ICSIDP 2019

# IEEE International Conference on Signal, Information and Data Processing 2019

11-13 December, 2019 Chongqing, China

# FINAL PROGRAM

**Sponsors:**

- IEEE Beijing Section
- Beijing Institute of Technology

**Organizers:**

- Beijing Institute of Technology
- Beijing Institute of Technology Chongqing Innovation Center

**Co-organizers:**

- National Key Lab of Microwave Imaging Technology, Chinese Academy of Sciences
- The 14th Research Institute of China Electronics Technology Group Corporation
- Chongqing Three Gorges University
- National Key Laboratory of Science and Technology on Test Physics & Numerical Mathematics
- Beijing Racobit Electronic Information Technology Co., Ltd

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# Welcome Message from IEEE President

I'm Toshio Fukuda, 2019 IEEE President-Elect. It gives me great pleasure to welcome you to the IEEE International Conference on Signal, Information and Data Processing 2019 in Chongqing city. I know that the aim of this conference is to introduce the latest technological developments and academic research hot topics of signal processing technology, especially the latest research and applications of civilian signal processing technology. It's fantastic to know so many esteemed experts and technicians across signal processing to attend this conference. I'm sure you'll agree that the next few days will be unique in providing opportunities for subject-matter experts like yourselves to exchange achievements, views and ideas with peers.

IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. It is designed to serve professionals involved in all aspects of the electrical, electronic, and computing fields and related areas of science and technology that underlie modern civilization. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities. We offer membership to individuals from a range of engineering disciplines, sectors and interests. And as a multidisciplinary institution we reflect the increasingly diverse nature of engineering in the 21st century. By inspiring both today's and tomorrow's engineers and technologists to drive innovation, it will ultimately benefit society.

We publish the best research work that is coming out of China and we support the professional development of Chinese students – helping them become ready for the world of work and giving them international exposure. We also run a range technical conferences aimed at bringing the best researchers and engineers together – we are always looking for topic ideas that address the latest challenges so it is a great pleasure to be one of the sponsors for this well respected event.

It has been a great pleasure to work with the Beijing Institute of Technology to organize this event – this is the first time working with you on the Signal, Information and Data Processing Conference. I'd also like to thank the other sponsors, technical sponsor and co-organizers who have all worked hard to ensure it is a great success. It's fantastic to see so many signal processing experts and technicians attending and I'm sure that the outcomes of the next few days will benefit the developments of this field – I know there will be some excellent discussions.

Prof. Toshio Fukuda
Academician of Engineering Academy of Japan
Foreign Academician of Chinese Academy of Sciences
President of IEEE 2020
Honorary Chair of IEEE ICSIDP 2019

# Welcome Message from BIT President

IEEE International Conference on Signal, Information and Data Processing 2019 is jointly sponsored by IEEE Beijing Section and Beijing Institute of Technology. Today, it is successfully held in Chongqing, China. As the President of Beijing Institute of Technology and one of the Honorary Chairs of this conference, I sincerely congratulate the opening of this great event.

In today's world, a new round of technological revolution represented by information technology is rising, and the information technology innovations such as signal, information, and data processing are changing with every day. The development of information technology is profoundly changing people's modern production and life style. Signal, information and data processing technologies are still playing the continuously important role in traditional technical fields such as radar, communication, remote sensing, audio, and image processing. At the same time, they are providing the development sources for research in emerging fields such as artificial intelligence, biomedicine, the Internet of Things and big data. They will provide technical guarantee and support for the development of scientific and technological innovation and the improvement of human living standards. This conference will promote the development of signal, information, and data processing technology, and facilitate the development, application and integration of information technology in emerging disciplines and technological innovations.

Beijing Institute of Technology (BIT) has always been devoted to the economic and social development of China and the technical progress of human since its establishment in 1940. BIT insists on aiming at the development frontier of the world's science and technology, and contributes to the promotion of technological development in related fields, the improvement of people's livelihood and the well-being of all humankind with worldwide scholars. As the host of this conference, we will certainly make every effort to do the careful organization and arrangements to make the conference successful.

Finally, I wish this conference a complete success! I also wish the experts, scholars and friends all the best in Chongqing! I sincerely invite you to visit BIT and Chongqing Innovation Center of BIT for further communication when you are convenient.

Prof. Jun Zhang
Academician of Chinese Academy of Engineering
President of Beijing Institute of Technology
Honorary Chair of IEEE ICSIDP 2019

# Welcome Message from General Chair

It is our great pleasure to welcome you to this historical city of China – Chongqing – to participate in IEEE International Conference on Signal, Information and Data Processing 2019. This international conference is jointly sponsored by IEEE Beijing Section and Beijing Institute of Technology. This conference aims to provide a platform for signal processing experts and technicians to exchange ideas and achievements by introducing the latest technological development and academic research hot issues of the signal processing technology.

This conference is organized by Beijing Institute of Technology (BIT) and Chongqing Innovation Center of BIT. The co-organizers include National Key Lab of Microwave Imaging Technology, Chinese Academy of Sciences, the 14th Research Institute of China Electronics Technology Group Corporation, Chongqing Three Gorges University, National Key Laboratory of Science and Technology on Test Physics & Numerical Mathematics, and Beijing Racobit Electronic Information Technology Co., Ltd. We would like to thank the technical co-sponsors, Overseas Expertise Introduction Center for Discipline Innovation of Novel Radar Theory and Key Technology, Key Laboratory of Electronic and Information Technology in Satellite Navigation, Ministry of Education, Beijing Key Laboratory of Embedded Real-Time Parallel Processing Technology, China Hi-Tech Industrialization Association Intelligent Information Processing Industrialization Branch, China Radar Industry Association, National Nature Science Foundation of China, The Institution of Engineering and Technology (IET), Young Scientists Club of CIE, Signal Processing Society of CIE, and Radar Society of CIE, for their strong support to this conference. We would also express appreciation to all authors including those whose papers were not accepted. We thank keynote and tutorial speakers for sharing their unique insight into their professional specific areas. Special thanks to the Technical Program Committee for reviewing and selecting the excellent papers as well as other support and expertise.

As you know, Chongqing is the biggest city in China in terms of area and population, one of four municipalities in China. Chongqing is called as “Mountain city”, which is a popular destination for travelers with its hilly slopes, rivers, night views and spicy food. It is also well known for the ancient Three Kingdom culture and Three Gorges culture. On behalf the entire organizing committee, our technical sponsors and supporters, we hope you participate in passionate discussions, exchange ideas and enjoy IEEE International Conference on Signal, Information and Data Processing 2019 and enjoy your stay in Chongqing.

Prof. Teng Long
IEEE Fellow
Vice President of Beijing Institute of Technology
General Chair of IEEE ICSIDP 2019

# Welcome Message from Technical Program Committee Chair

On behalf of the Technical Program Committee, I would like to welcome you to the IEEE International Conference on Signal, Information and Data Processing 2019 (IEEE ICSIDP 2019). This conference aims to introduce the latest technological development and academic research hot issues of Signal, Information and Data processing, as well as their applications, and provide a platform for leading industrial and academic researchers to present their state-of-the-art accomplishment, discuss and share their experiences, and foresee future directions in the field of signal processing theories and applications.

All submitted papers to this conference were reviewed by the technical program committee, and thoroughly peer-reviewed by experts based on originality, significance and clarity. Finally, 134 papers were selected for oral presentation and 515 papers for interactive poster presentation. This conference is honored to feature 12 keynote speeches, 6 tutorials and 82 invited talks from distinguished experts which will share with us their latest research result and their insight to the future signal processing development. Throughout three conference days, the 35 oral presentation sessions and 16 parallel poster presentation sessions will be given. To our pleasure, the selected papers and invited talks cover a wide range of Audio, Acoustic and Sonar processing, Image, Video, and Multimedia Processing, Communications and Networks, Remote Sensing, Sensor Array and Radar System, AI Theory and Applications, and Signal Processing of Big Data, Novel Quantum/Terahertz Technology, Biomedical Signal Processing, The Internet of Things, GNSS Signal Processing and Positioning, Joint Wireless Communication and Radar Sensing, etc.

I would like to express my thanks to all the authors for their outstanding contributions. In particular, I would like to send my appreciation to all technical program committees for their hard work and contribution to the conference. I wish IEEE ICSIDP 2019 a great success and look forward to seeing you in Chongqing.

Prof. Xiaopeng Yang
Board of Governors of IEEE AESS
Professor of Beijing Institute of Technology
TPC Chair of IEEE ICSIDP 2019

# Organizations

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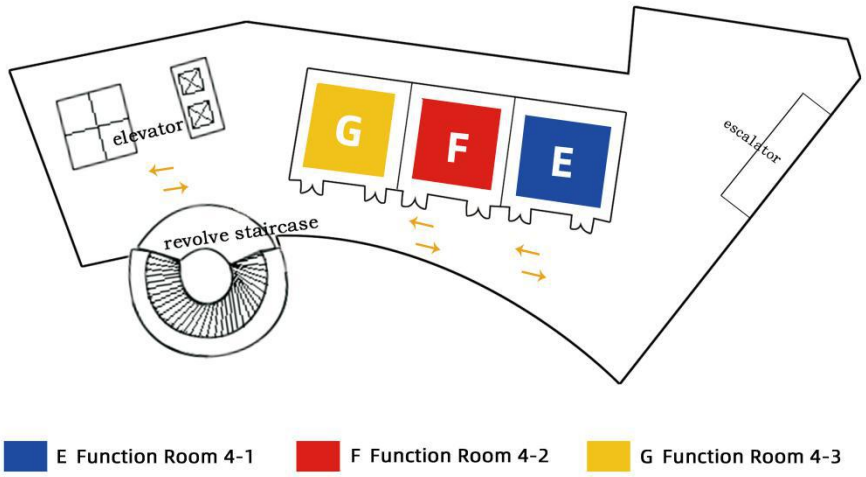
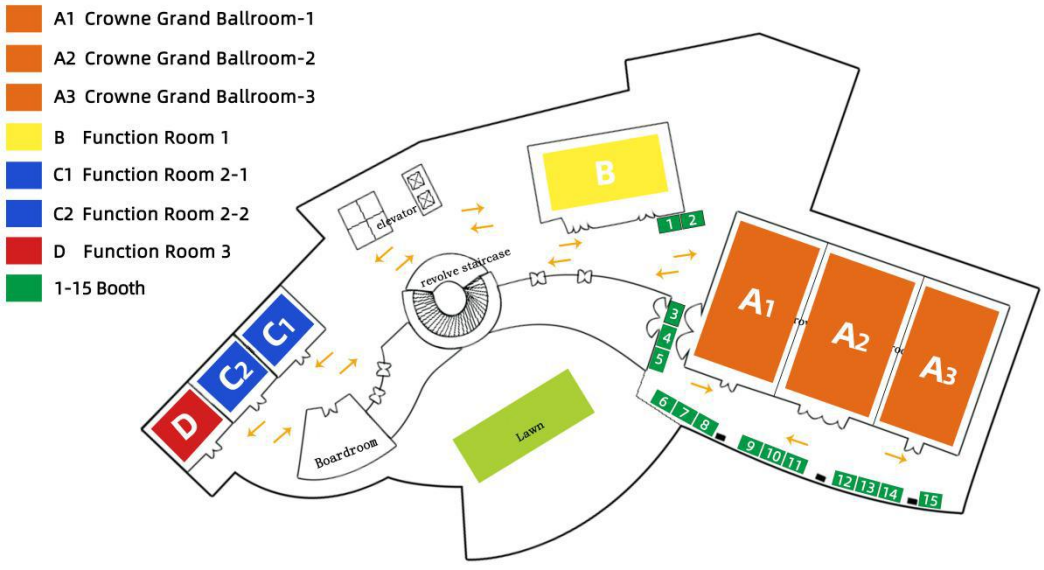
# Layout of Conference Venue

## Layout of B1:




## Layout of B2:



# Conference Schedule at a Glance

| Date | Time | Content | | Place |
|---|---|---|---|---|
| **December 10 Tuesday** | 08:00-22:00 | Registration | | Hotel Lobby |
| | 19:00-21: 30 | Tutorial 1 | Prof. Yan Zhang, Edge Intelligence for 5G Beyond | Function Room 1 |
| | | Tutorial 2 | Prof. Yvon Savaria, Hardware Support Architectures and Implementations for Effective Embedded AI and Signal Processing | Function Room 2 |
| **December 11 Wednesday** | 08:00-18:00 | Registration | | Hotel Lobby |
| | 08:00-08:30 | Opening Ceremony | | Crowne Grand Ballroom |
| | 08:30-09:15 | Keynote Speech 1 | Prof. Ge Wang, Bio-Imaging Driven by Big Data and Deep Learning | Crowne Grand Ballroom |
| | 09:15-10:00 | Keynote Speech 2 | Prof. Teng Long, On-board Signal and Information Processing for Remote Sensing Satellites | Crowne Grand Ballroom |
| | 10:00-10:30 | Group Photo/ Tea Break | | Foyer |
| | 10:30-11:15 | Keynote Speech 3 | Prof. Xuemin Lin, Big Graph Processing: Applications, Challenges, and Advances | Crowne Grand Ballroom |
| | 11:15-12:00 | Keynote Speech 4 | Prof. Motoyuki Sato, Signal Processing for Near Range Radar | Crowne Grand Ballroom |
| | 12:00-13:30 | | Lunch | Aqua Cafe |
| | 13:30-15:30 | Oral Session 1 | Photon/Quantum Communications<br>Chairs: Xiangdong Zhang, Baosen Shi | Function Room 2-1 |
| | | Oral Session 2 | Applications and Services based on Big Data<br>Chairs: Chi Liu, Yin Zhang | Function Room 2-2 |
| | | Oral Session 3 | Communications and Networks I<br>Chairs: Guan Gui, Haijun Zhang | Function Room 4-3 |
| | | Oral Session 4 | Image, Video, and Multimedia Processing I<br>Chairs: Hongliang Li, Yuxin Peng | Function Room 4-1 |

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|---|---|---|---|---|
| **December 11 Wednesday** | | Oral Session 5 | AI Applications<br>Chairs: Yilong Lu, Lan Du | Function Room 4-2 |
| | | Oral Session 6 | GPR and Wideband Imaging<br>Chairs: Xuan Feng, Shaoming Wei | Function Room 1 |
| | 15:30-16:00 | Tea Break | | Foyer |
| | 16:00-18:00 | Oral Session 7 | Audio and Acoustic Systems Analysis and Algorithms<br>Chairs: Wenwu Wang, Jing Guo | Function Room 4-3 |
| | | Oral Session 8 | Novel Approaches and Technologies for Big Data<br>Chairs: Hongfei Zhu, Shuang Li | Function Room 2-2 |
| | | Oral Session 9 | Adaptive Beamforming and Interference Suppression<br>Chairs: Tian Jin, Xiongyao Xie | Function Room 2-1 |
| | | Oral Session 10 | Image, Video, and Multimedia Processing II<br>Chairs: Guiguang Ding, Jinhui Tang | Function Room 4-1 |
| | | Oral Session 11 | The Internet of Things<br>Chairs: Yulong Zou, Yuantao Gu | Function Room 4-2 |
| | | Oral Session 12 | Radar Target Detection<br>Chairs: Zhenmiao Deng, Jibin Zheng | Function Room 1 |
| | 18:00-19:00 | Dinner | | Aqua Cafe |
| | 19:00-21:30 | Tutorial 3 | Prof. Antonio Napolitano, Cyclostationarity and Generalizations: An Ubiquitous Statistical | Function Room 1 |
| | | Tutorial 4 | Prof. Kai-Bor Yu, Advanced Monopulse Processing of Phased Array Radar | Function Room 2 |
| | 08:00-18: 30 | Exhibition Time | | Foyer |
| **December 12 Thursday** | 08:00-18:00 | Registration | | Hotel Lobby |
| | 08:30-09:15 | Keynote Speech 5 | Prof. Qi Tian, Person Re-Identification: Challenges and Recent Advances | Crowne Grand Ballroom A2+A3 |
| | 09:15-10:00 | Keynote Speech 6 | Prof. Jerome Zhengrong Liang, Deep Texture Analysis: An answer to why CNN goes with experts' scores, not the pathological reports | Crowne Grand Ballroom A2+A3 |

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| **December 12 Thursday** | 10:00-10:30 | Tea Break | | Foyer |
| | 10:30-11:15 | Keynote Speech 7 | Prof. Shipeng Li, Challenges and Opportunities in Massive Applications of | Crowne Grand Ballroom A2+A3 |
| | 11:15-12:00 | Keynote Speech 8 | Prof. Wenwu Wang, Deep Learning for Audio Classification | Crowne Grand Ballroom A2+A3 |
| | 12:00-13:30 | Lunch | | Aqua Cafe |
| | 13:30-15:50 | Oral Session 13 | Novel Quantum/Terahertz Technology<br>Chairs: Weifeng Zhang, Lijian Zhang | Function Room 4-2 |
| | 13:30-15:30 | Oral Session 14 | Remote Sensing Target Detection I<br>Chairs: Xuesong Wang, Yiming Zhu | Function Room 2-1 |
| | | Oral Session 15 | MIMO and Diversity<br>Chairs: Guolong Cui, Shengqi Zhu | Function Room 1 |
| | | Oral Session 16 | AI in Radar Signal Processing<br>Chairs: Shipeng Li, Caiming Qiu | Function Room 4-3 |
| | | Oral Session 17 | Radar Signal Processing<br>Chairs: Zengping Chen, Hao Shi | Function Room 4-1 |
| | 13:30-15:50 | Oral Session 18 | Joint Wireless Communication and Radar Sensing<br>Chairs: Qiang Li, Xingdong Liang | Function Room 2-2 |
| | 15:30-16:00 | Tea Break | | Foyer |
| | 15:30-16:30 | Poster Session 1 | Speech, Audio, Acoustic and Sonar Processing | Crowne Grand Ballroom A1 |
| | | Poster Session 2 | Image, Video, and Multimedia Processing | |
| | | Poster Session 3 | Signal Processing for Communications and Networks | |
| | | Poster Session 4 | Remote Sensing and Signal Processing I | |
| | | Poster Session 5 | Artificial Intelligence for Signal Processing | |
| | | Poster Session 6 | Signal Processing for Big Data | |

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|---|---|---|---|---|
| **December 12 Thursday** | | Poster Session 7 | Photon / Quantum Signal and Information Processing | |
| | | Poster Session 8 | Joint Wireless Communication and Radar Sensing | |
| | 16:30-18:30 | Oral Session 19 | Statistical Signal Processing<br>Chairs:Jinwen Ma, Wei Li | Function Room 4-2 |
| | | Oral Session 20 | Remote Sensing Target Detection II<br>Chairs: Yachao Li, Yongzhen Li | Function Room 2-1 |
| | | Oral Session 21 | Sparse Array & Signal Processing<br>Chairs: Hai Liu, Yingsong Li | Function Room 1 |
| | | Oral Session 22 | GNSS Signal Processing and Positioning<br>Chairs: Gérard Lachapelle, Tao Lin | Function Room 4-3 |
| | | Oral Session 23 | Neural Network Design & Implementation<br>Chairs: Li Du, Yupei Wang | Function Room 4-1 |
| | | Oral Session 24 | Remote Sensing Data Processing<br>Chairs: Tao Zeng, Yong Wang | Function Room 2-2 |
| | 18:30-19:30 | Dinner | | Aqua Cafe |
| | 19:30-22:00 | Tutorial 5 | Prof. Gérard Lachapelle, GNSS Precise Point Positioning with Android Smartphones and Comparison with High Performance Receivers | Function Room 1 |
| | | Tutorial 6 | Prof. Tapan K. Sarkar, Use of the Fractional Fourier Transform for Radar Target Identification Using the Singularity Expansion Method | Function Room 2 |
| | 08:30-18:30 | Exhibition Time | | Foyer |
| **December 13 Friday** | 08:00-18:00 | Registration | | Hotel Lobby |
| | 08: 00-10: 00 | Oral Session 25 | Target Detection in Acoustic Systems<br>Chairs: Xiaojun Qiu, Xueli Sheng | Function Room 4-2 |
| | | Oral Session 26 | Remote Sensing Intelligence Processing<br>Chairs: Turgay Celik, Junjie Wu | Function Room 2-1 |
| | | Oral Session 27 | Target Localization and DOA Estimation<br>Chairs: Xiaoping Zhang, Quanhua Liu | Function Room 2-2 |
| | | Oral Session 28 | Signal Processing Algorithm Implementation<br>Chairs: Lianlin Li, Yin Zhuang | Function Room 4-3 |

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|---|---|---|---|---|
| **December 13 Friday** | | Oral Session 29 | Waveform Design and Application<br>Chairs: Ningbo Liu, Wei Li | Function Room 4-1 |
| | | Oral Session 30 | Civilian Radar<br>Chairs: Gang Li, Julien Le Kernec | Function Room 1 |
| | 10: 00-10: 30 | Tea Break | | Foyer |
| | 10: 30-12: 30 | Oral Session 31 | Remote Sensing System Techniques<br>Chairs: Jie Chen, Qian He | Function Room 2-1 |
| | | Oral Session 32 | Bio-imaging and Biomedical Signal Processing<br>Chairs: Zeyang Xia, Wenbin Shi | Function Room 4-2 |
| | | Oral Session 33 | Signal Extraction and Feature Recognition<br>Chairs: Xiaolong Chen, Wei Li | Function Room 4-3 |
| | | Oral Session 34 | Communications and Networks II<br>Chairs: Chengwen Xing, Wenchi Cheng | Function Room 4-1 |
| | | Oral Session 35 | Remote Sensing Information Extraction<br>Chairs: Bing Zhang, Ferdinando Nunziata | Function Room 2-2 |
| | 12:30-13: 30 | Lunch | | Aqua Cafe |
| | 13:30-14:15 | Keynote Speech 9 | Prof. James E. Fowler, Low-Rank and Sparse Representations in Signal Processing | Crowne Grand Ballroom A2+A3 |
| | 14:15-15:00 | Keynote Speech 10 | Prof. Xiaojun Qiu, Virtual Sound Barriers and their Applications | Crowne Grand Ballroom A2+A3 |
| | 15:00-15:30 | Tea Break | | Foyer |
| | 15:00-16:00 | Poster Session 9 | Remote Sensing and Signal Processing II | Crowne Grand Ballroom A1 |
| | | Poster Session 10 | Sensor Array and Multichannel Signal Processing | |
| | | Poster Session 11 | Bio-imaging and Biomedical Signal Processing | |
| | | Poster Session 12 | Signal Processing Theory and Methods | |
| | | Poster Session 13 | Signal Processing for Cyberspace Security | |
| | | Poster Session 14 | The Internet of Things | |

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|---|---|---|---|---|
| **December 13 Friday** | | Poster Session 15 | GNSS Signal Processing and Positioning | |
| | | Poster Session 16 | Signal Processing for Communications and Networks | |
| | 16:00-16:45 | Keynote Speech 11 | Prof. Caiming Qiu, Toward Theoretical Understanding of Deep Learning | Crowne Grand Ballroom A2+A3 |
| | 16:45-17:30 | Keynote Speech 12 | Prof. Ke Wu, Future Wireless – Game-Changing Technology for Everything | Crowne Grand Ballroom A2+A3 |
| | 18:30-21:30 | Award Banquet | | Crowne Grand Ballroom A2+A3 |
| | 08: 00-18: 00 | Exhibition Time | | Foyer |

*Hotel Lobby/酒店大堂: 1st Floor of Hotel (F1 of Hotel)*
*Function Room 1/多功能厅1: B, 2nd Basement of Hotel (B2 of Hotel)*
*Function Room 2-1/多功能厅2-1: C1, 2nd Basement of Hotel (B2 of Hotel)*
*Function Room 2-2 /多功能厅2-2: C2, 2nd Basement of Hotel (B2 of Hotel)*
*Function Room 4-1 /多功能厅4-1: E, 1st Basement of Hotel (B1 of Hotel)*
*Function Room 4-2 /多功能厅4-2: F, 1st Basement of Hotel (B1 of Hotel)*
*Function Room 4-3 /多功能厅4-3: G, 1st Basement of Hotel (B1 of Hotel)*
*Crowne Grand Ballroom-1 /皇冠大宴会厅-1: A1, 2nd Basement of Hotel (B2 of Hotel)*
*Crowne Grand Ballroom-2/皇冠大宴会厅-2: A2, 2nd Basement of Hotel (B2 of Hotel)*
*Crowne Grand Ballroom-3 /皇冠大宴会厅-3: A3, 2nd Basement of Hotel (B2 of Hotel)*
*Foyer /走廊: 2nd Basement of Hotel (B2 of Hotel)*

# Oral Sessions Schedule at a Glance

| 13: 30 – 15: 30, December 11 | | | | | | |
|---|---|---|---|---|---|---|
| **Sessions** | **Session 1** | **Session 2** | **Session 3** | **Session 4** | **Session 5** | **Session 6** |
| **Place&Time** | **Function Room 2-1** | **Function Room 2-2** | **Function Room 4-3** | **Function Room 4-1** | **Function Room 4-2** | **Function Room 1** |
| **13:30** | Yuxi Liu | Qinghua Zhang | Guan Gui | Hongliang Li | F1172 | Xuan Feng |
| **13:50** | Guilu Long | Yuan He | Nan Wu | Yuxin Peng | F4154 | Hai Liu |
| **14:10** | Xihua Zou | G4874 | Wei Peng | Hua Huang | F6249 | Tian Jin |
| **14:30** | Baosen Shi | G7136 | Haijun Zhang | B2412 | F5260 | Xiongyao Xie |
| **14:50** | Wangzhe Li | G3778 | C5367 | B2189 | F4852 | Shaoming Wei |
| **15:10** | Weifeng Zhang | G1546 | C7975 | B2464 | F2990 | Yuntao Wu |
| **16: 00 – 18: 00, December 11** | | | | | | |
| **Sessions** | **Session 7** | **Session 8** | **Session 9** | **Session 10** | **Session 11** | **Session 12** |
| **Place&Time** | **Function Room 4-3** | **Function Room 2-2** | **Function Room 2-1** | **Function Room 4-1** | **Function Room 4-2** | **Function Room 1** |
| **16:00** | A1046 | G4782 | E2511 | Guiguang Ding | Weiping Zhu | Xiaolong Chen |
| **16:20** | A3087 | G1837 | E2549 | Jinhui Tang | Jun Zhang | Zhenmiao Deng |
| **16:40** | A3177 | G51054 | E2725 | B1128 | Min Sheng | Fengzhou Dai |
| **17:00** | A3221 | G5094 | E3068 | B3146 | Bo Ai | Jibin Zheng |
| **17:20** | A4534 | G4035 | E3327 | B2763 | Yulong Zou | E3437 |
| **17:40** | A41077 | G5840 | E11104 | B2060 | Yuantao Gu | D2088 |
| **13: 30 – 15: 30, December 12** | | | | | | |
| **Sessions** | **Session 13** | **Session 14** | **Session 15** | **Session 16** | **Session 17** | **Session 18** |
| **Place&Time** | **Function Room 4-2** | **Function Room 2-1** | **Function Room 1** | **Function Room 4-3** | **Function Room 4-1** | **Function Room 2-2** |
| **13:30** | Wei Zhang | Xuesong Wang | Guolong Cui | F1194 | Zengping Chen | Xingdong Liang |
| **13:50** | Lijian Zhang | Yiming Zhu | Shengqi Zhu | F2535 | J3268 | Yinghui Quan |
| **14:10** | Xiulai Xu | Zenghui Zhang | E5315 | F1754 | J3512 | Yimin Liu |
| **14:30** | Xilin Wang | D4484 | E5744 | F1201 | J3186 | D41081 |
| **14:50** | H1135 | D4446 | E5110 | F1271 | J1248 | E7432 |
| **15:10** | H5756 | D2427 | E5463 | F1133 | J3257 | N01067 |
| **15:30** | H6548 | | | | | D41094 |
| **16: 30 – 18: 30, December 12** | | | | | | |
| **Sessions** | **Session 19** | **Session 20** | **Session 21** | **Session 22** | **Session 23** | **Session 24** |
| **Place&Time** | **Function Room 4-2** | **Function Room 2-1** | **Function Room 1** | **Function Room 4-3** | **Function Room 4-1** | **Function Room 2-2** |
| **16:30** | Ahmed I. Zayed | Longfei Shi | Yingsong Li | Jianghui Geng | Li Du | Tao Zeng |
| **16:50** | K1615 | Lan Du | E5123 | Xiaoji Niu | J4066 | Yong Wang |
| **17:10** | K2171 | Yachao Li | E5389 | Baigen Cai | J8071 | Junjie Wu |
| **17:30** | K2420 | D4298 | E1206 | Chuang Shi | J4145 | D5934 |
| **17:50** | K2500 | D4099 | E1214 | Yidong Lou | J6816 | D4768 |
| **18:10** | K2788 | D5382 | E1536 | P2304 | J3291 | D4325 |

| 08: 00 – 10: 00, December 13 | | | | | | |
|---|---|---|---|---|---|---|
| **Sessions** | **Session 25** | **Session 26** | **Session 27** | **Session 28** | **Session 29** | **Session 30** |
| **Place&Time** | **Function Room 4-2** | **Function Room 2-1** | **Function Room 2-2** | **Function Room 4-3** | **Function Room 4-1** | **Function Room 1** |
| **08:00** | A4043 | Turgay Celik | Xiaoping Zhang | Lianlin Li | Ran Tao | Yilong LU |
| **08:20** | A4238 | Fan Zhang | E5185 | J3202 | K5499 | Gang Li |
| **08:40** | A4407 | D4429 | E1188 | J3031 | K3067 | Cheng Hu |
| **09:00** | A4416 | D1476 | E1279 | J3259 | K3098 | Julien Le Kernec |
| **09:20** | A4780 | D4349 | E1109 | J3184 | K3132 | Xiaopeng Yang |
| **09:40** | A3240 | D4773 | E1096 | J3866 | K3227 | Wenqin Wang |
| **10: 30 – 12: 30, December 13** | | | | | | |
| **Sessions** | **Session 31** | **Session 32** | **Session 33** | **Session 34** | **Session 35** | |
| **Place&Time** | **Function Room 2-1** | **Function Room 4-2** | **Function Room 4-3** | **Function Room 4-1** | **Function Room 2-2** | |
| **10:30** | Jie Chen | Zeyang Xia | K3256 | Chengwen Xing | Bing Zhang | |
| **10:50** | Yongchao Zhao | Wenbin Shi | K3403 | Fangjiong Chen | Ferdinando Nunziata | / |
| **11:10** | Qian He | I2575 | K3720 | Zhenming Yu | D4438 | |
| **11:30** | Hai Li | I2219 | K3736 | C5630 | D1942 | |
| **11:50** | D2180 | I2331 | K7582 | C2301 | D1163 | |
| **12:10** | D2222 | I2483 | K1379 | C5411 | D1465 | |

**Please note:**
The name listed in the table is the speaker of invited talk.
The number listed in the table is the paper ID of oral presentation.

# Keynote Speeches

**Title: Bio-Imaging Driven by Big Data and Deep Learning**
**Speaker: Prof. Ge Wang, Rensselaer Polytechnic Institute, USA**
**Time: 08: 30 – 09: 15, December 11, 2019**
**Place: Crowne Grand Ballroom, B2 of Hotel**

**Abstract:** Currently, deep learning is the mainstream of machine learning and a most active area of artificial intelligence. Computer vision and image analysis are great application examples of deep learning. While computer vision and image analysis deal with existing images and produce related features (registration, segmentation, classification, etc.), tomography produces images of internal structures from externally measured features (line integrals, k-space samples, etc.) of underlying images. Recently, deep learning techniques are being actively developed worldwide for tomographic image reconstruction. We believe that "image reconstruction is a new frontier of machine learning" (IEEE Transactions on Medical Imaging 37 (2018) 1289), and promises major impacts on the development of solutions to many inverse problems. Over the past years, we have been working on data-driven bio-imaging, especially CT, MRI, and optical image reconstruction algorithms for superior imaging performance. In this presentation, we report our representative results, involving important applications and methodological innovations. We welcome collaborative opportunities.

**Biography:** Ge Wang is Clark & Crossan Endowed Chair Professor and Director of Biomedical Imaging Center, Rensselaer Polytechnic Institute, Troy, NY, USA. He published the first spiral/helical cone-beam/multi-slice CT algorithm in 1991 and since then 100+ papers systematically contributed to theory, algorithms, artifact reduction and biomedical applications in this area. Currently, there are 100+ million medical CT scans yearly with a majority in the spiral/helical cone-beam/multi-slice mode. His group developed interior tomography theory and algorithms to solve the long-standing "interior problem" for high-fidelity local reconstruction, and enable omni-tomography ("all-in-one") with CT-MRI as an example. He initiated the area of bioluminescence tomography. He wrote 450+ journal publications, receiving a high number of citations and academic awards. His results were featured in Nature, Science, PNAS, and various news media. In 2016, he wrote the first perspective on neural-network-based tomographic imaging as the new frontier of machine learning. His team has been in collaboration with world-class groups and continuously well-funded by federal agencies and major imaging companies, actively translating machine learning techniques into imaging products. His interest includes x-ray CT, MRI, optical tomography, multimodality fusion, and machine learning. He is Lead Guest Editor of five IEEE Transactions on Medical Imaging Special Issues, Founding Editor-in-Chief of International Journal of Biomedical Imaging, Outstanding Associate Editor of IEEE Trans. Medical Imaging, Board Member of IEEE Access, Associate Editor of IEEE Trans. Radiation and Plasma Medical Sciences, Medical Physics, and Editorial Board Member of Journal of Machine Learning Science and Technology. He is Fellow of IEEE, SPIE, OSA, AIMBE, AAPM, and AAAS.

**Title: On-board Signal and Information Processing for Remote Sensing Satellites**
**Speaker: Prof. Teng Long, Beijing Institute of Technology, China**
**Time: 09:15-10:00, December 11, 2019**
**Place: Crowne Grand Ballroom, B2 of Hotel**

**Abstract:** With the development of remote sensing technology, the Earth observation satellites have the characteristics of high resolution, wide coverage and multi-satellite network. So the acquired data grows geometrically, which brings severe challenges to the transmission, storage and processing of satellite data. On-board real-time processing technology is an effective means to solve these problems. Based on this technology, the data processing is completed within the satellite, such as interest region extraction, target detection and recognition, etc. Then the processing results can be directly transmitted to the users through broadcast downlink. The information acquisition delay can be reduced from hours to minutes. Because of the on-board processing technology, the application efficiency will be greatly improved, such as in the situations of emergency, disaster reduction and national security.

This Keynote firstly expounds the development of Earth observation remote sensing satellites. And then, the significance and the technology development of the on-board real-time processing are introduced. Secondly, the technology difficulties and solving methods of on-board processing for optical or SAR payload are discussed. Finally, the development of the technology is prospected.

**Biography:** Prof. Teng Long received the B.S. degree from University of Science and Technology of China (USTC) in 1989, and the Ph.D. degree from Beijing Institute of Technology (BIT) in 1995. After graduation he joined the faculty of BIT, where he became a full professor in 2002. He was a visiting scholar at Stanford University and University College London in 1999 and 2002 respectively. Currently, he serves as the Vice President of BIT. He is a Fellow of IEEE, IET and the Chinese Institute of Electronics (CIE). He is the president of CIE Signal Processing Society and vice president of CIE Radar Society. His research interests include the fundamental and significant issues of the novel radar system and signal processing. His work includes the novel one-dimensional high resolution imaging radar, two-dimensional synthetic aperture imaging radar and the new technology and application of the real-time signal processing technology in remote sensing observation.

**Title: Big Graph Processing: Applications, Challenges, and Advances**
**Speaker: Prof. Xuemin Lin, the University of New South Wales, Australia**
**Time: 10:30-11:15, December 11, 2019**
**Place: Crowne Grand Ballroom, B2 of Hotel**

**Abstract:** Graph data are key parts of Big Data and widely used for modelling complex structured data with a broad spectrum of applications. Over the last decade, tremendous research efforts have been devoted to many fundamental problems in managing and analysing graph data. In this talk, I will cover various applications, challenges, and recent advances. We will also look to the future of the area.

**Biography:** Xuemin Lin is a UNSW Scientia Professor, the head of data and knowledge research group in the school of computer science and engineering at UNSW, and an adjunct Professor at ECNU, Fudan University, and Guangzhou University. He is a fellow of IEEE. Xuemin's research interests lie in databases, data mining, algorithms, and complexities. Specifically, he is working in the areas of scalable processing and mining of large scale data, including graph, spatial-temporal, streaming, text and uncertain data.

Xuemin has been very frequently serving as a PC member and area chairs (senior PC members) in SIGMOD, VLDB, ICDE, ICDM, KDD, CIKM, and EDBT. He received the honour of outstanding reviewer in KDD2012. He was an associate editor of ACM TODS (2008-2014) and IEEE TKDE (Feb 2013- Jan 2015), and an associate editor-in-Chief of TKDE (2015-2016), respectively. Currently, he is the editor-in-Chief of TKDE (Jan 2017 - now) and an associate editor of WWW Journal (2013 - now).

**Title: Signal Processing for Near Range Radar**
**Speaker: Prof. Motoyuki Sato, Tohoku University, Japan**
**Time: 11:15-12:00, December 11, 2019**
**Place: Crowne Grand Ballroom, B2 of Hotel**

**Abstract:** Ground Penetrating Radar (GPR) is a typical near-range radar, and the interaction of antenna with radar targets is important in the radar performance. In this keynote speech, I will introduce a few examples how antenna design, signal processing directly contribute the radar performance. And I will demonstrate our works on advanced signal processing in GPR which include soil moisture estimation. Then we will also discuss about GB-SAR system based on MIMO radar and its signal processing.

**Biography:** Motoyuki Sato received the Dr. Eng. degree in information engineering from the Tohoku University, Sendai, Japan. Since 1997 he is a professor at Tohoku University.

His current interests include transient electromagnetics and antennas, radar polarimetry, ground penetrating radar (GPR), borehole radar, electromagnetic induction sensing, interferometric and polarimetric SAR.

He was the technical chair of International conference on Ground Penetrating Radar, GPR96 held in Sendai, Japan and he served the general chair of IGARSS2011. He received 2014 Frank Frischknecht Leadership Award from SEG for his contribution to his sustained and important contributions to near-surface geophysics in the field of ground-penetrating radar.

**Title: Person Re-Identification: Challenges and Recent Advances**
**Speaker: Prof. Qi Tian, University of Texas at San Antonio, USA**
**Time: 08:30-09:15, December 12, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** As a research topic attracting more and more interests in both academia and industry, person Re-Identification (ReID) targets to identify the re-appearing persons from a large set of videos. It is potential to open great opportunities to address the challenging data storage problems, offering an unprecedented possibility for intelligent video processing and analysis, as well as exploring the promising applications on public security like cross camera pedestrian searching, tracking, and event detection.

This talk aims at reviewing the latest research advances, discussing the remaining challenges in person ReID, and providing a communication platform for researchers working on or interested in this topic. This talk includes several parts on person ReID:

- Task definition, challenges and benchmarks of person ReID
- Fully supervised learning for person ReID
- Unsupervised learning or weakly supervised learning for person ReID
- Open issues and promising research topics of person ReID

This talk also covers our latest work on person ReID, as well as our viewpoints about the unsolved challenging issues in person ReID. We believe this talk would be helpful for researchers working on person ReID and other related topics.

**Biography:** Qi Tian is currently a Chief Scientist in Computer Vision at Huawei Noah's Ark Lab. He was a Full Professor in the Department of Computer Science, the University of Texas at San Antonio (UTSA) from 2002 to 2019. During 2008-2009, he took one-year Faculty Leave at Microsoft Research Asia (MSRA). Dr. Tian received his Ph.D. in ECE from University of Illinois at Urbana-Champaign (UIUC) and received his B.E. in Electronic Engineering from Tsinghua University and M.S. in ECE from Drexel University, respectively. Dr. Tian's research interests include computer vision, multimedia information retrieval and machine learning and published over 510 refereed journal and conference papers. His Google citation is over 17200+ with H-index 65. He was the co-author of best papers including IEEE ICME 2019, ACM CIKM 2018, ACM ICMR 2015, PCM 2013, MMM 2013, ACM ICIMCS 2012, a Top 10% Paper Award in MMSP 2011, a Student Contest Paper in ICASSP 2006, and co-author of a Best Paper Candidate in ACM Multimedia 2019, and a Best Paper/Student Paper Candidate in ICME 2015 and PCM 2007.Dr. Tian research projects were funded by ARO, NSF, DHS, Google, FXPAL, NEC, SALSI, CIAS, Akiira Media Systems, HP, Blippar and UTSA. He received 2017 UTSA President's Distinguished Award for Research Achievement, 2016 UTSA Innovation Award, 2014 Research Achievement Awards from College of Science, UTSA, 2010 Google Faculty Award, and 2010 ACM Service Award. He is the associate editor of IEEE TMM, IEEE TCSVT, ACM TOMM, MMSJ, and in the Editorial Board of Journal of Multimedia (JMM) and Journal of MVA. Dr. Tian is the Guest Editor of IEEE TMM, Journal of CVIU, etc. Dr. Tian is a Fellow of IEEE(2016).

**Title: Deep Texture Analysis: An answer to why CNN goes with experts' scores, not the pathological reports**
**Speaker: Prof. Jerome Zhengrong Liang, State University of New York at Stony Brook, USA**
**Time: 09:15-10:00, December 12, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** Artificial intelligence (AI) research for medical diagnosis started soon after human began to use computer, initially called artificial neural network (ANN) and now convolutional neural network (CNN). ANN has been mainly explored to classify the experts' handcrafted features from the raw images, while CNN adds a component to extract the features from the raw images.

Experimental evidences have shown that CNN can be trained by a large number of the raw images with experts' scores (or labels) to march or even surpass the experts' performance for both non-medical and medical diagnosis applications. However, the performances of both the CNN models and the experts on medical diagnosis dropped dramatically when the labels of the raw images were replaced by the medical pathological reports.

