

# CONFERENCE REPORT

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## JULY 10–13, 2017, XI'AN, CHINA

The International Society of Information Fusion (ISIF) organized its 20th annual flagship conference last July in the city of Xi'an, the ancient capital of the People's Republic of China. Xi'an Jiaotong University, the IEEE Aerospace and Electronic Systems Society, and the Chinese Society of Information Fusion co-organized the conference. From over 20 countries, 393 attendees came to Xi'an for academic exchange on information fusion-related research fields.



Group photo of FUSION 2017 attendees.

This diversity highlights the broad appeal of the conference and the international community supporting it. In the past two decades, the fusion community has been experiencing steady growth. FUSION 2017 had 12 tutorials, 269 presentations, and three keynote addresses, with a wide range of approaches, applications, and novel ideas covering all aspects of the field of information fusion research. A most impressive undertaking in FUSION 2017 was the 20 year special program, which is described in a separate article, "Twenty Years of Fusion."

FUSION 2017 was the first fusion conference in China. We briefly address the important organizational work of the complex conference events in this article.

## TECHNICAL PROGRAM

All the conference activities occurred on a dedicated floor at the Wyndham Grand Hotel, which provided focus and convenience to leverage the richness of the technical program. Activities started with 12 tutorials on Monday, July 10, and the main conference was from Tuesday through Thursday.



Host cities of past 20 FUSION conferences.

The FUSION 2017 technical program committee included 243 members and was co-chaired by Vesselin Jilkov, Mitch Kokar, Brian La Cour, and Nagi Rao. It provided at least three expert reviews for each of the 369 submitted papers; many papers had more than three reviews. The result was 276 papers (with an acceptance rate of 74.8%) in a vibrant set of regular and special sessions, convened in eight breakout rooms. A complete list of all 35 sessions can be found at the conference website ([www.fusion2017.org](http://www.fusion2017.org)) and the EDAS system (<http://edas.info/p23143>).

Following the paper review process, the technical committee co-chairs assembled a set of 44 best-scoring papers and passed them on to the awards committee. The final selection of the awards was done by an awards committee headed by the two award co-chairs, Henk Blom and Chee-Yee Chong. The awards selection rules and process can be found at [www.fusion2017.org](http://www.fusion2017.org). The best papers were the following:

### JEAN-PIERRE LE CADRE BEST PAPER AWARDS

"Generalized Optimal Sub-Pattern Assignment Metric"

Abu Sajana Rahmathullah,<sup>1</sup> Angel Garcia-Fernandez,<sup>2</sup> Lennart Svensson<sup>3</sup>

<sup>1</sup>Zenuity AB, Sweden; <sup>2</sup>Aalto University, Finland; <sup>3</sup>Chalmers University, Göteborg, Sweden

### FIRST RUNNER-UP

"Target Motion Analysis with Unknown Measurement Noise Variance"

Branko Ristic,<sup>1,2</sup> Xuezhi Wang,<sup>1</sup> Sanjeev Arulampalam<sup>2</sup>

<sup>1</sup>RMIT University, Australia; <sup>2</sup>Defence Science and Technology, Australia

**SECOND RUNNER-UP**

“Maximum Likelihood Detection on Images”

B. Balasingam,<sup>1</sup> Y. Bar-Shalom,<sup>2</sup> P. Willett,<sup>2</sup> K. Pattipati<sup>2</sup>

<sup>1</sup>University of Windsor, Canada; <sup>2</sup>University of Connecticut, USA

**TAMMY BLAIR BEST STUDENT PAPER AWARDS**

“Dual-Satellite Source Geolocation with Time and Frequency Offsets and Satellite Location Errors”

Chao Liu,<sup>1</sup> Le Yang,<sup>2</sup> Lyudmila Mihaylova<sup>1</sup>

<sup>1</sup>University of Sheffield, United Kingdom; <sup>2</sup>Jiangnan University, People’s Republic of China

**FIRST RUNNER-UP**

“Student-*t* Process Quadratures for Filtering of Non-Linear Systems with Heavy-Tailed Noise”

