

Location: IET: London Savoy Place / Link to online conference sent in an email to delegates

Note all questions and answers will be managed using Zoom chat. The questions in the poster session will be managed using <https://www.sli.do/> – the code for the main conference is #SSPD22 and the password will be sent in an email to delegates.

Tuesday 13th September 2022

9:00 to 9:30 Refreshments

Session 1 – Applications and Implementation – Chair – Mike Davies, University of Edinburgh

9:30 Introduction and Welcome to Day 1/Session 1 – Mike Davies, University of Edinburgh.

9:40 – 10:40 Keynote Speaker: Dealing with Epistemic Uncertainty in Information Fusion Systems, Lance Kaplan, ARL.

10:40 – 11:05 Automatic Approximation for 1-Dimensional Feedback-Loop Computations: a PID Benchmark, Yun Wu¹, Yun Zhang¹, Anis Hamadouche¹, Joao Mota¹, Andrew M Wallace¹, ¹Heriot-Watt University.

11:05 – 11:35 Refreshments

11:35 – 12:00 Efficient Joint Surface Detection and Depth Estimation of Single-photon Lidar Data using assumed Density Filtering, Kristofer Drummond¹, Dan Yao¹, Agata Pawlikowska², Robert Lamb², Steve McLaughlin¹, Yoann Altmann¹, ¹Heriot-Watt University, ²Leonardo.

Session 2 – Panel Discussion and Lightning Posters – Chair – Jordi Barr - Dstl

12:00 Introduction and Welcome to Session 2 – Jordi Barr, Dstl

12:00 – 13:00 Panel Discussion: Open Source intelligence

13:00 – 13:30 Lightning Poster Presentations

- **P1.** An Extension to the Frenet-Serret and Bishop Invariant Extended Kalman Filters for Tracking Accelerating Targets, Joe Gibbs¹, David Anderson¹, Matt MacDonald², John Russell², ¹University of Glasgow, ²Leonardo.
- **P2.** Joint Undervolting and Overclocking Power Scaling Approximation on FPGA, Yun Wu¹, Joao Mota¹, Andrew M Wallace¹, ¹Heriot-Watt University.
- **P3.** State Estimation of the Spread of COVID-19 in Saudi Arabia using Extended Kalman Filter, Lamia Alyami¹, Saptarshi Das¹, ¹University of Exeter.
- **P4.** Optimal Bernoulli Point Estimation with Applications, Alexey Narykov¹, Murat Uney¹, Jason F. Ralph¹, ¹University of Liverpool.
- **P5.** High Resolution DOA Estimation for Contiguous Target with Large Power Difference, Murtiza Ali¹, Karan Nathwani¹, ¹Indian Institute of Technology.

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- **P6.** Compressive Self-Noise Cancellation in Underwater Acoustics, Pawan Kumar¹, Karan Nathwani¹, Vinayak Abrol², Suresh Kumar³, ¹Indian Institute of Technology, ²University of Oxford, ³DRDO, India.
- **P7.** Non-Coherent Discrete Chirp Fourier Transform for Modulated LFM Parameter Estimation, Kaiyu Zhang¹, Fraser K Coutts¹, John Thompson¹, ¹University of Edinburgh.
- **P8.** Unsupervised Expectation Propagation Method for Large-Scale Sparse Linear Inverse Problems, Dan Yao¹, Steve McLaughlin¹, Yoann Altmann¹, ¹Heriot-Watt University.
- **P9.** Movement Classification and Segmentation Using Event-Based Sensing and Spiking Neural Networks, Paul Kirkland¹, Gaetano Di Caterina¹, ¹University of Strathclyde.
- **P10.** Enhanced Space-Time Covariance Estimation Based on a System Identification Approach, Faizan Khattak; Ian Proudler¹, Stephan Weiss¹, ¹University of Strathclyde.

13:30 – 14:45 Lunch and Poster Presentations – There will be an opportunity to view posters either online or at Savoy Place (Q & A will use <https://www.sli.do>)

Session 3 Networking and Communications – Chair – Steve McLaughlin, Heriot-Watt University

14:45 Introduction and Welcome to Session 3 – Steve McLaughlin, Heriot-Watt University

14:45 OMASGAN: Out-of-distribution Minimum Anomaly Score GAN for Anomaly Detection, Nikolaos Dionelis¹, Sotirios Tsafaris¹, Mehrdad Yaghoobi¹, ¹University of Edinburgh.

15:10 Refreshments

15:45 Fast Trajectory Forecasting With Automatic Identification System Broadcasts, Yicheng Wang¹, Murat Uney¹, ¹University of Liverpool.

16:10 Deep Learning for Spectral Filling in Radio Frequency Applications, Michael Girard¹, Matthew Setzler¹, Elizabeth Coda¹, Jeremiah Rounds¹, Michael Vann¹, ¹Pacific Northwest National Laboratory.

16:35 Closing remarks

19:30 Conference Reception Drinks - IET Savoy Place

20:00 Conference Dinner

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Wednesday 14th September 2022

8:30 to 9:00 Refreshments

Session 4 Machine Learning – Chair – James Hopgood, University of Edinburgh

9:00 Introduction and Welcome to Day 2/Session 4 – Machine Learning – James Hopgood, University of Edinburgh

9:05 – 10:05 Academic Keynote Speaker: Lie Groups Statistics and Machine Learning for Military Sensors based on Symplectic Structures of Information Geometry, Frédéric Barbaresco, Thales

10:05 – 10:35 Invited Speaker: Signal Processing for Military Communications, Jon Spencer, Dstl.

10:35 – 11:00 Robust DOA Estimation Based on Deep Neural Networks in Presence of Array Phase Errors, Xuyu Gao², Aifei Liu², Yutao Xiong², ¹Harbin Engineering University, ²Northwestern Polytechnical University.

11:00 – 11:25 Refreshments

Session 5 – Panel Discussion – Chair – Jordi Barr - Dstl

11:25 Introduction and Welcome to Session 5 – Jordi Barr, Dstl

11:25 – 12:25 Panel Discussion: Should defence be more university friendly or should universities be more defence friendly?

12:25 – 13:25 Lunch

Session 6 – Radar Sonar and Acoustics – Chair – Gary Heald, Dstl

13:25 Introduction and Welcome to Session 6 – Gary Heald, Dstl

13:25– 13:55 Invited Speaker: Points, Particles and Positions: Recent Advances in Distributed Processing of Agile Objects, Simon Godsill, University of Cambridge.

13:55 – 14:20 A Polynomial Subspace Projection Approach for the Detection of Weak Voice Activity, Vincent W Neo¹, Stephan Weiss², Patrick A Naylor¹, ¹Imperial College London, ²University of Strathclyde.

14:20 – 14:45 Optimizing Sonobuoy Placement using Multiobjective Machine Learning, Christopher M Taylor¹, Simon Maskell¹, Jason F. Ralph¹, ¹University of Liverpool.

14:45 – 15:10 Refreshments

15:10 – 15:35 Image Quality SAR Refocus of Moving Targets undergoing Complicated Rolling Maneuvers, David A. Garren¹, ¹Naval Postgraduate School.

15:35 – 16:00 Learning Low-Rank Models From Compressive Measurements for Efficient Projection Design, Fraser K Coutts¹, John Thompson¹, Bernard Mulgrew¹, ¹University of Edinburgh.

16:00 – 16:25 LoRaWAN Performance Evaluation and Resilience under Jamming Attacks, Vaia Kalokidou¹, Manish Nair¹, Mark Beach¹, ¹University of Bristol.

16:25 Closing remarks