Accumulated medical knowledge reveals that the lesion heterogeneity is a footprint of lesion evolution and ecology, and the heterogeneity is also an indicator of lesion progress and response to intervention. The heterogeneity can be reflected by the image contrast distribution (or texture patterns) across the lesion volume. Image textures have been shown as an effective descriptor of the lesion heterogeneity for computer-aided diagnosis.

Can we go into the raw images to map the image contrast distribution into texture images and train CNN to learn from the texture images? This question is the central theme of this presentation with application to CT colonography or virtual colonoscopy, i.e. from AlphaGo to AlphaPolyp.

**Biography:** Jerome Zhengrong Liang gained a Ph.D. degree in Physics from City University of New York in 1987, followed by one year Research Fellow in Nuclear Medicine and Radiation Oncology at Albert Einstein College of Medicine. He had been a Research Associate and then Assistant Professor in Radiology at Duke University Medical Center. He joined State University of New York at Stony Brook (SUNY-SB) in 1992 and currently holds a Professorship in the Departments of Radiology, Biomedical Engineering, and Electrical & Computer Engineering. He was a co-founder of the Program in Biomedical Engineering at SUNY-SB. His primary research interests in medical imaging include data acquisition geometry, image formation and processing methodology, and feature-based visualization and computer-aided detection and diagnosis. He has authored more than 400 scientific publications, 20 US patents, 45 invited talks, and 170 conference presentations. He has supervised more than 25 postdoctoral researchers and more than 40 graduate students (PhD and MS degrees). He has been served principal investigator (PI) for 11 NIH projects and Co-PI for four NIH projects. He received the State University of New York Chancellor's Entrepreneur Award for "whose invention has led to the startup of a company to commercialize the product" in 2002. He was elected Fellow to the IEEE for "contributions to medical image reconstruction and virtual colonoscopy" in 2007.

**Title: Challenges and Opportunities in Massive Applications of Artificial Intelligence Technologies**
**Speaker: Prof. Shipeng Li, IFLYTEK CO., LTD., China**
**Time: 10:30-11:15, December 12, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** In this talk, Dr. Li will first introduce different levels of artificial intelligence from a data perspective and give an honest estimation on the timeframe to reach each level of AI. He will then give an overview of the state-of-the-art AI technologies and some exciting applications enabled by AI using some industrial examples. He will then go ahead to analyze the challenges and opportunities we are facing today for massive applications of AI technologies in real world. He will also point out research directions and solutions to some of the pressing issues we are facing today.

**Biography:** Dr. Shipeng Li is Associate Director of Shenzhen Institute of Artificial Intelligence and Robotics for Society (AIRS). He was with a leading AI company in China serving as Corporate Vice President and Co-President of Research. Before that he was CTO of a leading IoT company in China. He was a founding member of Microsoft Research Asia (MSRA). Dr. Li was once a Research Area Manager and Principal Researcher at MSRA, and a Microsoft Partner in 1999-2015. Before Microsoft, Dr. Li was with Sarnoff Corporation as Member of Technical Staff.

Dr. Li is the Editor-in-Chief of IEEE Transactions on Circuits and Systems for Video Technology, a Fellow of IEEE, and IEAS (International Eurasian Academy of Science) Academician. He is an influential expert on multimedia, internet, computer vision, cloud computing, IoT and artificial intelligence, holding 200 US patents and 330+ international technical publications with 21,879+ citations (H-index: 76). He has trained 4 MIT TR35 winners (the world's top 35 innovators under the age of 35) over the years. He serves as a Standing Committee Member of Chinese Institute of Electronics, Co-Founder and Joint Secretary General of Artificial Intelligence Industry Technology Innovation Strategic Alliance under China MOST.

Dr. Li received B.S. and M.S. from University of Science and Technology of China and Ph.D. from Lehigh University.

**Title: Deep Learning for Audio Classification**
**Speaker: Prof. Wenwu Wang, University of Surrey, UK**
**Time: 11:15-12:00, December 12, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** Audio classification (e.g. audio scene analysis, audio event detection and audio tagging) have a variety of potential applications in security surveillance, intelligent sensing for smart homes and cities, multimedia search and retrieval, and healthcare. This research area is under rapid development recently, having attracted increasing interest from both academia and industrialists. In this talk, we will present some recent and new development for several challenges related to this topic, including data challenges (e.g. DCASE challenges), acoustic modelling, feature learning, dealing with weakly labelled data, and learning with noisy labels. We will show some latest results of our proposed algorithms, such as the attention neural network algorithms for learning with weakly labelled data, and their results on AudioSet – a large scale dataset provided by Google, as compared with several baseline methods. We will also use some sound demos to illustrate the potentials of our proposed algorithms.

**Biography:** Wenwu Wang is a Professor in Signal Processing and Machine Learning, and a Co-Director of the Machine Audition Lab within the Centre for Vision Speech and Signal Processing, University of Surrey, UK. He is also a Guest Professor at Qingdao University of Science and Technology, China.

He received the B.Sc. degree in 1997, the M.E. degree in 2000, and the Ph.D. degree in 2002, all from the College of Automation, Harbin Engineering University, China. He worked in King's College London (2002-2003), Cardiff University (2004-2005), Tao Group Ltd. (now Antix Labs Ltd.) (2005-2006), Creative Labs (2006-2007), and University of Surrey (since May 2007). He was a Visiting Scholar at Ohio State University, USA, in 2008. His current research interests include blind signal processing, sparse signal processing, audio-visual signal processing, machine learning and perception, artificial intelligence, machine audition (listening), and statistical anomaly detection. He has (co)-authored over 250 publications in these areas.

He and his team have won the Reproducible System Award on DCASE 2019, Best Student Paper Award on LVA/ICA 2018, the Best Oral Presentation on FSDM 2016, the Top-Quality Paper Award in IEEE ICME 2015, Best Student Paper Award finalists on ICASSP 2019 and LVA/ICA 2010. He and his team have achieved the 1st place (among 35 submitted systems) in the 2017 DCASE Challenge on "Large-scale weakly supervised sound event detection for smart cars", the 3rd place (among 558 submissions) on the 2018 Kaggle Challenge on "Freesound General-Purpose Audio Tagging", the TVB Europe Award for Best Achievement in Sound in 2016, the finalist for GooglePlay Best VR Experience in 2017, and the Best Solution Award on the Dstl Challenge "Under-sampled Signal Recognition" in 2012.

He has been a Senior Area Editor (2019-) and Associate Editor (2014-2018) for IEEE Transactions on Signal Processing. He is an Associate Editor (2019-) for EURASIP Journal on Audio Speech and Music Processing. He was a Publication Co-Chair for ICASSP 2019, Brighton, UK, and will serve as Tutorial Chair for ICASSP 2024, Seoul, South Korea. He also serves as a Member (2019-) of the International Steering Committee of Latent Variable Analysis and Signal Separation.

**Title: Low-Rank and Sparse Representations in Signal Processing**
**Speaker: Prof. James E. Fowler, Mississippi State University, USA**
**Time: 13:30-14:15, December 13, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** Many signal-processing problems of current interest can be cast as the separation of a low-rank signal of interest from a sparse signal of outliers. Such a low-rank/sparse representation (LRSR) has found extensive use across a myriad of signal-processing applications over the last decade. This talk reviews the foundational motivations for the coupling low-rank and sparsity constraints as well as the mathematical formulation and solution to such a framework. Several representative applications of LRSR are then overviewed, including recent results for foreground/background extraction of video, destriping of hyperspectral imagery, and unsupervised hyperspectral classification.

**Biography:** James E. Fowler received the B.S. degree in computer and information science engineering and the M.S. and Ph.D. degrees in electrical engineering from The Ohio State University, Columbus, OH, USA, in 1990, 1992, and 1996, respectively.

In 1997, he held a postdoctoral assignment at the Universite de Nice-Sophia Antipolis, France, and, in 2004, he was a Visiting Professor at Telecom ParisTech, Paris, France. He is currently Billie J. Ball Professor and Interim Department Head of the Department of Electrical & Computer Engineering at Mississippi State University in Starkville, MS.

Dr. Fowler is the Editor-in-Chief of IEEE Signal Processing Letters. He was previously a Senior Area Editor for IEEE Transactions on Image Processing and Associate Editor for IEEE Transactions on Computational Imaging, IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, and IEEE Signal Processing Letters. He is currently an Associate Editor for the EURASIP Journal on Image and Video Processing. He is a former chair of the Image, Video, and Multidimensional Signal Processing Technical Committee of the IEEE Signal Processing Society and is currently a member of the Computational Imaging Technical Committee of the IEEE Signal Processing Society. He was a General co-Chair of the 2014 IEEE International Conference on Image Processing, Paris, France, and the Speech, Image, and Video Processing track chair of the 2013 Asilomar Conference on Signals, Systems, and Computers. He is currently the publicity chair of the Data Compression Conference. He is a Fellow of the IEEE.

**Title: Virtual Sound Barriers and their Applications**
**Speaker: Prof. Xiaojun Qiu, University of Technology Sydney, Australia**
**Time: 14:15-15:00, December 13, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** Active control is a method of reducing existing noise by the introduction of controllable secondary sources to affect the radiation and transmission of the original primary noise source. It can provide better solutions to low frequency noise problems than the current passive noise control methods when there are weight, volume, or access constraints. A virtual sound barrier is an active noise control system that uses arrays of loudspeakers and microphones to create a practical size of quiet zone in a noise environment just like an acoustic barrier but without blocking air and light. This technology can be used to reduce sound radiation from noise sources or to reduce noise level around one or few person heads in noisy environments. This lecture introduces the history, principle and design methods of the virtual sound barriers first, and then describes recent progress in research on the systems, especially the applications of planar virtual sound barriers on power transformer noise radiation control from an enclosure and on traffic noise transmission control from outside into a room via an open window. This lecture is concluded by the limitations and future direction discussions of the virtual sound barriers.

**Biography:** Xiaojun Qiu is a professor in Audio, Acoustics and Vibration at Center for Audio, Acoustics and Vibration in Faculty of Engineering and Information Technology, University of Technology Sydney. He received his Bachelor and Master degrees from Peking University in 1989 and 1992, and his PhD from Nanjing University in 1995, respectively, all majoring in Acoustics. He worked in the University of Adelaide as a Research Fellow in the field of active noise control from 1997 to 2002, worked in the Institute of Acoustics of Nanjing University as a professor on Acoustics and Signal processing from 2002 to 2013, and worked at RMIT University as a Professor of Design on Audio Engineering from 2013 to 2016. He joined University of Technology Sydney in 2016. Xiaojun Qiu's main research areas include noise and vibration control, room acoustics, electro-acoustics and audio signal processing, particularly applications of active control technologies. He is a Fellow of Audio Engineering Society and a Fellow of International Institute of Acoustics and Vibration. He serves as an Associate Editor for the International Journal of Acoustics and Vibration and an Associate Technical Editor for the Journal of Audio Engineering Society. He has authored and co-authored 1 package of software, 3 books, 5 book chapters, 7 national standards and more than 400 academic papers. He has applied more than 90 invention patents, and more than 50 of them have been granted. He founded the center for Audio, Acoustics and vibration in Faculty of Engineering and Information Technology at University of Technology Sydney in 2016, which is one of the largest acoustics centres in Australia at present.

**Title: Toward Theoretical Understanding of Deep Learning**
**Speaker: Prof. Caiming Qiu, Shanghai Jiao Tong University, China**
**Time: 16:00-16:45, December 13, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

**Abstract:** Nowadays, deep learning is definitely one of the most popular topics in computer science. For some specific tasks, e.g., speech recognition, image classification, deep learning is the state-of-the-art approach, even better than human beings. However, there is still no significant result on the foundation of deep learning. Recently, more and more works focus on the theoretical analysis and interpretation of deep learning from various viewpoints.

In this talk, we will first give a brief review on the theoretical development of deep learning. Several emerging approaches or frameworks, e.g., RMT(Random Matrix Theory), NTK(Neural Tangent Kernel) are introduced. Finally, we will demo some interested applications of deep learning in image understanding, anomaly detection and wireless communication.

**Biography:** Prof. Caiming Qiu, IEEE fellow, Distinguished Professor of National Thousand Talents Program, Director of Research Center for Big Data of Shanghai Jiaotong University. He contributed to the development of the rigorous analysis of big data under random matrix framework. All of the results are included in 3 monographs titled as Smart Grid and Big Data: Theory and Practice, Cognitive Networked Sensing and Big Data and Cognitive Radio Communication and Networking: Principles and Practice. His current interest is in some theoretical problems arising in deep learning and big data. Prof. Caiming Qiu holds 8 patents and published over 70 journal papers and 100 conference papers. He won ICC Best Paper Award in 2011. ICC is one of the IEEE Communications Society's two flagship conferences.

Prof. Caiming Qiu received the Ph.D. degree in electrical engineering from New York University. He served at Bell Laboratories from 1997 to 2000. He was Founder-CEO and President of Wiscom Technologies, Inc.

**Title: Future Wireless – Game-Changing Technology for Everything**
**Speaker: Prof. Ke Wu, University of Montreal, Canada**
**Time: 16:45-17:30, December 13, 2019**
**Place: Crowne Grand Ballroom A2+A3, B2 of Hotel**

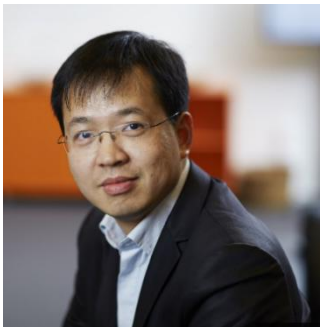
**Abstract:** Recent research and development of hardware architectures and technologies over MHz-through-THz frequency range have generated a significant momentum for future wireless applications. This leap forward is being propelled by the organic fusion of multiple functions and the scalable integration of multiple technologies through heterogeneous materials and innovative processes. This presentation begins with the overview of fundamental wireless functionalities. Emerging diversity scenarios and integration solutions in wireless technologies are reviewed in connection with performance and efficiency. Technological roadmap is highlighted with reference to enabling and building technological elements, ranging from current and emerging compound materials to evolving and beyond CMOS, and from developing substrate integrations to future electromagnetic techniques. The talk also provides a brief tour of the state-of-the-art and future wireless systems including various biomedical applications and healthcare services. Challenging issues and future directions of wireless technology and system development including 5G and beyond are discussed.

**Biography:** Dr. Ke Wu is Professor of Electrical Engineering at Polytechnique Montreal (University of Montreal). He holds the NSERC-Huawei Industrial Research Chair in Future Wireless Technologies (the first Huawei-endowed Chair in the world). He has been the Director of the Poly-Grames Research Center. He was the Canada Research Chair (2002-2016) in RF and millimeter-wave engineering and the Founding Director (2008-2014) of the Center for Radiofrequency Electronics Research of Quebec. Dr. Wu is also an adjunct professor with the School of Information Science and Engineering, Ningbo University, leading a future wireless research program. He has authored/co-authored over 1300 referred papers, and a number of books/book chapters and more than 50 patents. Dr. Wu was the general chair of the 2012 IEEE MTT-S International Microwave Symposium (the largest IEEE annual conference). He was the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S). He also serves as the inaugural North-American representative in the General Assembly of the European Microwave Association (EuMA). He was the recipient of many awards and prizes including the inaugural IEEE MTT-S Outstanding Young Engineer Award, the 2004 Fessenden Medal of the IEEE Canada, the 2009 Thomas W. Eadie Medal from the Royal Society of Canada (The Academies of Arts, Humanities and Sciences of Canada), the Queen Elizabeth II Diamond Jubilee Medal, the 2013 Award of Merit of Federation of Chinese Canadian Professionals, the 2014 IEEE MTT-S Microwave Application Award, the 2014 Marie-Victorin Prize (Prix du Québec – the highest distinction of Québec in the Natural Sciences and Engineering), the 2015 Prix d'Excellence en Recherche et Innovation of Polytechnique Montréal, the 2015 IEEE Montreal Section Gold Medal of Achievement and the 2019 IEEE MTT-S Microwave Prize. He is a Fellow of the IEEE, a Fellow of the Canadian Academy of Engineering (CAE) and a Fellow of the Royal Society of Canada. He was an IEEE MTT-S Distinguished Microwave Lecturer from Jan. 2009 to Dec. 2011.

# Tutorials

**Title: Edge Intelligence for 5G Beyond**
**Speaker: Prof. Yan Zhang, University of Oslo, Norway**
**Time: 19: 00 - 21: 30, December 10, 2019**
**Place: Function Room 1, B2 of Hotel**

**Abstract:** In this talk, we will present basic concepts related to edge intelligence for 5G Beyond and key enabling technologies with respect to communications, computation, machine learning, deep learning and cyber-physical optimization. We will first introduce the main concepts and challenges in 5G Beyond. Then, we will provide a thorough perspective on how mobile edge computing concepts can be adapted for 5G networks. In this scenario, we will focus on resource allocation, models and optimization problems, and various offloading and caching techniques. Next, we will extend mobile edge computing to edge intelligence and present our ideas on utilizing deep reinforcement learning (deep Q-learning, DDPG) for data transmission, offloading and content distribution in 5G networks. We will further present edge intelligence in 5G-enabled IoT systems, e.g., intelligent transport systems. The approach and the solutions in this context will result in highly efficient interconnection and synergy among various types of components in 5G networks and its applications.



**Biography:** Professor Yan Zhang, named 2018 and 2019 "Highly Cited Researcher" (Web of Science top 1% most cited worldwide), is Full Professor in the Department of Informatics at University of Oslo, Norway. He received a PhD degree in School of Electrical & Electronics Engineering, Nanyang Technological University, Singapore. He is an Associate Technical Editor of IEEE Communications Magazine, an Editor of IEEE Network Magazine, an Editor of IEEE Transactions on Vehicular Technology, an Editor for IEEE Transactions on Industrial Informatics, an Editor of IEEE Transactions on Green Communications and Networking, an Editor of IEEE Communications Surveys & Tutorials, an Editor of IEEE Internet of Things journal, an Editor of IEEE Systems Journal, and an Editor of IEEE Vehicular Technology Magazine. He serves as chair positions in a number of conferences, including IEEE GLOBECOM 2017, IEEE PIMRC 2016, IEEE CCNC 2016, WICON 2016, IEEE SmartGridComm 2015, and IEEE CloudCom 2015. His current research interests include: next-generation wireless networks leading to 5G, reliable and secure cyber-physical systems (e.g., smart grid, healthcare, and transport). He is IEEE VTS (Vehicular Technology Society) Distinguished Lecturer during 2016-2020. He is also a senior member of IEEE, IEEE CS, IEEE PES, IEEE ComSoc, and IEEE VT society.

**Title: Hardware Support Architectures and Implementations for Effective Embedded AI and Signal Processing**
**Speaker: Prof. Yvon Savaria, Polytechnique Montreal, Canada**
**Time: 19: 00 - 21: 30, December 10, 2019**
**Place: Function Room 2, B2 of Hotel**

**Abstract:** Signal Processing and AI algorithms can be very demanding when used in embedded systems with stringent density, power and energy consumption constraints. Hardware accelerators and dedicated architectures are often mandatory to meet system requirements. This talk will review the concept of hardware accelerators, how they can be implemented and what they can contribute to embedded signal processing and AI engines. The benefits can be in terms of throughput, latency, power, energy and system density. Designers can leverage many solutions, ranging from multi-processor, ASIP, ASICs and FPGA based systems on chip. A global perspective, covering from roots of the field to state-of-the-art methods will be presented. The talk will tap on a long experience developed through dozens of implementations and applications leveraging diverse technologies.

**Biography:** Yvon Savaria FIEEE received the B.Ing. and M.Sc.A in electrical engineering from Polytechnique Montreal Canada in 1980 and 1982 respectively. He also received the Ph.D. in electrical engineering in 1985 from McGill University. Since 1985, he has been with Polytechnique Montreal, where he is currently professor and director of the Microelectronics Research Group in the department of electrical engineering. Professor Savaria was also appointed as a guest scientist at the Innovation Institue of Beihang University.

He has carried work in several areas related to microelectronic circuits and microsystems such as testing, verification, validation, physical design methods, defect and fault tolerance, effects of radiation on electronics, CAD methods, reconfigurable computing and applications of microelectronics to telecommunications, aerospace, image processing, video processing, radar signal processing, and digital signal processing acceleration. He is currently involved in several projects that notably relate to virtual networks, machine learning, computational efficiency and application specific architecture design. He used artificial neural networks and a wide range of hardware acceleration techniques to implement effective hardware accelerated signal processors over the past 30 years. He holds 16 patents, has published more than 160 journal papers and more than 460 conference papers.

He has been working as a consultant or was sponsored for carrying research by more than 20 companies or research organizations. He is a member of the Regroupement Stratégique en Microélectronique du Québec (Canada) (RESMIQ), of the Ordre des Ingénieurs du Québec (OIQ - Canada), and is a member of CMC Microsystems Advisory Comittee. He was co-founder of two high-tech spin-offs and an early collaborator to several others. He also received in 2006 a Synergy Award of the Natural Sciences and Engineering Research Council of Canada for his work with LTRIM.

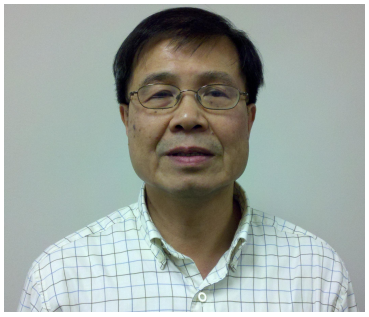
**Title: Cyclostationarity and Generalizations: an Ubiquitous Statistical Model for Science Data**
**Speaker: Prof. Antonio Napolitano, University of Napoli "Parthenope", Italy**
**Time: 19: 00 - 21: 30, December 11, 2019**
**Place: Function Room 1, B2 of Hotel**

**Abstract:** Cyclostationary signals and their generalizations are a suitable model for data originated by many processes arising from the interaction/combination of periodic phenomena and random phenomena. Examples come from many fields including communications, radar/sonar, telemetry, mechanics, biology, astronomy, and econometrics. Statistical characterization and applications of cyclostationary signals and their generalizations are reviewed. In particular, the problems of statistical function measurements, filtering, uniform sampling, parameter estimation, and signal detection are addressed. A link with other nonstationarity models is discussed.

**Biography:** Antonio Napolitano (M'95–SM'07–F'16) was born in Napoli, Italy, in 1964. He received the Ph.D. degree in electronic engineering and computer science from the University of Napoli Federico II, Naples, Italy, in 1994. In 1997, he was with the Department of Electrical and Computer Engineering, University of California, Davis, CA, USA, as a Postdoctorate Research Associate. From 1995 to 2001 he has been Assistant Professor and from 2001 to 2005 Associate Professor at the University of Napoli Federico II. Since 2005, he is a Full Professor in telecommunications at the University of Napoli "Parthenope." In 2005, he was a Visiting Professor at the Institute de Recherche Mathematique de Rennes, Haute Bretagne, France. In 2010 and 2013, he was a Visiting Professor at the Laboratoire d'Analyse des Signaux & des Processus Industriels, Universite Jean-Monnet, Roanne, France. In 2014 and 2015, he was a Visiting Professor at Ecole Nationale Superieure d'Electronique, d'Electrotechnique, d'Informatique et d'Hydraulique et Telecommunications, Toulouse, France. He held visiting appointments at the Universite de Nice—Sophia Antipolis, France (1994); the University of North Carolina, Chapel Hill, NC, USA (1997, 2001, 2002); the Technical University of Wroclaw, Poland (1999, 2001); the Centro de Investigacion en Matematicas, Guanajuato, Mexico (2000–2002); Econometric Department, Wyzsza Szkola Biznesu, Nowy Sacz, Poland (2000–2007); the School of Electrical and Information Engineering, University of South Australia (2010). He is the author of the books Generalizations of Cyclostationary Signal Processing: Spectral Analysis and Applications (Wiley-IEEE Press, 2012) and Cyclostationary Processes and Time Series: Theory, Applications, and Generalizations, Elsevier, 2019. In 1996, he received the Best Paper of the Year Award from the European Association for Signal Processing (EURASIP) for a paper on higher order cyclostationarity. In 2007, he received the EURASIP Best Paper Award for a paper on the functional approach in signal analysis. In 2008, he received the Most Cited Paper Award for a review article on cyclostationarity from Elsevier. From 2006 to 2009 and from 2011 to 2015, he has been an Associate Editor of the IEEE Transactions on Signal Processing. He is on the Editorial Board of Signal Processing (Elsevier) since 2008 and Digital Signal Processing (Elsevier) since 2015. From 2008 to 2013, he has been an Elected Member of the Signal Processing Theory and Method Technical Committee of the IEEE Signal Processing Society. Since 2017, he has been an Elected Member of the Sensor Array and Multichannel Technical Committee of the IEEE Signal Processing Society. He is EURASIP Local Liaison Officer.

**Title: Advanced Monopulse Processing of Phased Array Radar**
**Speaker: Prof. Kai-Bor Yu, Shanghai Jiao Tong University, China**
**Time: 19: 00 - 21: 30, December 11, 2019**
**Place: Function Room 2, B2 of Hotel**

**Abstract:** Monopulse processing is widely used in search and track radar. This tutorial covers topics such as robust adaptive techniques for target angle estimation in jamming and some advanced techniques that exploit 4-channel radar system for mainlobe cancellation, 2-target monopulse and weighted monopulse to eliminate the beam-shape loss. Further topics such as some extensions on mainlobe cancellation, multi-pulse monopulse and MIMO-monopulse will also be briefly covered. Here is the outline:
- monopulse radar
- robust adaptive monopulse
- 4-channel vs 3-channel phased array
- mainlobe cancellation
- 2-target monopulse
- weighted monopulse
- Some further topics on mainlobe cancellation
- multi-pulse monopulse and MIMO-monopulse



**Biography:** Kai-Bor Yu is a life senior member of IEEE. He received the B.S. from Yale University, the M.S. from Brown University, and the Ph.D. from Purdue University, all in Electrical Engineering. During 1982-1988, he was an Assistant Professor of Electrical Engineering at Virginia Tech. Since then he had worked in industry for 25 years that included employment as Principal Systems Engineer at GE Global Research Center, Raytheon Company, Lockheed Martin Company and Boeing Company. Since 2015, he is a Visiting Professor at the School of Electronics, Information and Electrical Engineering, Shanghai Jiao Tong University. In 1992, Dr. Yu was inducted into GE's Whitney Gallery of Technical Achievers for his contributions' on Radar Electronic Protection. He has also received best paper awards in 1993 IEEE Radar Conference and in 2016 IET International Radar Conference. Dr. Yu has contributed to over 30 US/International patents and numerous journal and conference publications. His research interests include different aspects of radar signal processing and systems analysis.

## Title: GNSS Precise Point Positioning With Android Smartphones and Comparison with High Performance Receivers

**Speaker: Prof. Gérard Lachapelle, Polytechnique Montreal, Canada**
**Time: 19: 30 - 22: 00, December 12, 2019**
**Place: Function Room 1, B2 of Hotel**

**Abstract:** Precise Point Positioning (PPP) is becoming increasingly used instead of differential GNSS(DGNSS) due to its ease of use. With PPP, precise satellite orbits and clock corrections are calculated using the numerous International GNSS Service (IGS) permanent stations. The IGS network conceptually replaces the reference station(s) used in DGNSS. Models of the ionosphere and the troposphere are used to aid PPP, especially ionospheric models for single frequency users. In addition to 3D position, PPP provides estimates of GNSS time and zenith tropospheric delays.

**Biography:** Professor Emeritus Gérard Lachapelle holds a Canada Research Chair/Informatics Circle of Research Excellence Chair in wireless location in the Department of Geomatics Engineering, the University of Calgary, Canada, where he has been professor since 1988 and Department Head from 1995 to 2003. From 1980 to 1988, he was Executive VP of Nortech (Surveys) Canada Inc. and Norstar Instruments where he directed GPS R&D programs, which resulted in the development of receiver technology that was subsequently taken over by NovAtel Inc in the late 80s. Since joining the University of Calgary, he and his PLAN (Position, Location And Navigation) Proup have developed numerous novel algorithms, software and patents related to Global Navigation Satellite Systems (GNSS) that have been licensed worldwide. Since holding a CRC/iCORE Chair in wireless location in 2001, this research also includes the development of new GNSS signal processing methods, indoor technologies and new applications. He holds degrees in geodesy and surveying engineering for Laval University, the University of Oxford, the University of Helsinki and the Technical University at Graz. Prior to 1980, he worked for five years as a geodetic engineer with the Geodetic Survey of Canada where he was involved in geodetic research and the Redefinition of the North American Datum, a joint project with the U.S. National Geodetic Survey. Professor Lachapelle has been active in numerous associations and was Western Vice President of the (U.S.) Institute of Navigation in 2002-03. He has received scores of awards for his work, including the Institute of Navigation Johannes Kepler Award in 1997 and fellowship of IEEE, the Royal Society of Canada, the Institute of Navigation, the Canadian Academy of Engineering and the Royal Institute of Navigation.

**Title: Use of the Fractional Fourier Transform for Radar Target Identification using the Singularity Expansion Method**
**Speaker: Prof. Tapan K. Sarkar, Syracuse University, USA**
**Time: 19: 30 - 22: 00, December 12, 2019**
**Place: Function Room 2, B2 of Hotel**

**Abstract:** This presentation will discuss the Fractional Fourier Transform for estimating parameters of damped sinusoids utilizing both early and late time transient scattering data contaminated by noise. Transient scattering responses are composed of damped sinusoids at late times and impulse-like components at early times. Due to the impulse-like components, it is difficult to extract meaningful damped sinusoids. In this study the entire noisy time domain response is used to extract the signal parameters of interest. The fractional Fourier transform (FrFT), especially the half Fourier transform (HFT) is used to analyze the data for parameter identification. Impulse or Gaussian-like pulses can be easily separated from the damped exponentials in the HFT domain, as they have similar functional representations. Results from several examples show that the new technique is applicable for noisy signals that are composed of damped exponentials and pulse-like components.

**Biography:** Tapan K. Sarkar received the B.Tech. degree from the Indian Institute of Technology, Kharagpur, in 1969, the M.Sc.E. degree from the University of New Brunswick, Fredericton, NB, Canada, in 1971, and the M.S. and Ph.D. degrees from Syracuse University, Syracuse, NY, in 1975. From 1975 to 1976, he was with the TACO Division of the General Instruments Corporation. He was with the Rochester Institute of Technology, Rochester, NY, from 1976 to 1985. He was a Research Fellow at the Gordon McKay Laboratory, Harvard University, Cambridge, MA, from 1977 to 1978. He is a Professor in the Department of Electrical and Computer Engineering, Syracuse University. His current research interests deal with numerical solutions of operator equations arising in electromagnetics and signal processing with application to system design. He has authored or coauthored more than 400 journal articles and numerous conference papers and 32 chapters in books and fifteen books

Dr. Sarkar is a Registered Professional Engineer in the State of New York. He received the College of Engineering Research Award in 1996 and the Chancellor's Citation for Excellence in Research in 1998 at Syracuse University. He was the 2014 President of the IEEE Antennas and Propagation Society. He is the receipient of the 2020 IEEE Electromagnetics Field Award.

He received Docteur Honoris Causa from Universite Blaise Pascal, Clermont Ferrand, France in 1998, from Politechnic University of Madrid, Madrid, Spain in 2004, and from Aalto University, Helsinki, Finland in 2012. He received the medal of the friend of the city of Clermont Ferrand, France, in 2000.

# Oral Sessions

## Oral Session 1: Photon/Quantum Communications

**Time:** **13: 30 - 15: 30, December 11, 2019**
**Place:** **Function Room 2-1, B2 of Hotel**
**Chairs:** **Prof. Xiangdong Zhang, Beijing Institute of Technology, China**
**Prof. Baosen Shi, University of Science and Technology of China, China**

13: 30 **MICROWAVE QUANTUM OPTICS PHENOMENA IN SUPERCONDUCTING QUANTUM CIRCUITS (INVITED TALK)**
Yuxi Liu
Tsinghua University

13: 50 **PRACTICAL QUANTUM SECURE DIRECT COMMUNICATION (INVITED TALK)**
Gui-Lu Long
Tsinghua University

14: 10 **PHOTONICS SHAPES MICROWAVE COMMUNICATIONS AND MEASUREMENTS (INVITED TALK)**
Xihua Zou
Southwest Jiaotong University

14: 30 **QUANTUM INFORMATION PROCESSING WITH ORBITAL ANGULAR MOMENTUM STATES (INVITED TALK)**
Bao-Sen Shi
University of Science and Technology of China

14: 50 **MICROWAVE PHOTONIC RADAR (INVITED TALK)**
Wangzhe Li
Institute of Electronics of the Chinese Academy of Sciences

15: 10 **SILICON PHOTONIC INTEGRATED CIRCUITS FOR MICROWAVE SIGNAL GENERATION AND PROCESSING (INVITED TALK)**
Weifeng Zhang
Beijing Institute of Technology

## Oral Session 2: Applications and Services based on Big Data

**Time:** 13: 30 - 15: 30, December 11, 2019
**Place:** Function Room 2-2, B2 of Hotel
**Chairs:** Prof. Chi Liu, Beijing Institute of Technology, China
Prof. Yin Zhang, Zhongnan University of Economics and Law, China

13: 30 **MULTI-GRANULARITY COGNITIVE COMPUTING FOR BIG DATA (INVITED TALK)**
Qinghua Zhang
Chongqing University of Posts and Telecommunications

13: 50 **SMART SENSING FOR INDUSTRIAL IOT (INVITED TALK)**
Yuan He
Tsinghua University

**G4874** **SHORT-TERM TRAFFIC FLOW PREDICTION BASED ON THE**
14: 10 **DIFFERENTIAL DATA GRAPH AND DEEP LEARNING**
Haijing Zhang[1], Bobin Yao[1]*
[1]School of Electronic and Control Engineering, Chang'an University, Xi'an 710064, P. R. China

**G7136** **HIN-VMRESYS: HETEROGENEOUS INFORMATION NETWORK BASED**
14: 30 **VEHICLE MUSIC RECOMMENDATION SYSTEM**
Ranran Wang[1], Yi Ye[1], Chi Jiang[1], Xiao Ma[1]*
[1]Zhongnan University of Economics and Law, Wuhan, China

**G3778** **EDGE-BASED DIFFERENITAL BIG DATA PROCESSING FOR**
14: 50 **SENSOR-CLOUD SYSTEMS**
Yaxin Mei[1], Tian Wang[1]*, Ying Ma[2, 3]
[1]College of Computer Science and Technology, Huaqiao University, Xiamen, China
[2]College of Computer and Information Engineering, Xiamen University of Technology, Xiamen, China
[3]Key Laboratory of Data Mining and Intelligent Recommendation, Fujian Province University, Xiamen, China

**G1546** **THE RESEARCH ON DATA ACQUISITION, PROCESSING, AND**
15: 10 **APPLICATION OF MULTI TYPE ENVIRONMENT**
Zhen Lin, Xiaofeng Zhang, Jianguo Ling, Hongyan Su, Wei Jin, Caixia Yang, Rundong Fan, Rundong Fan
Beijing Institute of remote Sensing equipment Beijing, China

## Oral Session 3: Communications and Networks I

**Time:** 13: 30 - 15: 30, December 11, 2019
**Place:** Function Room 4-3, B1 of Hotel
**Chairs:** Prof. Guan Gui, Nanjing University of Posts And Telecommunications, China
Prof. Haijun Zhang, University of Science & Technology Beijing, China

13: 30 **DEEP LEARNING FOR NEXT-GENERATION PHYSICAL LAYER WIRELESS COMMUNICATIONS (INVITED TALK)**
Guan Gui
Nanjing University of Posts and Telecommunications

13: 50 **COOPERATIVE LOCALIZATION, FROM THEORY TO PRACTICE (INVITED TALK)**
Nan Wu
Beijing Institute of Technology

14: 10 **STATISTICAL CSI ACQUISITION IN NON-STATIONARY MASSIVE MIMO ENVIRONMENT (INVITED TALK)**
Wei Peng
Huazhong University of Science and Technology

14: 30 **ARTIFICIAL INTELLIGENCE BASED FUTURE MOBILE NETWORKS (INVITED TALK)**
Haijun Zhang
University of Science & Technology Beijing

**C5367**
14: 50 **PHASE-ROTATED SPECTRAL CORRELATION DETECTOR BASED SENSING FOR WIDEBAND SPECTRUM AT LOW SNRS**
Chaochao Sun[1,2], Peizhong Lu[1]*
[1]School of Computer Science, Fudan University, Shanghai, China
[2]College of Computer Science and Technology, Shanghai University of Electric Power, Shanghai, China

**C7975**
15: 10 **OUTAGE OF FREQUENCY DIVERSE ARRAY-BASED SECURE TRANSMISSION OVER RAYLEIGH FADING CHANNELS***
Shilong Ji, Wen-Qin Wang*
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

## Oral Session 4: Image, Video, and Multimedia Processing I

**Time:** 13: 30 - 15: 30, December 11, 2019
**Place:** Function Room 4-1, B1 of Hotel
**Chairs:** Prof. Hongliang Li, University of Electronic Science and Technology of China, China
Prof. Yuxin Peng, Peking University, China

13: 30 **VISION-LANGUAGE MAPPING FOR REFERRING IMAGE SEGMENTATION (INVITED TALK)**
Hongliang Li
University of Electronic Science and Technology of China

13: 50 **CROSS-MEDIA INTELLIGENCE: REPRESENTATION, ANALYSIS, AND APPLICATION (INVITED TALK)**
Yuxin Peng
Peking University

14: 10 **ON-MANIFOLD VIDEO MOTION ANALYSIS AND ITS APPLICATION (INVITED TALK)**
Hua Huang
Beijing Institute of Technology

**B2412**
14: 30 **SCENE-BASED BLIND AND FLICKERING PIXEL DYNAMIC CORRECTION ALGORITHM**
Zizhuang Song[1]*, Dongfang Zhang[1], Shuo Zhang[1]
[1]Beijing Institute of Remote Sensing Equipment, Beijing 100854, China

**B2189**
14: 50 **SOLDER JOINT DEFECT DETECTION BASED ON IMAGE SEGMENTATION AND DEEP LEARNING**
Shijia Gao[1, 2], Hui Zhang[1, 2], Hanguang Mi[1, 2]
[1]National Key Laboratory of Science and Technology on Aerospace Intelligent Control, Beijing, China
[2]Beijing Aerospace Automatic Control Institute, 50# Yongding Road, Beijing, China

**B2464**
15: 10 **POLSAR IMAGE SEGMENT USING MODEL-BASED DECOMPOSITION AND ENERGY MINIMIZATION**
Chengcai Yang[1]*, Hui Yu[1], Long Zhuang[1], Ming Hao[1]
[1]Nanjing Research Institute of Electronics Technology, Nanjing, China

## Oral Session 5: AI Applications

**Time:** 13: 30 - 15: 30, December 11, 2019
**Place:** Function Room 4-2, B1 of Hotel
**Chairs:** Prof. Yilong Lu, Nanyang Technological University, Singapore
Prof. Lan Du, Xidian University, China

**F1172** **A NOVEL METHODOLOGY OF CARDIAC ARRHYTHMIA**
13: 30 **CLASSIFICATION BASED ON ECG AND CONTEXT-DEPENDENT HMM**
Wenjing Wei[1], Xun Wang[1], Ge Zhan[1], Pengyuan Zhang[1]*, Yonghong Yan[1, 2, 3]
[1]Key Laboratory of Speech Acoustics and Content Understanding, Institute of Acoustics, Chinese Academy of Sciences, Beijing, China
[2]Xinjiang Laboratory of Minority Speech and Language Information Processing, Xinjiang Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Xining, China
[3]University of Chinese Academy of Sciences, Beijing, China

**F4154** **HIERARCHICAL JOINT LEARNING FOR CHINESE WORD EMBEDDINGS**
13: 50
Zhe Wang[1], Qiong Wang[1], Yechao Bai[1]*, Xinggan Zhang[1]
[1]School of Electronic Science and Engineering, Nanjing University, No.163 Xianlin Road, Qixia District, Nanjing, China

**F6249** **AEMFACE: ADDITIVE E-MARGIN LOSS FOR DEEP FACE RECOGNITION**
14: 10
Qiang Li[1], Xianzhen He[1], Wenguang Wang[1], Shiming Ge[2]*,
[1]School of Information Engineering, Southwest University of Science and Technology, Mianyang, China
[2]Institute of Information Engineering, Chinese Academy of Sciences, China

**F5260** **A REAL-TIME ALGORITHM FOR USV NAVIGATION BASED**
14: 30 **ON DEEP REINFORCEMENT LEARNING SYSTEM**
Zhiguo Zhou[1]*, Yipeng Zheng[1], Kaiyuan Liu[1], Xu He[1], Chong Qu1
[1]School of Information and Electronics Beijing Institute of Technology, Beijing, China
[2]Shanghai Marine Diesel Engine Research Institute, Shanghai, China

**F4852** **USING BIDIRECTIONAL LSTM WITH BERT FOR CHINESE**
14: 50 **PUNCTUATION PREDICTION**
Mingfeng Fang[12], Haifeng Zhao[1], Xiao Song[2], Xin Wang[3], Shilei Huang[2]
[1]School of Computer Science and Technology, Anhui University, Hefei, China
[2]PKU-HKUST Shenzhen Hong Kong Institution, Shenzhen, China
[3]Shenzhen Raisound Technologies, Co., Ltd, Shenzhen, China

**F2990** **NEWS TOPIC DISCOVERY THROUGH COMMUNITY DETECTION**
15: 10
Daqing Wu, Xiangyang Guo, Jinwen Ma*
Department of Information and Computing Science, School of Mathematical Sciences & LMAM Peking University, Beijing, 100871, P.R. China

## Oral Session 6: GPR and Wideband Imaging

**Time:** 13: 30 - 15: 30, December 11, 2019
**Place:** Function Room 1, B2 of Hotel
**Chairs:** Prof. Xuan Feng, Jilin University, China
Prof. Shaoming Wei, Beihang University, China