Jakub Průher,<sup>1</sup> Filip Tronarp,<sup>2</sup> Toni Karvonen,<sup>2</sup> Simo Särkkä,<sup>2</sup> Ondřej Straka<sup>1</sup>

<sup>1</sup>University of West Bohemia, Czech Republic; <sup>2</sup>Aalto University, Finland

**SECOND RUNNER-UP**

“Gradient-Based Recursive Maximum Likelihood Identification of Jump Markov Non-Linear Systems”

Andre R. Braga,<sup>1</sup> Carsten Fritsche,<sup>2</sup> Fredrik Gustafsson,<sup>2</sup> Marcelo Bruno<sup>3</sup>

<sup>1</sup>Federal University of Ceara, Quixadá, Brazil; <sup>2</sup>Linköping University, Sweden; <sup>3</sup>Aeronautics Institute of Technology, Brazil



Best student paper award.

The proceedings of all FUSION conferences so far (1998–2017) were distributed to all attendees on-site. The proceedings of FUSION 2017 have been published in IEEE Xplore and are posted on the ISIF website for FUSION 2017 attendees. Further details of the conference, including a photo gallery, can be found at [www.fusion2017.org](http://www.fusion2017.org).

We are grateful to our plenary speakers whose talks brought conference attendees a rare mix of technical competence, experience, and passion for information fusion.



Plenary panel held in Wyndham Grand Hotel.

FUSION 2017’s plenary sessions had two plenary talks and one plenary panel. Plenary talk speakers were:

- ▶ Yaakov Bar-Shalom, Target Tracking and Data Fusion: How to Get the Most out of Your Sensors (and Make a Living out of This),
- ▶ Chee-Yee Chong, Artificial Intelligence to Data Science: Challenges and Opportunities to Information Fusion,
- ▶ Alfonso Farina, Simon Godsill, Fredrik Gustafsson, Kathryn Laskey, Nageswara Rao, and Elisa Shabbazian, Data Fusion: Whither Now and Why, moderated by X. Rong Li. Invited Participants: Yaakov Bar-Shalom and Roy Streit.

In recognition of the meritorious contributions of Prof. Yaakov Bar-Shalom, FUSION 2017 had a special tribute workshop International Workshop on Fusion, Tracking, and Estimation—A Tribute to Professor Yaakov Bar-Shalom. Detailed information can be found at [www.fusion2017.org](http://www.fusion2017.org).



Yaakov Bar-Shalom workshop.

**SOCIAL ACTIVITIES**

FUSION 2017 featured a number of social events. The guided tours to the Terracotta Army, the Old City Wall, and Mount Hua for attendees and their companions proved very popular. The icebreaker and welcome receptions were held at the conference venue.

## ISIF Conference Report



Welcome reception.

The 7th Annual Fusion 5K Run was held at the Qujiangchi Relics Park. Twelve runners, including nine conference attendees and three family members joined the race.



Qujiangchi Relics Park (5K run).

The gala dinner was served on July 12, 2017, at the Huaqing Aegean International Hot Spring Resort. The evening included a full-course dinner, toasts by general co-chairs of FUSION 2017 and Lyudmila Mihaylova (ISIF president), an award ceremony for best papers and best student papers, and an award ceremony for the 20 year special program for FUSION conferences.



Gala dinner.

After the banquet, conference attendees went to a famous attraction, Huaqing Pool, to watch the show *Song of Everlasting Sorrow*. Many conference attendees claimed it was a “once-in-a-lifetime experience.”



The Song of Everlasting Sorrow show.

### ORGANIZATION

FUSION 2017 was a great success: a large number of submissions, many high-quality accepted papers, high attendance levels, a week packed with technical and cultural events, and a healthy profit for ISIF.

### ACKNOWLEDGMENTS

The driving force behind the FUSION conferences is the information fusion community. We are grateful to the organizing committee, past organizers who helped us, the ISIF Board of Directors, all volunteers, and everyone for their contributions to a successful FUSION 2017.