13: 30 **POLARIMETRIC MIGRATION IMAGING OF FULL POLARIMETRIC GPR (INVITED TALK)**
Xuan Feng
Jilin University

13: 50 **AUTOMATIC DETECTION AND CHARACTERIZATION OF REBAR IN CONCRETE USING A DUAL SENSOR OF GPR AND EMI (INVITED TALK)**
Hai Liu
Guangzhou University

14: 10 **ULTRAWIDEBAND IMAGING: THEORY AND APPLICATIONS (INVITED TALK)**
Tian Jin
National University of Defense Technology

14: 30 **NOVEL GPR DATA PROCESSING TECHNOLOGIES TO DETECT THE DEFECTS AND GROUTING OF TUNNELING (INVITED TALK)**
Xiongyao Xie
Tongji University

14: 50 **ULTRA-WIDEBAND THREE-DIMENSIONAL IMAGING METHOD BASED ON STATE SPACE PROCESSING (INVITED TALK)**
Shaoming Wei
Beihang University

15: 10 **MULTIDIMENSIONAL FREQUENCY ESTIMATION USING UNITARY PUMA ALGORITHM WITHOUT PAIRING PARAMETERS (INVITED TALK)**
Yuntao Wu
Wuhan University of Technology

## Oral Session 7: Audio and Acoustic Systems Analysis and Algorithms

**Time:** 16: 00 - 18: 00, December 11, 2019
**Place:** Function Room 4-3, B1 of Hotel
**Chairs:** Prof. Wenwu Wang, University of Surrey, UK
Prof. Jing Guo, Beijing Institute of Technology, China

**A1046** **DNN-BASED SPEECH ENHANCEMENT FOR IMPROVING SPEECH**
16: 00 **QUALITY AND INTELLIGIBILITY SIMULTANEOUSLY**

Ge Zhan[1, 2*], Wenjing Wei[1, 2], Qi Hu[1, 2], Pengyuan Zhang[1, 2]
[1]Institute of Acoustics, Chinese Academy of Sciences, No.19 West North Fourth Ring Road, Beijing, China
[2]University of Chinese Academy of Sciences, No.19 Yuquan Road, Beijing, China

**A3087** **DNN AND CLUSTERING BASED BINAURAL SOUND SOURCE**
16: 20 **LOCALIZATION IN MISMATCHED HRTF CONDITION**

Jin Wang[1], Jing Wang[1]*, Zhaoyu Yan[1], Xinyao Wang[1], Xiang Xie[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**A3177** **BEAMFORMING AND DEEP MODELS INTEGRATED MULTI-TALKER**
16: 40 **SPEECH SEPARATION**

Chao Peng[1], Xihong Wu[1], Tianshu Qu[1]*
[1]Key Laboratory on Machine Perception (Ministry of Education), Speech and Hearing Research Center, Peking University, Beijing, China

**A3221** **SIMULATION OF SHIP-RADIATED NOISE BASED ON SHALLOW MARINE**
17: 00 **ENVIRONMENT**

Yeye Liu[1], Yaohui Lv[1]*, Tingting Lv[1], Yuchao Wei[2], Xing Liu[3]
[1]Ocean University of China, No. 238, Songling Road, Laoshan District, Qingdao, Qingdao, China
[2]The second representative office in Qingdao, Qingdao, China
[3]Qingdao Digitech Information Technology co., LTD, Qingdao, China

**A4534** **PERFORMANCE COMPARISON OF M ARY AND CSK SPREAD SPECTRUM**
17: 20 **COMMUNICATION OVER DEEP SEA VERTICAL CHANNEL**

Shengjun Xiong, Lisheng Zhou, Qiming Ma, Yupeng Du, Zhenduo Wang, Chao Wang
Science and Technology on Sonar Laboratory, Hangzhou Applied Acoustic Research Institute, Hangzhou, P. R. China

**A41077** **MAXIMUM CORRENTROPY CRITERION BASED SPARSE CHANNEL**
17: 40 **ESTIMATION UNDER IMPULSIVE NOISE IN COMPLEX DOMAIN**

Xiao Zhang[1], Yanan Tian[2, 3, 4]*, Xiao Han[2, 3, 4], Qingyu Liu[5], Longxiang Guo[2, 3, 4]
[1]College of Computer Science and Technology, JiLin Uiniversity, Chang Chun, China
[2]Acoustic science and Technology laboratory, Harbin Engineering University, Harbin 150001, China
[3]Key Laboratory of Marine Information Acquisition and Security (Harbin Engineering University), Harbin 150001, China
[4]College of Underwater Acoustic Engineering, Harbin Engineering University, Harbin 150001, China
[5]Naval Equipment Research Institute, Beijing, China

## Oral Session 8: Novel Approaches and Technologies for Big Data

**Time:** **16: 00 - 18: 00, December11, 2019**
**Place:** **Function Room 2-2, B2 of Hotel**
**Chairs:** **Prof. Hongfei Zhu, Chongqing University of Posts and Telecommunications, China**
**Prof. Shuang Li, Beijing Institute of Technology, China**

**G4782** **ADAPTIVE ENSEMBLE EMBEDDING FOR TRANSFER LEARNING**
16: 00

Binhui Xie[1], Yunqiang Duan[2], Shuang Li[1]*
[1]School of Computer Science and Technology, Beijing Institute of Technology, Beijing, China
[2]Coordination Center of China, National Computer Network Emergency Response Technical Team Beijing, China

**G1837** **A MEASURABLE FRAMEWORK FOR RUN TIME DATA SAMPLING IN**
16: 20 **LARGE SCALE DATACENTER**

Hedong Yan, Shilin Wen, Rui Han*
Department of Computer Science, Beijing institute of technology, Beijing, China

**G51054** **PERSONALIZED RECOMMENDATION MODEL OF TRAFFIC**
16: 40 **PACKAGE BASED ON USER CONSUMPTION BEHAVIOR**

Jing Du, Haochen Xu, Zhixiao Tu
Zhongnan University of Economics and Law, Wuhan, China

**G5094** **OPTIMIZED CLUSTERING BASED ON SEMANTIC SIMILARITY OF**
17: 00 **COMPONENTS FOR SHORT TEXT**

Wensong Liu*, Feng Lin, Zhuqing Hu, Jinhui Zhang
State Grid of Electrical Power Research Institute, Nanjing, China

**G4035** **SYNERGISTIC TARGET TRACKING OF SURFACE TARGET WITH**
17: 20 **MULTIPLE CRUISE MISSILES***

Xiangyu Zhang[1]*, Jingli Huang[2], Guohong Wang[1], Lin Li[1], Lin Yang[1], Tingting Xin[1]
[1]Institute of Information Fusion of Naval Aviation University, Yantai, China
[2]UAV Teaching and Research Room of Naval Aviation University, Qindao, China

**G5840** **ENABLING DIFFERENTIALLY PRIVATE IN BIG DATA MACHINE**
17: 40 **LEARNING**
Dong Li[1], Xiaojiang Zuo[1], Rui Han[1]*
[1]Department of Computer Science, Beijing institute of technology, Beijing, China

## Oral Session 9: Adaptive Beamforming and Interference Suppression

**Time:** **16: 00 - 18: 00, December 11, 2019**
**Place:** **Function Room 2-1, B2 of Hotel**
**Chairs:** **Prof. Tian Jin, National University of Defense Technology, China**
**Prof. Xiongyao Xie, Tongji University, China**

**E2511** **SPARSE ADAPTIVE BEAMFORMER DESIGN WITH A GOOD QUIESCENT**
16: 00 **BEAMPATTERN**
Xuan Zhang, Xiangrong Wang*
Beihang University Beijing, China

**E2549** **THE ANALYSIS OF INTERFERENCE SUPPRESSION CAPABILITY OF**
16: 20 **MVDR ALGORITHM BASED ON MICROPHONE ARRAY**
Haonan Shang[1], Shizhe Tan[2]*, Jun Miao[1], Chao Liu[1]
[1]College of Information Science and Engineering, Ocean University of China, QingDao, China
[2]China Electronic Technology Group Corporation No. 54, Shijiazhuang, China

**E2725** **BEAMPATTERN SYNTHESIS WITH SUBARRAY LAYOUT**
16: 40
Lifang Feng, Guolong Cui*, Lingjiang Kong, Siyu Miao
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu 611731, China

**E3068** **RESEARCH ON COMPOSITE DECEPTION INTERFERENCE**
17: 00 **RECOGNITION AND SUPPRESSION TECHNOLOGY BASED ON MULTI-DIMENSIONAL FEATURES**
YANG Lin*, ZHANG Xiangyu, LI Lin, WANG Guohong
Institute of Information Fusion Naval Aeronautical University, Yantai, China

**E3327** **KNOWLEDGE AIDED DIRECT DATA DOMAIN STAP ALGORITHM FOR**
17: 20 **FORWARD LOOKING AIRBORNE RADAR**
Zhiqi Gao[1]*, Haihong Tao[2]
[1]College of Information Engineering, Inner Mongolia University of Technology, Hohhot, China
[2]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China

**E11104** **ADAPTIVE MONOPULSE ANGLE ESTIMATION METHOD FOR**
17: 40 **DISTRIBUTED RADAR IN PRESENCE OF MAINLOBE JAMMING**

Junqi Xue[1], Xuchen Wu[1], Xiaopeng Yang[1]*, Manjun Lu[2], Yao Yao[2]
[1]School of Information and Electronics, Beijing Institute of Technology, and Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China
[2]Shanghai Radio Equipment Institute, Shanghai, China

## Oral Session 10: Image, Video, and Multimedia Processing II

**Time:** **16: 00 - 18: 00, December 11, 2019**
**Place:** **Function Room 4-1, B1 of Hotel**
**Chairs:** **Prof. Guiguang Ding, Tsinghua University, China**
**Prof. Jinhui Tang, Nanjing University of Science and Technology, China**

16: 00 **FILTER PRUNING METHODS FOR DEEP NEURAL NETWORK COMPRESSION FOR COMPUTER VISION APPLICATIONS (INVITED TALK)**

Guiguang Ding
Tsinghua University

16: 20 **WEAKLY SUPERVISED IMAGE UNDERSTANDING (INVITED TALK)**

Jinhui Tang
Nanjing University of Science and Technology

**B1128** **A LIGHT-WEIGHT DEEP CNN OBJECT DETECTION**
16: 40 **FRAMEWORK BASED ON DENSE CONNECTIONS**

Yicong Zhang[1,2], Mingyu Wang[2]*, Yang Cao[3], Xianbo Qiu[1], Wu Zhou[3], Zhaolin Li[2]
[1]College of Information Science and Technology, Beijing University of Chemical Technology, Beijing, China
[2]School of Information Science and Technology, Tsinghua University, Beijing, China
[3]Beijing Aerospace Chenxin Technology Co., Ltd., Beijing, China

**B3146** **IMPACT OF STALLING ON QOE FOR 360-DEGREE VIRTUAL**
17: 00 **REALITY VIDEOS**

Muhammad Shahid Anwar[1], Jing Wang[1]*, Asad Ullah[1], Wahab Khan[1], Sadique Ahmad2, Zhuoran Li[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing 10081, China
[2]School of Computer Science, Beijing Institute of Technology, Beijing 10081, China

**B2763** **AN INTEGRATED DETECTION AND TRACKING SYSTEM**
17: 20 **APPLIED TO UNMANNED SURFACE VEHICLES**

Zhiguo Zhou[1]*, Qiuling Wang[1], Zhao Jing[1], Chong Qu[1,2]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Shanghai Marine Diesel Engine Research Institute, Shanghai, China

**B2060** **AUTOMATIC DIGITAL RECOGNITION OF MULTIPLE**
17: 40 **ELECTRICITY DASHBOARDS**

Zhiwei Zheng[1], Yi Zhou[2], Jiarun Cao[2]*, Fan Huang[2]
[1]School of Hospitality Management, China University of Labor Relations, Beijing, China
[2]School of Computer Science and Technology, Beijing Institute of Technology, Beijing, China

## Oral Session 11: The Internet of Things

**Time:** **16: 00 - 18: 00, December 11, 2019**
**Place:** **Function Room 4-2, B1 of Hotel**
**Chairs:** **Prof. Yulong Zou, Nanjing University of Posts and Telecommunications, China**
**Prof. Yuantao Gu, Tsinghua University, China**

16: 00 **SPEECH ENHANCEMENT WITH DEEP LEARNING (INVITED TALK)**
Weiping Zhu
Concordia University

16: 20 **DEEP LEARNING FOR WIRELESS NETWORKS: WHICH MODEL TO USE? (INVITED TALK)**
Jun Zhang
The Hong Kong Polytechnic University

16: 40 **HIGH-ACCURACY ADAPTIVE INDOOR LOCALIZATION: CHALLENGES AND APPROACHES (INVITED TALK)**
Min Sheng
Xidian University

17: 00 **5G KEY TECHNOLOGIES FOR INTELLIGENT HIGH-SPEED RAILWAY (INVITED TALK)**
Bo Ai
Beijing Jiaotong University

17: 20 **INTELLIGENT INTERFERENCE EXPLOITATION FOR HETEROGENEOUS CELLULAR NETWORKS AGAINST EAVESDROPPING (INVITED TALK)**
Yulong Zou
Nanjing University of Posts And Telecommunications

17: 40 **COMPRESSED SUBSPACE LEARNING BASED ON CANONICAL ANGLES PRESERVING PROPERTY (INVITED TALK)**
Yuantao Gu
Tsinghua University

## Oral Session 12: Radar Target Detection

**Time:** **16: 00 - 18: 00, December 11, 2019**
**Place:** **Function Room 1, B2 of Hotel**
**Chairs:** **Prof. Zhenmiao Deng, Sun Yat-sen University, China**
**Prof. Jibin Zheng, Xidian University, China**

16: 00 **RADAR DETECTION FOR LOW-OBSERVABLE MOVING TARGET AT SEA (INVITED TALK)**
Xiaolong Chen
Naval Aviation University

16: 20 **OPTIMAL AND SUB-OPTIMAL WIDEBAND EXTENDED TARGET DETECTION USING DECHIRPED ECHOES (INVITED TALK)**
Zhenmiao Deng
Sun Yat-sen University

16: 40 **BAYESIAN WIDEBAND RADAR TARGET DETECTION IN HETEROGENEOUS CLUTTER (INVITED TALK)**
Fengzhou Dai
Xidian University

17: 00 **RESEARCH ON RADAR TARGET SIGNAL DETECTION AND RECONSTRUCTION (INVITED TALK)**
Jibin Zheng
Xidian University

**E3437** **GLRT-BASED PERSYMMETRIC DETECTORS FOR WIDEBAND**
17: 20 **RADAR TARGETS IN GAUSSIAN CLUTTER**
Tao Jian[1]*, You He[1], Yuhao Yang[2], Yingni Hou[2], Jian Zhang[3], Zhuo Tong[4]
[1]Research Institute of Information Fusion, Naval Aviation University, Yantai, Shandong, 264001, China
[2]Key Laboratory of Intellligent Sensing Technology, Nanjing Research Institute of Electronics Technology, Nanjing, China
[3]Unit 91206 of PLA, Qingdao, Shandong, 266108, China
[4]Yantai First Specialized Secondary School, Yantai, Shandong, 264001, China

**D2088** **A METHOD FOR HIGH-SPEED AND MANEUVERING RANGE-SPREAD**
17: 40 **TARGET DETECTION**
Pengjie You[1], Zegang Ding[1]*, Lichang Qian[1], Xu Zhou[1], Yangkai Wei[1], Siyuan Liu[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China

## Oral Session 13: Novel Quantum/Terahertz Technology

**Time:** 13: 30 - 15: 50, December 12, 2019
**Place:** Function Room 4-2, B1 of Hotel
**Chairs:** Prof. Weifeng Zhang, Beijing Institute of Technology, China
Prof. Lijian Zhang, Nanjing University, China

13: 30 **PHOTONIC ENERGY-TIME ENTANGLEMENT IN QUANTUM COMMUNICATIONS (INVITED TALK)**
Wei Zhang
Tsinghua University

13: 50 **MEASURING THE QUANTUM MEASUREMENT (INVITED TALK)**
Lijian Zhang
Nanjing University

14: 10 **MANIPULATING THE COUPLING STRENGTH IN A STRONGLY COUPLED QUANTUM DOT-CAVITY SYSTEM (INVITED TALK)**
Xiulai Xu
Institute of Physics, Chinese Academy of Sciences

14: 30 **QUANTUM ENTANGLEMENT WITH PHOTONIC ORBITAL ANGULAR MOMENTUM (INVITED TALK)**
Xilin Wang
Nanjing University

**H1135** **DIMENSIONAL EFFECTS OF A SILICON BASED**
14: 50 **METAMATERIAL TERAHERTZ BAND STOP FILTER**
Wei Xu[1], Haiyang Guo[1], Tao Lv[1], Qian Zhang[1], Yong Qin[2], Xiuhan Li[1]*
[1]School of Electronics and Information Engineering, Beijing Jiaotong University, Beijing, China
[2]State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, Beijing, China

**H5756** **MULTIDIMENSIONAL QUANTUM STATE TOMOGRAPHY WITH**
15: 10 **COMPRESSED SENSING METHOD**
Shikang Li[1], Xue Feng[1]*, Wei Zhang[1], Yidong Huang[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, China

**H6548** **ROOM TEMPERATURE SINGLE PHOTON EMISSION OF COLLOIDAL**
15: 30 **QUANTUM DOTS AT 800NM**
Siyue Jin[1], Lu Qin[1], Bibo Lin[1], Jie Ren[1], Xingsheng Xu[1]*
[1]College of Materials Science and Opt-Electronic Technology, University of Chinese Academy of Sciences, State Key Laboratory of Integrated Optoelectronics, Institute of Semiconductors, Chinese Academy of Science, Beijing 100083, P. R. China

## Oral Session 14: Remote Sensing Target Detection I

**Time:** 13: 30 - 15: 30, December 12, 2019
**Place:** Function Room 2-1, B2 of Hotel
**Chairs:** Prof. Xuesong Wang, National University of Defense Technology, China
Prof. Yiming Zhu, University of Shanghai for Science and Technology, China

13: 30 **POLARIMETRIC SAR TARGET SCATTERING INTERPRETATION AND APPLICATIONS (INVITED TALK)**
Xuesong Wang
National University of Defense Technology

13: 50 **THZ 3-D SAR SPARSE IMAGING WITH 2-D PSEUDO-RANDOM ARRAY (INVITED TALK)**
Yiming Zhu
University of Shanghai for Science and Technology

14: 10 **DEEP LEARNING FOR SAR IMAGE DETECTION (INVITED TALK)**
Zenghui Zhang
Shanghai Jiao Tong University

**D4484** 14: 30 **AIRPORT RUNWAY DETECTION BASED ON IMPROVED FUZZY CLUSTERING FOR POLSAR IMAGES**
Zheng Cheng[1], Ping Han[2]*, Yishuang Wan[2], Binbin Han[2], Xiaoguang Lu[2]
[1]Basic Experiment Center, Civil Aviation University of China, Tianjin, China
[2]College of Electronic Information and Automation, Civil Aviation University of China, Tianjin, China

**D4446** 14: 50 **VEHICLE TRACKING IN CLUTTER ENVIRONMENT USING HIGH RESOLUTION RADAR**
Lan Zhengxiang[1], Zhang Yaotian[1], Yang Bin[1]*, Wang Jun[1], Zhang Yuxi[1]
[1]School of Electronic and Information Engineering, Beihang University, Beijing, China

**D2427** 15: 10 **ANTI-PERSONNEL MINE DETECTION BY SPARSE REPRESENTATION OF GPR B-SCAN RADARGRAM IMAGE**
Tao Sun[1, 2]*, Chaopeng LUO[1], Mengna Liu[2], Liqing Zhou[2], Xianxiu Tang[3], Riheng Meng[2], XinjianTang[4], Weifeng Hao[5]
[1]Science and Technology on Near-Surface Detection Laboratory, Wuxi, China
[2]Electronic Information School of Wuhan University, Wuhan, China
[3]Dept.of Architectural Engineering Hubei Water Resources Technical College, Wuhan, China
[4]State Key Laboratory of Geomechanics and Geotechnical Engineering Institutude of Rock and Soil Mechanics, Chinese Academy of Sciences, Wuhan, China
[5]Antarctic Center of Sureying and Mapping of Wuhan Univeristy, Wuhan, China

## Oral Session 15: MIMO and Diversity

**Time:** 13: 30 - 15: 30, December 12, 2019
**Place:** Function Room 1, B2 of Hotel
**Chairs:** Prof. Guolong Cui, University of Electronic Science and Technology of China, China
Prof. Shengqi Zhu, Xidian University, China

13: 30 **WIDEBAND MIMO RADAR WAVEFORM DESIGN (INVITED TALK)**
Guolong Cui
University of Electronic Science and Technology of China

13: 50 **WAVEFORM DIVERSITY RADAR AND ITS APPLICATION (INVITED TALK)**
Shengqi Zhu
Xidian University

**E5315** **TRANSMIT COVARIANCE MATRIX FOR SINR ENHANCEMENT IN**
14: 10 **COLOCATED MIMO RADARS USING PARTICLE SWARM OPTIMIZATION**
Wei Xiong*, Chaopeng Yu, Weiguo Lu
Leihua Electronic Technology Research Institute, Aviation Industry Corporation of China, Wuxi, China

**E5744** **QUARTIC OPTIMIZATION FOR MIMO RADAR TRANSMIT**
14: 30 **BEAMPATTERN SYNTHESIS**
Jing Yang, Guolong Cui*, Xianxiang Yu, Lingjiang Kong
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu City, China

**E5110** **ENERGY EFFICIENT POWER ALLOCATION DESIGN FOR**
14: 50 **BEAMSPACE MISO NON-ORTHOGONAL MULTIPLE ACCESS SYSTEMS**
Penglu Liu, Yong Li, Wei Cheng, Wenjie Zhang, Xiang Gao
School of Electronics and Information, Northwestern Polytechnical University, Xi'an, Shaanxi, China

**E5463** **ROBUST DESIGN OF TRANSMIT/RECEIVE BEAMFORMING FOR**
15: 10 **MULTIPLE-INPUT MULTIPLE-OUTPUT RADAR**
Junhui Qian[1]*, Yu Luo[2], Ning Fu[3], Ran Liu[4], Zeyu Feng[5]
[1]School of Microelectronic and Communication Engineering, Chongqing University, Chongqing, China
[2]School of Microelectronic and Communication Engineering, Chongqing University, Chongqing, China
[3]Department of Automatic Test and Control, Harbin Institute of Technology, Harbin, China
[4]College of Computer Science, Chongqing University, Chongqing, China
[5]Chengdu Surveying Geotechnical Research Institute Co. Ltd.of MCC, Chengdu, China

## Oral Session 16: AI in Radar Signal Processing

**Time:** 13: 30 - 15: 30, December 12, 2019
**Place:** Function Room 4-3, B1 of Hotel
**Chairs:** Prof. Shipeng Li, IFLYTEK CO., LTD, China
Prof. Caiming Qiu, Shanghai Jiao Tong University, China

**F1194** 13: 30 **FAST SUPER-RESOLUTION 3D SAR IMAGING USING AN UNFOLDED DEEP NETWORK**
Jingkun Gao[1,2]*, Yu Ye[1], Shizhong Li[1], Yuliang Qin[2], Xunzhang Gao[2], Xiang Li[2]
[1]TH Satellite Center of China, Beijing, China
[2]College of Electronic Science and Technology, National University of Defense Technology, Changsha, China

**F2535** 13: 50 **DEEP NEURAL NETWORK FOR DOA ESTIMATION WITH UNSUPERVISED PRETRAINING**
Liu-Li Wu[1]*, Zhang-meng Liu[1], Zhi-tao Huang[1], Gui-zhou Wu[1]
[1]State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, National University of Defense Technology (NUDT), Changsha, China

**F1754** 14: 10 **CLASSIFICATION AND IDENTIFICATION OF MICRO-DOPPLER SIGNATURES OF PEDESTRIAN AND CYCLISTS USING SIMULATED DATA AND ELM**
Lin Wang[1], Yilong Lu[1]*
[1]School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore

**F1201** 14: 30 **SMALL BOAT DETECTION FOR RADAR IMAGE DATASETS WITH YOLO V3 NETWORK**
Guanqing Li*, Zhiyong Song, Qiang Fu
College of Electronic Science, National University of Defense Technology, Changsha, China

**F1271** 14: 50 **RADAR SIGNAL RECOGNITION BASED ON SQUEEZE-AND-EXCITATION NETWORKS**
Qizhe Qu[1,2], Shunjun Wei[2]*, Hao Su[2], Mou Wang[2], Jun Shi[2], Xiaojun Hao[1]
[1]State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System (CEMEE), Luoyang, 471003, China
[2]University of Electronic Science and Technology of China, Chengdu, 611731, China

**F1133** 15: 10 **RESEARCH ON ELECTRONIC JAMMING IDENTIFICATION BASED ON CNN**
Qingyuan Zhao[1], Yang Liu[1], Linjie Cai[1], Yaobing Lu[1]
[1]Beijing Insititute of Radio Measurement, Beijing, China

## Oral Session 17: Radar Signal Processing

**Time:** 13: 30 - 15: 30, December 12, 2019
**Place:** Function Room 4-1, B1 of Hotel
**Chairs:** Prof. Zengping Chen, Sun Yat-sen University, China
Dr. Hao Shi, Beijng Institute of Technology, China

13: 30 **PROGRESS AND APPLICATION OF HOLOGRAPHIC RADAR SIGNAL PROCESSING (INVITED TALK)**
Zengping Chen
Sun Yat-sen University

**J3268** **RADAR ANTI-RETRANSMITTED JAMMING TECHNOLOGY**
13: 50 **BASED ON AGILITY WAVEFORMS**
Hongyu Wang [1,2]*, Xinkun Yang[1,2], Yang Li[1,2,3]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing 100081, China
[3]Beijing Institute of Technology Chongqing Innovation Center, Chongqing 401120, China

**J3512** **JOINT RADAR-COMMUNICATION SYSTEM DESIGN VIA FH CODE**
14: 10 **SELECTION AND PSK MODULATION**
Jing Xu[1], Xiangrong Wang[1]*
[1]School of Electronic and Information Engineering, Beihang University, Beijing, China

**J3186** **A RANGE AND VELOCITY AMBIGUITY RESOLUTION METHOD BASED**
14: 30 **ON AMBIGUITY MATRIX COMPLETION AND E LIMINATION WITH LOW SNR**
Jiang Zhu[1], Yu Li[1], Chongdi Duan[1], Weiwei Wang[1], Cai Wen[2]*, Yan Huang[3]
[1]Xi'an Institute of Space Radio Technology, Xi'an, China
[2]School of Information Science and Technology, Northwest University, Xi'an, China
[3]State Key lab of Millimeter Waves, Southeast University, Xi'an, China

**J1248** **INFORMATION THEORY FOR FUTURE DETECTION SYSTEM**
14: 50 **CONSTRUCTION**
Chunxia Li[1], Jianjun Ge[1]*, Mingxing Li[2]
[1]Information Science Academy of China Electronics Technology Group Corporation, Beijing, China
[2]The 15th Research Institute of China Electronics Technology Group Corporation, Beijing, China

**J3257** **IMPLEMENTATION OF HIGH RESOLUTION DIGITAL PULSE**
15: 10 **WIDTH MODULATOR BASED ON FPGA**
Kun Cheng[1]*
[1]Department of Modern Physics, University of Science and Technology of China, Hefei, China

## Oral Session 18: Joint Wireless Communication and Radar Sensing

**Time:** 13: 30 - 15: 50, December 12, 2019
**Place:** Function Room 2-2, B2 of Hotel
**Chairs:** Prof. Qiang Li, the 27th Research Institute of China Electronics Technology Group Corporation, China
Prof. Xingdong Liang, Institute of Electronics, Chinese Academy of Sciences, China

13: 30 **JOINT RADAR SENSING AND WIRELESS COMMUNICATION: OPPORTUNITIES AND CHALLENGES (INVITED TALK)**
Xingdong Liang
Institute of Electronics of the Chinese Academy of Sciences

13: 50 **NEW TECHNOLOGY OF MULTIFUNCTIONAL INTEGRATED SIGNAL PROCESSING MICROSYSTEM (INVITED TALK)**
Yinghui Quan
Xidian University

14: 10 **AGILITY AND INDEX MODULATION: A NEW APPROACH FOR DUAL FUNCTION RADAR COMMUNICATION (INVITED TALK)**
Yimin Liu
Tsinghua University

**D41081**
14: 30 **MULTIDIMENSIONAL WAVEFORMS FOR JOINT WIRELESS COMMUNICATION AND HIGH RESOLUTION SAR SYSTEMS**
Jie Wang
Nanjing University of Information Science & Technology

**E7432**
14: 50 **RADAR NETWORK PERFORMANCE ANALYSIS BASED ON EM SIGNAL DISTRIBUTION MODELING**
Feifeng Liu
Beijing Institute of Technology

**N01067**
15: 10 **RRAM-BASED FLOATING-POINT IN-MEMORY-COMPUTING ARCHITECTURE FOR HIGH THROUGHPUT SIGNAL PROCESSING**
Yufeng Xie
Fudan University

**D41094**
15: 30 **THREE-DIMENSIONAL MULTIPLE ACCESS METHOD FOR JOINT RADAR AND COMMUNICATION ENABLED V2X NETWORK**
Zhiqing Wei
Beijing University of Posts and Telecommunications

## Oral Session 19: Statistical Signal Processing

**Time:** 16: 30 - 18: 30, December 12, 2019
**Place:** Function Room 4-2, B1 of Hotel
**Chairs:** Prof. Jinwen Ma, Peking University, China
Prof. Wei Li, Beijing Institute of Technology, China

16: 30 **SAMPLING THEOREM FOR TWO-DIMENSIONAL FRACTIONAL FOURIER TRANSFORM (INVITED TALK)**
Ahmed I. Zayed
DePaul University-Chicago

**K1615** **A MODIFIED S TRANSFORM WITH ADJUSTABLE WINDOW FUNCTION**
16: 50 Bixuan Jiao[1], Yibin Rui[1]*, Meng Gao[1], Haifeng Fei[1], Qing Yu[1]
[1]Nanjing University of Science and Technology, Nanjing, China

**K2171** **TARGET DETECTION WITH VECTOR BUNDLE MODEL OF**
17: 10 **CEMS: $L_1$-NORM VERSUS $L\infty$-NORM**
Hao Wu, Yongqiang Cheng*
College of Electronic Science, National University of Defense Technology, Changsha, China

**K2420** **RANGE STATISTICAL RESOLUTION LIMIT OF TWO CLOSE-SPACED**
17: 30 **TARGETS BASED ON THE ASYMPTOTIC DISTRIBUTION OF GLRT**
Yunlei Zhang [1,2]*, Jianbin Lu[1], Shusen Tian[1], Yuan Xie[2], Jun Tang[2]
[1]School of Electronic Engineering, Navy University of Engineering Wuhan, China
[2]Department of Electronic Engineering, Tsinghua University, Beijing, China

**K2500** **COVARIANCE MATRIX ESTIMATION IN COMPOUND-GAUSSIAN SEA**
17: 50 **CLUTTER WITH DISCRETE SPIKES**
Hao DING[1], Ningbo LIU[1,2]*, Yong HUANG[1], Yunlong DONG[1], Jian GUAN[1]
[1]Naval Aviation University, NAU, Yantai, Shandong, P.R. China
[2]No.23 Institute of the Second Academy, CASIC, Beijing, P.R. China

**K2788** **A NOVEL RADAR MOVING TARGET CLASSIFICATION AND**
18: 10 **RECOGNITION TECHNOLOGY**
Chunhua Zhou[1,2], Liang Gao[1,2]*, Qian Chen[1,2], Yifeng Zhao[1,2], Jiejun Yin[1,2], Huiting Xia[1,2]
[1]Shanghai Radio Equipment Research Institute, Shanghai, China
[2]Shanghai Engineering Research Center of Target Identification and Environment Perception, Shanghai, China

## Oral Session 20: Remote Sensing Target Detection II

**Time:** 16: 30 - 18: 30, December 12, 2019
**Place:** Function Room 2-1, B2 of Hotel
**Chairs:** Prof. Yachao Li, Xidian University, China
Prof. Yongzhen Li, National University of Defense Technology, China

16: 30 **TARGET DETECTION METHOD BASED ON RADAR POLARIZATION CHARACTERISTICS AND ITS APPLICATION (INVITED TALK)**
Longfei Shi
National University of Defense Technology

16: 50 **SAR TARGET DETECTION AND DISCRIMINATION IN COMPLEX SCENES (INVITED TALK)**
Lan Du
Xidian University

17:10 **IMAGING ALGORITHM AND POSITION TECHNOLOGY STUDY ON BISTATIC FORWARD-LOOKING SAR(INVITED TALK)**
Yachao Li
Xidian University

**D4298** **CLASSIFICATION OF FOD TARGETS BASED ON POLARIMETRIC**
17: 30 **CHARACTERISTICS**
Yangliang Wan[1,2] , Fei Qin[1,2]*, Yunlong Liu[2], Xingdong Liang[2]
[1]School of Electronics, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China
[2]National Key Lab of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, Beijing, China

**D4099** **A CONTEXT-AWARE TRACKING METHOD FOR AERIAL VIDEOS**
17: 50 Fukun Bi[1], Mingyang Lei[1]*, Zhihua Yang[1], Jinyuan Hou[1], Jie Zhang[1]
[1]School of Information Science and Technology, North China University of Technology, Beijing, China

**D5382** **A DECEPTIVE MO VING TARGET GENERATION BASED ON**
18: 10 **CROSS PRODUCT MODULATION**
Lixin Liu, Shiqi Xing, Bo Pang, Dahai Dai, Yongzhen Li
State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System National University of Defense Technology Changsha, China

## Oral Session 21: Sparse Array & Signal Processing

**Time:** **16: 30 - 18: 30, December 12, 2019**
**Place:** **Function Room 1, B2 of Hotel**
**Chairs:** **Prof. Hai Liu, Guangzhou University, China**
**Prof. Yingsong Li, Harbin Engineering University, China**

16: 30 **SPARSE-AWARE SIGNAL PROCESSING AND ITS APPLICATIONS (INVITED TALK)**
Yingsong Li
Harbin Engineering University

**E5123** **SECURE TRANSMIT OPTIMIZATION BASED ON QOS FOR**
16: 50 **MISOMES CHANNEL WITH ARTIFICIAL NOISE AIDED**
Xiang Gao, Yong Li, Wei Cheng, Ge Shi, Penglu Liu, Yi Zheng
School of Electronics and Information, Northwestern Polytechnical University, Xi'an, Shaanxi, China

**E5389** **JOINT DESIGN OF SPARSE ARRAY SPARSE PULSE TRAIN AND**
17: 10 **STAP FOR MIMO RADAR WITH CO-LOCATED ANTENNAS**
Wanxin Shi[1], Qian He[1]*, Rick S. Blum[2]
[1]University of Electronic Science and Technology of China, No.2006, Xiyuan Ave, West Hi-Tech Zone, Chengdu, China
[2]Lehigh University, Bethlehem, USA

**E1206** **ROBUST SPARSE ARRAYS WITH MULTIPLE-FOLD REDUNDANT**
17: 30 **DIFFERENCE COARRAYS**
Dong Zhu[1], Gang Li[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing 100084, China

**E1214** **FOURTH-ORDER CUMULANTS USING SPARSE BAYESIAN LEARNING**
17: 50 Rui Guo[1]*, Jin Meng[1], Fangmin He[1], Yue Zhang[2]
[1]National Key Laboratory on Vessel Integrated Power System Technology, Naval University of Engineering, Wuhan, China
[2]ATR, National University of Defense Technology, Changsha, China

**E1536** **DIRECTION FINDING WITH PARTIALLY CORRUPTED DATA**
18: 10 **BASED ON OPTSPACE ALGORITHM**
Shang-Ling Deng, Ping Chu, Bin Liao*
College of Electronics and Information Engineering, Shenzhen University, Shenzhen, China

## Oral Session 22: GNSS Signal Processing and Positioning

**Time:** 16: 30 - 18: 30, Decenber 12, 2019
**Place:** Function Room 4-3, B1 of Hotel
**Chairs:** Prof. Gérard Lachapelle, University of Calgary, Canada
Dr. Tao Lin, UniStrong, China

16: 30 **TOWARDS GLOBAL INSTANTANEOUS DECIMETER-LEVEL POSITIONING USING MULTI-CONSTELLATION AND MULTI-FREQUENCY GNSS (INVITED TALK)**
Jianghui Geng
Wuhan University

16: 50 **A PROPOSED UNIVERSAL ARCHITECTURE FOR MULTI-SOURCE DEEPLY-COUPLED GNSS RECEIVER (INVITED TALK)**
Xiaoji Niu
Wuhan University

17: 10 **BEIDOU-BASED NEXT GENERATION TRAIN CONTROL (INVITED TALK)**
Baigen Cai
Beijing Jiaotong University

17: 30 **WIDE AREA NANOSECOND TIME SYNCHRONIZING SYSTEM BASED ON BDS (INVITED TALK)**
Chuang Shi
Beihang University

17: 50 **THE PROGRESS AND TREND OF A-GNSS/A-BDS(INVITED TALK)**
Yidong Lou
Wuhan University

**P2304** **RESEARCH ON POST-CORRELATION DEDUCTION METHOD FOR**
18: 10 **SPOOFING DETECTION**
Li Cheng[1]*, Sufei Zhou[2], Jiansheng Zheng[1]
[1]Electronic Information school of Wuhan University, Wuhan, China
[2]GNSS Research center of Wuhan Universtiy, Wuhan, China

## Oral Session 23: Neural Network Design & Implementation

**Time:** 16:30 - 18: 30, December 12, 2019
**Place:** Function Room 4-1, B1 of Hotel
**Chairs:** Prof. Li Du, Nanjing University, China
Dr. Yupei Wang, Beijing Institute of Technology, China

16: 30 **DESIGN OF CONVOLUTIONAL NEURAL NETWORK ACCELERATOR IN EDGE DEVICE (INVITED TALK)**
Li Du
Nanjing University

**J4066** **FPGA IMPLEMENTATION OF HIGH-THROUGHPUT,**
16: 50 **LOW-LATENCY COMPLEX LMS ALGORITHM**
Yongcai Liu, Songhu Ge, Jinling Xing, Zhongpu Cui, Jin Meng
National Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering

**J8071** **AN ENERGY EFFICIENT CARRY-FREE INNER PRODUCT UNIT**
17: 10 Wen Yan[1]*, Miloš D. Ercegovac[2]
[1]Key Laboratory of Technology in Geo-spatial Information Processing and Application System, Institute of Electronics, Chinese Academy of Sciences, Beijing, China
[2]Computer Science Department, University of California, Los Angeles, CA, USA

**J4145** **APPLYING CONVOLUTIONAL NEURAL NETWORK FOR OBJECT**
17: 30 **DETECTION ON FT-MATRIX 7002 DSP**
Qiang Zhang[1], Xiao Hu[1]*, Xi Tian[2], Siyu Lei[3]
[1,2]College of Computer, National University of Defence Technology, Changsha, China
[3]College of Economics and Management, Chang'an University, Xi'an, China

**J6816** **FPGA-BASED ACCELERATOR FOR**
17: 50 **CONVOLUTION OPERATIONS**
Yunfei Cao[1], Xin Wei[1], Tingting Qiao[1], He Chen[2]*
[1]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing Institute of Technology,
[5]South Zhongguancun Street, Haidian District, Beijing, China

**J3291** **AN OPTIMIZED PARALLEL PULSE COMPRESSION**
18: 10 **ALGORITHM BASED ON MULTI-CORE DSP**

Jian Shen[1]*, Zhicheng Wang[2], Hanxi Zhao[1], Zhenhua Tang[1], Shuangshuang Li[1], Fen Li[1]
[1]The Fifth Laboratory, Shanghai Radio Equipment Research Institute, Shanghai, China
[2]School of Electronic Information and Electrical Engineering, Shanghai JiaoTong University, Shanghai, China

## Oral Session 24: Remote Sensing Data Processing

**Time:** **16: 30 - 18: 30, December 12, 2019**
**Place:** **Function Room 2-2, B2 of Hotel**
**Chairs:** **Prof. Tao Zeng, Beijing Institute of Technology, China**
**Prof. Yong Wang, Harbin Institute of Technology, China**

16: 30 **A PARAMETRIC IMAGING METHOD FOR EDGE RECOVERY FROM SYNTHETIC APERTURE RADAR ECHO (INVITED TALK)**

Tao Zeng
Beijing Institute of Technology

16: 50 **SHIPBORNE INVERSE SYNTHETIC APERTURE RADAR IMAGING OF SHIP TARGET (INVITED TALK)**

Yong Wang
Harbin Institute of Technology

17: 10 **IMAGING METHODS FOR BISTATIC FORWARD-LOOKING SAR MOUNTED ON HIGH-SPEED MANEUVERING PLATFORMS (INVITED TALK)**

Junjie Wu
University of Electronic Science and Technology of China

**D5934** **HIGH RESOLUTION MULTIPASS AIRBORNE SAR**
17: 30 **TOMOGRAPHY IN URBAN AREAS**

Jinwei Xie[1]*, Zhenfang Li[1], Zhibin Wang[2]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China
[2]Beijing Institute of Spacecraft System Engineering, Beijing, China

**D4768** **CRITICAL AND OPTIMAL BASELINE OF SINGLE-PASS SINGLE-ANTENNA**
17: 50 **SQUINT ANGLE AIRBORNE INSAR**

Pengbo Wang[1]*, Huaping Xu[1], Shuo Li[1]
[1]School of Electronics and Information Engineering, Beihang University, Beijing, China

**D4325** **A 3D RECONSTRUCTION METHOD OF MOUNTAIN AREAS FOR**
18: 10 **TOMOSAR**

Xiaowan Li[1,2,3], Xingdong Liang[1,2], Fubo Zhang[1,2], Xiangxi Bu[1,2], Yangliang Wan[1,2,3], Xingdong Liang[1,2]*

[1]Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China

[2]National Key Lab of Mocrowave Imaging Technology, Beijing, China

[3]School of Electronics, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China

## Oral Session 25: Target Detection in Acoustic Systems

**Time:** **08: 00 - 10: 00, Decenber 13, 2019**

**Place:** **Function Room 4-2, B1 of Hotel**

**Chairs:** **Prof. Xiaojun Qiu, University of Technology Sydney, Australia**
**Prof. Xueli Sheng, Harbin Engineering University, China**

**A4043** **A METHOD OF UNDERWATER TARGET DETECTION VIA**
08: 00 **NON-NEGATIVE MATRIX FACTORIZATION**

Jingwei Yin[1,2,3], Bing Liu[1,2,3], Guangping Zhu[1,2,3]*, Longxiang Guo[1,2,3]

[1]Acoustic Science and Technology Laboratory, Harbin Engineering University, Harbin China

[2]Key Laboratory of Marine Information Acquisition and Security (Harbin Engineering University), Ministry of Industry and Information Technology, Harbin, China

[3]College of Underwater Acoustic Engineering, Harbin Engineering University, Harbin, China

**A4238** **UNDERWATER TARGET RECOGNITION METHOD BASED ON**
08: 20 **CONVOLUTION AUTOENCODER**

Yuechao Chen*, Jintao Shang

Science and Technology on Sonar Laboratory, Hangzhou Applied Acoustics Research Institute, Hangzhou, China

**A4407** **A NEW APPROACH OF RECOGNIZING THE PROPELLER BLADE**
08: 40 **NUMBERS BASED ON HARMONIC DISTORTIONS**

Xiaopeng Kong*, Zhixiang Yao, Jinhua Hu

Naval University of Engineering, Wuhan, P.R. China

**A4416** **AN EXPERIMENTAL DEMONSTRATION OF DETECTION OF ACOUSTIC**
09: 00 **ABERRATION CAUSED BY SUBMERGED INTRUDER IN LITTORAL WATER BASED ON WRELAX-NRTR**

Shuaijing Liu[1,2], Feng Xu[1,2]*, Juan Yang[1,2], Hao Tang[3]

[1]Institute of Acoustics, Chinese Academy of Sciences, Beijing, China

[2]University of Chinese Academy of Sciences, Beijing, China

[3]Hangzhou Applied Acoustics Research Institute, Hangzhou, China

**A4780** **RESEARCH ON TARGET DETECTION AND SEGMENTATION IN**
09: 20 **FORWARD LOOKING MULTI-BEAM SONAR IMAGES**
Deze Zhang, Wei Fan, Sai Zeng
National Key Laboratory of Science and Technology on Underwater Acoustic Antagonizing, Shanghai, China

**A3240** **EXPERIMENTAL STUDY ON DISTORTION OF SOUND ECHO REFLECTED**
09:40 **BY A CYLINDRICAL OBJECT LOCATED IN UNDERWATER MULTI-PATH CHANNEL**
Wei Sun, Fangyong Wang, Hao Tang, Jilin Zha
Science and Technology on Sonar Laboratory, Hangzhou Applied Acoustics Research Institute, Hangzhou, China

## Oral Session 26: Remote Sensing Intelligence Processing

**Time:** **08: 00 - 10: 00, December 13, 2019**
**Place:** **Function Room 2-1, B2 of Hotel**
**Chairs:** **Prof. Turgay Celik, University of Witwatersrand, South Africa**
**Prof. Junjie Wu, University of Electronic Science and Technology of China, China**

08: 00 **DEEP LEARNING IN REMOTE SENSING (INVITED TALK)**
Turgay Celik
Univ. of Witwatersrand

08: 20 **MULTI-ASPECT SAR TARGET RECOGNITION BASED ON DEEP RECURRENT LEARNING IN RESOURCE-CONSTRAINED ENVIRONMENTS (INVITED TALK)**
Fan Zhang
Beijing University of Chemical Technology

**D4429** **DEEP TRANSFER LEARNING BASED ON GENERATIVE ADVERSARIAL**
08: 40 **NETWORKS FOR SAR TARGET RECOGNITION WITH LABEL LIMITATION**
Wei Zhang[1], Yongfeng Zhu[1]*, Qiang Fu[1]
[1]National Key Laboratory of Science and Technology on ATR, College of Electronic Science, National University of Defense Technology (NUDT), Changsha, China

**D1476** **EVALUATION OF DIFFERENT APPROACHES OF CONVOLUTIONAL**
09: 00 **NEURAL NETWORKS FOR LAND USE AND LAND COVER CLASSIFICATION BASED ON HIGH RESOLUTION REMOTE SENSING IMAGES**

Jianwei Ma[1], Yayong Sun1, Guohui Deng[2]*, Shifeng Huang[1], Yiting Tao[2], He Zhu[1], Qiang Teng[3], Xianchao Meng[4]
[1]Research Center of Flood and Drought Disaster Reduction of the Ministry of Water Resources, China Institute of Water Resources and Hydropower Research, Beijing, China
[2]School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, China
[3]School of Management and Economics, Beijing Institute of Technology, Beijing, China
[4]Shenzhen Huakong Seg Company Limited, Shenzhen, China

**D4349** **FEATURE-LOSS DOUBLE FUSION SIAMESE NETWORK FOR**
09: 20 **DUAL-POLARIZED SAR SHIP CLASSIFICATION**

Yunlong Xi, Gang Xiong, Wenxian Yu
Shanghai Key Laboratory of Intelligent Sensing and Recognition, Shanghai Jiao Tong University, Shanghai, China

**D4773** **POLSAR IMAGE CLASSIFIACATION BASED ON DEEP CNN AND**
09: 40 **ADABOOST**

Xiaofeng Tan[1], Ming Li[1]*, Peng Zhang[1], Yan Wu[2], Yinyin Jiang[1], Hao Sun[1]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China
[2]School of Electronic Engineering, Xidian University, Xi'an, China

## Oral Session 27: Target Localization and DOA Estimation

**Time:** **08: 00 - 10: 00, December 13, 2019**
**Place:** **Function Room 2-2, B2 of Hotel**
**Chairs:** **Prof. Xiaoping Zhang, Ryerson University, Canada**
**Prof. Quanhua Liu, Beijing Insititute of Technology, China**

08: 00 **ADVANCES IN PASSIVE LOCALIZATION AND TRACKING (INVITED TALK)**

Xiaoping Zhang
Ryerson University

**E5185** **JOINT DOD AND DOA ESTIMATION FOR BISTATIC MIMO RADAR WITH**
08: 20 **UNKNOWN SPATIALLY COLORED NOISE: A TENSOR COMPLETION APPROACH***

Xiaohong Li[1], Ruibo Ding[1], Fangqing Wen[2]*
[1]National Demonstration Center for Experimental Electrical & Electronic Education, Yangtze University, No.1 of Nanhuan Rd, Jingzhou, China
[2]Electronics & Information School of Yangtze University, No.1 of Nanhuan Rd, Jingzhou, China

**E1188** **DIRECTION OF ARRIVAL ESTIMATION VIA JOINT SPARSE**
08: 40 **BAYESIAN LEARNING FOR BI-STATIC PASSIVE RADAR**

Xinyu Zhang[1]*, Kai Huo[1], Yongxiang Liu[1], Weidong Jiang[1], Xiang Li[1]
[1]College of Electronic Science, National University of Defense Technology, Changsha, China

**E1279** **ACCURATE DOA ESTIMATION BASED ON REAL-VALUED SINGULAR**
09: 00 **VALUE DECOMPOSITION**

Hui Cao[1]*, Qi Liu[2],
[1]School of Information Engineering, Wuhan University of Technology, Wuhan, China
[2]Department of Electrical Engineering, City University of Hong Kong, Hong Kong, China

**E1109** **ANALYSIS OF GRATING SPECTRUM BY USING MUSIC FOR SUB-ARRAYS**
09: 20 Jiaolong Shan[1]*, Fengfeng Chen[1], Weina Guo[1]

[1]AVIC Leihua Electronic Technology Research Institute, Wuxi, China

**E1096** **GRID EVOLUTION: AN ITERATIVE REWEIGHTED ALGORITHM FOR**
09: 40 **OFF-GRID DOA ESTIMATION WITH GAIN/PHASE UNCERTAINTIES**

Wu Xiaochuan[1], Hu Bin[1], Chen Qiushi[1], Zhang Xin[1], Yang Qiang[1], Deng Weibo[1]*
[1]School of Electronic and Information Engineering, Harbin Institute of Technology, Harbin, China

## Oral Session 28: Signal Processing Algorithm Implementation

**Time:** **08: 00 - 10: 00, December 13, 2019**
**Place:** **Function Room 4-3, B1 of Hotel**
**Chairs:** **Prof. Lianlin Li, Peking University, China**
**Dr. Yin Zhuang, Peking University, China**

08: 00 **UNSUPERVISED MICROWAVE VISION ： MAKE INVISIBLE VISIBLE (INVITED TALK)**

Lianlin Li
Peking University

**J3202** **SIGNAL PROCESSING SYSTEM OF BACK-PROJECTION ALGORITHM**
08: 20 **WITH MULTI GPUS**
Liu Xiaoguang
Brainware Terahertz Information Technology Co., Ltd., Hefei, China

**J3031** **AN IMPROVED HARMONIC SUPPRESSION METHOD BASED ON**
08: 40 **ADAPTIVE COMPENSATION ALGORITHM FOR MONOBIT RECEIVER**
Muyao Yu[1]*, Shengbo Dong[1]
[1]Beijing Institute of Remote Sensing Equipment, Beijing, China

**J3259** **A METHOD OF TDOA MEASUREMENT IN MULTI-STATION LOCATING**
09: 00 **SYSTEM**
Wangjie Chen[1,2*], Huancheng Su[1], Weiqiang Zhu[1], Hui Guo[1], Jianwei Zhang[1], Panpan Zhang[1]
[1]Nanjing Electronic Equipment Institute, No. 99 Jianheng Road, Nanjing, China
[2]Nanjing University of Science and Technology, No.200 Xiao Lingwei Street, Nanjing, China

**J3184** **TWO DIMENSION DOA ESPRIT ALGORITHM BASED ON PARALLEL**
09: 20 **COPRIME ARRAYS AND COMPLEMENTARY SEQUENCE IN MIMO COMMUNICATION SYSTEM**
Shufeng Li [1,2*], Yuan Zhang[1], Robert Edwards[2]
[1]School of Information and Communication Engineering, Communication University of China, Beijing, China
[2]The Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough University, Loughborough, Leicestershire, LE11 3TU, UK

**J3866** **THE RECONFIGURABLE PIPELINED VARIABLE-POINT FFT**
09: 40 **PROCESSOR DESIGN**
Jiale Wang[1], Yizhuang Xie[2]*, Bingyi Li[1], Chen Yang[1], Shankang Hu[1]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing 100081, China

## Oral Session 29: Waveform Design and Application

**Time:** **08: 00 - 10: 00, December 13, 2019**
**Place:** **Function Room 4-1, B1 of Hotel**
**Chairs:** **Prof. Ningbo Liu, Naval Aviation University, China**
**Prof. Wei Li, Beijing Insititute of Technology, China**

08: 00 **FRACTIONAL SIGNAL PROCESSING: THEORY AND APPLICATIONS (INVITED TALK)**
Ran Tao
Beijing Institute of Technology

**K5499** **ALIASING ERROR ESTIMATION OF FRACTIONAL FOURIER**
08: 20 **TRANSFORM BASED ON WINDOWED SAMPLES**

Fang-Jia Yan[1], Bing-Zhao Li[2]*
[1]School of Mathematics and Statistics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory on MCAACI, Beijing Institute of Technology, Beijing, China

**K3067** **LPI-BASED OFDM RADAR WAVEFORM DESIGN IN A COOPERATIVE**
08: 40 **RADAR-COMMUNICATIONS SYSTEM**

Chenguang Shi[1,2], Yijie Wang[1], Fei Wang[1], Sana Salousz[3] and Jianjiang Zhou[1]
[1]Key Laboratory of Radar Imaging and Microwave Photonics (Nanjing Univ. Aeronaut. Astronaut.), Ministry of Education, Nanjing 210016, China
[2]Science and Technology on Electro-Optic Control Laboratory, Luoyang 471009, China
[3]School of Engineering and Computing Sciences, Durham University, Durham, DH1 3LE, U.K.

**K3098** **MARITIME SMALL TARGETS DETECTION METHOD FOR PASSIVE**
09: 00 **BISTATIC RADAR USING NON-COOPERATIVE RADAR AS ILLUMINATOR OF OPPORTUNITY**

Song Jie *, Wang Guoqing, Zhang Caisheng
Research Institute of Information, Naval Aviation University, YanTai, China

**K3132** **GOLAY COMPLEMENTARY WAVEFORM DESIGN FOR ENHANCED**
09: 20 **DOPPLER RESOLUTION**

Jiahua Zhu[1], Yanxin Ma[1], Pengzheng Lei[1], Chongyi Fan[2], Shuang Yi[3], Hongtu Xie[4]
[1]College of Meteorology and Oceanology National University of Defense Technology, Changsha, P. R. China
[2]College of Electronic Science National University of Defense Technolog, Changsha, P. R. China
[3]School of Engineering RMIT University Melbourne, Australia
[4]School of Electronics and Coomunication Engineering Sun Yat-sen Univeristy, Guangzhou, P. R. China

**K3227** **VARIABLE VELOCITY AMBIGUITY NUMBERS COMPENSATION**
09: 40 **METHOD FOR NEAR SPACE TARGET DETECTION**

Kaina Zhang, Tao Shan*, Hongchi Zhang
School of Information and Electronics, Beijing Institute of Technology, Beijing, P.R. China
School of Electronics and Coomunication Engineering Sun Yat-sen Univeristy
Guangzhou, P. R. China

## Oral Session 30: Civilian Radar

**Time:** **08: 00 - 10: 00, December 13, 2019**
**Place:** **Function Room 1, B2 of Hotel**
**Chairs:** **Prof. Gang Li, Tsinghua University, China**
**Dr. Julien Le Kernec, University of Glasgow, UK**

08: 00 **CLASSIFICATION OF ROAD USERS USING LOW-COST RADAR SENSORS AND MACHINE INTELLIGENCE (INVITED TALK)**
Yilong LU
Nanyang Technological University

08: 20 **RADAR MICRO-DOPPLER ANALYSIS FOR HUMAN ACTIVITY SENSING (INVITED TALK)**
Gang Li
Tsinghua University

08: 40 **INSECT RADAR SIGNAL PROCESSING AND EXPERIMENTAL VERIFICATION (INVITED TALK)**
Cheng Hu
Beijing Institute of Technology

09: 00 **RADAR SENSING IN ASSISTED LIVING (INVITED TALK)**
Julien Le Kernec
University of Glasgow

09: 20 **BIRD DETECTION SYSTEM BASED ON MIMO RADAR (INVITED TALK)**
Xiaopeng Yang
Beijing Institute of Technology

09: 40 **FREQUENCY DIVERSE ARRAY TIME VARIANCE AND ITS POTENTIAL APPLICATIONS (INVITED TALK)**
Wenqin Wang
University of Electronic Science and Technology of China

## Oral Session 31: Remote Sensing System Techniques

**Time:** 10: 30 - 12: 30, December 13, 2019
**Place:** Function Room 2-1, B2 of Hotel
**Chairs:** Prof. Jie Chen, Beihang University, China
Prof. Qian He, University of Electronic Science and Technology of China, China

10: 30 **HIGH-RESOLUTION SPACEBORNE SAR SYSTEM WITH AZIMUTHAL MULTIPLE ANGLE OBSERVATION (INVITED TALK)**
Jie Chen
Beihang University

10: 50 **HYPERSPECTRAL REMOTE SENSING: ESSENCE, USES AND SOME EXAMPLES**
Yongchao Zhao
Institute of Electronics of the Chinese Academy of Sciences

11: 10 **DETECTION AND ESTIMATION USING QUANTIZED CLOUD MIMO RADAR MEASUREMENTS (INVITED TALK)**
Qian He
University of Electronic Science and Technology of China

11: 30 **INVESTIGATION OF DETECTION AND CLASSIFICATION FOR METEOROLOGICAL TARGETS WITH AIRBORNE WEATHER RADAR (INVITED TALK)**
Hai Li
Civil Aviation University of China

**D2180** **MULTIBAND PASSIVE ISAR PROCESSING BASED ON BAYESIAN**
11: 50 **COMPRESSIVE SENSING**
Ran Zhang, Xia Bai*, Juan Zhao
School of Information and Electronics, Beijing Institute of Technology, Beijing, P.R. China

**D2222** **A DECEPTION JAMMING APPROACH FOR SPACEBORNE SAR IMAGING**
12: 10 **USING FREQUENCY DIVERSE ARRAY**
Zhibin Wang[1], Bang Huang[1,2]*, Running Zhang[1], Yu Zhu[1], Tianxing Liao[2], Lei Liu[1]
[1]Beijing Institute of Spacecraft System Engineering, Beijing, China
[2]School of Information and communication, University of Electronic Science and Technology of China, Chengdu, China

## Oral Session 32: Bio-imaging and Biomedical Signal Processing

**Time:** **10: 30 - 12: 30, December 13, 2019**
**Place:** **Function Room 4-2, B1 of Hotel**
**Chairs:** **Prof. Zeyang Xia, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China**
**Prof. Wenbin Shi, Beijing Institute of Technology, China**

10: 30 **COMPUTATIONAL BIOMECHANICS AND ROBOTICS FOR PRECISION ORTHODONTICS (INVITED TALK)**
Zeyang Xia
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences

10: 50 **MEASURING MULTISCALE COMPLEXITY IN HUMAN SLEEP ELECTROENCEPHALOGRAPHY (INVITED TALK)**
Wenbin Shi
Beijing Institute of Technology

**I2575** **UNSUPERVISED CONTOUR-AWARE REGISTRATION NETWORK FOR**
11: 10 **EYEBALL B-MODE OCULAR ULTRASOUND IMAGES**
Songlin Liu[1], Maolin Pang[1], Sunao Liu[1], Bei Tian[2], Wenli Yang[2], Xuejin Chen[1]*
[1]University of Science and Technology of China, Hefei, Anhui
[2]Beijing Tongren Hospital, Beijing, China

**I2219** **ON RETINAL VESSEL SEGMENTATION USING FCN**
11: 30 Xin Liu, Zhengyao Bai*, Qiong Li
School of Information Science & Engineering, Yunnan University, Kunming, China

**I2331** **EFFECT OF VARIOUS IMAGE INFORMATION IN POLYP**
11: 50 **CLASSIFICATION BY DEEPING LEARNING WITH SMALL DATASET**
Yi Wang[1]*, Xiaodong Chen[1], Huaiyu Cai[1], Zhengrong Liang[2]
[1]School of Precision Instrument and Opto-Electronics Engineering, Tianjin University, China, Key Laboratory of Opto-Electronics Information Technology (Tianjin University), Ministry of Education, Tianjin, 300072, China
[2]Department of Radiology, State University of New York, Stony Brook, NY 11794, USA

**I2483** **BRAIN EXTRACTION FROM MAGNETIC RESONANCE IMAGING USING**
12: 10 **DEEP NEURAL NETWORK WITH EDGE PRIOR**

Zhou Bin[1], Linsong Wang[2], Zhu Jian[3], Jiasong Wu[1], Kong Youyong[1,4,5]*, Shu Huazhong[1,4,5]

[1]School of Computer Science and Engineering, Southeast University, 210096, Sipailou 2, Nanjing, China

[2]College of Chien-Shiung Wu Honor, Southeast University, Nanjing, China

[3]Shandong Cancer Hospital, Shandong Academy of Medical Sciences, Jinan, China

[4]International Joint Laboratory of Infomration Integration, Southeast University, Nanjing, China

[5]Key Laboratory of Computer Network and Infomration Display and Visualization, Southeast University, Nanjing, China

## Oral Session 33: Signal Extraction and Feature Recognition

**Time:** **10: 30 - 12: 30, December 13, 2019**
**Place:** **Function Room 4-3, B1 of Hotel**
**Chairs:** **Dr. Xiaolong Chen, Naval Aviation University, China**
**Prof. Wei Li, Beijing Institute of Technology, China**

**K3256** **A TD-CF PREPROCESSING METHOD OF FMCW RADAR FOR DYNAMIC**
10: 30 **HAND GESTURE RECOGNITION**

Wentai Lei[1]*, Xinyue Jiang[1], Qianying Tan[1], Long Xu[1], Ye Zhao[2], Tiankun Xu[2], Yan Li[2], Qingyuan Gu[3], Gengye Liu[3], Yumei Zhao[4], Wenjun Li[4]

[1]School of Computer Science and Engineering, Central South University, Changsha, China

[2]Beijing Mass Transit Railway Operation Co. LTD, Beijing, China

[3]Time Varying Transmission Co. LTD, Xiangtan, China

[4]Yewuxuan Communication Technology Co. LTD, Beijing, China

**K3403** **STUDY ON SCATTERING SIGNATURE SIGNAL MODELING METHOD OF**
10: 50 **SEA-SURFACE TARGET FOR BI-STATIC SYNTHETIC APERTURE RADAR**

DiaoGuijier[1,2]*, Ni Hong[2], Zhang Yajing[3], Zhan Tianming[4], Xu Xiaojian[5]

[1]Science and Technology on Complex System Control and Intelligent Agent Cooperation Laboratory, Beijing, China

[2]Beijing Electro-mechanical Engineering Institute, Beijing, China

[3]Datang Mobile Communication Equipment Co., Ltd., Datang Telecom Group, Beijing, China

[4]Beijing Aerospace Smart Manufacturing Technology Development Co. Ltd., Beijing, China

[5]Electronic information engineering college, Beihang University, Beijing, China

**K3720** **THEORETICAL ANALYSIS FOR EXTENDED TARGET RECOVERY USING**
11: 10 **RSFRS**

Lei Wang[1], Tianyao Huang[1], Yimin Liu[1], Huaiying Tan[2]*,
[1]Department of Electronic and Engineering, Tsinghua University, Beijing, China
[2]Radar Research Institute, Beijing, China

**K3736** **MAXIMUM LIKELIHOOD AND LEAST SQUARES METHODS,**
11: 30 **ALGORITHMS AND EXPERIMENTS FOR "SENSING WAVES AND SEEING IMAGES"**

Kaifeng Gao[1], Hangfang Zhao[2*,3], Xianyi Gong[2]
[1]Ocean College, Zhejiang University, Zhoushan, China
[2]College of Information Science and Electronic Engineering, Zhejiang University, Hangzhou, China
[3]Key Laboratory of Ocean Observation-Imaging Testbed of Zhejiang Province Zhoushan, China

**K7582** **MULTI-TO-TWO-LDA FOR HRRP RADAR TARGET RECOGNITION**
11: 50

Lu Yao[1], Lei Han[1]*, Jindong Guo[1], Tao Shang[2]
[1]School of Mechanical and Electrical Engineering, Beijing Institute of Technology, Beijing, China
[2]Equipment Repair Depatrment, Beijing, China

**K1379** **PANSHARPENING OF MULTISPECTRAL IMAGES BASED ON**
12: 10 **CYCLE-SPINNING QUINCUNX LIFTING TRANSFORM**

Yan Shi[1]*, Wanyu Zhou[1], and Wei Li[1]
[1]Beijing Key Laboratory of Fractional Signals and Systems, School of Information and Electronics, Beijing Institute of Technology, Beijing, China

## Oral Session 34: Communications and Networks II

**Time:** **10: 30 - 12: 30, December 13, 2019**
**Place:** **Function Room 4-1, B1 of Hotel**
**Chairs:** **Prof. Wenchi Cheng, Xidian University, China**
**Prof. Chengwen Xing, Beijing Institute of Technology, China**

10: 30 **SPACE TERAHERTZ COMMUNICATION (INVITED TALK)**

Chengwen Xing
Beijing Institute of Technology

10: 50 **THE LOW-RANK CRITERION AND ITS APPLICATIONS IN SPATIAL SPECTRUM ESTIMATION AND OVERSPREAD CHANNEL ESTIMATION (INVITED TALK)**

Fangjiong Chen
South China University of Technology

11: 10 **SPECTRAL ANALYSIS AND IMAGING TECHNOLOGY BASED ON MULTIMODE FIBER (INVITED TALK)**
Zhenming Yu
Beijing University of Posts and Telecommunications.

**C5630** **CLUSTERING BASED INTERFERENCE ANALYSIS OF GSM-R NETWORK**
11: 30 **ON DRIVE TEST DATA**
Xiang Chen[1,2]*, Hui Cao[1,2], Jingxuan Huang[3], Zhongfa Li[1,2], Zesong Fei[3]
[1]School of Electronics and Information Techology, Sun Yat-sen University, Guangzhou 510006, China
[2]Key Lab of EDA, Research Institute of Tsinghua University in Shenzhen (RITS), Shenzhen 518075, China
[3]School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China

**C2301** **MULTIPLE KERNEL INDEPENDENT COMPONENT ANALYSIS FOR**
11: 50 **ANTI-JAMMING OF COMMUNICATION RADIO**
Yu Guo[1]*, Jin Meng[1], Songhu Ge[1], Jinling Xing[1], Yaxing Li[1], Hao Wu[1]
[1]National Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, China

**C5411** **A NEW METHOD OF SPECIFIC EMITTER IDENTIFICATION**
12: 10 Liting Sun[1]*, Wanlong Zhang[1], Xiang Wang[1], Kaihong Li[2]，Yiwei Guo[3], Jiarun Yang[4]
[1]State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System,National University of Defense Technology，Changsha, China
[2]Unit 78100 of PLA, Chengdu, Sichuan
[3]Unit 91605 of PLA, Xiamen, Fujian
[4]Unit 32045 of PLA, Xiamen, Fujian

## Oral Session 35: Remote Sensing Information Extraction

**Time:** **10: 30 - 12: 30, December 13, 2019**
**Place:** **Function Room 2-2, B2 of Hotel**
**Chairs:** **Prof. Bing Zhang, Aerospace Information Research Institute, Chinese Academy of Science, China**
**Prof. Ferdinando Nunziata, Università degli Studi di Napoli Parthenope, Italy**

10: 30 **REMOTELY SENSED BIG DATA: EVOLUTION IN MODEL DEVELOPMENT FOR INFORMATION EXTRACTION (INVITED TALK)**
Bing Zhang
Aerospace Information Research Institute, Chinese Academy of Science

10: 50 **ANALYSIS OF THE PERFORMANCE OF METHODS TO ENHANCE THE SPATIAL RESOLUTION OF MEASUREMENTS COLLECTED BY A MICROWAVE PROBE (INVITED TALK)**

Ferdinando Nunziata
Università degli Studi di Napoli Parthenope

**D4438** **AN IMPROVED HYBRID FREEMAN/EIGENVALUE DECOMPOSITION FOR**
11: 10 **POLARIMETRIC SAR DATA**

Borong Sun[1,2], Weixian Tan[1,2]*, Wei Xu[1,2], and Pingping Huang[1,2]
[1]College of Information Engineering. Inner Mongolia University of Technology, Hohhot, China
[2]Inner Mongolia Key Laboratory of Radar Technology and Application, Hohhot, China

**D1942** **AN IMPROVED FEATURE EXTRACTION METHOD BASED ON CONTEXT**
11: 30 **FEATURES FOR MULTI-SPECTRAL REMOTE SENSING IMAGERY**

Na Li[1]*, Ruihao Wang[1], Huijie Zhao[1], Huijie Zhao[1], Wei Wei[2]
[1]School of Instrumentation and Optoelectronic Engineering, Beihang University, Beijing, China
[2]Beijing Mechanical and Electrical Engineering Design Institute

**D1163** **COMPRESSIVE MULTIDIMENSIONAL HARMONIC RETRIEVAL WITH**
11: 50 **PRIOR KNOWLEDGE**

Yinchuan Li[1,2,3], Xu Zhang[1], Zegang Ding[1,2]*, Xiaodong Wang[3]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China
[3]Electrical Engineering Department, Columbia University, New York, USA

**D1465** **PAN-SHARPENING FRAMEWORK BASED ON LAPLACIAN SHARPENING**
12: 10 **WITH BROVEY**

Sarwar Shah Khan[1], Qiong Ran[1]*, Muzammil Khan[2], Zhenyu Ji[1]
[1]College of Information Science & Technology Beijing University of Chemical Technology Beijing, China
[2]Department of Computer & Software Technology University of Swat Swat, Pakistan

# Poster Sessions

| Time: 15: 30 - 16: 30, December 12, 2019 Place: Crowne Grand Ballroom A1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Session 1** | D41047 | D41093 | **Session 2** | A1072 | A1120 | A1158 | A1274 | A1277 | A1570 |
| A1752 | A1822 | A1829 | A1834 | A1926 | A1940 | A2361 | A2724 | A3047 | A3079 |
| A3100 | A3138 | A3223 | A3336 | A3342 | A3360 | A3384 | A3435 | A3443 | A3528 |
| A3529 | A3540 | A3553 | A3588 | A3632 | A3705 | A3767 | A3792 | A4053 | A4140 |
| A4159 | A4195 | A4232 | A4244 | A4344 | A4357 | A4387 | A4388 | A4393 | A4417 |
| A4423 | A4426 | A4457 | A4559 | A4596 | A4643 | A4698 | A4743 | A4797 | A4799 |
| A4809 | A4875 | A4980 | A11007 | A41076 | **Session3** | B1127 | B1324 | B1333 | B1368 |
| B1397 | B1440 | B1561 | B1627 | B2097 | B2124 | B2150 | B2218 | B2272 | B2391 |
| B2392 | B2431 | B2462 | B2479 | B2501 | B2507 | B2515 | B2518 | B2579 | B2626 |
| B2641 | B2718 | B2734 | B2794 | B2800 | B2811 | B2820 | B2842 | B2846 | B2859 |
| B2925 | B2932 | B2962 | B2963 | B2964 | B2969 | B2989 | B2991 | B3235 | B3355 |
| B3433 | B3706 | B3805 | B4295 | B4410 | B4589 | B5554 | B5835 | B6422 | B6510 |
| N0243 | N01045 | **Session4** | D1470 | D1854 | D2114 | D2121 | D2141 | D2162 | D2250 |
| D2273 | D2310 | D2311 | D2348 | D2351 | D2413 | D2450 | D2451 | D2453 | D2467 |
| D2480 | D2710 | D2771 | D2791 | D2813 | D2826 | D2828 | D2881 | D2889 | D2907 |
| D3030 | D3078 | D3082 | D3107 | D3111 | D3115 | **Session5** | F1108 | F1278 | F1296 |
| F1330 | F1555 | F1574 | F1634 | F1766 | F1810 | F1824 | F1849 | F1867 | F2370 |
| F2623 | F2636 | F2735 | F2843 | F2985 | F3239 | F3445 | F3537 | F3591 | F3858 |
| F4576 | F4647 | F4739 | F5386 | F6302 | F6815 | F11066 | **Session6** | G1209 | G3229 |
| G4737 | G4825 | G4988 | G5131 | G5352 | G5580 | G5877 | G5893 | G5895 | G7873 |
| G7983 | N0935 | **Session7** | H1538 | H1742 | H1758 | H1784 | H1787 | H1986 | H4760 |
| H4851 | H5530 | H5779 | H5804 | H6746 | H6966 | H11006 | **Session8** | J1358 | J1513 |
| J1924 | J1928 | J2452 | J2590 | J2637 | J2642 | J2973 | J2994 | J3210 | J3383 |
| J3469 | J3503 | J3550 | J3729 | J3761 | J3777 | J3860 | J3897 | J3899 | J3904 |
| J3939 | J3951 | J3952 | J3954 | J3970 | J4207 | J4447 | J4461 | J4844 | J4950 |
| J4971 | J5978 | J6803 | J6918 | J7364 | J21075 | J31000 | J31008 | J51011 | |
| **Time: 15: 00 - 16: 00, December 13, 2019 Place: Crowne Grand Ballroom A1** | | | | | | | | | |
| **Session 9** | D3294 | D3347 | D3362 | D3458 | D3624 | D3628 | D3648 | D3707 | D3781 |
| D3819 | D3882 | D3896 | D3927 | D3993 | D4057 | D4064 | D4073 | D4074 | D4091 |
| D4126 | D4152 | D4165 | D4208 | D4267 | D4288 | D4312 | D4337 | D4354 | D4369 |
| D4396 | D4402 | D4434 | D4486 | D4508 | D4542 | D4584 | D4619 | D4709 | D4738 |
| D4775 | D4814 | D4839 | D4857 | D4888 | D4901 | D4995 | D5048 | D5095 | D5105 |
| D5281 | D5292 | D5326 | D5456 | D5543 | D5544 | D5869 | D5905 | D41010 | D41098 |
| N0032 | N0156 | N0415 | N0592 | N0848 | **Session10** | E1040 | E1084 | E1085 | E1245 |
| E1332 | E1338 | E1363 | E1390 | E1441 | E1477 | E1533 | E1557 | E1587 | E1845 |
| E1922 | E2054 | E2063 | E2076 | E2086 | E2399 | E2571 | E2719 | E2880 | E3178 |
| E3197 | E3226 | E4293 | E4616 | E4861 | E4883 | E4920 | E5062 | E5081 | E5117 |
| E5147 | E5356 | E5395 | E5408 | E5485 | E5539 | E5783 | E5827 | E5841 | E5898 |
| E6101 | E6170 | E6573 | E7125 | E7151 | E7252 | E7314 | E7563 | E7714 | E7817 |
| E7876 | E7885 | E7944 | E7965 | E11012 | E11108 | E11112 | E21102 | E21106 | E21107 |

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|---|---|---|---|---|---|---|---|---|---|
| E21111 | E31103 | E31105 | E51099 | E71095 | N0037 | N0052 | N0090 | N0166 | N0173 |
| N0181 | N0211 | N0220 | N0305 | N0564 | N0621 | N0631 | N0649 | N0745 | N0757 |
| N0795 | N0996 | N01019 | **Session11** | I1380 | I1598 | I2373 | I2475 | I2601 | I2929 |
| **Session12** | K1137 | K1176 | K1381 | K1481 | K1505 | K1556 | K1597 | K1762 | K1871 |
| K1903 | K1931 | K1948 | K2148 | K2313 | K2409 | K2547 | K2617 | K2721 | K2868 |
| K2886 | K2902 | K3045 | K3059 | K3065 | K3144 | K3164 | K3183 | K3192 | K3193 |
| K3225 | K3236 | K3241 | K3251 | K3328 | K3334 | K3345 | K3421 | K3442 | K3449 |
| K3482 | K3504 | K3629 | K3639 | K3704 | K3713 | K3722 | K3740 | K3765 | K3776 |
| K3853 | K3884 | K3900 | K3958 | K3959 | K3979 | K3981 | K4103 | K4142 | K4237 |
| K4741 | K5113 | K5187 | K5372 | K5398 | K5460 | K5711 | K5960 | K5961 | K6228 |
| K7622 | K31017 | K31073 | K31092 | K31096 | N0041 | N0056 | N0174 | N0217 | **Session13** |
| L1583 | L2870 | **Session14** | M1890 | M2732 | M3551 | M3625 | M4532 | M5190 | M5833 |
| M6562 | M6945 | M6946 | M31001 | **Session15** | N0892 | N0930 | P2247 | P2283 | P2864 |
| P2949 | P3216 | P5807 | P21002 | P21003 | **Session16** | C1419 | C5266 | C7343 | C31088 |
| N0280 | N0906 | | | | | | | | |

## Poster Session 1: Joint Wireless Communication and Radar Sensing

**Time:** 15: 30 - 16: 30, December 12, 2019
**Place:** Crowne Grand Ballroom A1, B2 of Hotel
**Chair:** Prof. Qiang Li, the 27th Research Institute of China Electronics Technology Group Corporation, China
Prof. Xingdong Liang, Institute of Electronics, Chinese Academy of Sciences, China

**D41047** **VTENSOR: USING VIRTUAL TENSORS TO BUILD A LAYOUT-OBLIVIOUS AI PROGRAMMING FRAMEWORK**
Feng Yu[1,2], Huimin Cui[1,2*], Xiaobing Feng[1,2]
[1]State Key Laboratory of Computer Architecture, Insitute of Computing Technology, Chinese Academy of Sicences, Beijing, China
[2]University of Chinese Academy of Sciences, Beijing, China

**D41093** **PERFORMANCE OF JOINT RADAR-COMMUNICATION ENABLED COOPERATIVE UAV NETWORK**
Xu Chen[1], Zhiqing Wei[1], Zixi Fang[1], Hao Ma[1], Zhiyong Feng[1*], Huici Wu[1]
[1]Key Laboratory of Universal Wireless Communications, Ministry of Education, Beijing University of Posts and Telecommunications, Beijing, China

## Poster Session 2: Speech, Audio, Acoustic and Sonar Processing

**Time:** 15: 30 - 16: 30, December 12, 2019
**Place:** Crowne Grand Ballroom-1
**Chair:** Prof. Feifeng Liu, Beijing Institute of Technology, China

**A1072** **MULTIPLE ADDITIONAL BIT-RATE CHANNEL-AWARE MODES IN EVS CODEC FOR PACKET LOSS RECOVERY**
Chongling Rao[1], Shenghui Zhao[1*]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China

**A1120** **A MODEL OF K-G MIXED DISTRIBUTION FOR THE REVERBERATION OF HIGH RESOLUTION ACTIVE SONAR IN SHALLOW WATER**
Xu Sun*, Ranwei Li
Science and Technology on Sonar Laboratory, Hangzhou Applied Acoustics Research Institute, Hangzhou, China

**A1158** **MULTI-FORMAT SPEECH PERCEPTION HASHING ALGORITHM BASED ON FREQUENCY BAND VARIANCE**
Yibo Huang[1*], Yong Wang[1]
[1]College of Physics and Electronic Engineering, Northwest Normal University, No.967,Anning East Road, Anning District, Lan Zhou, China

**A1274** **ROBUST END TO END ACOUSTIC MODEL BASED ON DEEP SIMILARITY NETWORK**

Songxue Tian[1], Weize Sun[1*], Lei Huang[2]
[1]College of Electronics and Information Engineering, Shenzhen University, China, Shenzhen
[2]College of Electronics and Information Engineering, Shenzhen University, China, Shenzhen

**A1277** **RESEARCH ON ACOUSTIC SCENE CLASSIFICATION BASED ON MULTIPLE MIXED CONVOLUTIONAL NEURAL NETWORKS**

Lidong Yang[1], Zhuangzhuang Zhang[1*], Jiangtao Hu[1]
[1]School of Information Engineering, Inner Mongolia University of Science and Technology, Baotou, China

**A1570** **DIRECT POSITION DETERMINATION USING TDOA AND FDOA BASED ON VARIABLE BASELINE**

Mingbin Li[1,a], Yuanyuan Song[2,b], Yijun Li[2], Luxi Zhang[2], Zhenzhu Zha[2], Qiang Yan[1], Qun Wan[2,c]
[1]Sichuan, 611731, Southwest Institute of Electronic Technology
[2]School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu

**A1752** **AUDIO SCENE CLASSIFICATION BASED ON GATED RECURRENT UNIT**

Lidong Yang[1], Jiangtao Hu[1*], Zhuangzhuang Zhang[1]
[1]School of Information Engineering, Inner Mongolia University of Science and Technology, Baotou, China

**A1822** **A DOUBLE-SIDE WSOLA WITH GAIN PREDICTION BASED ON GRU FOR PACKET LOSS CONCEALMENT**

Patrick Mugisha[1], Jing Wang[1*], Xiaohan Zhao[1], Zhuoran Li[1], Kai Qian[1],
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**A1829** **A WEIGHTED MULTI-TASK LEARNING APPROACH FOR MANDARIN-ENGLISH CODE-SWITCHING SPEECH RECOGNITION**

Shilei Huang[1], Xiao Song[1*], Yi Liu[2]
[1]PKU-HKUST Shenzhen Hong Kong Institution, ShenZhen, China
[2]Shenzhen Raisound Technologies, Co., Ltd, ShenZhen, China

**A1834** **A CHINESE SPEECH RECOGNITION SYSTEM BASED ON ARTICULATORY FEATURES**

Shixuan Du[1], Qingran Zhan[1], Yahui Shan[1], Xiang Xie[1,2*]
[1]Information and Electronics Institute, Beijing Institute of Technology, Beijing, China
[2]Shenzhen Research Institute, Beijing Institute of Technology, Shenzhen, China

**A1926 SPEAKER DIARIZATION FOR MULTI-SPEAKER CONVERSATIONS VIA X-VECTORS**

Yangfan Zhang[1,2], Xiao Song[2], Jian Zhang[2*]
[1]School of Computer Science and Technology, Anhui University, Hefei, China
[2]Peking University Shenzhen Institute, Shenzhen, China

**A1940 A COMPARISON OF BACKGROUND NOISE REDUCTION TECHNIQUES FOR SPEECH ENHANCEMENT**

Yuhao Lu and Wasim Ahmad
James Watt School of Engineering
University of Glasgow
Glasgow, United Kingdom, G12 8QQ

**A2361 NON-INTRUSIVE SPEECH QUALITY ASSESSMENT BASED ON TUCKER DECOMPOSITION AND DEEP NEURAL NETWORK**

Yahui Shan[1], Jing Wang[1*], Min Liu[1], Yiyu Luo[1], Xiang Xie[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**A2724 DESIGN OF SHIP RADIATED NOISE SIGNAL GENERATOR BASED ON FPGA**

Hu Chen[1*], Zhang Fengzhen[1], Li Guijuan[1], Zhang Zhaohui[1], Mu Lin[1], Hu Wenshuai[1]
[1]Science and Technology on Underwater Test and Control Laboratory, Dalian, China

**A3047 A SIGNAL PROCESSING TECHNIQUE FOR LFMCW RADAR**

Qingliang Shen[1*]
[1]Jiangsu Automation Research Institute, LianYunGang, China

**A3079 ONE NARROWBAND CROSS-CORRELATOR DETECTOR FOR PASSIVE SONAR**

Shengzeng Zhou[1*], Xuanmin Du[1], Jinsheng Cheng[1]
[1]Shanghai Marine electronic equipment research institute, 5200 Jindu Road, Minhang District, Shanghai, China

**A3100 SEQUENTIAL MONTE CARLO AND PROBABILITY HYPOTHESIS DENSITIES FOR UNDERWATER MULTITARGET TRACKING IN ACTIVE SONOBUOY SYSTEMS**

Pengfei Shao, Qing Li, Lei Wang
Science and Technology on Sonar Laboratory and Hangzhou Applied Acoustics Research Institute, Hangzhou, China

**A3138 RESEARCH ON SEARCHING RATE OPTIMIZATION METHOD OF HPA ACTIVE SONAR**

Di Meng[1], Shengzeng Zhou[2*]
[1]Naval Research Academy, Beijing, China
[2]Shanghai Marine electronic equipment research institute, 5200 Jindu Road, Minhang District, Shanghai, China

**A3223 ACCURACY ANALYSIS OF BISTATIC ACTIVE SONAR RANGING**

Linfeng Jiang[1], Shengzeng Zhou[1], Delong Sun[1], Linfeng Jiang[1]
[1]Shanghai Marine Electronic Equipment Research Institute, Shanghai, China

**A3336 COGNITIVE RADAR WAVEFORM OPTIMIZATION FOR STEALTH TARGET RCS ESTIMATION**

Qing Wang[1], Meng Li[1], Yuzhang Guo[1*]
School of Electrical and Information Engineering, Tianjin University, Tianjin, 300072, China

**A3342 ANALYTICAL SOLUTION OF ACTIVE NOISE CONTROL IN SOUND FIELD WITH A REFLECTIVE SURFACE**

Jingwei Liu[1,2], Ran Wang[1,2], Yuwei Feng[1,2], Xiaolin Wang[2*]
[1]University of Chinese Academy of Sciences, Beijing, China
[2]Key Laboratory of Noise and Vibration Research, Institute of Acoustics, Chinese Academy of Sciences, No. 21 North 4th Ring Road, Haidian District, Beijing, China

**A3360 PERFORMANCE ANALYSIS OF BINAURAL AUDIO RENDERING WITH RECONSTRUCTED HRTF UNDER LINEAR INTERPOLATION AND SSH**

Xinyao Wang[1], Jing Wang[1*], Zhaoyu Yan[1], Min Liu[1], Kai Qian[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**A3384 A METHOD OF SOUND FIELD CONTROL USING BEAM DEFLECTION**

Xian Zhang[1], Jianlong Li[1,2*]
[1]College of Information Science and Electronic Engineering, Zhejiang University, Hangzhou, China
[2]Key Laboratory of Ocean Observation-Imaging Testbed of Zhejiang Province, Zhejiang University, Zhoushan, China

**A3435 TARGET GEOMETRIC CONFIGURATION ESTIMATION BASED ON ACOUSTIC SCATTERING SPATIOTEMPORAL CHARACTERISTICS**

Li Rui*, An Junying, Cheng Gang
Qingdao Branch, Institute of Acoustic, Chinese Academy of Sciences, No.96 Huizhiqiao Road, Qingdao, China

**A3443 SIMULATION RESEARCH OF OCEAN ENVIRONMENT NOISE SPATIAL CORRELATION**

Bo Yang[1], Wu Qu[1], Yuanyuan Hou[2], Pengtao Hu[1], Kaiming Wu[1]
[1]Science & Technology on Underwater Acoustic Antagonizing Laboratory, Zhanjiang, P. R. China, 524022
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**A3528 EFFICIENT OFF-GRID DOA ESTIMATION BASED ON MODIFIED MUSIC FOR ARBITRARY LINEAR ARRAYS**

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**A3529 THE W-DISJOINT ORTHOGONALITY OF UNDERWATER ACOUSTIC SIGNALS AND UNDERDETERMINED SOURCE COUNTING FOR ACOUSTIC VECTOR SENSOR**

Yang Chen[1], Jinxia Wang[1*], Yun Yu[2], Xiao Zhang[3], Biao Yang[1], Yanping Zhu[1]
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**A3540 DESIGN OF GROUPED SENSOR GEOMETRY IN SKY-WAVE TIME-DIFFERENCE-OF-ARRIVAL LOCALIZATION SYSTEMS**

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**A3553 SUPPRESSING GRATING LOBES IN WIDEBAND SUBARRAY ADAPTIVE BEAMFORMING**

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**A3588 SOUND SIGNAL SEPARATION TECHNIQUE IN WIND TUNNEL TEST BY USING PLANAR MICROPHONE ARRAY**

Hefeng Zhou[1*], Yun Zhao[1], Xinwu Zeng[1], Haijun Wu[2], Weikang Jiang[2]
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**A3632 HORIZONTAL WAVENUMBER ESTIMATION TECHNIQUE BASED ON COMPRESSIVE SENSING IN SHALLOW WATER**

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**A3705 A CONICAL HELIX ARRAY FOR SMALL AUTONOMOUS UNDERWATER PLATFORMS**

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**A3767 STUDY ON OPTIMIZATION OF QPSO ALGORITHM IN BEAMFORMING**

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**A3792 RESEARCH ON BEAM SHARPENING TECHNOLOGY OF A CIRCULAR ARRAY DECONVOLVED BEAMFORMING**

Xiefan Pan[1,2*], Benqi Liu[1,2], Liang Liu[2], Wenrui Yang[2], Huaibin Yan[2], An Fu[2]
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**A4053 RESEARCH ON CROSS-MEDIUM TARGET DETECTION**

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**A4140 SIMULATION OF PHASE CHARACTERISTICS OF UNDERWATER TARGET ACOUSTIC SCATTERING**

JinTao Yong[1], YunFei Chen[1], Bing Jia[1], Yang Zhang[1]
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**A4159 UNDERWATER SIGNAL RECOGNITION USING A CONVOLUTIONAL NEURAL NETWORK**

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**A4195 ADAPTIVE JOINT CHANNEL ESTIMATION OF DIGITAL SELF-INTERFERENCE CANCELATION IN CO-TIME CO-FREQUENCY FULL-DUPLEX UNDERWATER ACOUSTIC COMMUNICATION**

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**A4232 TRACK BEFORE DETECT FOR LOW FREQUENCY ACTIVE TOWED ARRAY SONAR**

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**A4244 NOVELCRITERION OF PILOT OPTIMIZATION IN UNDERWATER ACOUSTIC OFDM SYSTEMS BASED ON COMPRESSED SENSING**

Yanan Yu, Rongkun Jiang, Wei Gao, Yue Hao, Fang Xie
School of Information and Electronics, Beijing Institute of Technology

**A4344 EXPERIMENTAL DEMONSTRATION OF UNDERWATER ACOUSTIC COMMUNICATION OVER DEEP-SEA CHANNEL**

Pengyu Du[1*], Xiaohui Zhu[1], Chao Wang
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**A4357 A TWO-DIMENSIONAL STRATEGY OF ADAPTIVE MODULATION AND CODING FOR UNDERWATER ACOUSTIC COMMUNICATION SYSTEMS**

Lihuan Huang[1], Lifan Zhang[1], Yujie Wang[1], Qunfei Zhang[1*],
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**A4387** **A-KNN: AN ADAPTIVE METHOD FOR CONSTRUCTING HIGH-RESOLUTION OCEAN MODELS**

Jun Liu[1,2], Yu Gou[1], Tong Zhang[1*], Xinyi Jiang[3], XinQi Du[1], XuanZhang[1]
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**A4388** **CONVOLUTIONAL LSTM NETWORKS FOR SEAWATER TEMPERATURE PREDICTION**

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**A4393** **MODULATION RECOGNITION OF UNDERWATER ACOUSTIC COMMUNICATION SIGNALS BASED ON JOINT FEATURE EXTRACTION**

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**A4417** **AN UNDERWATER ACOUSTIC FREQUENCY ESTIMATION ALGORITHM BASED ON FIRST-ORDER NEWTON ITERATIONS**

Qi Yan, Huakun Jiao, Ting Huo*, Xinjie Wang, Xiaowei Wang
School of Information and Control, Qingdao University of Technology, Qingdao, China

**A4423** **SUBMARINE TARGET SONAR IMAGE SEGMENTATION BASED ON FCM CLUSTERING WITH THREE-DIMENSIONAL GRAY FEATURES**

Zhou Jia Li[1], Guo Hai Tao[1,2], Luo Rui Ying[1], Sun Lin Na[1]
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**A4426 MODULATION PATTERN RECOGNITION OF NON-COOPERATIVE UNDERWATER ACOUSTIC COMMUNICATION SIGNALS BASED ON LSTM NETWORK**

Xuesong Yu[1,2,3], Li Li[1,2,3*], Jingwei Yin[1,2,3], Mengqi Shao[1,2,3], Xiao Han[1,2,3]
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**A4457 SIDE-SCAN SONAR IMAGE ROUGH RECOGNITION AND FEATURE MATCHING BASED ON CNN AND SIFT**

Chaoping Dong[1,2,3], Longxiang Guo[1,2,3*], Keming Hu[4], Jingwei Yin[1,2,3], Xueli Sheng[1,2,3]
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**A4559 REAL-TIME AMPLITUDE CORRECTION METHOD OF UNDERWATER MEASURED SIGNAL BASED ON FIR FILTER**

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**A4596 RESEARCH AND SIMULATION OF EXTENDED HELIX SEARCH METHOD FOR ANTI-SUBMARINE HELICOPTER**

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**A4643 BASED ON DIFFERENT BUOY ARRAY UNDER THE SUBMARINE EVASIVE TIME**

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**A4698 STUDY OF ACOUSTIC TOMOGRAPHY TO CIRCULAR SYNTHETIC APERTURE SONAR IMAGING**

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**A4743 ANALYSIS OF VOCAL CHARACTERISTICS OF RISSO'S DOLPHINS BASED ON SPEECH SIGNAL PROCESSING**

Xu Gaofeng[1], Yang Fengmao[1], Jin Bo[1]
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**A4797 LONG DISTANCE COMMUCATION TECHNOLOGY OF DEEP SEA ACOUSTIC RELEASE TRANSPONDER**

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**A4799 DESIGN OF INERTIAL/ACOUSTIC INTEGRATED NAVIGATION SYSTEM OF UNDERWATER VEHICLE**

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**A4809 A LOW-PAPR UNDERWATER ACOUSTIC MULTIUSER COMMUNICATION ALGORITHM BASED ON SELECTIVE DIFFERENTIAL CODING AND SC-FDMA**

Xiaowei Wang[*], Zequn Li, Hanxue Ding, Huakun Jiao, Qi Yan
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**A4875 ULTRASONIC INSPECTION OF PREFABRICATED CONSTRUCTIONS USING REVERSE TIME MIGRATION IMAGING METHOD**

Yuan Qi[1], Zhijie Chen[1], Hai Liu[1*], Yuliang Qi[2], Huawei Tong[1], Jiangang Xie[3]
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[3]School of Artificial Intelligence, The Open University of Guangdong, Guangzhou 510091, China

**A4980** **THE RESEARCH ON ACOUSTIC COMMUNICATION ANTIDOPPLER SHIFT TECHNOLOGY BASED ON FRFFT**

Linfeng-Chai[1,2], Yongfeng-Zhang[1,2], Zhizheng-Zhang[1,2]
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**A11007** **SIGNAL CORRECTION IN UAV SWARM ACOUSTIC COMMUNICATION**

Shangbin Zhang[1*], Yanjie Zhao[1], Shuang Wu[1], Guangxun Du[1], Deming Zhao[1]
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**A41076** **MIMO-SC-FDE COMMUNICATION WITH PARTIAL FFT DEMODULATION OVER UNDERWATER ACOUSTIC CHANNELS**

Xiao Zhang[1], Wei Ge[2,3,4*], Xiao Han[2,3,4], Jingwei Yin[2,3,4]
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## Poster Session 3: Image, Video, and Multimedia Processing

**Time:** **15: 30 - 16: 30, December 12, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Prof. Chenwei Deng, Beijing Institute of Technology, China**

**B1127** **AN EVENT CODING METHOD BASED ON FRAME IMAGES WITH DYNAMIC VISION SENSOR MODELING**

Xingpeng Lu[1, 2], Mingyu Wang[2*], Yang Cao[3], Ruilian Zhao[1], Wu Zhou[3], Zhaolin Li[2]
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**B1324** **HYPERSPECTRAL INVERSION FOR SOIL MOISTURE AND TEMPERATURE BASED ON GAUSSIAN PROCESS REGRESSION**

Zhen Li[1], Baojun Zhao[1*], Yibing Tian[1], Yun Huang[1]
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**B1333 ADABOOSTNET: AN EFFICIENT HIERARCHICAL NEURAL NETWORK FOR IMAGE CLASSIFICATION**

Shichao Zhou[1], Baojun Zhao[1], Linbo Tang[1*], Donglin Jing[1], Yu Pan[1], Yun Huang[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**B1368 ENTIRE CHAINS SIMULATION SYSTEM FOR OPTICAL REMOTE SENSING IMAGING**

Mengyuan Zhao[1,2], Xiaoshan Ma[1*], Xin Meng[1], Zhen Yang[1], Xiaodong Peng[1]
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**B1397 SPACE TARGET SUPER-RESOLUTION BASED ON LOW-COMPLEX CONVOLUTIONAL NETWORKS**

Tingting Cui[1,2], Linbo Tang[1,2*], Jinghong Nan[1,2], Zhenzhen Li[1,2]
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**B1440 A METHOD BASED ON REGIN DIVISION FOR EVALUATING THE LASER DISTURBING PICTURE**

Wang Xun[1,2], Sun Mingjiao1, Gao Xiangxiang[1], Zhou Lian[1], Wang Jin Li[1], Liu Lu[1]
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[2]Beijing Institute of Technology, Beijing, China

**B1561 WEIGHTED ANOMALY DETECTION ALGORITHM BASED ON LOCAL DENSITY**

Yibing Tian[1], Linbo Tang[1*], Zhen Li[1], Yun Huang1
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**B1627 EFFICIENT AND LIGHTWEIGHT TARGET RECOGNITION FOR HIGH RESOLUTION SPACEBORNE SAR IMAGES**

Yu Pan[1], Linbo Tang[1*], Donglin Jing[1], Wei Tang[1], Shichao Zhou[1]
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**B2097 AUTO CENTER FIND DENSITY PEAKS ALGORITHM AND ITS APPLICATION IN FACE IMAGE CLUSTERING**

GuiYan Wang[1,2], ChangJiang Bu[1*], YueSheng Luo[1]
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[2]Department of Basic Research, Harbin Finance University, Harbin, China

**B2124 INTERSECTION TRAFFIC FLOW COUNTING BASED ON HYBRID REGRESSION MODEL**

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Faculty of Engineering, University of Sydney, Sydney, Australia
College of Command and Control Engineering, Army Engineering University, Nanjing, China

**B2150 AN IMAGE SEGMENTATION METHOD FOR THE BLIND SIDEWALKS RECOGNITION BY USING THE CONVOLUTIONAL NEURAL NETWORK U-NET**

Ling Liu, Yiping Wang, Hua Zhao*
College of Physics and Technology, Nanjing Normal University, Nanjing, China

**B2218 AN IMAGE REGISTRATION ALGORITHM BASED ON SLOPE AND DISTANCE RATIO CONSTRAINTS**

Haibo Huang[1], Xiangfei Nie[1*], Zegang Ding[2], Xiaoling Li[1], Yue Zhang[1], Liyuan Feng[1]
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**B2272 PART-BASED CONVOLUTIONAL NETWORK FOR VISUAL TRACKING**

Yiheng Zhang[1], Hui He[1], Jiaoyang An[1], Bo Ma[1*]
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**B2391 A LESS CONVOLUTED APPROACH TO 3D POSE ESTIMATION**

Uchechukwu J. Okechukwu[1*], Yan Luo[1], Hao Jin[1], Yu Cao[2]
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**B2392 POSE-GUIDED NEURAL NETWORK WITH HYBRID REPRESENTATION FOR PERSON RE-IDENTIFICATION**

Yang Cheng[1], Hongyu Wang[1*], Xiaokai Liu[2]
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**B2431 GROUND TARGET AUTOMATIC RECOGNITION AND TRACKING IN COMPLEX BATTLEFIELD ENVIRONMENT**

Chen Wu[1], Linbo Tang[1*], Chenhui Duan[1]
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**B2462** **EDGE-GUIDED PANORAMIC VIDEO STITCHING WITH LIMITED OVERLAP**

Chaoyu Xie, Xuejin Chen*
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University of Science and Technology of China, Hefei, China

**B2479** **ANALYSIS AND IMPROVEMENT OF GENERAL METHODS IN INFRARED IMAGE DETAIL ENHANCEMENT**

Yitian Li[1], Chengguang Ma[1*], Zhizhe Liu[1], Ziqi Liu[2]
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[2]Beijing Computational Science Research Centerdept, 100193, Beijing, China

**B2501** **LOGO DETECTION BASED ON CONVOLUTIONAL NEURAL NETWORKS**

Chao Lu[1], Dandan Li[1], Dan Zeng[1]
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**B2507** **SPATIAL-TEMPORAL SEGMENTATION-BASED TRACKING**

Yuqi Han[1], Zhongyang Xiao[2], Linbo Tang[1*]
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**B2515** **IMPROVING SEMANTIC SEGMENTATION VIA LABEL PROPAGATION AND TEMPORAL CONSISTENCY**

Feiyu Qin, Lumeng Cao, Xuejin Chen*
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University of Science and Technology of China, Hefei, China

**B2518** **VISUAL TRACKING VIA LOCALITY-CONSTRAINED AFFINE SUBSPACE CODING**

Yuping Zhang[1*], Jiaoyang An[1], Bo Ma[1]
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**B2579** **MOVING TARGET DETECTION BASED ON CIRCULAR VIDEO SAR**

Hongshuo Wang[1], Baojun Zhao[1*], Xingsha Yang[1]
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**B2626** **A REAL-TIME VISUAL UAV DETECTION ALGORITHM ON JETSON TX2**

Zipeng Zhang[1], Linbo Tang[1*], Yibing Tian[1], Yu Pan[1]
[1]Beijing Key Laboratory of Embeded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China

**B2641** **BINARY SEPARABLE CONVOLUTIONAL :AN EFFICIENT FAST IMAGE CLASSIFICATION METHOD**

Donglin Jing[1], Linbo Tang[1*], Yu Pan[1], Wei Tang[1], Shichao Zhou[1]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China

**B2718** **VDETOR: AN EFFECTIVE AND EFFICIENT NEURAL NETWORK FOR VEHICLE DETECTION IN AERIAL IMAGE**

Zhengquan Piao[1], Baojun Zhao[1], Linbo Tang[1*], Wei Tang[1], Shichao Zhou[1], Donglin Jing[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**B2734** **A METHOD FOR FAST REMOTE SENSING IMAGES CLASSIFICATION**

Fengjiao Li[1], Donglin Jing[1], Fukun Bi[2], Hao Shi[1,3*]
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[3]Beijing Institute of Technology Chongqing Innovation Center, Chongqing, 401120, China

**B2794** **INTERACTION RECOGNITION USING DEPTH INFORMATION BASED ON 3D CNNS**

Jianjun Li[1*], Huiting Liu[1], Chao Zhang[1], Kesai Li[1], Yue Sun[1]
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**B2800** **AIRCRAFT DETECTION IN REMOTE SENSING IMAGE FOR SPACE-BORNE PLATFORM**

Wei Tang[1,2], Baozhao Jun[1,2], Linbo Tang[1,2*],Yu Pan[1,2], Dongling Jin[1,2], zhengpiao Quan[1,2]
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**B2811** **AN EFFICIENT CROWD ESTIMATION METHOD USING CONVOLUTIONAL NEURAL NETWORK WITH THERMAL IMAGES**

Muhua Xu
Princeton International School of Math and Science, Princeton, United States

**B2820** **MULTI-SENSOR IMAGE STITCHING AND FUSION BASED AIR INFRARED TARGET COOPERATIVE DETECTION**

Jinghong Nan[1,3], Baojun Zhao[1,2*], Tingting Cui[1,2], Yongfeng Xie[3]
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**B2842** **MULTI-SCALE REAL-TIME OBJECT DETECTION WITH DENSELY CONNECTED NETWORK**

Dong Jiang, Zhengyao Bai*, Qiong Li
School of Information Science & Engineering, Yunnan University, Kunming, China

**B2846** **EARLY DETECTION OF FOREST FIRE BASED ON UNMANED AERIAL VEHICLE PLATFORM**

Xingsha Yang[1], Linbo Tang[1*], Hongshuo Wang[1], Xinxin He[1]
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**B2859** **RESEARCH ON CROP PLANTING AREA CLASSIFICATION FROM REMOTE SENSING IMAGE BASED ON DEEP LEARNING**

Yun Huang[1], Linbo Tang[1*], Donglin Jing[1], Zhen Li[1], Yibing Tian[1], Shichao Zhou[1]
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**B2925** **REAL-TIME CHERRY COLOR GRADING BASED ON MACHINE VISION**

Yuekun Pei[1,2], Mingyue Lian[1,2*], Yanchao Jiang[1,2], JiaMin Ye[1,2], Xinxin Han[1,2], Yu Gu[1,2]
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**B2932** **RESEARCH ON CHERRY SHAPE DETECTION TECHNOLOGY BASED ON MACHINE VISION**

Yuekun Pei[1,2], Jiamin Ye[1,2*], Yanchao Jiang[1,2], Mingyue Lian[1,2], Xinxin Han[1,2], Gu Yu[1,2]
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**B2962** **DETECTION OF RAILWAY LEAKAGE CABLE JIGS BASED ON SSD**

Yunzuo Zhang*, Panliang Yang, Wenxuan Li
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**B2963 SHOT BOUNDARY DETECTION BASED ON HSV COLOR MODEL**

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**B2964 RESEARCH ON THE KEY-FRAME EXTRACTION OF SURVEILLANCE VIDEO BASED ON MOTION VELOCITY**

Yunzuo Zhang*, Shasha Zhang, Yaning Guo
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**B2969 DESIGN AND IMPLEMENTATION OF FACE RECOGNITION SYSTEM BASED ON XILINXZYNQ-7000**

Zheng Wen[1], Mengchao Wu[1], Yizhuang Xie[1]*
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**B2989 SHOT BOUNDARY DETECTION WITH KEY MOTION ESTIMATION AND APPEARANCE DIFFERENTIATION**

Zhe Lu[1], Lifang Wu[1], Meng Jian[1]*, Shuai Zhang[1], Dong Wang[1], Xiangdong Wang[2]
[1]Department of Informatics Beijing University of Technology, Beijing, China
[2]Institute of Sports Science General Administration of Sports, Beijing, China

**B2991 DISCRETE CLASSIFICATION OPTIMIZATION HASHING FOR IMAGE RETRIEVAL**

Feng Li[1], Wenjin Hu[1], Lifang Wu[1], Meng Jian[1]*, Kuan Zhao[1], Yukun Chen[1]
[1]Beijing university of technology, Beijing, China

**B3235 FAST INFRARED TARGET DETECTION ALGORITHM BASED ON MATHEMATICAL MORPHOLOGY AND OTSU'S METHOD**

Ning Wang[1], Ming Zhou[1], Qinglei Du[1], Bing Wang[1]
[1]Air Force Early Warning Academy, Wuhan 430019, China
[2]Second Affiliation name of department and organisation, Address, City, Country

**B3355 ROTATION-INVARIANT FAST TEMPLATE MATCHING BASED ON SEQUENTIAL MONTE CARLO**

Cuifang Xie[1], Min Guo[2], Hongfei Feng[2], Chen Wong[2], Lei Sun[1]*
[1]School of Information and Electronics, Beijing, China
[2]Xi'an Longview Electronic Engineering Co., Ltd, Xi'an, China

**B3433** **AN IMPROVED DETECTION METHOD FOR MULTI-SCALE AND DENSE PEDESTRIANS BASED ON FASTER R-CNN**

Kai Zhu[1], Lintao Li[2], Dongfang Hu[3], Dongxu Chen[4], Liang Liu[5]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, P.R. China
[2]School of Electronic Engineering, Beijing University of Posts and Telecommunications, Beijing, P.R. China
[3]Beijing Galaxy Information&Communication Co., Ltd., Beijing, P.R. China
[4]China Academic of Electronics and Information Technology, Beijing, P.R. China
[5]China Mobile Research Institute, Beijing, P.R. China

**B3706** **NO-REFERENCE DEFOCUSED IMAGE QUALITY ASSESSMENT BASED ON HUMAN VISUAL SYSTEM**

Han Dong[1], Aodong Shen[1,2*], Youyong Kong[1,2], Yu Shen[1], Huazhong Shu[1,2,3]
[1]School of Computer Science and Engineering, Southeast University, 210096, Sipailou 2, Nanjing, China
[2]Key Laboratory of Computer Network and Infomration Display and Visualization, Southeast University, Nanjing, China
[3]International Joint Laboratory of Infomration Integration, Southeast University, Nanjing, China

**B3805** **A REAL-TIME ALGORITHM FOR VISUAL DETECTION OF HIGH-SPEED UNMANNED SURFACE VEHICLE BASED ON DEEP LEARNING**

Zhiguo Zhou[1*], Siyu Yu[1], Kaiyuan Liu[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**B4295** **CAMERA ARRAY CALIBRATION USING A SIMPLE CHECKERBOARD PATTERN**

Jungang Yang[1], Chao Xiao[1], Pu Wang[1*], Yougan Luo[2], Chengjin An[1]
[1]College of Electronic Science and Technology, National University of Defense Technology, Changsha, China
[2]The Teaching and Research Support Center, National University of Defense Technology, Changsha, China

**B4410** **A HYBRID METHOD OF CASCADED FEATURES FOR RGB-D SEMANTIC SEGMENTATION**

Jichao Jiao*, Cheng Zhang, Libin Yuan, Yaokai Mo, Zhongliang Deng
School of Electronic Engineering, Beijing University of Posts and Telecommunications, Beijing, China

**B4589** **JOINT STEREO POSITIONING BASED ON SAR/CCD SATELLITE IMAGES INTRODUCING VIRTUAL OBSERVATION WEIGHTS**

Li Yingying[1*], Run Yi[2], Wu Hao[1], Li Zhixin[1], Long En[1], Xin Yu[1], Lian Cuiping[1]
[1]Beijing institute of remote sensing information, Beijing, China
[2]Yunnan institute of transportation planning and design, Kunming, China

**B5554** **AN OBJECT DETECTION AND CLASSIFICATION METHOD USING RADAR AND CAMERA DATA FUSION**

Fahad A Jibrin, Zhenmiao Deng, Yixiong Zhang*
School of Information Science and Engineering, Xiamen University, Xiamen, China

**B5835** **RESEARCH ON INFRARED AND VSISIBLE IMAGE FUSION SYSTEM**

Xinxin He[1,2], Linbo Tang[1,2*], Chen Wu[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing 100081, China

**B6422** **REAL-TIME REMOTE SENSING VIDEO COMPRESSION FOR ON-ORBIT HETEROGENEOUS PLATFORM**

Chenhui Duan[1,2], Linbo Tang[1,2*], Chen Wu[1,2], Cheng Li[1,2], Chen Li[3], Baojun Zhao[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing 100081, China
[3]School of Computer Science, North China University of Technology, Beijing 100144, China

**B6510** **IMPROVED SCHEME FOR REVERSIBLE DATA HIDING FOR ENCRYPTED IMAGES USING INTERPOLATION TECHNIQUE**

Yingqiang Qiu[1], Qichao Ying[2], Kangyu Lv[1], Zhenxing Qian[3*], Nianci Tang[1], Xinpeng Zhang[3]
[1]College of Information Science & Engineering, Huaqiao University, Xiamen, China
[2]School of Communication and Information Engineering, Shanghai University, Shanghai, China
[3]School of Computer Science, Fudan University. Shanghai, China

**N0243** **AN IMPROVED CURRENT STATISTICAL MODEL WITH MANEUVER DETECTION**

Nengjie Ou*, Shengli Wang, Zhi Zhang, Jianxin Lin
Nanjing Research Institute of Electronics Technology, Nanjing, China

**N01045** **CONTEXT COMPLEXITY METRIC OF ASSOCIATION PROBLEM FOR TARGET TRACKING**

Bing Liu[1], Yi Wang[2], Chongying Qi[2], Xiaojing Shen[1]
[1]Department of Mathematics, Sichuan University, Chengdu, China
[2]BIT RACO Electronic, Information Technology Company, Beijing, China

## Poster Session 4: Remote Sensing and Signal Processing I

**Time:** 15: 30 - 16: 30, December 12, 2019
**Place:** Crowne Grand Ballroom A1, B2 of Hotel
**Chair:** Prof. Zegang Ding, Beijing Institute of Technology, China

**D1470** **REMOTE SENSING IMAGE FUSION METHOD BASED ON ADAPTIVE FRACTIONAL DIFFERENTIAL**

Xiaoling Li[1], Xiangfei Nie[1*], Zegang Ding[2], Haibo Huang[1], Yue Zhang[1], Liyuan Feng[1]
[1]College of Electronics and Information Engineering, Chongqing Three Gorges University, Chongqing, China
[2]Radar Research Laboratory, Beijing Institute of Technology, Beijing, China

**D1854** **A REMOTE SENSING IMAGE MATCHING ALGORITHM BASED ON ANISOTROPIC SCALE SPACE**

Manjun Yan[1], Zefu Tan[1*], Weiming Tian[2], Aijun Tan[1], Yi Zhang[1]
[1]Key Laboratory of Information and Signal Processing, Chongqing Three Gorges University, Chongqing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

**D2114** **NOVEL WAVEFORM DESIGN WITH LOW PROBABILITY OF INTERCEPT AND HIGH DOPPLER TOLERANCE FOR MODERN COGNITIVE RADAR**

Xiang Feng[1*], Qun Song[2], Zhaolin Zhang[2], Yinan Zhao[2]
[1]Weifang Medical University, No.7166, Baotong West Street, Kuiwen District, Weifang, China
[2]Harbin Institute of Technology, No.92, Xidazhi Street, Nangang District, Harbin, China

**D2121** **RESOLUTION ANALYSIS FOR BISTATIC GEO OBJECT ISAR IMAGING**

Huatao Shang[1], Tuo Fu[1*], Defeng Chen[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**D2141** **RADAR TRANSMITTER LEAKAGE CANCELLATION**

Xingjian Chen[1*], Paul Siqueira[1*]
[1]Electrical and Computer Engineering, University of Massachusetts, Amherst, MA, USA

**D2162** **AN AUTOMATIC THRESHOLDING METHOD FOR WATER BODY DETECTION FROM SAR IMAGE**

Zhibin Wang[1], Running Zhang[1], Qingjun Zhang[1], Yu Zhu[1], Bang Huang[2], Zheng Lu[1*]
[1]Beijing Institute of Spacecraft System Engineering, Beijing, China
[2]University of Electronic Science and Technology of China, Chengdu, China

**D2250 RESEARCH ON SUB-APERTURE IMAGING ALGORITHM OF NEAR-FIELD WIDE BEAM SYNTHETIC APERTURE RADAR**

Qingwei Ji[1*], Wenqiang Shi[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**D2273 A HIGH RESOLUTION SF-LFM RADAR SYSTEM BASED ON USRP X310**

Wentai Lei[1]*, Zhaoliang Liu[1], Xinyue Jiang[1], Ye Zhao [2], Tiankun Xu[2], Yan Li[2], Gengye Liu[3], Qingyuan Gu[3], Yumei Zhao[4], Wenjun Li[4]
[1]School of Computer Science and Engineering, Central South University, Changsha, China
[2]Beijing Mass Transit Railway Operation Co. LTD, Beijing, China
[3]Time Varying Transmission Co. LTD, Xiangtan, China
[4]Yewuxuan (Beijing) Communication Technology Co. LTD, Beijing, China

**D2310 PERFORMANCE ANALYSIS OF THREE-DIMENTIONAL IMAGING USING SINGLE-PASS MULTI-AZIMUTH-ANGLE SAR DATA**

Hui Kuang[1], Yu Zhu[1], Zheng Lu[1], Zhibin Wang[1], Yufei Huang[1]
[1]Beijing Institute of Spacecraft System, Engineering, Beijing, China

**D2311 AN IMAGE FORMATION ALGORITHM FOR COOPERATIVE FORWARD LOOKING SAR OF MANNED AERIAL VEHICLE AND UAV WITH ACCELERATION**

Ziqiang Meng[1,2*], Xiaoming Li[1], Xiaobo Deng[1], Xiaodong Han[1], Daiyin Zhu[2]
[1]AVIC Leihua Electronic Technology Institute, Wuxi, China
[2]College of Electronic and Information Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

**D2348 SPACEBORNE BISTATIC INSAR GEOLOCATION WITH GEOSTATIONARY TRANSMITTER**

Yuekun Wang[1*], Zheng Lu[2], Feng Tian[3], Zhiyong Suo[3], Zhenfang Li[3], Yu Zhu[2]
[1]Nanjing Research Institute of Electronics Technology, Nanjing, China
[2]Beijing Institute of Spacecraft System Engineering, Beijing, China
[3]National Key Laboratory of Radar Signal Processing, Xidian University, Xi'an, China

**D2351 FORMATION DESIGN AND ACCURACY ANALYSIS OF GEO-LEO BISTATIC INSAR SYSTEM**

Zheng Lu[1], Yuekun Wang[2*], Hui Kuang[1], Yufei Huang[1], Zhibin Wang[1], Yu Zhu[1]
[1]Beijing Institute of Spacecraft System Engineering, Beijing, China
[2]Nanjing Research Institute of Electronics Technology, Nanjing, China

**D2413** **SAR IMAGING ALGORITHM BASED ON A NEW THREE-DIMENTIONAL ISO-RANGE MODEL FOR HIGH-SQUINT AND WIDE SWATH SAR**

Hua Zhong[1], Guangyong Zheng[1], Ronghua Zhao[2]
[1]State Key Laboratory of CEMEE, Luoyang, China
[2]School of Communication Engineering, Hangzhou Dianzi University, Hangzhou, China

**D2450** **A THREE-DIMENSIONAL IMAGING METHOD BASED ON PEAK DETECTION FOR MULTI-ANGLE SAR**

Zhibin Wang[1*], Running Zhang[1], Bang Huang[2], Changshan He[1], Hui Kuang[1], Yufei Huang[1]
[1]Beijing Institute of Spacecraft System Engineering, Beijing, China
[2]University of Electronic Science and Technology of China, Chengdu, China

**D2451** **INFLUENCE OF COUPLING SIGNAL ON INTERFEROMETRIC MEASUREMENT OF GROUND-BASED SYNTHETIC APERTURE RADAR**

Ying Kong[1], Xu Wang[1*], Feifei Lv[1], Ling Jin[2], Ming Kong[1], Guohua Wei[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Aerospace Dongfanghong Satellite Co. Ltd. Beijing, China

**D2453** **IDENTIFYING STEALTH AIRCRAFT BASED ON COOPERATIVE DETECTION WITH METRIC-BAND RADAR AND MICROWAVE RADAR**

Jianchao Mu*, Hongliang Liu, Xuemei Yan
Beijing Institute of Radio Measurement, Beijing, China

**D2467** **A NOVEL METHOD FOR ABRUPT MOTION CHANGE RADAR TARGET DETECTION BASED ON GENERALIZED RADON-FOURIER TRANSFORM**

Siyuan Liu[1], Zegang Ding[1*], Xu Zhou[1], Pengjie You[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China

**D2480** **GAN-BASED MONOCHROMATIC FULL-FOCUS THZ IMAGING**

Guoyao Ye[1], Li Ding[2], Yiming Zhu[2*]
[1]University of Shanghai for Science and Technology, Shanghai, China
[2]Terahertz Technology Innovation Research Institute, University of Shanghai for Science and Technology, Shanghai, China

**D2710** **SAR IMAGING ALGORITHM BASED ON HILBERT TRANSFORM IN LONG WAVELENGTH SAR SYSTEM**

Jian Wang[1*], Jie Chen[1], Member IEEE, Pengbo Wang[1], Xiangwei Pan[1], Anqi Gao[1]
[1]School of Electronics and Information Engineering, Beihang University, Beijing, China

**D2771** **A UNIFIED BACK-PROJECTION CORRECTION ALGORITHM FOR SQUINT SAR BASED ON SPECAN PROCESSING**

Chao Wang, Heng Sun, Xin-Yu Zhang, Ran Zhang
National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, Beijing, P.R. China

**D2791** **A DIRECT POSITION DETERMINATION METHOD FOR FOUR-STATION TDOA LOCATION SYSTEM**

SUN-RuiQi[1], CHEN-ShunYuan[1], BAI-JinLiang[1], GAO-Lu[1], Li-Hu[1], SUN-Heng[1]
[1]BEIJING INSTITUTE OF SPACE LONG MARCH VEHICLE National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics Beijing, China

**D2813** **THE ANALYSES FOR DISCRETIZATION BEHAVIOR OF LINE SEGMENT TARGET IN SAR IMAGE**

Yangkai Wei[1,2], Tao Zeng[1,2], Xinliang Chen[1,2*], Yujie Fan[1,2*], Yuhan Wen[1,2*], Zegang Ding[1,2*]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China

**D2826** **SAR PARAMETER ESTIMATION METHOD FOR RECTANGLE PLANE BASED ON INFORMATION GEOMETRY**

Yuhan Wen[1], Xinliang Chen[1*], Yangkai Wei[1], Yujie Fan[1], Tao Zeng[1], Zegang Ding[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China

**D2828** **THE DISTRIBUTED SAR RECONSTRUCTION METHOD FOR LINE TARGET**

Yujie Fan[1,2], Xinliang Chen[1,2*], Yangkai Wei[1,2], Yuhan Wen[1,2], Tao Zeng[1,2], Zegang Ding[1,2]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China
[2]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**D2881** **FAST DIGITAL BEAMFORMING FOR CONFORMAL ARRAY**

Yiling Lu[1], Yin Xiang[1*], Yikun Zhao[1], Zegang Ding[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China

**D2889** **CLUTTER CANCELLATION FOR RADAR DETECTING UNMANNED AERIAL VEHICLES BASED ON FPLMS ALGORITHM**

Pengcheng Yang[1*], Zhiliang Tu[1], Xiaole Guo[1]
[1]The 38th Research Institute of China Electronics Technology Group Corporation, Hefei, China

**D2907** **A ROBUST SPACE-TIME CLUTTER CANCELLATION ALGORITHM FOR AIRBORNE PASSIVE RADAR**

Pengcheng Yang[1*], Zhiliang Tu[1], Jianghong Yang[1]
[1]The 38th Research Institute of China Electronics Technology Group Corporation, Hefei, China

**D3030** **WEAK MULTI-TARGETS TRACK-BEFORE-DETECT ALGORITHM BASED ON RECURSIVE HOUGH TRANSFORM**

Lin Li*, Guohong Wang, Xiangyu Zhang, Hongbo Yu, Tingting Xin
Institute of Information Fusion, Naval Aviation University, Yantai, China

**D3078** **REMOTE SENSING OF MARINE AEROSOL WITH AN SNSPDBASED LIDAR**

Cheng Wu[1,2 *], Wenge Xing[1], Zhijun Feng[1,2], Linghao Xia[1,2]
[1]Nanjing Research Institute of Electronics Technology, Nanjing 210039, China
[2]Key Laboratory of IntelliSense Technology, CETC, Nanjing 210039, China

**D3082** **ANALYSIS OF SAR TOMOGRAPHY ALGORITHM FOR MULTIPLE APPLICATION REQUIREMENTS***

Yupeng Wang*, Danru Yu, Zhaoyang Li
Institute of Remote Sensing Equipment, Beijing,China

**D3107** **WIND TURBINE CLUTTER MITIGATION FOR WEATHER RADAR VIA LOW-RANK MATRIX COMPLETION**

Xiaodong Wang[1], Mingwei Shen[1,*], Di Wu[2], Daiyin Zhu[2]
[1]College of Computer and Information Engineering, Hohai University, Nanjing, China
[2]Key Laboratory of Radar Imagine and Microwave Photonics & Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing, China

**D3111** **MITIGATION OF WIND TURBINE CLUTTER FOR WEATHER RADARS USING RANGE-DOPPLER DOMAIN JOINT INTERPOLATION IN LOW SNR ENVIRONMENTS**

Xu Yao[1], Mingwei Shen[1,*], Xiaodong Wang[1], Di Wu[2], Daiyin Zhu[2]
[1]College of Computer and Information Engineering, Hohai University, Nanjing, China
[2]Key Laboratory of Radar Imagine and Microwave Photonics & Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing, China

**D3115** **RECONSTRUCTION OF THE MISSING HFSWR-BASED SURFACE CURRENT DATA USING DINEOF METHOD**

Shen Zhiben[1*], Dong Liang[1], Peng Xu[1], Deng Haihua[1], Peng Liang[1], Gu Wei[1]
[1]Wuhan Second Ship Design and Research Institute, Wuhan, China

## Poster Session 5: Artificial Intelligence for Signal Processing

**Time:** **15: 30 - 16: 30, December 12, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Prof. Yanhua Wang, Beijing Institute of Technology, China**

**F1108** **REAL-TIME OBJECT DETECTION WITH ATTENTION MASK**

Haixin Wang[1], Xue Bai[2], Qiongzhi Wu[*]
[1]Beijing Institute of Technology, Beijing, China
[2]Beijing Institute of Radio Measurement, Beijing, China

**F1278** **OBJECT RECOGNITION OF THREE-DIMENSIONAL SAR BASED ON POINTNET**

Mou Wang[1], Shunjun Wei[1*], Hao Su[1], Qizhe Qu[1], Min Yan[1], Jun Shi[1]
[1]University of Electronic Science and Technology of China, Chengdu, 611731, China

**F1296** **RADAR TARGET DETECTION USING CONVOLUTIONAL NEUTRAL NETWORK IN CLUTTER**

Yuan Xie[1*], Jun Tang[1], Li Wang[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, China

**F1330** **CONCEALED THREAT DETECTION BASED ON MULTI-VIEW MILLIMETER WAVE IMAGING FOR HUMAN BODY**

Yuan Jiang[1*], Jing Cui[1], Zhenhong Chen[1], Xin Wen[1]
[1]Science and Technology on Metrology and Calibration Laboratory, Beijing Institute of Radio Metrology and Measurement,Beijing, China

**F1555** **ANN BASED RELATIONSHIP MODELING OF SUBMARINE SEDIMENTARY SOIL PROPERTIES AND RESISTIVITY***

Lanjun Liu[1*], Caiyi Chen[1], Li Deng[1], Pingping Fan[2*], Zhibo Liao[1], Zhaowei Chen[1]
[1]College of Engineering, Ocean University of China, Qingdao, China
[2]Institute of Oceanographic Instrumentation, Qilu University of Technology (Shandong Academy of Sciences), Qingdao,China

**F1574** **SUPERVISED LINEAR DIMENSIONALITY REDUCTION BASED ON FACTOR ANALYSIS AND INFORMATION-THEOERTIC CRITERIA**

Wei Zhang[1], Lan Du[1*], Liling Li[1]
[1]National Lab of Radar Signal Processing, Xidian University, Xi'an, China

**F1634** **RESEARCH ON FAULT DIAGNOSIS FOR INERTIAL DEVICES BASED ON VARIATIONAL MODE DECOMPOSITION AND PROBABILISTIC NEURAL NETWORK**

Hu Zhou[1*], Ran Duan[2], Lan Yue[1], Bo Lu[1], Wenjing Chen[1], Qingzhu Liu[1]
[1]Beijing Aerospace Automatic Control Institute, Beijing, China
[2]National Key Laboratory of Science and Technology on Aerospace Intelligence Control, Haidian, Beijing, China

**F1766** **RESEARCH ON ACTIVE JAMMING RECOGNITION IN COMPLEX ELECTROMAGNETIC ENVIRONMENT**

Chang Xu[1], Lei Yu[1*], Yinsheng Wei[1], Peng Tong[1]
[1]Harbin Institute of Technology, Harbin, China

**F1810** **COMPOSITE LEARNING CONTROL FOR UAVS VIA PRESCIBED PERFORMANCE**

Tao Jiang[1], Defu Lin[1*], Hao Chen[2]
[1]Beijing Key Laboratory of UAV Autonomous Control, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Dynamics and Control of Flight Vehicle whin Ministry of Education,Beijing Institute of Technology, Beijing, China

**F1824** **SHIP AND CORNER REFLECTOR IDENTIFICATION BASED ON EXTREME LEARNING MACHINE**

Haodong Yuan[1], Xiongjun Fu[1*], Congxia Zhao[1], Min Xie[1], Xuanyi Gao[1]
[1]Beijing Institute of Technology, Beijing, China

**F1849** **RADAR TARGET RECOGNITION OF BALLISTIC MISSILE IN COMPLEX SCENE**

Wenbo Tang[1], Lei Yu[1], Yinsheng Wei[2*],Peng Tong[2*]
[1]Harbin Institute of Technology, Harbin, China
[2]Institute of Electrical Engineering Technology, Xidazhi Street, Harbin, China

**F1867** **FAST RECOGNITION OF PULL-OFF JAMMING USING LSTM**

Ying Qin[1], Jing Yang[1], Mengtao Zhu[1], Yunjie Li[1*],
[1]Beijing Institute of Technology, Beijing, China

**F2370** **RADAR HIGH RESOLUTION RANGE PROFILE RESTORATION BASED ON CONDITIONAL GENERATIVE ADVERSARIAL NETWORKS**

Xuefeng Zhang, Wenying Wang*, Ming Li, Pengfei Shi
Nanjing Research Institute of Electronics Technology, Nanjing, China

**F2623** **UNSUPERVISED ENVIRONMENTAL SOUND CLASSIFICATION BASED ON TOPOLOGICAL PERSISTENCE**

Yueqi Cao[1], Shiqiang Zhang[1], Fangjia Yan[1], Wenyu Li[2], Fupeng Sun[1], Huafei Sun[1*]
[1]School of Mathematics and Statistics, Beijing Institute of Technology, Beijing, China
[2]School of Computer Science and Technology, Beijing Institute of Technology, Beijing, China

**F2636** **FUZZY ARTMAP NETWORK AND CLUSTERING FOR STREAMING CLASSIFICATION UNDER EMERGING NEW CLASSES**

Yiyang Xu[1], Yan Li[2*], YunJie Li[1]
[1]School of Information and Electronics Beijing Institute of Technology, Beijing, China
[2]School of Information and Electronics Beijing Institute of Technology, Beijing, China
Peng Cheng Laboratory,Shenzhen,China

**F2735** **A METHOD BASED ON CLUSTERING TO SUPPRESS DRFM DENSE FALSE TARGETS**

Tongan Liu[1*], Mei Dong[1], Linrang Zhang[1], Wanjie Song[1]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an 710071, People's Republic of China

**F2843** **UNSUPERVISED K-MEANS COMBINED WITH SOFM STRUCTURE ADAPTIVE RADAR SIGNAL SORTING ALGORITHM**

Shunqi Su[1], Xiongjun Fu[1*], Congxia Zhao[1], Jingfang Yang[1], Min Xie[1], Zhifeng Gao[1]
[1]Beijing Institute of Technology, Beijing, China

**F2985** **LEARNING LAPLACIAN MATRIX FOR SMOOTH SIGNALS ON GRAPH***

Tianxing Liao, Wen-Qin Wang*, Bang Huang, Jian Xu
School of Information and Communication Engineering,
University of Electronic Science and Technology of China, Chengdu, 611731, China

**F3239** **FINGERPRINT IDENTIFICATION OF SHORT WAVE TRANSMITTER BASED ON DEEP LEARNING**

Cheng Liu[1], Bin Chen[1*], Shanhu Qu[1], Xiaoyang Sui[2]
[1]College of Electronic Engineering ,Naval University of Engineering,Wuhan,China
[2]Navy unit 92038, Qingdao, China

**F3445** **DATA AUGMENTATION USING CONDITIONAL GENERATIVE ADVERSARIAL NETWORK FOR UNDERWATER TARGET RECOGNITION**

Chen Li[1,2,*], Zhaoqiong Huang[1,2], Ji Xu[1,2], Yonghong Yan[1,2,3]
[1]Key laboratory of Speech Acoustics and Content Understanding, Institute of Acoustics, Chinese Academy of Sciences, Beijing, China
[2]University of Chinese Academy of Sciences, Beijing, China
[3]Xinjiang Key Laboratory of Minority Speech and Language Information Processing, Xinjiang Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China

**F3537 RECOGNITION OF THE RADAR ANTENNA SCANNING PERIOD BASED ON CONVOLUTIONAL NEURAL NETWORK**

Bin Wang[1,2], Hong Wang[2], Shunan Wang[2], Yifeng Wang[1], Dan Zeng[1], Min Wang[1*]
[1]Shanghai University, Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Shanghai Institute for Advanced Communication and Data Science, Shanghai, China
[2]51st Institute of CETC, Shanghai, China

**F3591 ZERO-SHOT LEARNING WITH CROSS-LAYER NEURAL NETWORK FOR EMITTER PATTERN RECOGNITION**

Zilin Zhang[1], Yan Li[1,2*], Jinliang Bai[3]
[1]Beijing Institute of Technology, Beijing, China
[2]Peng Cheng Laboratory, Shenzhen, China
[3]Beijing Institute of Space Long March Vehicle, Beijing, China

**F3858 SOPC-BASED IMPLEMENTATION OF CONVOLUTIONAL NEURAL NETWORK**

Xing Feng[1,2], Mingfei Jia[1,2], He Chen[1,2*]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology,Beijing 100081, China

**F4576 REPRESENTATION LEARNING OF LOGICAL QUERY FOR KNOWLEDGE REASONING**

Yashen Wang[1*], Huanhuan Zhang[1], Yifeng Liu[1]
[1]China Academy of Electronics and Information Technology of CETC, Beijing, China

**F4647 WEIBO AUTHORSHIP IDENTIFICATION BASED ON WASSERSTEIN GENERATIVE ADVERSARIAL NETWORKS**

Wanbing Tang[1], Chunhua Wu[1*], Xiaolong Chen[1], Yudao Sun[1] , Chen Li[2]
[1]School of Cyberspace Security, Beijing University of Posts and Telecommunications, Beijing, CN
[2]School of Information,North China University of Technology,Beijing,CN

**F4739 PVFE: POINT-VOXEL FEATURE ENCODERS FOR 3D OBJECT DETECTION**

Jun Xu[1], Yanxin Ma[2*], Songhua He[1], Jiahua Zhu[2], Yang Xiao[3], Jun Zhang[4]
[1]College of Information Science and Engineering, Hunan University, Changsha, China
[2]College of Meteorology and Oceanography, National University of Defense Technology, Changsha, China
[3]China Aerodynamics Research and Development Center, Mainyang, China
[4]College of Electronic Science, National University of Defense Technology, Changsha, China

**F5386** **A COGNITIVE RADAR WAVEFORM OPTIMIZATION APPROACH BASED ON DEEP REINFORCEMENT LEARNING**

Qing Wang*, Yanming Qiao, Lirong Gao
School of Electrical and Information Engineering, Tianjin University, Tianjin, 300072, China

**F6302** **HDSTF: A HYBRID DEEP SPATIO-TEMPORAL FRAMEWORK FOR TRAFFIC PREDICTION***

Wei Li[1], Shiming Xia[1], Feiqiong Chen[2], Junyang Qiu[1], Xin Liu[1], Zhisong Pan[1*]
[1]College of Command and Control Engineering, Army Engineering University, Nanjing, China
[2]College of Field Engineering, Army Engineering University, Nanjing, China

**F6815** **MICRO-BATCH TRAINING BASED ON RESIDUAL ATTENTION NETWORK FOR ACOUSTIC SCENE CLASSIFICATION WITH MISMATCHED RECORDING DEVICES**

Min Ye[1,2], Hong Zhong[1], Xiao Song[2], Shilei Huang[3], Jian Zhang[2*]
[1]School of Computer Science and Technology, Anhui University, Hefei, China
[2]PKU Shenzhen Institute, Shenzhen, China
[3]PKU-HKUST Shenzhen Hong Kong Institution, Shenzhen, China

**F11066** **BUILDING LAYOUT DETERMINATION BASED ON GENERATIVE ADVERSARIAL NETS IN THROUGH-WALL RADAR IMAGING**

Yong Jia[1*], Shengyi Chen[1], Ruiyuan Song[1], Yongheng Zhang[1], Gang Wang[1], Chao Yan[1]
[1]College of Information Science & Technology, Chengdu University of Technology, Chengdu 610059, China

## Poster Session 6: Signal Processing for Big Data

**Time:** **15: 30 - 16: 30, December 12, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Dr. Yan Wang, Beijing Institute of Technology, China**

**G1209** **A DIMENSIONAL REDUCTION VISUALIZATION METHOD FOR LARGE DATA OF POWER GRID BASED ON T-SNE ALGORITHMS**

Feixiang Gong[1], Yang Shen[2], Lin Qiao[2], Shuo Chen[2], Zhuo Chen[1]*, Shiming Tian[1]
[1]Department of Power Consumption and Energy Efficiency, China Electric Power Research Institute Co., Ltd., Beijing, China
[2]State Grid Liaoning Electric Power Co., Ltd., Shenyang, China

**G3229** **DESIGN OF REMOTE SENSING IMAGE SHARING SERVICE SYSTEM BASED ON BLOCK CHAIN TECHNOLOGY**

Zhou Xiaoming[1*], Li Caiping[1], Tang Dejin[2], Song Yuchen[1], Hu Zhen[1], Zhang Jisheng[1]
[1]Beijing Institute of Remote Sensing Information, Beijing, China
[2]National Geomatics Center of China Beijing, Beijing, China

**G4737 DEEP DISCRIMINATIVE FEATURE LEARNING FOR DOMAIN ADAPTATION**

Qiuxia Lin[1], Hefeng Lin[1], Shuang Li[1*]
[1]Beijing Institute of Technology, Beijing, China

**G4825 BALANCED DISCRIMINATIVE TRANSFER FEATURE LEARNING FOR VISUAL DOMAIN ADAPTATION**

Limin Su*, Shuang Li
Beijing Institute of Technology Beijing, China

**G4988 SITE OPTIMIZATION FOR MULTIFUNCTION RADAR BASED ON BIG DATA**

Juan Shen, Zhengxin Song
Beijing institute of radio measurement

**G5131 EXTRACTION AND ANALYSIS OF HEAT STORAGE LOAD CHARACTERISTICS FOR POWER QUALITY IMPROVEMENT**

Jue Bo[1], Shuo Chen[1], Lin Qiao[1], Sai Liu[2], Kun Tian[3], Haixin Wang[3*], Yunlu Li[3], Junyou Yang[3]
[1]State Grid Liaoning Electric Power Co. Ltd., Shenyang, China
[2]NARI Group Corporation (State Grid Electric Power Research Institute), Nanjing, China
[3]Shenyang University of Technology, Shenyang, China

**G5352 RESEARCH ON MODELING OF AIR TARGET MOTION CHARACTERISTICS AND TRACK IDENTIFICATION METHOD**

Zewen Wang[1], Hongmin Zhang[1*], Ke Jin[2]
[1]PLA Strategic Support Force Information Engineering University, Zhengzhou, China
[2]National Digital Switching System Engineering and Technological Research Center, Zhengzhou, China

**G5580 ARTIFICIAL NEURAL NETWORK ALGORITHM FOR PREDICT THE PHOTOCATALYTIC ACTIVITY OF THE MN CO-DOPED $MGAL_2O_4$: CE COMPOSITE PHOTOCATALYST**

Chaoli Chen[1], Qikai Li[1], Qing Zhang[2], Yanlan Li[2], Yong Wei[1], Shifa Wang[1,3*]
[1]School of Electronic and Information Engineering, Chongqing Three Gorges University, Wanzhou, Chongqing, China
[2]School of Electronic and Information Engineering, Chongqing Three Gorges University, Wanzhou, Chongqing, China
[3]Chongqing key laboratory of geological environment monitoring and disaster early-warning in three gorges reservoir area, Chongqing Three Gorges University, Wanzhou, Chongqing, China

**G5877 NEURAL NETWORKS FROM A PHYSICAL PERSPECTIVE**

Yifan Sun[1*]
[1]Beijing Key Laboratory of Nanophotonics & Ultrafine Optoelectronic Systems, School of Physics, Beijing Institute of Technology, 100081, Beijing, China

**G5893 EFFICIENT REAL-TIME QUERY OF MULTIMEDIA DATA BASED ON LOCAL SENSITIVE HASH**

Xiaohan Gao[1*], Yaoyao Wu[1], Yang Gao[2]
[1]Beijing Institute of Technology, Beijing, China
[2]China Information Technology Security Evaluation Center, Beijing, China

**G5895 SWITCHABLE TV-SERIES BROWSING SCHEME USING ALIGNMENT OF VIDEO AND EPISODE PLOT DESCRIPTION**

Yaoyao Wu[1*], Songyang Du[2], Yang Gao[3]
[1]Beijing Institute of Technology, Beijing, China
[2]Beijing Special Vehicle Research Institute, Beijing, China
[3]China Information Technology Security Evaluation Center, Beijing, China

**G7873 MULTI-ANTENNA TUNING SIMULATION PLATFORM BY DEEP REINFORCEMENT LEARNING**

Ying Zhao[1], Keqiao Zhang[2], Rui Han[1*]
[1]Department of Computer Science, Beijing institute of technology, Beijing, China
[2]College of Electrical and Control Engineering, North China University of Technology, Beijing, China

**G7983 DESIGN OF TARGET BEHAVIOR INTELLIGENT ANALYSIS SYSTEM BASED ON DISTRIBUTED COMPUTING**

Xinlong Pan[1, 2*], Xueqi Cheng[2], Libo Yao[1], Zhenqiu Zhu[1], Biao Ding[1], Tiantian Tang[1], Minbo Li[3], Chuanhui Liu[1]
[1]Institute of Information Fusion, Naval Aviation University, Yantai, China
[2]CAS Key Laboratory of Network Data Science & Technology, Inistitute of Computing Technology, Chinese Academy of Sciences, Beijing, China
[3]School of Software, Fudan University, Shanghai, China

**N0935 RDBMS BASED HADOOP METADATA AND LOG DATA MANAGEMENT OPTIMIZATION**

Haiying Che[1], Octave Iradukunda[1], Khalilov Shahin[2]
[1]Computer Science and Technology, Beijing Institute of Technology, Beijing, China
[1] Computer Science and Technology, Beijing Institute of Technology, Beijing, China
[2] Computer Science and Technology, Beijing Institute of Technology, Beijing, China

## Poster Session 7: Photon / Quantum Signal and Information Processing

**Time:** 15: 30 - 16: 30, December 12, 2019
**Place:** Crowne Grand Ballroom A1, B2 of Hotel
**Chair:** Dr. Xinliang Chen, Beijing Institute of Technology, China

**H1538 IDENTIFICATION AND SUPPRESSION OF CLUTTER USING MACHINE LEARNING METHOD**

Meiqin Liu[1,2], Rui Wang[1,2*], Cheng Hu[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology),Ministry of Education, Beijing 100081, China

**H1742 MICROWAVE PHOTONIC FILTER WITH TWO HIGHLY-SELECTIVE AND INDEPENDENTLY-TUNABLE PASSBANDS**

Zhen Zeng[1], Yuan Ling[1], Xuyan Zhang[1], Lingjie Zhang[1], Zhiyao Zhang[1*],Yong Liu[1]
[1]State Key Laboratory of Electronic Thin Films and Integrated Devices, School of Optoelectronic Science and Engineering,University of Electronic Science and Technology of China, Chengdu, China

**H1758 LOW-POWER RF SIGNAL DETECTION WITH HIGH GAIN USING A TUNABLE OPTOELECTRONIC OSCILLATOR**

Xiuyou Han[1*], Yuchen Shao[1], Shuanglin Fu[1], Xinxin Su[1], Chao Wang[2], Yitang Dai[3], Yiying Gu[1], Mingshan Zhao[1]
[1]School of Optoelectronic Engineering and Instrumentation Science, Dalian University of Technology, Dalian, China
[2]School of Engineering and Digital Arts, University of Kent Canterbury, U.K
[3]State Key Laboratory of Information Photonics and Optical Communications, Beijing University of Posts and Telecommunications, Beijing, China

**H1784 FULLY POLARIMETRIC RADAR OBSERVING INSECTS FLIGHT**

Huafeng Mao[1], Rui Wang[1*], Cheng Hu[1], Jing Yang[2]
[1]Key Laboratory of Electronic and Information Technology in Satellite Navigation, Beijing Institute of Technology, Beijing,China
[2]School of Business Administration, Hunan University, Changsha, China

**H1787 APPLICABILITY ANALYSIS OF POLARIZATION CALIBRATION METHODS FOR ENTOMOLOGICAL RADAR**

Muyang Li[1], Rui Wang[1*], Cheng Hu[1]
[1]Key Laboratory of Electronic and Information Technology in Satellite Navigation, Beijing Institute of Techology Beijing, China

**H1986** **RECONFIGURABLE BROADBAND RADIO-FREQUENCY TRANSCEIVER BASED ON OPTICAL COMB GENERATED THROUGH ELECTRO-OPTIC MODULATION AND CYCLIC FOUR-WAVE MIXING EFFECT**

Lingjie Zhang[1], Yangxue Ma[1], Zhen Zeng[1], Yaowen Zhang[1], Zhiyao Zhang[1*], Yong Liu[1]
[1]State Key Laboratory of Electronic Thin Films and Integrated Devices, School of Optoelectronic Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China

**H4760** **ANALYSIS OF WAVEFRONT RECONSTRUCTION IN SURFACE WAVE HOLOGRAPHY**

Yu-Hui Chen
School of Physics, Beijing Institute of Technology, Beijing 100081, China

**H4851** **MICROWAVE MAGNETIC FIELD SENSING BASED ON RABI RESONANCE USING RB VAPOR CELL WITH ANTI-RELAXATION COATING**

Ning Ru, Xiaochi Liu*, Jifeng Qu
Center for advanced measurement science, National Institute of Metrology, Beijing, China

**H5530** **A MANEUVERING TRACKING METHOD BASED ON LSTM AND CS MODEL**

Siwei Li[1], Cheng Hu[1], Rui Wang[1*], Chao Zhou[1], Jing Yang[2]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]School of Business Administration, Hunan University, Changsha, China

**H5779** **POLYNOMIAL-TIME SOLUTION FOR THE #P PROBLEM BASED ON CLASSICAL ELECTRONIC CIRCUITS**

Jiacheng Bao[1], Zhenwei Yang[2], Houjun Sun[1], Xiangdong Zhang[2*]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]School of Physics, Beijing Institute of Technology, Beijing, China

**H5804** **EXPERIMENTAL OBSERVATION OF TOPOLOGICALLY PROTECTED BOUND STATES IN TWO DIMENSIONAL QUANTUM WALK**

Bo Wang, Tian Chen, Xiangdong Zhang
School of Physics, Beijing Institute of Technology, Beijing, China

**H6746** **LOCALLY DISTINGUISH ORTHOGONAL QUANTUM STATES WITH ENTANGLEMENT RESOURCES**

Zhi-Chao Zhang
Beijing Key Laboratory of Nanophotonics and Ultrafine Optoelectronic Systems, School of Physics,Beijing Institute of Technology,Beijing, 100081, China

**H6966** **PERFORMANCE ON THE DISCRETE VARIABLE BASED SATELLITE-TO-GROUND QUANTUM KEY DISTRIBUTION LINKS**

Jian Geng, Wen Jin, Xinfeng Yan, and Yongsheng Cheng
Beijing Institute of Space Long March Vehicle, Beijing, China

**H11006** **SINGLE-SHOT PHOTONIC TIME-STRETCH ANALOG-TO-DIGITAL CONVERTER BASED ON DISSIPATIVE SOLITON**

Ting Zou[1], Yaowen Zhang[1], Di Peng[2*], Xuyan Zhang[1], Zhiyao Zhang[1],Yong Liu[1]
[1]State Key Laboratory of Electronic Thin Films and Integrated Devices, School of Optoelectronic Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China
[2]Guangdong Provincial Key Laboratory of Micro-nano Manufacturing Technology and Equipment, School of Electromechanical Engineering, Guangdong University of Technology, Guangzhou, China

## Poster Session 8: Design and Implementation of Signal Processing Systems

**Time:** **15: 30 - 16: 30, December 12, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Dr. Yizhuang Xie, Beijing Institute of Technology, China**

**J1358** **DESIGN OF IMAGE TRANSMISSION SYSTEM OF INTRABODY COMMUNICATION BASED ON CAPACITIVE COUPLING**

Yongtao Hou, Yong Song*, Maoyuan Li, Xu Zhang, Ning Li, Wangwang Zhu, Yongjia Wang
School of Optics and Photonics, Beijing Institute of Technology, Beijing, China

**J1513** **IMAGE ENCRYPTION USING ANAMORPHIC FRACTIONAL FOURIER LENS WITH TRANSFORMATION MATERIALS**

Xiaobo Yang, Jin Hu*
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**J1924** **SIMULATION PLATFORM FOR USV PATH PLANNING BASED ON UNITY3D AND A* ALGORITHM**

Zhiguo Zhou[1*], Xu He[1], Lisheng Xu[1], Chong Qu[2]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Shanghai Marine Diesel Engine Research Institute, Shanghai, China

**J1928** **RESEARCH ON VEHICLE LICENSE PLATE LOCATION ALGORITHM BASED ON CONVOLUTIONAL NEURAL NETWORK**

Yaqi Li[1*], Yanming Zhao[2,] Junyu Zhou[2]
[1, 2]School of information and communication engineering, Communication University of China Beijing, China

**J2452** **AN IMPROVED PARALLEL MATCHED FILTER AND SYMBOL SYNCHRONZATION ALGORITHM BASED ON FREQUENCY DOMAIN TIMING ERROR ESTIMATION**

Jian Yan[1], Shili Wang[2], Dongxu Chen[3], Dongfang Hu[4], Kai Zhu[5]
[1,5]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2,4]Beijing Galaxy Information&Communication Co., Ltd., Beijing, China
[3]China Academic of Electronics and Information Technology, Beijing, China

**J2590** **A SPARSE ARRAYS SIDELOBE SUPPRESSION METHOD: CLEAN ALGORITHM FOR JOINT TARGET NUMBER ESTIMATION**

Tongtong Zhang[1], Jiyan Huang[1*], Wei Ding[1], Yalong Wang[1]
[1]University of Electronic Science and Technology of China, Chengdu, China

**J2637** **MULTIPLE-PRF SET SELECTION BASED ON SKYLINE DIAGRAM**

Yuanyuan Huai*, Huikai Zang, Xingyu Cai, Jian Gao, Zhirong Shi
Xi'an Electronic Engineering Research Institute, Xi'an, China

**J2642** **AN FPGA-BASED IMPLEMENTATION OF FOURIER-MELLIN TRANSFORM**

Chen Chen[1], Xiujie Qu[1*], Liwen Gao[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**J2973** **WORD LENGTH OPTIMIZATION METHOD FOR RADIX-$2^K$ FIXED-POINT PIPELINE FFT PROCESSORS**

Long Pang[1*], Ao Li[1], Yinan Zhou[1], Chen Yang[2], Yizhuang Xie[3], He Chen[3]
[1]School of Information and Communication Engineering, Communication University of China, Beijing, China
[2]Hisilicon Semiconductor, Huawei Technologies Co., Ltd, Beijing, China
[3]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**J2994** **FPGA VERIFICATION OF RADAR SIGNAL PROCESSING BASED ON SOC**

XiaoYing Chen[1], XingHua Wang[1], Ying Liu[2], ZiCheng Liu[3], Jian An[4]
[1]School of Information and Electronics Beijing Institute of Technology, Beijing China
[2]School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing China
[3]Beijing BiTMicro Technology Co, Beijing China
[4]Beijing Space Information Relay Transmission Technology Research Center, Beijing China

**J3210 CONSTRUCTION OF LARGE SCALE FLEXIBLE LOAD RESOURCE CONTROL SYSTEM**

Feixiang Gong[1]*, Xinhua Zhang[2], Lei Ma[3], ShengBo Sun[4], Kai Zhang[4], Songsong Chen[1]
[1]Department of Power Consumption and Energy Efficiency, China Electric Power Research Institute Co., Ltd. Beijing, China
[2]State Grid Co., Ltd., Beijing, China
[3]State Grid Xinjiang Electric Power Co., Ltd., Urumchi, China
[4]State Grid Hebei Electric Power Co., Ltd., Shijiazhuang, China

**J3883 THE MICRO-DOPPLER FEATURES EXTRACTION OF EXPERIMENTAL DATA OF CHAFF CLOUD SCATTER DISPERSION BASED ON EMPIRICAL MODE DECOMPOSITION**

Ran Li[1]， Xinhong Hao[1*], Song Bai[2], Ping Li[1]
[1]Beijng Institute of Technoloy, Beijing, China
[2]No.208 Research Institute of China Ordnance Industries, Beijing, China

**J3469 MAJORIZATION MINIMIZATION BASED MEMETIC ALGORITHM FOR DESIGNING POLYPHASE SEQUENCES WITH GOOD CORRELATION PROPERTIES**

Kaiyue Hou[1], Wei Ren[1], Quanhua Liu[1*]
[1]Key Laboratory of Electronic and Information Technology in Satellite Navigation, Ministry of Education, Beijing Institute of Technology, Beijing, China

**J3503 RESEARCH ON THE RADIO FREQUENCY SIMULATION METHOD FOR WIDE-BAND RADAR COMPLEX TARGET BASED ON PHYSICAL OPTICS AND PHYSICAL DIFFRACTION THEORY**

DiaoGuijier[1,2*], Ni Hong[2], Zhan Tianming[3], Zhang Yajing[4], Yang Liang[2]
[1]Science and Technology on Complex System Control and Intelligent Agent Cooperation Laboratory, Beijing, China
[2]Beijing Electro-mechanical Engineering Institute, Beijing, China
[3]Beijing Aerospace Smart Manufacturing Technology Development Co. Ltd., Beijing, China
[4]Datang Mobile Communication Equipment Co., Ltd., Datang Telecom Group, Beijing, China

**J3550 DUAL DPT FOR COHERENT ACCUMULATION OF HIGH-SPEED HIGH-MANEUVERING TARGET**

Pengfei Shi, Wenying Wang & Yao Wei
Nanjing Research Institute of Electronics Technology Nanjing 210039, China

**J3729 AN IMPROVED RUDP FOR DATA TRANSMISSION IN EMBEDDED REAL-TIME SYSTEM**

Yingying CHEN[1,2], Shanqing HU[1,2*], Xingming LI[3], Ce WANG[1,2], Zhe CHEN[4]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
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[3]Beijing Racobit Electronic Information Technology Co. Ltd, Beijing 100081, China
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**J3761 REAL-TIME PROCESSING FOR REMOTE SENSING SATELLITE DATA BASED ON STREAM COMPUTING**

Xiaojuan Sun[1,3], Bing Li[2,3,4*], Tao Shi[3], Yunxin Hu[1,3], Xiaoyan Yang[3], Yao Song[1,3]
[1]University of Chinese Academy of Science, School of Electronic, Electrical and Communication Engineering, No. 19 Yuquan Road, Beijing, China
[2]University of Chinese Academy of Science, School of Cyber Security, No. 19 Yuquan Road, Beijing, China
[3]Institute of Electronics, Chinese Academy of Science, No. 19 North Fourth Ring West Road, Beijing, China
[4]Institute of Information Engineering, Chinese Academy of Science, No. 89 Minzhuang Road, Beijing, China

**J3777 A PARAMETER OPTIMIZATION ALGORITHM FOR SPACE-BASED FAST SEARCH RADAR**

Meijing Jiao[1], Lizhong Jiang[1,2*], Yan Heng[1], Hanxi Zhao[1], Jun Wang[1], Zhijun Zhang[1]
[1]Shanghai Radio Equipment Research Institute, Shanghai, China
[2]Huazhong University of Science and Technology, Wuhan, China

**J3860 MULTI-CHANNEL RF SIGNAL ACQUISITION SYSTEM DESIGN BASED ON AD9361**

Ce WANG[1,2], Shanqing HU[1,2*], Xingming LI[3], Yingying CHEN[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
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[3]Beijing Racobit Electronic Information Technology Co. Ltd

**J3897 RESEARCH ON OPTIMIZATION OF SUPPRESSION INTERFERENCE CANCELLATION ALGORITHM**

Qigeng Zhang[1*], Ju Wang[2], He Yang
[1]Beijing Institute of Technology, No. 5, Zhongguancun South Street, Haidian District, Beijing, China
[2]Beijing Institute of Technology, Beijing, China

**J3899 REALIZATION OF FIXED-POINT SAR IMAGING BASED ON EMBEDDED GPU**

HuiXing Li[12], ZiXin Gao[3*], BingYi Li[3], YiZhuang Xie[12]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China
[3]Beijing Institute of Radio Measurement, Beijing, China

**J3904 THE VERIFICATION SYSTEM OF SLIDING SPOTLIGHT MODE SAR IMAGING BASED ON SOPC**

Shankang Hu[1], Yizhuang Xie[2], Jie Lian[1]*, Bingyi Li[3]
[1]Beijing Institute of Remote Sensing Equipmentt, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology Beijing Institute of Technology, Beijing, China
[3]Beijing Institute of Radio Metrology and Measurement, Beijing, China

**J3939 DESIGN OF DISTRIBUTED HETEROGENEOUS GENERAL SIGNAL PROCESSING PLATFORM ARCHITECTURE**

Tianyi Wang[1*], Zongfu Xie[1], Bo Gao[1]
[1]School of Information System Engineering, Strategy Support Force Information Engineering University, Zhengzhou, China

**J3951 REMOTE SENSING IMAGE CLASSIFICATION BASED ON MARKOV RANDOM FIELD**

Tong Zhang[1], Yin Zhuang[2*]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China
[2]School of Electronic Engineering and Computer Science, Peking University, Beijing, China

**J3952 OPTICAL REMOTE SENSING IMAGES FEATURE EXTRACTION OF FOREST REGIONS**

HaiLin Du[1*], Yin Zhuang[2]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, Beijing Institute of Technology, Beijing, China
[2]School of Electronic Engineering and Computer Science, Peking University, Beijing, China

**J3954 PHASE COMPENSATION ALGORITHM OF W-BAND ANTENNA ARRAY BASED ON FRACTIONAL DELAY FIR FILTER**

Xiao Xu[1*], Liquan Wang[1], Juanfang Chai[1], Mengmeng Sheng[2], Shan Huang[1], Yexin Zhang[1]
[1]Shanghai Electro-Mechanical Engineering Institute, Shanghai, China
[2]Beijing Racobit Electronic Information Technology, Beijing, China

**J3970** **OPTICAL REMOTE SENSING IMAGE WATERS EXTRACTION TECHNOLOGY BASED ON DEEP LEARNING CONTEXT-UNET**

Ruoda Yan[1], Shan Dong[2*]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing 100081, China
[2]Engineering Center of Digital Audio and Video, Communication University of China, Beijing 100024, China

**J4207** **THE FPGA IMPLEMENTATION OF LOW-ALTITUDE AND SLOW-SPEED SMALL TARGET DETECTION**

Tianqu Liu[1], Jinping Sun[1*], Wei Shangguan[2]
[1]School of Electronic and Information Engineering, Beihang University, Beijing, China
[2]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China

**J4447** **A FPGA-BASED IMPLEMENTATION OF V-BLAST MIMO-OFDM COMMUNICATION SYSTEM**

Jiang Tao[1], Lei Peng[1], Zhang Yuxi[1], Wang Jun[1*], Yang Bin[1]
[1]School of Electronic and Information Engineering, Beihang University, Beijing, China

**J4461** **SYSTEM DESIGN OF A MULTICHANNEL AUTOMATIC TEST AND DATA ACQUISITION SYSTEM FOR DIGITAL PHASED ARRAY ANTENNAS**

Ruixuan Yang[1], Meichen Guo[1], Huiqian Du[1], Kun Yu[2], Qiongzhi Wu[1*]
[1]Beijing Institute of Technology, Beijing, China
[2]Liaoning Planning and Designing Institute of Post and Telecommunication Co. Ltd, Liaoning, China

**J4844** **A FIR FILTER WITH VARIABLE ORDER BASED ON FPGA**

Li Jiahao[1,4], Li Bingyi[2], Hu Shankang3 ,Qiao Tingting[1,4],Xie Yizhuang[1,4]*
[1]Beijing Key laboratory of Embedded Real-time Information Processing Technology, Beijing, China
[2]Beijing Institute of Radio Metrology and Measurement,Beijing,China
[3]Beijing Institute of remote sensing equipment, Beijing,China
[4]Beijing Institute of Technology, Beijing, China

**J4950** **IMPLEMENTATION OF AUTOMATIC FACE DETECTION SYSTEM BASED ON ARM**

Keng Li, He Chen*
Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing Institute of Technology, Beijing, China

**J4971** **MULTIPLE OBJECT LOCALIZATION AND VITAL SIGN MONITORING USING A MIMO IR-UWB RADAR SYSTEM**

Jian Liu[1], Xiaolei Shang[1], Heng Zhu[1], Jian Li[12]
[1]Department of EEIS, University of Science and Technology of China, Hefei, Anhui, China
[2]Department of ECE, University of Florida, Gainesville, Florida 32611, USA

**J5978** **ALGORITHM IMPLEMENTATION OF ON-BOARD SAR IMAGING ON FPGA+DSP PLATFORM**

Wenyue Yu[1], Bingyi Li[1], Yizhuang Xie[1], He Chen[1], Dan Lu[2], Liang Chen[1]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology Beijing Institute of Technology Beijing 100081, China
[2]Shanghai Institute of Satellite Engineering Shanghai 201109, China

**J6803** **A NOVEL CNN ARCHITECTURE ON FPGA-BASED SOC FOR REMOTE SENSING IMAGE CLASSIFICATION**

Na Zhang[1,3], Hao Shi[1,2,3*], Liang Chen[1,2,3], Tong Lin[4], Xin Shao[1,3]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Institute of Technology Chongqing Innovation Center, Chongqing, 401120, China
[3]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China
[4]Beijing Racobit Electronic Information Technology Co., Ltd, Beijing, China

**J6918** **THREE-LEVEL MEMORY ACCESS ARCHITECTURE FOR FPGA-BASED REAL-TIME REMOTE SENSING IMAGE PROCESSING SYSTEM**

Ning Zhang[1,2], Xin Wei[1,2], Lei Chen[1,2], He Chen[1,2]*
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing 100081, China

**J7364** **A LIGHTWEIGHT EDGE COMPUTING PLATFORM DESIGNED ON EMBEDED SYSTEM**

Qin Lin[1*], Ling Pan[1], Mingquan Jia[1], Hongwei Liu[1], Mingqin Wu[1], Hao Zhang[1], Yu Zhong[1]
[1]Key laboratory of agile intelligent computing, the 10th research institute of China Electronics Technology Group Corporation, Chengdu, China

**J21075** **LOW SNR WIDEBAND SIGNAL SYNTHESIS ALGORITHMS FOR MULTIPLE ANTENNAS**

Yuedong Luo[1*], Zheng Cai[1], Yingbin Chen[1]
[1]China Xi'an Satellite Control Center, Xi'an, China

**J31000** **A SATELLITE NAVIGATION RELATIVE TIMING METHOD FOR GNSS-R MINIATURIZED PASSIVE LOCATION SYSTEMS**

Lei Shi[1*], Zhen Huang[2], Xuefeng Feng[1]
[1]School of Aerospace Engineering, Tsinghua University, Beijing, China
[2]Tsinghua Space Center, Tsinghua University, Beijing, China

**J31008** **DESIGN AND IMPLEMENTATION OF HIGH PERFORMANCE FFT PROCESSOR WITH RADIX-$2^K$ ALGORITHM**

Long Pang[1*], Yamei Huang[1], Chen Wang[1], Chen Yang[2], Yizhuang Xie[3], He Chen[3]
[1]School of Information and Communication Engineering, Communication University of China, Beijing, China
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**J51011** **HANDWRITTEN TIBETAN DIGITAL WORDS RECOGNITION BASED ON IMPROVED CONVOLUTIONAL NEURAL NETWORK**

Qianjun Shuai[1], Xingwen Wu[1*], Libiao Jin[2]
[1]School of Information and Communication Engineering, Beijing, China
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## Poster Session 9: Remote Sensing and Signal Processing II

**Time:** **15: 00 - 16: 00, December 13, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Prof. Zegang Ding, Beijing Institute of Technology, China**

**D3294** **MULTI-COMPONENT LFM SIGNAL DETECTION BASED ON DIRFAT ALGORITHM**

Langxu Zhao[1*], Haihong Tao[1], Jia Su[1], Weijia Chen[1]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China

**D3347** **HFSWR IONOSPHERIC CLUTTER SUPPRESSION BASED ON CROSS-CORRELATION OF MULTIPLE AGGREGATION ZONES**

Yingning Dong, Boyuan Dong, Weibo Deng*, Xiaochuan Wu, Xin Zhang, Qiang Yang
Key Laboratory of Marine Environmental Monitoring and Information Processing, Ministry of Industry and Information Technology, China
School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China

**D3362** **GEO-SAR STARING AND TRACKING IMAGING MODE DESIGNING FOR HURRICANE OBSERVATION**

Bingji Zhao[1*], Qingjun Zhang[1], Liping Liu[1], Chao Dai[1], and Jianfeng Yin[1]
[1]Beijing Institute of Spacecraft System Engineering CAST, Beijing 100094, China

**D3458** **ACCURACY ANALYSIS OF MULTI-APERTURE ALONG-TRACK INTERFEROMETRIC SAR FOR OCEAN SURFACE CURRENT VECTOR MAPPING**

Yan Li[1,2], Jinsong Chong[2*]
[1]School of Electronics, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China
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**D3624** **REMOTE SENSING OF BOTTOM PARAMETERS BASED ON ACOUSTIC BACKSCATTERING CHARACTERISTICS**

Shengqi Yu[1, 2], Baohua Liu[1, 2]*, Kaiben Yu[1, 2], Zhiguo Yang[1, 2], Guangming Kan[2, 3], Xiaobo Zhang[1, 2]
[1]National Deep Sea Center, Ministry of Natural Resources, Qingdao, China
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Qingdao, China
[3]Key Laboratory of Marine Sedimentology and Environmental Geology, First Institute of Oceanography, Qingdao, China

**D3628** **AN IMPROVED DEEPLAB BASED MODEL FOR EXTRACTING CULTIVATED LAND INFORMATION FROM HIGH DEFINITION REMOTE SENSING IMAGES**

Hao FAN [1,2], Qingdi WEI [1,2], De-qin SHU [1*], Ying LI [1], Liang ZHANG[1], Chuan-dong YANG[1]
[1]College of Information Science&Engineering Shandong Agricultural University, Tai'an, China
[2]Shandong Technology and Engineering Center for Digital Agriculture, Tai'an, China

**D3648** **CHARACTERISTIC ANALYSIS OF THE GREEN-CHANNEL WAVEFORMS WITH ALB MAPPER5000**

Shuai Xing*, Dandi Wang, Qing Xu, Yuzhun Lin, Pengcheng Li, Chenbo Liu
PLA Strategic Support Force Information Engineering University, Zhengzhou, China

**D3707** **A FAST METHOD FOR COMPUTING THE TARGET VISIBILITY TIME THROUGH THE RADAR FENCE**

Yang Xu[1], Defeng Chen[1*], Tuo Fu[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**D3781** **ADS-B MESSAGE AUTHENTICATION USING FEATURES OF SIGNAL IN TRANSITION REGIONS**

Nan Jiang[1], Shutong Qi[1], Feixiang Luo[1*], Wang Jun[1], Wenfeng Wang[1]
[1]School of Electronic and Information Engineering of Beihang University, Beijing, China

**D3819 A MACHINE LEARNING AIDED METHOD FOR GNSS-R PERMITTIVITY RETRIEVAL VIM ANALYSIS**

Yan Jia[1], Yuekun Pei[2*], Wenmei Li[1]
[1]Smart Health Big Data Analysis and Location Services Engineering Lab of Jiangsu Province, Nanjing University of Posts and Telecommunications, Nanjing, China
[2]Beidou High Precision Positioning Service Technology Engineering Laboratory of Liaoning Province, Dalian Universitiy, Dalian, China

**D3882 AN INISAR IMAGING METHOD BASED ON TRANSLATIONAL RECONSTRUCTION**

Huayu Fan[1], Lixiang Ren[2,3*], Jingdong Wang[2,3], Erke Mao[2,3], Jian Yang[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, China
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**D3896 INFORMATION FUSION OF OPTICAL IMAGE AND SAR IMAGE BASED ON DEM**

Yue Zhang[1], Xue Yao[1], Shirong Jiang[1], Hong Yang[1], Xiangfei Nie[1*]
[1]School of Electronic and Information Engineering, Chongqing Three Gorges University, Chongqing, China

**D3927 ON THE EVALUATION OF COMPACT POLARIMETRIC SAR FEATURES OVER SEA OIL SLICKS DURING A CONTROLLED OIL-ON-WATER EXERCISE**

Yu Li[1], Yuanzhi Zhang[2], Maurizio Migliaccio[3], Ferdinando Nunziata[3], Andrea Buono[3]
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[3] Dipartimento di Ingegneria, Università degli Studi di Napoli “Parthenope”, Centro Direzionale isola C4, 80143 Napoli, Italy

**D3993 AN APPROACH FOR CORRECTION OF IONOSPHERE PHASE CONTAMINATION BASED ON COVARIANCE MATRIX RECOUNSTRUCTION IN SKYWAVE RADAR SYSTEMS**

Xiong Weibo[1*], Wu Xuchen[1], Yang Zhaojun[1]
[1]Beijing Institute of Technology, Beijing, China

**D4057 A NEW PHASE UNWRAPPING ALGORITHM COMBINING MINIMUM SURFACE-FITTING AND NETWORK FLOW FOR INSAR**

Li Che, Liubing Jiang*
School of Computer Science and Information Security, Guilin University of Electronic Technology, Guilin, Guangxi, China

**D4064 A NETWORK PRUNING METHOD FOR REMOTE SENSING IMAGE SCENE CLASSIFICATION**

Baogui Qi[1], He Chen[1*], Yin Zhuang[2], Shaorong Liu[3], Liang Chen[1,4]
[1] Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing 100081, China
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**D4073 METHOD FOR GENERATING INFRARED BIG DATA FOR DEEP LEARNING ALGORITHM TRAINING BY USING SMALL SAMPLE DATA**

Chai Guobei[1], Yang Wenfu[1], Liu Wei[1], Zhao Xuan[1], Yang Jian[1], Zhao Xiaoning[1]
[1]China Academy of Launch Vehicle Technology, Beijing, China

**D4074 BISTATIC ISAR IMAGING APPROACH FOR MANEUVERING TARGETS WITH SPARSE APERTURE**

Yong Wang*, Xuefei Chen, Xin Huang
Research Institute of Electronic Engineering Technology, Harbin Institute of Technology, Heilongjiang, China

**D4091 MAINLOBE JAMMING SUPPRESSION WITH FREQUENCY DIVERSE ARRAY RADAR**

Jiantao Shi[1,2*], Jun Sun[1,2], Yuhao Yang[1,2], Ning Wang[1,2]
[1] Nanjing Research Institute of Electronics Technology, Nanjing, China
[2] Key Laboratory of IntelliSense Technology, CETC, Nanjing, China

**D4126 A FAST PHASE ERROR CORRECTION METHOD FOR COMPRESS SENSING SAR IMAGING**

Jiacheng Ni[1], Qun Zhang[1,2], Linghua Su[1], Jingyi Zhang[3], Zhiqiang Ma[1]
[1]Institute of Information and Navigation, Air Force Engineering University, Xi'an, China
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**D4152 RESEARCH AND IMPLEMENTATION OF SATELLITE IMAGE TARGET RECOGNITION BASED ON DEEP LEARNING**

Xiao Jun Wang[1], Bao An Ji[1], Yan Peng Wang[1]
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**D4165 WIDE AREA REMOTE SENSING IMAGE ON ORBIT TARGET EXTRACTION AND IDENTIFICATION METHOD**

Zongling Li, Luyuan Wang, Jiyang Yu, Bowen Cheng, Liang Hao, Shuai Jiang
Institute of Spacecraft System Engineering, China Academy of Space Technology, Beijing, China

**D4208 AUTOMATIC RECONSTRUCTION OF 3-D BUILDING STRUCTURES FOR TOMOSAR USING NEURAL NETWORKS**

Siyan Zhou[1,2], Yanlei Li[1,2], Fubo Zhang[2*], Longyong Chen[1,2], Xiangxi Bu[1,2]
[1]School of Electronics, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China
[2] National Key Lab of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, Beijing, China

**D4267 GEOMETRIC CORRECTION OF SPACEBORNE SAR IMAGE BASED ON DEM AND ICESAT DATABASE**

Chao Xing[1], Yuekun Wang[2], Zhibin Wang[3], Zhiqiang Liao[4], Feng Tian[1], Zhiyong Suo[1*], Zhenfang Li[1]
[1]National Key Laboratory of Radar Signal Processing, Xidian University, Xi'an, China
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[3]Beijing Institute of Spacecraft System Engineering, Beijing, China
[4]Sichuan Aerospace Electronic Equipment Research Institute, Sichuan, China

**D4288 A METHOD FOR SHIP DETECTION BASED ON SEA-LAND SEGMENTATION**

Shuai Jiang[1], Yalong Pang[1], Luyuan Wang[1*], Jiyang Yu[1], Bowen Cheng[1], Zongling Li[1], Liang Hao[1], Cuilian Wang[1]
[1]Beijing Institute of spacecraft system Engineering, Beijing, China

**D4312 SPATIAL-TEMPORAL CHANGES OF VEGETATION RESTORATION IN YAN'AN BASED ON MODIS NDVI AND LANDSAT NDVI**

Zihui Zhi[1], Hao Yin[2*], Na Lu[3], Xinxin Zhang[4], Kun Yu[1], Xu Guo[1], Hao Qi[1]
[1]School of Water Resources and Environment, China University of Geosciences (Beijing), Beijing, China
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[4]Office, Chinese Academy of Geological Sciences, Beijing, China

**D4337 RESEARCH ON THE ADJACENCY EFFECT FOR OFF-NADIR OPTICAL REMOTE SENSING***

Xiaoshan Ma[*], Zhen Yang, Xiaodong Peng
Key Laboratory of Electronics and Information Technology for Space System, National Space Science Center, Chinese Academy of Sciences, Beijing, China

**D4354** **AN EFFICIENT ISAR IMAGING METHOD FOR RAPIDLY SPINNING TARGETS**

Zhijun Yang[1*], Xiaoheng Tan[1], Dong Li[2], Yue Zhang[3]
[1]School of microelectronics and communication engineering, Chongqing university, Chongqing, China
[2]Center of communication and tracking telemetering command, Chongqing university, Chongqing, China
[3]School of electronic and information engineering, Chongqing three gorges university, Chongqing, China

**D4369** **RESEARCH ON YELLOW RIVER ICE SUPERVISED CLASSIFICATION METHOD BASED ON POLARIMETRIC SAR DATA**

Pingping Huang[1,2], Qiang Shi[1,2*], Wei Xu[1,2], Weixian Tan[1,2]
[1]College of Information Engineering. Inner Mongolia University of Technology, Hohhot, China
[2]Inner Mongolia Key Laboratory of Radar Technology and Application, Hohhot, China

**D4396** **PASSIVE GNSS-BASED SAR DATA ACQUISITION AND REALTIME PREPROCESSING SYSTEM**

Lingzhi Zhang[1,2], Feifeng Liu[1,2*], Zhanze Wang[1,2], Chenghao Wang[1,2], Tao Zeng[1,2]
[1]Radar Research Lab, School of Information and Eletronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China

**D4402** **HIGH-FREQUENCY MONITORING OF INLAND LAKES WATER EXTENT USING TIME-SERIES SENTINEL-1 SAR DATA**

Zhu Peng[1,2], Huang Shifeng[1,2*], Yang Yongmin[1,2], Ma Jianwei[1,2], Sun Yayong[1,2], Gao Siyuan[1,2]
[1]China Institute of Water Resources and Hydropower Research, Beijing, China
[2]Ministry of Water Resources and Drought Mitigation Engineering Research Center for flood control, Beijing, China

**D4434** **BUILDING AREAS DETECTION FROM OPTICAL REMOTE SENSING IMAGES BASED ON HIERARCHICAL STRUCTURE DESCRIPTION**

Wenkai Liu[1], Jie Zhang[1*], Fukun Bi[1], Xiaodi Sun[1], Jianhong Han[1]
[1]School of Information Science and Technology, North China University of Technology, Beijing, China

**D4486 DUAL POLARIMETRIC HRRP SEQUENCE RECOGNITION BASED ON H/α FEATURES**

Liang Zhang[1,2], Teng Long[1,2], Yang Li[1,2,3], Yanhua Wang[1,2,3]*
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[3]Beijing Institute of Technology Chongqing Innovation Center, Chongqing 401120, China

**D4508 SMALL SHIP DETECTION IN SAR IMAGES BASED ON MODIFIED SSD**

Long Han[1], Wei Ye[1], Jianwei Li[2], Da Ran[1]
[1]Space Engineering University, Beijing, China
[2]Naval Aeronautical University, Yantai, China

**D4542 SAR IMAGING REALIZATION WITH FPGA BASED ON VIVADO HLS**

xuan zhou[1,2], zhong jun yu, yue cao, shuai jiang
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**D4584 ZERO-SHOT SUPER RESOLUTION FOR SATELLITE REMOTE SENSING IMAGES**

Yang Junzhi[1,2]*
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Institute of Remote Sensing Information, Beijing, China

**D4619 DIFFERENT LEVELS MULTI-SOURCE REMOTE SENSING IMAGE FUSION**

Kai Lin[1], Wenmei Li[1]*, Haiyan Liu[2], Jiaqi Wu[1]
[1]School of Geographic and Biologic Information, Nanjing University of Posts and Telecommunications, Nanjing, China
[2]College of Telecommunications & Information Engineering, Nanjing University of Posts and Telecommunications, Nanjing, China

**D4709 AN ALGORITHM FOR AZIMUTH AMBIGUITIES DETECTION ON HIGH RESOLUTION SAR IMAGES USING SSD**

Jian Wang[1]*, Jie Chen[1], Member IEEE, Pengbo Wang[1], Zhirong Men[1], Xiangwei Pan[1]
[1]School of Electronics and Information Engineering, Beihang University, Beijing, China

**D4738 HUMAN MOTION RECOGNITION BASED ON RADAR MICRODOPPLER FEATURES USING BAYESIAN NETWORK**

Yaotian Zhang, Yao Peng, Jun Wang*, Peng Lei
School of Elecronic and Information Engineering, Beihang University, Beijing, China

**D4775 UNSUPERVISED IMAGE CHANGE DETECTION BASED ON GROUND-BASED IMAGING RADAR**

Huifang Ren[1,2], Pingping Huang[1,2*], Weixian Tan[1,2], Wei Xu[1,2], Fang Liu[1,2], Mingzhi Zhang[3]
[1]College of Information Engineering. Inner Mongolia University of Technology, Hohhot, China
[2]Inner Mongolia Key Laboratory of Radar Technology and Application, Hohhot, China
[3]China Geological Environment Monitoring Institute, Beijing, China

**D4814 SMALL TARGETS RECOGNITION IN SAR SHIP IMAGE BASED ON IMPROVED SSD**

Yong Li[1], Jing Chen[1], Meng Ke[1*], Linghao Li[1], Zegang Ding[1,2], Yan Wang[1,2]
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**D4839 MULTI-ROTORS UAV MOTION RECOGNITION BASED ON MICRO-DOPPLER FEATURE EXTRACTION**

Jing Wen[1*], Liang Tu[1], Lei Wang[1], Wang Ren[2]
[1]Information Engineering School, Nanchang Hangkong University, Nanchang, China
[2]Shanghai Aerospace Electronic Technology, Shanghai, China

**D4857 APPLICATION OF KALMAN FILTER IN DEFORMATION DATA PROCESSING OF GROUND-BASED DIFFERENTIAL INTERFEROMETRIC RADAR**

Aijun Tan[1], Zefu Tan[1*], Weiming Tian[2], Manjun Yan[1], Ying Long[1]
[1]Key Laboratory of Information and Signal Processing, Chongqing Three Gorges University, Chongqing, China
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**D4888 A SAR TARGET RECOGNITION METHOD WITH FREQUENCY AND SPATIAL DOMAIN ENHANCEMENT**

Zhiru Wang, Liang Chen*, Baogui Qi, Guanqun Wang, Hao Shi
Beijing Key Laboratory of Embedded Realtime Information Processing Technology, Beijing Institute of Technology, Beijing, China

**D4901 A METHOD OF ACQUIRING VIBRATION MODE OF BRIDGE BASED ON MIMO RADAR**

Ao Jiao[1,3], Congrong Han[1,3],Ruiguo Huo[1,3], Weiming Tian[1,2,3*] , Tao Zeng[1,2,3], Xichao Dong [1,2,3]

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**D4995 IMPROVED GENERALIZED LIKELIHOOD RATIO DETECTOR FOR RANGE -SPREAD TARGET**

Kuiyu Qu[1], Xiaopeng Yang[1]*, Quanhua Liu[1], Zhennan Liang[1], Guanxu Huang[1]

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[2]Shanghai Radio Equipment Institute, Shanghai, China

**D5048 ROBUST TRANSMIT BEAMFORMING METHOD FOR INTERFERENCE MITIGATION IN MIMO SCHEME**

Junnan Shi*, Pengfei Wang, ZhiCheng Wang, Jun Wang

Shanghai Radio Equipment Research Institute, Shanghai, People's Republic of China

**D5095 A NEW POLARIMETRIC CALIBRATION METHOD FOR C-BAND SPACEBORNE SAR BASED ON SCATTERING MODEL OF AMAZON RAINFOREST**

Jiwei Hu[1*], Hongxing Dang[1], Xiaomin Tan[1], Haoqiang Shi[1], Jun Hong[2]

[1]Academy of Space Electronic Information Technology, Xi'an, China

[2]Institute of Electronics, Chinese Academy of Sciences, Beijing, China

**D5105 A ROBUST DBF METHOD FOR SPACEBORNE SAR**

Xie Hu[1], GaoYang[1], Dang HongXing[1], Tan xiaomin[1], Li Shirun[1], Chang Xinya[2]

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**D5281 LAND-SEA SEPARATION ALGORITHM BASED ON PHASE CORRELATION FOR MARINE SURVEILLANCE RADAR**

Ming Zhou[1,2*], Liang Ma[1,2], Ning Wang[1,2], Yuhao Yang[1,2], Jun Sun[1,2]

[1]Nanjing Research Institute of Electronics Technology, Nanjing 210039, China

[2]Key Laboratory of Intellisense Technology, Nanjing 210039, China

**D5292** **DATA PROCESSING AND ACCURACY VERIFICATION OF AN AIRBORNE LARGE-FOOTPRINT LASER ALTIMETER**

Zixuan Li[1], Shaoning Li[2*], Zhang Guo[2,3], Tieli Yang[1], Xinyang Chen[2], Weiqi Lian[2]
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[2]State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan,China
[3]Collaborative Innovation Center of Geospatial Technology, Wuhan University, Wuhan, China

**D5326** **PLANE ACCURACY ANALYSIS OF MULTI-SOURCE HIGH RESOLUTION SATELLITE IMAGE**

Ao Li[1,2], Furun Huang[1], Zhen Wen[1]
[1]College of Geomatics, Shandong University of Science and Technology, Qingdao, China
[2]Land Satellites Romote Sensing Application Center, MNR, Beijing , China

**D5456** **PROCESSING OF MILLIMETER WAVE AIRBORNE INTERFEROMETRIC SAR DATA**

FengTian[1], Yuekun Wang[2], Zhibin Wang[3], Zhiqiang Liao[4], Zhiyong Suo[1*], Zhenfang Li[1], Wei Yan[5], Jiwei Hu[5]
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**D5543** **AN ADS-B ANTI-COUNTERFEITING SYSTEM BASED ON TDOA**

Hao Shen[1*], Keren Liu[1], Yuxuan Yao[1], Jun Wang[1]
[1]School of Electronic and Information Engineering, Beihang University (BUAA), Beijing, China

**D5544** **FULL-TIME RESOLUTION ANALYSIS AND PATH DETERMINATION FOR AIR BORNE FORWARD-LOOKING SAR WITH OPPORTUNISTIC ILLUMINATOR**

Zhanze Wang[1], Feifeng Liu[1*], Lingzhi Zhang [1], ChengHao Wang[1], Tao Zeng[1]
[1]School of information and electronics: Key Laboratory of Electronic and Information Technology in Satellite Navigayion, Beijing institute of technology, Beijing, China

**D5869** **EXPERIMENT AND RESULTS OF BISTATIC UAV SAR**

Meng Ke[1], Youwang Chen[1], Yong Li[1*], Linghao Li[1], Feifeng Liu[1], Zegang Ding[1,2]
[1]School of information and Electronics Beijing Institute of Technolog, Beijing, China
[2] Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing, China

**D5905 ANALYSIS OF EFFECTS OF FARADAY ROTATION ON GEOSYNCHRONOUS SAR IMAGING**

Shiyu Sun[1], Xichao Dong[1,2*], Jiaqi Hu[1], Cheng Hu[1,3]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Institute of Technology Chongqing Innovation Center, Chongqing, China
[3]The Key Laboratory of Electronic and Information Technology in Satellite Navigation, Beijing, China

**D41010 CLUTTER MODELING FOR FOD SURVEILLANCE RADAR AT LOW GRAZING ANGLE**

Fei Qin[1,2], Yangliang Wan[1,2*], Xingdong Liang[2], Siyan Zhou[1,2]
[1]School of Electronics, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China
[2]National Key Lab of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, Beijing, China

**D41098 BALANCED LEARNING-BASED METHOD FOR REMOTE SENSING AIRCRAFT DETECTION**

Yi Ma[1], Jie Wei[1], Fangrong Zhou[1], Yu Zhu[2*], Jing Liu[2], Mingyang Lei[3]
[1]Electric Power Research Institute, Yunnan Power Grid Company ltd., Kunming, China
[2]China Academy of Space Technology, Beijing, China
[3]Beijing Institute of Technology, Beijing, China

**N0032 METHOD OF AERIAL TARGET LENGTH EXTRACTION BASED ON HIGH RESOLUTION RANGE PROFILE**

Lianqing Yu, Yun Li, Yuhao Yang
Nanjing Research Institute of Electronics Technology, Key Laboratory of IntelliSense Technology, CETC, Nanjing, China

**N0156 POLARIMETRIC SAR IMAGE SCATTERING CENTER ESTIMATION VIA ATOMIC NORM MINIMIZATION**

Ying Xi[1], Yanhua Wang[1,2,3]*, Wei Chen[1], Haibo Liu[1,2], Yang Li[1,2,3]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing 100081, China
[3]Beijing Institute of Technology Chongqing Innovation Center, Chongqing 401120, China

**N0415 A LANE LINES POST-PROCESSING ALGORITHM: BASED ON FORAGING SEARCH AND CIRCULANT STRUCTURE KERNEL TRACKING**

Ding Wei[1], Zou Lin[1*], He Xiang chen[2], Wan Qun[1], Zhang Tong tong[1], Zhou Long[3]
[1]University of Electronic Science and Technology of China, Chengdu, China
[2]Beijing Institute of Remote Sensing Equipment, Beijing, China
[3]The Rocket Force University of Engineering, Xi'an, China

**N0592** **HARQ AND ADAPTIVE TTI BUNDLING FOR LOW EARTH ORBIT SATELLITE VOICE COMMUNICATION**

Siqiang Wang[1,2], Ce Sun[1], Jingxuan Huang[1], Xinyi Wang[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Science and Technology on Communication Networks Laboratory, Shijiazhuang, Hebei Province, China, Beijing, China

**N0848** **SHIP DETECTION METHOD FOR REMOTE SENSING IMAGES VIA ADVERSARY STRATEGY**

Yun Wang[1,2*]
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## Poster Session 10: Sensor Array and Multichannel Signal Processing

**Time:** **15: 00 - 16: 00, December 13, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Prof. Quanhua Liu, Beijing Institute of Technology, China**

**E1040** **A NEW OUTLIER DETECTION METHOD BASED ON MACHINE LEARNING**

Yafei Lv[1*], Yaqi Cui[1], Xiaohan Zhang[1], Mi Cai[1], Xiangqi Gu[1], Zhenyu Xiong[1]
[1]Research Institute of Information Fusion, Naval Aviation University, Yantai, China

**E1084** **PERFORMANCE COMPARISON OF RECONSTRUCTION ALGORITHM BASED ON NON-UNIFORM SAMPLING SYSTEM**

Hanxi Zhao[1*], Hebin Pan[2], Jian Shen[1], Zhijun Zhang[1], Meijing Jiao[1], Fen Li[1]
[1]Shanghai Radio Equipment Research Institute, Shanghai, China
[2]The Sixth Military Representative Office of the CPLA Naval in Shanghai Address, Shanghai, China

**E1085** **A NEW BELIEF-BASED CLASSIFICATION FUSION FOR INCOMPLETE DATA**

Zuowei Zhang[1*], Xuxia Zhang[1], Zhunga Liu[1]
[1]School of Automation, Northwestern Polytechnical University, Xi'an, China

**E1245** **THE CIRCULAR ARRAY PASI ALGORITHM BASED ON ARRAY TRANSLATION**

Lei Yang[1], Zhangjun Wang[1], Xiufen Wang[1*], Jinlong Gong[1], Yingying Gai[1], Feng Zhang[1]
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**E1332 FREQUENCY DIVERSITY IN LOW-ALTITUDE TARGET DOA ESTIMATION**

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**E1338 ECHO DOA BASED HIGH-RESOLUTION TARGET LOCATION**

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**E1363 AN AZIMUTH HIGH RESOLUTION ALGORITHM BASED ON VIRTUAL ARRAY AND SPATIAL RESAMPLING**

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**E1390 WIDEBAND DOA ESTIMATION UNDER CLUTTER USING MIMO RADAR WITH SPARSE ARRAY**

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**E1441 DIRECTION OF ARRIVAL ESTIMATION OF WIDEBAND NONCIRCULAR SIGNALS IN FREQUENCY DOMAIN**

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**E1477 A COMPUTATIONALLY EFFICIENT SCHEME FOR FMCW RADAR DETECTION AND PARAMETER ESTIMATION**

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**E1533 RESEARCH ON HIGH RESOLUTION ALGORITHM OF SOUND SOURCE LOCALIZATION BASED ON MICROPHONE ARRAY**

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**E1557 ESPRIT-LIKE DIRECTION OF ARRIVAL ESTIMATION ALGORITHM BASED ON GRADIENT DESCENT FOR CO-PRIME LINEAR ARRAY**

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**E1587 MUTUAL COUPLING SELF-CALIBRATION FOR PARAMETER ESTIMATION WITH VECTOR ANTENNAS**

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**E1845 DIRECTION FINDING OF WIDEBAND SIGNALS USING IDENTICALLY ORIENTED VECTOR ANTENNAS**

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**E1922 TWO-DIMENSIONAL ANGLE ESTIMATION FOR SPARSE MIMO ARRAY WITH VELOCITY RECEIVE SENSORS BASED ON REAL-VALUED QUADRILINEAR DECOMPOSITION**

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**E2054 PERFORMANCE ANALYSIS OF CONFORMAL CONICAL ARRAY FOR AIRBORNE RADAR**

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**E2063 ROBUST BEAMFORMER BASED ON MAGNITUDE RESPONSE CONSTRAINT AND SPARSE CONSTRAINT**

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**E2076 ROBUST FREQUENCY DIVERSE ARRAY BEAMFORMER VIA RANDOM FREQUENCY OFFSET**

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**E2086 WIDEBAND PHASE-ONLY TRANSMIT ADAPTIVE DIGITAL BEAMFORMING TECHNOLOGY**

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**E2399 ROBUST ADAPTIVE BEAMFORMER BASED ON COMPLEX LS-SVR**

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**E2571 ROBUST MINIMUM GEOMETRIC POWER DISTORTIONLESS RESPONSE BEAMFORMING WITH SPARSE CONSTRAINT IN HEAVY-TAILED NOISE OF UNKNOWN STATISTICS**

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**E2719 ADAPTIVE BEAMFORMING FOR JAMMING SUPPRESSION IN THE WHOLE RANGE DOMAIN**

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**E2880 ENHANCED ROBUST CAPON BEAMFORMING USING EIGENSPACE-LIKE METHOD**

Wei Zhang*, Yue Xie, Xuyuan Cao and Xin Yin
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**E3178 IONOSPHERIC DECONTAMINATION BASED ON GENERAL PARAMETERIZED TIME-FREQUENCY ANALYSIS FOR HIGH-FREQUENCY HYBRID SKY-SURFACE WAVE RADAR**

Zhuoqun Wang, Yajun Li, Dongmei Guo, Xiuhua Shi, Yanbin Li, Sheng Shao
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**E3197 A WAY OF SHADOW ZONE AUTONOMOUS LOCALIZATION OF DEEP SEA BY A SINGLE HYDROPHONE**

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**E3226** **KNOWLEDGE-AIDED SPACE TIME ADAPTIVE PROCESSING FOR AIRBORNE RADAR IN HETEROGENEOUS ENVIRONMENTS**

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**E4293** **MULTI-CARRIER AGILE PHASED ARRAY RADAR**

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**E4616** **MAXIMUM LIKELIHOOD ANGLE-RANGE ESTIMATION IN FDA-MIMO RADAR**

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**E4861** **A METHOD OF RADAR DATA COMPRESSION BASED ON SCATTERING CENTER EXTRACTION**

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**E4883** **A FAST STATE-SPACE ALGORITHM FOR 3D SCATTERING CENTER EXTRACTION OF RADAR TARGETS**

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**E4920** **RANGE-ANGLE DECOUPLED ESTIMATION BASED ON GROUPED FREQUENCY CODING METHOD IN MONOSTATIC FDA-MIMO RADAR**

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**E5062** **CONTINUOUS MIMO RADAR WAVEFORM OPTIMIZATION**

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**E5081 A DISTRIBUTED MIMO RADAR ORIENTED BARRAGE JAMMING STRATEGY**

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**E5117 HIGH-PERFORMANCE DETECTION ALGORITHM OF ALAMOUTI-SOQPSK-TG TELEMETRY SYSTEM**

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**E5147 POWER ALLOCATION STRATEGY FOR MIMO RADAR WHEN COPING WITH A SMART JAMMER**

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**E5356 A MODIFIED INFORMATION EMBEDDING SCHEME FOR THE INTEGRATED SYSTEM OF RADAR AND COMMUNICATION**

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**E5395 A CLOSED-FORM SOLUTION FOR MOVING TARGET LOCALIZATION IN DISTRIBUTED MIMO RADAR SYSTEMS**

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**E5408 SIMULTANEOUS LOCATION AND PARAMETER ESTIMATION OF HUMAN VITAL SIGN WITH MIMO-FMCW RADAR**

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**E5485 JOINT TRANSMIT BEAMFORMING FOR MULTIUSER MIMO COMMUNICATION AND MIMO RADAR**

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**E5539 SUCCESSIVE CANCELLATION BASED SEMIDEFINITE RELAXATION DETECTION AND DECODING FOR POLAR CODED UPLINK MULTIUSER MASSIVE MIMO SYSTEM***

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**E5783 DISCRETE DYNAMIC BAYESIAN NETWORK THREAT ASSESSMENT METHOD BASED ON CLOUD PARAMETER LEARNING**

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**E5827 TWO-DIMENSIONAL SPARSE ARRAY DESIGN OF THREE-DIMENSIONAL MIMO RADAR IMAGING SYSTEM**

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**E5841 RESEARCH ON WAVEFORM DESIGN AND IMAGING OF MIMO-SAR**

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**E5898 DETECTION PERFORMANCE OF MIMO RADAR FOR A REALISTIC STEALTH AIRCRAFT MODEL**

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**E6101 INISAR IMAGING UNDER SQUINT MODEL FOR IFDS DATA**

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**E6170 POLARIZATION MONOPULSE FORWARD-LOOKING IMAGING ALGORITHM BASED ON BADS OPTIMIZATION**

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**E6573 STRONG SCATTERER RECONSTRUCTION BASED ON CHIRP-PULSE MICROWAVE COMPUTED TOMOGRAPHY**

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**E7125 EFFECT OF POSITION ON THE PERFORMANCE OF FUSION DETECTION FOR MULTISTATIC AIRBORNE RADAR**

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**E7151 DELAY AND PHASE PREDICTION METHOD FOR DISTRIBUTED COHERENCE-SYNTHESIZING RADAR**

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**E7252 DISTRIBUTED DETECTION WITH LOCAL LEAST SQUARES QUANTIZATION**

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**E7314 OBSERVATION CAPABILITY FOR DISTRIBUTED MULTI-SENSOR INFORMATION FUSION**

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**E7563 ADAPTIVE DETECTION OF RANGE-SPREAD TARGET IN THE PRESENCE OF SIGNAL MISMATCH**

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**E7714 TRACK-TO-TRACK ASSOCIATION ALGORITHM BASED ON ADAPTIVE CLUSTERING THRESHOLD**

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**E7817 TENSOR BASED ANALYSIS DICTIONARY LEARNING FOR COLOR VIDEO DENOISING**

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**E7876 SYNTHETIC APERTURE RADAR IMAGES TARGET DETECTION AND RECOGNITION WITH MULTISCALE FEATURE EXTRACTION AND FUSION BASED ON CONVOLUTIONAL NEURAL NETWORKS**

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**E7885 DISTRIBUTED RADAR ROBUST LOCATION ERROR CALIBRATION BASED ON INTERPLATFORM RANGING INFORMATION**

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**E7944 ANTENNA APERTURE RESOURCE MANAGEMENT OF DIGITAL ARRAY RADAR USING A GREY CHANCE CONSTRAINED PROGRAMMING MODEL**

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**E7965 COHERENT INTEGRATION TECHNIQUE FOR SMALL TARGETS IN PASSIVE RADAR BASED ON LTE SIGNALS**

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**E11012 MODELING AND ANALYSIS ON DISTRIBUTED RADAR TARGET DOA ACCURACY WITH SYSTEMATIC ERRORS**

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**E11108 MULTI-JAMMING SEPARATION METHOD BASED ON SPATIAL FILTERING FOR ULTRA-LARGE APERTURE DISTRIBUTED ARRAY RADAR**

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**E11112 SOURCE NUMBER AND DOA ESTIMATION METHOD BASED ON EIGEN-BEAM MUSIC FOR CLOSELY SPACED SIGNALS**

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**E21102 OPTIMIZATION OF VIRTUAL ARRAY ELEMENT POSITION FOR SPARSE ARRAY BASED ON PARTICLE SWARM ALGORITHM**

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**E21106 ROBUST ADAPTIVE BEAMFORMING FOR DISTRIBUTED RADAR BASED ON COVARIANCE MATRIX RECONSTRUCTION AND STEERING VECTOR ESTIMATION**

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**E21107 ROBUST WIDEBAND BEAMFORMING OF PLANAR ARRAY FOR RAPIDLY MOVING INTERFERENCE**

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**E21111 ADAPTIVE BEAMFORMING BASED ON EIGEN-OBLIQUE PROJECTION FOR MAINLOBE INTERFERENCE SUPPRESSION**

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**E31103 STEPPED FREQUENCY WAVEFORMS WITH PHASE COMPENSATION FOR SPACE-TIME ADAPTIVE PROCESSING**

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**E31105 STAP BASED ON RANDOM PHASED CODED SIGNAL FOR RANGE AMBIGUITY CLUTTER SUPPRESSION**

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**E51099 THE EFFECT OF AMPLITUDE AND PHASE DISTORTION ON THE QUALITY OF ONE-DIMENSIONAL HIGH RESOLUTION RANGE PROFILE**

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**E71095 PARALLEL SIMULATION CALCULATION AND VISUALIZATION TECHNOLOGY OF NETWORK RADAR SYSTEM ACTUAL DETECTION POWER IN URBAN BUILDING ENVIRONMENT**

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**N0037 AN ANALYTICAL INITIAL ORBIT DETERMINATION METHOD USING TWO RADAR POSITION AND RADIAL VELOCITY OBSERVATIONS**

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**N0052 DESIGN AND PERFORMANCE EVALUATION OF MICROWAVE LANDING RADAR USED FOR DEEP SPACE**

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**N0090 DUAL-FREQUENCY CORRELATION BACK PROJECTION ALGORITHM USING THE DUAL-FREQUENCY GRP TO DETECT THE DEFECTS OF TUNNEL STRUCTURE NONDESTRUCTIVELY**

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**N0166 RANDOM BODY MOVEMENT CANCELLATION METHOD FOR FMCW RADAR VITAL SIGN DETECTION**

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**N0173 A DOPPLER HISTORY MODULATED JAMMING AGAINST MIMO SAR**

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**N0181 NONCONTACT DETECTION OF HEARTBEAT AND RESPIRATORY RATE VIA 77GHZ RADAR BASED ON ADAPTIVE DOUBLE SLIDING-TIME WINDOW ALGORITHM**

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**N0211** **RESEARCH ON THE OPTIMIZATION STRATEGY OF PHASED ARRAY RADAR MULTI-AREA SEARCH PERFORMANCE**

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**N0220** **2-D COHERENCE FACTOR ENHANCEMENT OF RADAR IMAGES**

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**N0305** **PARAMETERS ESTIMATION OF UNRESOLVED TARGETS WITH STEPPED FREQUENCY TRAIN OF LFM PULSES FOR PHASED ARRAY RADAR: RANGE, ANGLE AND VELOCITY***

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**N0564** **SIMULTANEOUS TRACKING OF MULTIPLE TARGETS USING INTERFEROMETRIC FMCW RADAR**

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**N0621** **MODELING AND EXPERIMENTAL STUDY OF FULL-DUPLEX CHANNEL CHARACTERISTICS FOR PHASED ARRAY SIMULTANEOUS TRANSMISSION AND RECEPTION**

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**N0631** **SLOW-TIME MIMO RADAR WAVEFORM GENERATOR WITH EXPERIMENTAL RESULTS**

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**N0649** **STUDY ON WAVEFORM CHARACTERISTIC FOR SIMULTANEOUS TRANSMIT AND RECEIVE USED IN MULTIFUNCTION PHASED ARRAY**

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**N0745 A BLANKET JAMMING CANCELLING ALGORITHM FOR VHF RADAR WITH UNIFORM CIRCULAR ARRAY**

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**N0757 ANGULAR GLINT ANALYSIS BASED ON PARAMETRIC MODEL OF TARGET**

Xilei Hong[1,2], Zhennan Liang[1,2], Yuanyuan Song[1,2*], Shanqing Hu[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

**N0795 RESEARCH ON AN L-BAND POLARIZATION DIVERSITY MONOPOLE ANTENNA**

Zhang Mingxi[1], Wang Qian[2]
[1]School of electronic information engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu, 210016, China
[2]Aviation Key Laboratory of Science and Technology on High Performance Electromagnetic Windows AVIC Research Institute for Special Structures of Aeronautical Composites, Jinan, Shandong, 250023, China

**N0996 IMPACT ANALYSIS OF CFAR DETECTION FOR FALSE TARGETS GENERATED BY THE PHASE-SWITCHED SCREEN**

Ran Zhang[*], Yuan S Chen, Yu X Zhang, Lei Guo, Liang J Bai, Ping L Zhang
National key laboratory of science and technology on test physics and numerical mathematics, Beijing institute of Space Long March Vehicle, Beijing, China

**N01019 STUDY ON EXTRAPOLATION TECHNIQUE OF FIREFINDER RADAR BASED ON METEOROLOGICAL CONDITIONS**

XIE Kai[1], QIN Peng-cheng[1], WANG Rui[1], ZHU Fu-hong[2]
[1]Department of weapons engineering Army Academy of Artillery and Air Defense Hefei, AnHui, China
[2]Unit 31606 Huzhou, ZheJiang, China

## Poster Session 11: Bio-imaging and Biomedical Signal Processing

**Time:** 15: 00 - 16: 00, December 13, 2019
**Place:** Crowne Grand Ballroom A1, B2 of Hotel
**Chair:** Dr. Xichao Dong, Beijing Institute of Technology, China

**I1380** **LOGARITHMIC TEXTURE ANALYSIS FOR EARLY LUNG CANCER SCREENING ON CONTRAST ENHANCEMENT CT IMAGES**

Fangfang Han[1], Haoran Liu[1], Hong Xie[2*], Shuo Chen[1], Shouliang Qi[1], Shi Zhou[2], Wei Qian[3*]
[1]College of Medicine and Biological Information Engineering, Northeastern University, Shenyang, P. R. China
[2]The Affiliated Hospital of Guizhou Medical University, Guiyang, P. R. China
[3]Department of Electrical Engineering, University of Texas at El Paso, El Paso, TX, USA

**I1598** **RESEARCH ON EIT IMAGE RECONSTRUCTION BASED ON IMPROVED GREIT ALGORITHM**

Xinying Zheng[1], Ge Kou[2*]
[1]School of Electronic Engineering and Optoelectronic Technology, Nanjing University of Science and Technology, Nanjing, China
[2]School of Electronic Engineering and Optoelectronic Technology, Nanjing University of Science and Technology, Nanjing, China

**I2373** **A NOVEL MERGED STRATEGY WITH DEFORMATION FIELD RECONSTRUCTION FOR CONSTRUCTING STATISTICAL SHAPE MODELS**

Zhaofeng Chen[1,2], Tianshuang Qiu[1*], Hongkai Wang[1]
[1]Faculty of Electronic Information and Electrical Engineering, Dalian University of Technology, Dalian, China
[2]School of Electronic Engineering, Jiujiang University, Jiujiang, China

**I2475** **A GLOBALLY ADAPTIVE REGION GROWING METHOD FOR CERVICAL TUMOR SEGMENTATION BASED ON MR IMAGES**

Ying Su[1], Weizhong Sun[1], Yanchi Shi[2], Fangfang Han[1], He Ma[1*], Ying Kang[1]
[1]Sino-Dutch Biomedical and Information and Egineering School, Shenyang, China
[2]Department of Radiology of Shengjing Hospital of China Medical University, Shenyang, China

**I2601** **MEASUREMENT OF OPTIC NERVE SHEATH ON OCULAR ULTRASOUND IMAGE BASED ON SEGMENTATION BY CNN**

Maolin Pang[1], Sunao Liu[1], Fanchao Lin[1], Songlin Liu[1], Bei Tian[2], Wenli Yang[2], Xuejin Chen[1*]
[1]University of Science and Technology of China, Hefei, Anhui
[1]Beijing Tongren Hospital, Beijing, China

**I2929** **MALARIA DISEASE PREDICTION BASED ON MACHINE LEARNING**

Octave Iradukunda[1], Haiying Che[1*], Josiane Uwineza[1],Jean Yves Bayingana[1], Muhammad S Bin-Imam[1], Ibrahim Niyonzima[1]
[1]School of Computer Science and Technology, Beijing Institute of Technology, Beijing, China
[2]School of Automation, Beijing Institute of Technology, Beijing, China

## Poster Session 12: Signal Processing Theory and Methods

**Time:** **15: 00 - 16: 00, December 13, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Prof. Wei Li, Beijing Institute of Technology, China**

**K1137** **AN INADVERTENT MODULATION FEATURE EXTRACTION METHOD BASED ON WMUWD AND MF-DFA**

Jian Sun[*], Hui Ma, Yaqing Du, Guangxun Lu, Haitao Bai
Luoyang Electronic Equipment Test Center of China

**K1176** **THE INFLUENCE OF PARAMETER SELECTION FOR RENYI PHASE PERMUTATION ENTROPY ON ABNORMAL CHANGE DETECTION**

Huan Kang, Xiaofeng Zhang[*]
School of Physics and Information Technology, Shaanxi Normal University, Xi'an, China

**K1381** **RADIATION SOURCE IDENTIFICATION BASED ON BOX DIMENSION OF PF AND SIB FUSION**

Shuang Ma[1], Yanhua Jin[1*], Xin Zhou[2]
[1]School of Aeronautics & Astronautics,University of Electronic Science and Technology of China,Chengdu,China
[2]Institute of Softwave, Chinese Academy of Sciences,Beijing, China

**K1481** **RADAR JAMMING RECOGNITION METHOD BASED ON FUZZY CLUSTERING DECISION TREE**

Yuning Wei[1*], Yong Li[1], Jindong Zhang[1]
[1]Key Laboratory of Radar Imaging and Microwave Photonics, Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing, China

**K1505** **CLASSIFICATION OF PEDESTRIAN MOTION BASED ON MICRO-DOPPLER FEATURE WITH LFMCW RADAR**

Yinsheng Wei[1],Yun Zhang[1],Zhaoyang Xu[1], XinLi[2]
[1]School of Electronic and Information Engineering, Harbin Institute of Technology, China
[2]Aviation University of Air Force, China

**K1556** **A PERFORMANCE ANALYSIS OF NEURAL NETWORK MODELS IN HRRP TARGET RECOGNITION**

Zhequan Fu*, Shangsheng Li, Xiangping Li, Bo Dan, Xukun Wang
Naval Aviation University, Yantai, China

**K1597** **A NOVEL HYBRID CONSENSUS-BASED HIGH-DEGREE CUBATURE INFORMATION FILTER**

Jun Liu, Yu Liu*, Kai Dong, Ziran Ding, Qichao Li
Naval Aviation University, Yantai, China

**K1762** **A MULTI-FEATURE HRRP TARGET RECOGNITION METHOD BASED ON RELIEFF ALGORITHM**

Kai Liu[1], Wenke Xie[1*], Jianping Ou[2], Hu Weihua[2], Pan Zhang[1,2], Guofan Wang[1,2]
[1]School of Physics and Electronics, Central South University , Changsha, China
[2]Academy of Electronic Sciences ,National University of Defence Technology, Changsha, China

**K1871** **GENERATIVE ADVERSARIAL NETWORKS FOR EXOATMOSPHERIC INFRARED OBJECTS DISCRIMINATION**

Dongya Wu[1*], Huanzhang Lu[1], Huamin Tao[1], Bendong Zhao[1], Ming Zhao[2]
[1]Department of Electronic Science National University of Defense Technology, Changsha, China
[2]Science and Technology on Near-Surface Detection Laboratory, Wuxi, China

**K1903** **A NOVEL THREAT SENSING ARCHITECTURE FOR HETEROGENEOUS COGNITIVE SENSOR NETWORKS**

Yongji REN[1*], Yun ZHANG[1], Zheng ZHOU[1], Xiaofeng XU[2], Xiaolei LIU[3]
[1]Naval Aviation University, Yantai, China
[2]Science and Technology on Communication Information Security Control Laboratory, Jiaxing, China
[3]Yantai Vocational College, Yantai, China

**K1931** **PROBE MACHINE BASED OPTIMIZATION APPROACH FOR CAPACITATED VEHICLE ROUTING PROBLEM**

Md. Azizur Rahman, Jinwen Ma*
Department of Information Science, School of Mathematical Sciences & LMAM, Peking University, Beijing, 100871, P. R. China

**K1948** **HIGH-PARALLEL HYPERSPECTRAL IMAGE DETECTION ALGORITHM BY SHERMAN-MORRISON CALCULATION OF DUAL-WINDOWS**

Yuan Li[1], Lu Li[1*], Wei Li[2]
[1]College of Information Science & Technology, Beijing University of Chemical Technology, Beijing, China
[2]School of Information and Electronics, Beijing Institute of Technology, Beijing, China

**K2148 A SECOND ORDER SYNCHROSQUEEZING S-TRANSFORM FOR ISAR IMAGING**

Mingzhe Zhu[1], Zijiao Tian[1], Lu Zhong[1*], Xianda Zhou[1], Bo Zang[1], Rui Xiao[1]
[1]Xidian University, No.2 Southern Tai Bai Rd., Xi An, Shaanxi, P.R.China, Xian, China, City, Country

**K2313 A MULTI-TASK BAYESIAN ALGORITHM FOR ONLINE COMPRESSED SENSING OF STREAMING SIGNALS**

Daoguang Dong*, Guosheng Rui, Wenbiao Tian, Ge Liu, Haibo Zhang
Navy Aviation University, Yantai, China

**K2409 CONVOLUTION AND CORRELATION THEOREMS FOR THE WINDOWED OFFSET LINEAR CANONICAL TRANSFORM***

Wenbiao Gao[1], Bingzhao Li[2*]
[1]School of Mathematics and Statistics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory on MCAACI, Beijing Institute of Technology, Beijing, China

**K2547 WIGNER DISTRIBUTION IN LINEAR CANONICAL DOMAINS: PROPERTIES AND DISCRETIZATION**

Zhichao Zhang[1*]
[1]School of Mathematics and Statistics, Nanjing University of Information Science & Technology, No 219, Ningliu Road, Nanjing, China

**K2617 DETECTION PERFORMANCE OF PASSIVE BISTATIC RADAR BASED ON NCAF**

Zhang Cai-sheng*, Chen Xiao-long, Zhang Hai
Naval Aviation University, Yantai, Shandong, P.R.China

**K2721 TOEPLITZ-BASED UNDERWATER ACOUSTIC CHANNEL BLIND DECONVOLUTION**

Siyuan Cang[1,2,3], Johan Sward[4], Xueli Sheng[1,2,3*], Andreas Jakobsson[4]
[1]Acoustic Science and Technology Laboratory, Harbin Engineering University, Harbin 150001, China
[2]Key Laboratory of Marine Information Acquisition and Security(Harbin Engineering University),Ministry of Industry and Information Technology, Harbin 150001, China
[3]College of Underwater Acoustic Engineering, Harbin Engineering University, Harbin 150001, China
[4]Department of Mathematical Statistics, Lund University, Lund SE-221 00, Sweden

**K2868 PSEUDO INDEPENDENT CONDITIONAL APPROXIMATION FOR TRAINING THE MIXTURES OF GAUSSIAN PROCESSES**

Jiahui Luo, Jinwen Ma*
Department of Information Science, School of Mathematical Sciences, Peking University, Beijing, China

**K2886** **THE JOINT DETECTOR BASED ON PRIOR KNOWLEDGE FOR MULTIPATH ENVIRONMENT**

Chun Cao, Chongyi Fan*, Huagui Du, Zhen Chen, Sixian Chen, Xiaoqing Jiang, Xiaotao Huang
College of Electronic Science and Technology National University of Defence Technology, Changsha, Hunan, China

**K2902** **ERROR LOWER BOUNDS AND SNR THRESHOLD PREDICTION IN TIME DELAY ESTIMATION VIA SPREADING CODES**

Suyang Liu[1], Chunjie Qiao[2], Jun Yang[1*], Xiye Guo[1]
[1]College of Intelligence Science and Technology, National University of Defense Technology, Changsha, China
[2]Changsha Technology Research Institute of Beidou Industry Safety, Changsha, China

**K3045** **A MULTIPLE DIMENSIONAL PARAMETER ESTIMATION METHOD FOR AIRBORNE ARRAY RADAR**

Xiaodong Han[1*], Ting Shu[1], Jin He[1], Xiaoming Li[2],Wenxian Yu[1]
[1]Shanghai Key Laboratory of Intelligent Sensing and Recognition, Shanghai JiaoTong University, Shanghai, China
[2]A VIC Leihua Electronic Technology Research Institute, Wuxi, China

**K3059** **MOVING HORIZON ESTIMATION FOR NETWORKED SYSTEMS WITH PACKET DROPOUTS COMPENSATION**

Shuai Liu*, Guorong Zhao, Chao Gao
Coastal defence academy, Naval Aviation University, Yantai, China

**K3065** **A METHOD TO IMPROVE THE ACCURACY OF ANGLE FOR AUTOMOTIVE RADAR**

Siyu Bai[1], Chengfa Xu[1]*
[1]BEIJING INSTITUTE OF TECHNOLOGY, BEIJING, China

**K3144** **RADAR SPECIFIC EMITTER IDENTIFICATION USING CARRIER FREQUENCY FEATURE**

Yao Qun[1*], Chai Heng[1], Gao Moyun[1]
[1]National Defense Laboratory for Marine Electromagnetism, 723 Institute of China Shipbuilding Industry Corporation(CSIC),Yang Zhou, China

**K3164** **SENSOR POSITION ERRORS CALIBRATION ALGORITHM OF NEAR-FIELD SOURCE BASED ON FOURTH-ORDER CUMULANT**

Mengyu Ni[1*], Hui Chen[1], Yang Cheng[2], Liuliu Ni[1], Xiaoge Wang[1]
[1]Air Force Early Warning Academy, Wuhan, China
[2]No.95662 Unit, the PLA, Lasa, China

**K3183 A COMPUTATIONALLY EFFICIENT FDOA ESTIMATION METHOD FOR RADAR PULSE TRAIN**

Hongzhi Jiang[1], Dexiu Hu[1*], Yongjun Zhao[1], Yongsheng Zhao[1], Zhixin Liu[1], Xiangying Gao[1]
[1]PLA Strategic Support Force Information Engineering University, Zhengzhou, China

**K3192 A IMPROVED HISTOGRAM PROBABILISTIC MULTIPLE HYPOTHESIS TRACKING ALGORITHM FOR MANEUVERING WEAK TARGET**

Wei Shangguan[1], Ying Lu[2], Jinping Sun[2*]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China
[2]School of Electronic and Information Engineering, Behang University, Beijing, China

**K3193 MINIMUM ENTROPY BASED VELOCITY COMPENSATION ALGORITHM FOR STRETCHED CHIRP-STEP WAVEFORMS**

Mingjing Liu[1*], Jianping Chen[2]
[1]Nanjing Research Institute of Electronic Technology, Nanjing, China
[2]Nanjing Research Center of ZTE, Nanjing, China

**K3225 MODULATION RECOGNITION OF SPACE-TIME BLOCK CODES BASED ON FOURTH-ORDER DELAY MATRIX**

Yu Keyuan[1], Zhang Limin[2*], Jin Kun[1], Yan Wenjun[1], Liu Zhao[3]
[1] Naval Aeronautical University,Yantai,China
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[3]92429 army, Qingdao, City, Country

**K3236 ANTI-JAMMING EFFECTIVENESS EVALUATION AND SIMULATION OF ANTI-RADIATION UNMANNED AERIAL VEHICLE**

LIU Yang[1], DONG Wen-feng[1], LIU Yang[2*]
[1]Information confrontation department,Air Force Early Warning Academy Wuhan China , City, Country
[2]Information confrontation department,Air Force Early Warning Academy Wuhan China , City, Country

**K3241 A NOVEL TARGET CLASSIFICATION AND IDENTIFICATION ALGORITHM FOR 77G LFMCW AUTOMOTIVE COLLISION AVOIDANCE RADAR**

Jing Zhang[1*], Weike Shang[1]
[1]The business department of military trade and civilian radar, The 38 Research Institution of CETC, Hefei, China

**K3251 MULTI-TARGET LOCALIZATION WITH MIMO RADAR VIA COUPLED CANONICAL POLYADIC DECOMPOSITION**

Geng Chen[12*], Ze-Feng Zhu[1], Jia-Xing Yang[2], Xiao-Feng Gong[2]
[1]People's Liberation Army of China, No. 91913, Dalian, China
[2]School of Information and Communication Engineering, Dalian University of Technology, Dalian, China

**K3328** **A NOVEL MULTIPLE HYPOTHESIS TRACKING ALGORITHM INTEGRATED WITH DETECTION PROCESSING**

Ziwei Wang[1], Jinping Sun[1*], Naiyu Wang[1]
[1]School of Electronic and Information Engineering, Behang University, Beijing, China

**K3334** **AN ENHANCED SMALL SIGNAL EQUIVALENT CIRCUIT MODEL FOR TRANSMISSION BANDWIDTH FAULT DIAGNOSIS OF VCSEL**

Tao Xiang[1], WenHao Chen[2*], Li Wang[3]
[1,2,3] Southwest China Institute Electronic Technology Chengdu, China

**K3345** **SPECIFIC EMITTER IDENTIFICATION BASED ON INSTANTANEOUS FREQUENCY CHARACTERISTICS**

Moyun Gao[1], Heng Chai[1], Jinfeng Wang[1]
[1]National Laboratory of Marine Electromagnetism, China Shipbuilding Industry Corporation No.723 Institute, Yangzhou, China

**K3421** **BEAM-WAVEGUIDE-ANTENNA MONOPULSE RADAR AMPLITUDEPHASE INCONSISTENCY SATELLITE CALIBRATION METHOD**

Peiwen Yang[1], Huawei Cao[1], Jialiang Han[1],Defeng Chen[2*]
[1]Beijing Institute of Technology, Beijing, China

**K3442** **MULTI-SENSOR ATTITUDE INFORMATION FUSION BASED ON EKF FOR MICRO-SATELLITE**

Fengqi Jiang[1], Xin Song[1*], Zhenguo Yan[1]
[1]College of Aerospace Science and Engineering, National University of Defense Technology, Changsha, China 410073

**K3449** **UNIMODULAR PHASE-CODED WAVEFORMS WITH LOW SIDELOBES OVER DESIRED RANGE-DOPPLER REGIONS**

Yinghao Sun[1,2], Lixiang Ren[1,2*], Kang Zhang[3], Erke Mao[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation(Beijing Institute of Technology), Ministry of Education, Beijing, China
[3]Beijing Institute of Radio Measurement, Beijing, China

**K3482** **WEAK TARGET INTEGRATION DETECTION BASED ON BISTATIC RADAR SECOND-ORDER KEYSTONE TRANSFORM**

Pan Jin[1], Xuan Rao[1], Xiangsheng Zhu[1], Fengqin Kan[1], Pan Jin[2*]
[1]School of Information Engineering, Nanchang Hangkong University, Nanchang, China

**K3504** **HUMAN TARGET ENHANCEMENT BASED ON RADON FOURIER TRANSFORM IN THROUGH-WALL IMAGING RADAR**

Yongfei Huang, Linjie Qian
Communication NCO school Army Engineering University of PLA, Chongqing, China

**K3629 THE PROCESSING OF SYNCHRONOUS DOUBLE PULSE LASER INDUCED ACOUSTIC SIGNAL**

Liu Tao[1*], Zong Siguang[1], Zhang Wencheng[2]
[1]Naval University of Engineering, Wuhan, China
[2]Naval Qingdao Base Radar Soar Repair Factory, Qingdao, China

**K3639 A CLUTTER SUPPRESSION METHOD FOR DIVERSE PULSE TRAIN WITH DIFFERENT INTRA-PULSE FREQUENCY CODING**

Fei Wang[1,2], Huaye Fan[1,2],Lixiang Ren[1,2*], Erke Mao[1,2],JianYang[1,2]
[1]School of Information and Electronics Beijing Institute of Technology Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation Beijing, China

**K3704 POST COMPENSATION OF WEAK NONLINEARITY FOR DIGITAL RECEIVER**

Peng Liang, Peng Xu, ShenZhiben
Wuhan Second Ship Design and Research Institute, Wuhan, Hubei, P.R. China

**K3713 A PHASE ADJUSTMENT METHOD FOR COMPENSATING DOPPLER MIGRATION IN PASSIVE BISTATIC RADAR**

Jue Wang, Bo Gao, Yifei Yan, Yingjun Li
Xi'an Research Institute of Navigation Technology, Xi'an, P. R. China

**K3722 APPLICATION OF GROUND-BASED DEFORMATION MONITORING RADAR IN MINE SLOPE MONITORING-TAKING A MINE IN INNER MONGOLIA AS AN EXAMPLE**

Yaolong Qi[1], Mingzhi Zhang[2], Lin Qi[3,4], Weixian Tan[3,4*], Jinping Sun[1*], Pingping Huang[3,4], Wei Xu[3,4]
[1]Electronics & Information Engineering, Beihang University, Beijing, China
[2]China Institute of Geological and Environmental Monitoring, Beijing, China
[3]Inner Mongolia Key Laboratory of Radar Technology and Application, Hohhot, China
[4]College of Information Engineering, Inner Mongolia University of Technology, Hohhot, China

**K3740 INFORMATION MODEL OF RADAR COMMUNICATION SYSTEM AND OPTIMIZATION OF POWER ALLOCATION**

Dan Chen[1*], Dazhuan Xu[1]
[1]Jiangsu Key Laboratory of Internet of Things and Control Technologies, College of Electronic and Information Engineering, Nanjing University of Aeronautics and Astronautics, 29 Jiangjun Avenue, Jiangning District, Nanjing, People's Republic of China

**K3765 INTERRUPTED SAMPLING REPEATER JAMMING SUPPRESSION METHOD BASED ON HYBRID MODULATED RADAR SIGNAL**

Jiaxiang Zhang[1,2], Chao Zhou[1,2*]
[1]Radar Research Lab,School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation(Beijing Institute of Technology), Ministry of Education,Beijing 100081, China

**K3776 A TWO-STEP PARAMETER ESTIMATION ALGORITHM FOR MICROWAVE PHOTONIC SPECTRUM AWARENESS**

Lu Chen[1], Yesheng Gao[1*], Xingzhao Liu[1], Zhicheng Wang[2]
[1]State Key Laboratory of Advanced Optical Communication System and Networks Department of Electronic Engineering, Shanghai Jiao Tong University, Shanghai, China
[2]Shanghai Radio Equipment Research Institute, Shanghai, China

**K3853 GENERATING FREQUNECY-HAPPING SEQUENCES BY CLIFFORD MAP**

Bo Pan, Dong Wang, Bin Wu, Zhi Hu
Engineering College, Air Force Engineering University

**K3884 MICRO-MOTION FEATURE EXTRACTION BASED ON PHASE-DERIVED VELOCITY MEASUREMENT FOR HIGH-SPEED TARGETS**

Huayu Fan[1], Wenji Li[2,3], Lixiang Ren[2,3*], Erke Mao[2,3], Jian Yang[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, China
[2]Radar Research Lab,School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[3]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology),Ministry of Education, Beijing, China

**K3900 A NOVEL PARAMETER ESTIMATION METHOD OF INTERRUPTED SAMPLING REPEATER JAMMING**

Yunyun Meng[1], Lei Yu[1*], Yinsheng Wei[1], Peng Tong[1]
[1]School of Electronic and Information Engineering， Harbin Institute of Technology，Harbin, China

**K3958 HIGH ACCURACY ACTIVE STAND-OFF TARGET GEOLOCATION USING UAV PLATFORM**

Xiwen Yang[1*], Defu Lin[1], Fubiao Zhang[1], Tao Song[1], Tao Jiang[1]
[1]Institute of UAV Autonomous Control, School of Aerospace Engineering, Beijing Institute of Technology, Beijing, China

**K3959 DUAL-CHANNEL MONOPULSE ANGLE ESTIMATION METHOD FOR WEAK TARGET BASED ON REFERENCE SIGNAL**

Yechen Li, Jie Yao, Qing Shen, Wei Cui
School of Information and Electronics, Beijing Institute of Technology, Beijing, China, 100081

**K3979 DETECTING METHOD FOR RESOLVABLE GROUP-TARGET SEPARATION BASED ON STANDARD DEVIATIONAL ELLIPSE**

Guanxu Huang[1], Xiaopeng Yang[1]*, Quanhua Liu[1], Zhennan Liang[1], Kuiyu Qu[1]
[1]School of Information and Electronics, Beijing Institute of Technology, and Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China

**K3981 PRELIMINARY EXPLORATION OF DETECTION AND COMMUNICATION UNIFICATION TECHNOLOGY FOR GROUND-BASED RADAR**

Zhou Hong, Tian Minghong, Yuan Zhentao, Wan Chao, Song Zhengxin, Xu Yang, Guo Jianming, Yuan Changcheng Nanjing Marine Radar Institute, Nanjing, China

**K4103 TARGET DETECTION METHOD FOR QUASI-CONTINUOUS WAVE SYSTEM RADAR**

Yu Zhang
Department of information processing, Nanjing Research Institute of Electronics Technology, Nanjing, China

**K4142 GRAPH TRAVERSAL APPLIED TO SEARCH FOR OPTIMAL MINIMUM PEAK SIDELOBE LEVEL BINARY SEQUENCES**

Yi Yang[1], Wei Ren[1], Yuanyuan Song[1*], Hao Li[1]
[1]Key Laboratory of Electronic and Information Technology in Satellite Navigation, Beijing Institute of Technology, Ministry of Education, Beijing, China

**K4237 THE APPLICATION OF PSEUDO-RANGE SMOOTHING IN TWO WAY TIME TRANSFER BASED ON ADAPTIVE KALMAN FILTERING**

Zihuan Hao[1,2], Jian Li[1,2*], Tu Xu[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

**K4741 OPTIMAL DESIGN OF MTD FILTER BASED ON FIR**

Dai Qiaona[1], Tian Yonghua[2]
[1,2]Surveillance Radar General Design Department, Beijing Institute of Radio Measurement, Beijing, China

**K5113 THE DENOISE AND RECONSTRUCTION METHOD FOR RADAR HRRP USING ENHANCED SPARSE AUTO-ENCODER**

Chen Guo[1], Cong'an Xu[1*], Shun Sun[1], Xiaohan Zhang[1]
[1]Institute of Information Fusion, Naval Aviation University, Yantai, China

**K5187** **AN AUGMENTED SPARSE ITERATIVE COVARIANCE-BASED ESTIMATION METHOD BASED ON ELASTIC NET FOR DOA ESTIMATION**

Zhengxiang Wu[1*], Ling He[1], Xiao Yan[1], Qian Wang[1], Lanfeng Xie[2]
[1] School of Astronautics & Aeronautic University of Electronic Science and Technology of China, Chengdu, China
[2] Chengdu Aircraft Design Institute of China Aviation Industry Group Corporation, Chengdu, China

**K5372** **BLOCK INVERSE-FREE SPARSE BAYESIAN LEARNING FOR BLOCK SPARSE SIGNAL RECOVERY**

Pengfei Chen, Juan Zhao*, Xia Bai
School of Information and Electronics, Beijing Institute of Technology, Beijing, P.R. China

**K5398** **SIGNAL DETECTION BASED ON RECURSIVE AUTOCORRELATION AND MN METHOD FOR SYNCHRONOUS NYQUIST FOLDING RECEIVER**

Xinqun Liu[1*], Tao Li[2], Shaoying Su[1], Zengping Chen[3]
[1]National Key Laboratory of Science and Technology on ATR, National University of Defense Technology (NUDT), Changsha, China
[2]Artificial Intelligence Research Center (AIRC), National Innovation Institute of Defense Technology (NIIDT), Beijing, China
[3]School of Electronics and Communication Engineering, Yat-Sen University, Guangzhou, China

**K5460** **A LOCATION METHOD FOR GROUND MOVING TARGET WITH AZIMUTH SPECTRUM ALIASING IN GEOSYNCHRONOUS SPACEBORNE-AIRBORNE BISTATIC MULTICHANNEL SAR**

Ying Zhang[1], Wei Xiong[1], Xichao Dong[2,3*], Cheng Hu[2,3], Chengxiang Liu[1], Yang Sun[1]
[1]Science and Technology on Complex Electronic System Simulation Laboratory，Space Engineering University, Beijing, China
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[3]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

**K5711** **AN IMPROVED ADAPTIVE PULSE COMPRESSION ALGORITHM BASED ON LINEAR FREQUENCY MODULATION SIGNAL**

Jinliang Bai[1*], Peng Qin[1], Hu Li[1], Ran Zhang[1], Xinyu Zhang[1]
[1]National key laboratory of science and technology on test physics and numerical mathematics, Beijing Institute of Space Long March Vehicle, Beijing, China

**K5960** **THE GDST FRAME AND INVERSE TRANSFORMS**

Yusong Yan[1], Hongmei Zhu[2]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
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**K5961 HARMONIC RETRIEVAL VIA LOW RESOLUTION SAMPLING**

Heng Zhu[1], Fangqing Liu[1] and Jian Li1[2]
[1]Department of EEIS, University of Science and Technology of China, Hefei, Anhui, China
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**K6228 FPGA IMPLEMENTATION FOR HYPERSPECTRAL TARGET DETECTION WITH ADAPTIVE COHERENCE ESTIMATOR**

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**K7622 A NEW RIEMANNIAN STRUCTURE IN SPD(N)**

Shiqiang Zhang[1], Yueqi Cao[1], Wenyu Li[2], Fangjia Yan[1], Yihao Luo[1], Huafei Sun[1*]
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**K31017 AN INTERACTING MULTIPLE MODEL SMOOTHING ALGORITHM FOR NONLINEAR MANEUVERING TARGET TRACKING**

KeFei Li[1,2,3,4], Xiaochuan Ma[1,2,3*], Yu Liu[1,2,3], Dongyu Yuan[1,2]
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**K31073 A NOVEL WIDEBAND DISTRIBUTED COHERENT RADAR PERFORMANCE EVALUATION METHOD**

Yunna Li[1], Zhennan Liang[1], Quanhua Liu[1*], Shaoqiang Chang[1], Kaixiang Zhang[1]
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**K31092 A HIGH-PRECISION POSITION FINDING METHOD FOR SHORT BASELINE RADAR SYSTEM**

Jiandong Li[1,2], Huayu Fan[3], Lixiang Ren[1,2*], Erke Mao[1,2]
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**K31096 MODIFIED TWO-FILTER SMOOTHING METHOD FOR COMPLEX NONLINEAR TARGET TRACKING**

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[1]Information Science Academy of China Electronics Technology Group Corporation, Beijing, China
[2]The 15th Research Institute of China Electronics Technology Group Corporation, Beijing, China

**N0041 INSTANTANEOUS FREQUENCY ESTIMATION OF HFM SIGNAL BASED ON INTERPOLATED STFRFT-VARIABLE WEIGHT LEAST SQUARE FITTING**

CAO Weihao[1*], YAO Zhixiang[1]
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**N0056 UNDERWATER MANEUVERING TARGET TRACKING ALGORITHM BASED ON INTERACTING MULTIPLE MODEL STRONG TRACKING SQUARE-ROOT CUBATURE KALMAN FILTER**

KeFei Li[1,2,3,4], Xiaochuan Ma[1,2,3*], Yu Liu[1,2,3], Dongyu Yuan[1,2]
[1]Institute of Acoustics, Chinese Academy of Science, Beijing, China
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**N0174 ANALYSIS OF REFLECTED CHARACTERISTICS OF MICROWAVE/MILLIMETER WAVE BASED ON MULTI-LAYER GRAPHENE**

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**N0217** **ENGINEERING CALCULATION METHOD OF AERODYNAMIC COEFFICIENTS FOR AIR-BREATHING HYPERSONIC VEHICLE**

Zhu Chenhao[1], Cui Naigang[1*], Chen Haipeng[2]
[1]Department of Astronautics Engineering, Harbin Institute of Technology, Harbin, China
[2]Shanghai Institute of Spaceflight Control Technology, Shanghai Academy of Spaceflight Technology, Shanghai, China

## Poster Session 13: Signal Processing for Cyberspace Security

**Time:** **15: 00 - 16: 00, December 13, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Prof. Yanhua Wang, Beijing Institute of Technology, China**

**L1583** **HIGH-SPEED AND HIGH-SECURITY HYBRID AES-ECC CRYPTOSYSTEM BASED ON FPGA**

Jingqi Zhang[1], Wei Gao[1], Jiakun Li[1], Xiaoyang Tian[2], Hua Dang[1*],
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Standard Department, Datang Mobile Communication Equipment Co., Ltd., Beijing, China

**L2870** **A PHYSICAL LAYER KEY GENERATION METHOD WITH RELIABLE NEGOTIATION**

Yuchen Wang[1], Xuanli Wu[2*], Zhicong Xu[3], Wei Wu[4], Hu Li[5], Ran Zhang[6]
[1,2,3,4]School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China
[5,6]National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, Beijing, China

## Poster Session 14: The Internet of Things

**Time:** **15: 00 - 16: 00, December 13, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Dr. YuzeSun, Beijing Institute of Technology, China**

**M1890** **NETWORK CONNECTIVITY PERFORMANCE ANALYSIS OF PLATOON-BASED VEHICULAR AD-HOC NETWORK ON A TWO-WAY LANE**

Chenghua Bian[1], Junhui Zhao[1,2*], Xiaoke Sun[2], Xuan Li[1], Dan Zou[1]
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[2]School of Electronic and Information Engineering, Beijing Jiaotong University, Beijing, China

**M2732 AN INTEGRATED SIMULATION PLATFORM FOR SPECTRUM COOPERATION IN VANETS**

Shanshan Jin[1,2], Chao Dong[1,2*], Wenjing You[1,2], Nan Zhong[2], Qihui Wu[1,2]
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[2]Department of Electronic and Information Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

**M3551 ROBUST BEAMFORMING FOR SWIPT IN MASSIVE MIMO**

Fengchao Zhu[1], Feifei Gao[2]
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[2]Tsinghua University, Beijing, China

**M3625 DESIGN AND OPTIMIZATION OF AGENT-AND-FORWARD SYSTEM WITH MULTI-SOURCE AND MULTI-RELAY**

Junwei Bao[1,2], Dazhuan Xu[1*], Hao Luo[1], Dan Chen[1]
[1]College of Electronics and Information Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China
[2]College of Science, Nanjing University of Aeronautics and Astronautics, Nanjing, China

**M4532 COMPRESSED SENSING FOR PHYSICAL LAYER SECURITY IN SINGLE RELAY COOPERATIVE SYSTEM**

Guangyao Han[1], Xiaomei Fu[1], Qing Lyu[2]
[1]School of Marine Sci. and Tech. Tianjin University Tianjin, China
[2]School of Electrical and Information Eng. Tianjin University Tianjin, China

**M5190 EFFECT ANALYSIS OF PASSIVE NODE MOBILITY ON UNDERWATER OPTICAL COMMUNICATIONS**

Li Xu[1], XiaoYa Hu[1] Wei Li[2], XiaoYa Hu[1*]
[1]School of Artificial Intelligence and Automation, Huazhong University of Science and Technology, Wuhan 430074, China
[2]Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan 430074, China

**M5833 A LOW-COPMLEXITY 2D DOA ESTIMATION ALGORITHM FOR MASSIVE MIMO SYSTEMS**

Wei Wu, Beizuo Zhu, Leiming Tang, Xiaofei Zhang*
Nanjing University of Aeronautics and Astronautics, Nanjing, China

**M6562** **ASNET: ANTENNA SELECTION LEARNING NETWORK FOR MOBILE TERMINAL DEVICES**

Chia-Hung Lin[1,5], Chao-Kai Wen[2], Member, IEEE, Shi Jin[3], Senior Member, IEEE, Wei-Ho Chung[4,5], and Ta-Sung Lee[1,5], Fellow, IEEE
[1]Institute of Communications Engineering, National Chiao Tung University, Taiwan
[2]Institute of Communications Engineering, National Sun Yat-sen University, Taiwan
[3]National Mobile Communications Research Laboratory, Southeast University, China
[4]Department of Electrical Engineering, National Tsing Hua University, Taiwan
[5]Center for mmWave Smart Radar Systems and Technologies, National Chiao Tung University, Taiwan

**M6945** **PROPERTIES OF BERNOULLI RANDOM PROJECTION FOR EMBEDDING SUBSPACES**

Qinghua Liu, Gen Li, and Yuantao Gu
Beijing National Research Center for Information Science and Technology (BNRist) and Department of Electronic Engineering, Tsinghua University, Beijing, China

**M6946** **WHY SUBSPACE CLUSTERING WORKS ON COMPRESSED DATA?**

Linghang Meng, Gen Li, and Yuantao Gu
Beijing National Research Center for Information Science and Technology (BNRist) and Department of Electronic Engineering, Tsinghua University, Beijing, China

**M31001** **A DATA TRANSMISSION MODEL IN MULTIMODE HETEROGENEOUS WIRELESS NETWORKS**

Feng Jin[1], Xianlie Li[1*], Donglin Bai[1], Yang Du[1], Yu Song[1]
[1]College of Information and Communication, National University of Defense Technology, Wuhan, China

## Poster Session 15: GNSS Signal Processing and Positioning

**Time:** **15: 00 - 16: 00, December 13, 2019**
**Place:** **Crowne Grand Ballroom A1, B2 of Hotel**
**Chair:** **Dr. Tao Lin, UniStrong, China**

**N0892** **GNSS ISL BASED NAVIGATION OF SATELLITES IN GEOTRANSFER ORBITS**

Yifan Zhou[1], Wende Huang[1], Leyuan Sun[1], Yueke Wang[1*], Chen Zhang[2]
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[2]Beijing Satellite Navigation Center, Beijing, China

**N0930** **AUTONOMOUS TIME SYNCHRONIZATION USING BEIDOU INTER-SATELLITE LINK RANGING**

Leyuan Sun[1], Yuan Gao[2], Wende Huang[1], Ping Li[3], Yifan Zhou[1], Jun Yang[1*]
[1]College of Intelligence Science and Technology, National University of Defense Technology, Changsha, China
[2]Beijing Satellite Navigation Center, Beijing, China
[3]Chongqing Normal University, Chongqing, China

**P2247** **RESEARCH ON GNSS ANTI-SPOOFING INTERFERENCE ALGORITHM BASED ON MUTI-RECEIVER**

Xiao Liu[1,2], Jian Li[1,2*], Tu Xu[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

**P2283** **TRACKING OF MOVING TARGET BASED ON SIAMMASK FOR VIDEO SAR SYSTEM**

Zihan Liang[1], Chaojie Lian[2], Yun Zhang[1], Huilin Mu[1], Gaopeng Li[2]
[1]School of Electronic and Information Engineering Harbin Institute of Technology Harbin, China
[2]Beijing Institute of Aerospace Systems Engineering Beijing, China

**P2864** **PERFORMANCE ANALYSIS OF DIFFERENT NONCOHERENT INTEGRATION ALTERNATIVES FOR WEAK GPS SIGNAL ACQUISITION**

Wen Zhang[1*], Yanqun Wu[1*], Lina Ma[1], Hongyang Bai[2, 3], Wen Chen[1], Tianyu Chen[1], Zuyong Wu[1]
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[3]School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing, China

**P2949** **ANALYSIS AND APPLICATION OF CNR PERFORMANCE OF STAP ANTI-JAMMING METHOD FOR GNSS RECEIVER**

Yi Guo[1]*, Ming Fan[2], Xiaoyan Ding[3], Fangjun Yan[1], Weihua Xie[1], Min Kong[1]
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[2]System Engineering Research Institute, Beijing, P.R.China
[3]Hebei Engineering Research Center for Geographic Information Application, Institute of Geographical Sciences, Hebei Academy of Sciences, Shijiazhuang, P.R.China

**P3216** **A FAST SATELLITE SELECTION ALGORITHM FOR GPS / BD INTEGRATED NAVIGATION SYSTEM BASED ON K-MEANS++ CLUSTERING ALGORITHM**

Tu Xu [1,2], Jian Li[1,2*], Xiao Liu [1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

**P5807** **ASSESSMENT OF ULTRA-TIGHTLY COUPLED GNSS/INS INTEGRATION SYSTEM TOWARDS AUTONOMOUS GROUND VEHICLE NAVIGATION USING MOBILE-PHONE IMU**

Yiran Luo[1,2,3], Chunyang Yu[3], Bing Xu[4], Guang-Je Tsai[5], Jian Li[1,2], You Li[3], and Naser El-Sheimy[3]
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**P21002** **AN ALGORITHM USING TRIPLE-FREQUENCY PSEUDORANGE-CARRIER PHASE COMBINATION FOR CYCLE-SLIP DETECTION AND REPAIR**

Min KONG[1], Fangjun YAN[1], Lili LIU[1], Pengpeng XU[1], Yuan GAO[1*]
[1]Beijing Satellite Navigation Center, Beijing, China

**P21003** **AN ADAPTIVE TIME HATCH FILTERING OF CARRIER PHASE SMOOTHING PSEUDORANGE**

Yuan GAO[1*], Min KONG[1], Lili LIU[1], Pengpeng XU[1], Fangjun YAN[1]
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## Poster Session 16: Signal Processing for Communications and Networks

**Time:** 15: 00 - 16: 00, December 13, 2019
**Place:** Crowne Grand Ballroom A1, B2 of Hotel
**Chair:** Prof. Rui Wang, Beijing Institute of Technology

**C1419** **MODIFIED ITERATIVE BP-CNN DECODER UNDER CORRELATED NOISE WITH SYMMETRIC α-STABLE DISTRIBUTIONS**

Senlin Li[1,2], Sihui Zheng[1,2], Jingwen Zhang[3], Xiang Chen[1,2*], Zesong Fei[3]
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**C5266** **AN ADVANCED ALGORITHM FOR SPECTRUM ALLOCATION OF PRIMARY USERS BASED ON COURNOT GAME**

NaiQian Zhang[1], Dou Yang[1], LiBiao Jing[2*]
[1]School of Information and Communication Engineering, Beijing, China
[2]Communication University of China, Beijing, China

**C7343** **AN ENERGY-EFFICIENT ROUTING PROTOCOL FOR WIRELESS SENSOR NETWORKS THROUGH ESTIMATING SINGLE LINKAGE HIERARCHICAL CLUSTERING**

Dekang Zhu[1*], Dan P. Guralnik[2], Bill Moran[3]
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[2]Dept of Electrical & Systems Engineering, University of Pennsylvania, Philadelphia, United States
[3]Dept of Electrical & Electronic Engineering, University of Melbourne, Melbourne, Australia

**C31088** **TARGET DETECTION ALGORITHM FOR AIRBORNE RADAR BASED ON MAP INFORMATION**

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**N0280** **TOWARDS TRACING BITCOIN CLIENT USING NETWORK TRAFFIC ANALYSIS**

Wenshu Guo[1], Jie Zhang[2]
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**N0906 RESEARCH ON STEP RESPONSE CHARACTERISTICS OF FLEXIBLE DC FIBER-OPTIC CURRENT TRANSFORMER**

Liu Bin[1*], Deng Xiaopin[1], Li Jianguang[2], Wu Zhejun[2], Liu Dongwei[2], Liu Boyang[2], Xiao Hao[2], Lei Jun[2]

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# About Chongqing

## About Chongqing City

Chongqing is China's famous historical and cultural city. It is one of four municipalities in China and the most economically important city in West China. Located on the edge of the Yungui Plateau, and surrounded by small green capped mountains, Chongqing City is intersected by the Jialing River and the upper reaches of the Yangtze. Its Ba cultures, Three Gorges culture, The Three Kingdoms culture, modern urban civilization make Chongqing feature in extremely rich cultural tourism resources. Also, Chongqing has the unique geographical conditions and the collecting of the mountains, water, forestry, spring, waterfall, hole, gorge; and the most outstanding peculiar natural tourism resource is canyon scenery. The famous are the Three Gorges (Qutang Gorge, Wu Gorge, Xiling Gorge) and Small Three Gorges. Also, the Three Gorges Dam and Gezhou Dam in Chongqing are world-famous.

## About Ciqikou (Chongqing Anceint Town)

Meaning "Porcelain Port" as porcelain has long been made & transported from here, located in ShaPingBa, on the banks of the Jialing River. This is a step back in time with several streets of Chongqing as it was, (and still is in some places). It is mostly comprised of Small shops selling tourist stuff, but does lead down to the river where it is possible to board a restaurant boat and where the present Hostel is located. The temple at the top of the hill is worth a visit. It's worth a visit for a couple of hours. Unlike similar places in China, this one is still in its original state and not a reconstruction. Walking uphill away from the river and main tourist area, it is still populated by regular families and homes as it has always been.

## About Hongya Cave (Hongyadong)

Hongya Cave has a history of over 2,300 years. It was a military fortress from the ancient Ba State (1046 B.C. - 256 B.C) to the Ming and Qing Dynasties (1368 - 1911), and was also the site of the earliest and most developed pier of ancient China. The site now houses a large-scale stilt house complex built alongside a steep cliff on the bank of Jialing River. It has become a popular destination for visitors to experience Bayu culture - a Chinese ethnic culture, gaze over the river, and taste delicious food. The stunning night view is a highlight and should not be missed.

Hongyadong is an 11-storey, 75 meters (245 feet) stilt house abutting a steep cliff. It is popular with tourists because it has a similar appearance to a building in Spirited Away - a masterpiece of a famous Japanese cartoonist, Hayao Miyazaki. It is incredible that the 1st floor and the 11th floor are accessible by two different roads. Visitors can take an elevator to each level where various bars, café and restaurants are arranged. Visitors can also see the symbolic Hongya Dripping on the 2nd floor, which is a small waterfall cascading down the cliff-face. It is regarded as one of the 12 Bayu Sites.

## About Chongqing Jiefangbei Pedestrian Street

Jiefangbei stands in the most prosperous downtown center of Chongqing. Jiefangbei, or the People' s Liberation Monument, formerly known as the Monument of Victory in the War of Resistance (usually called the "Anti Japanese war"), is a 27.5 meter highs structure. It is the center of the city marked as Chongqing's commercial heart. It is isolated by broad, paved pedestrian square and numerous glassy office skyscrapers and highrise hotels, reminicent of New York's Times Square or Tokyo's Shibuya district. Jeifangbei Shopping Square, itself completed at the end of 1997, is 400 meters from east to west, and 350 meters from north to south, covering an area of 24,400 m². Around the square are more than 3,000 stores various kinds of shops, with more than two dozen large malls and shopping centers, dozens of star-graded hotels, and offices such as banks, stock markets, trade and finance companies, postal and telecommunication services, and places of entertainment.

## About Chaotianmen Square

Chaotianmen Square is a newly-built architecture which situates at the confluence of the Yangtze and Jialing Rivers in the Peninsula of Yuzhong District in Chongqing. This square has gradually become a prosperous zone which shows the rapid development of this historic city.

Standing on the Chaotianmen Square, visitors can get an ideal view to the glorious Yangtze River. The Chaotianmen Square was built in the summer of 1998, covering an area of 800,000 square meters, and the ship-shaped square is one of the largest roof squares in China. This gorgeous river which mixes the past and the present culture of Chongqing City just flow in front of your eyes. During the festival period, there is a large-size ship model which is consisted of thousands of flowers in the center of this Chaotianmen Square for visitors to take photos.

It is composed by four major parts namely the View Scenery Square, the protection shore ladder road, the traffic square and the peripheral environment. It is a symbolic construction of integrated water collection and key position land transportation function. Four towers stand at the corners of a generous public podium planted with Banyan trees. The composition of four buildings represents a four pillared gateway, as well as the four winds, the four seasons, and the four directions of the world. The towers are each 40 metres by 40 metres in plan and stand 80 metres from each other. The total developed area below podium level is 370,000 squares metres with a further 400,000 square metres above podium level.

## About Great Hall of the People

Chongqing's Great Hall of the People (and the People's Square in front of the Hall) is an architectural symbol of Chongqing City. Its construction began in 1951, but its design is traditional and mirrors those of China's ancient classical dynasties. It somewhat resembles an enlarged version of the Temple of Heaven in Beijing. The People's Square was only completed in 1997 and is decorated with trees and flowers. The ground of the square is paved with smooth marble tiles; there is magic music fountain; at the southern end of the square stands a stage for performances in the open air. You may see thousands of people dancing on the square in the numerous beautiful lights in the evening.

# Transportation


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