TUESDAY 5 SEPTEMBER 2023

1800 Meet & Greet - Doria Park Hotel

WEDNESDAY 6 SEPTEMBER 2023

0815 Registration and refreshments

0845 Welcome: Gary Heald,
Conference Chair, Dstl & Heriot Watt University

Session 1

0900 Keynote Lecture - Radar
Maritime Applications of Synthetic Aperture Radar; Recap, Advances, Future Directions and a Shallow Water Case Study
Neil Stapleton, Dstl, UK

0940 Quantifying variability in maximum repeat-pass times for incoherent and coherent synthetic aperture sonar change detection via long-term measurements of high frequency seafloor scatter
Anthony Lyons, Gabriel Venegas, Jenna Hare, University of New Hampshire, USA

1000 Reverse-path multi-static SAR for moving target detection in clutter
Daniel Andre, University of Cranfield, UK; Francis Watson, University of Manchester, UK

1020 Coffee

1040 Sea-bottom type characterization from ultra-wideband backscatter
Angeliki Xenaki, Alessandro Mondi, Yan Pailhas, CMRE, Italy

1100 Improving SAS CCD change maps via data-driven re-navigation and sub-aperture coherence masking
Abigail Keith, Kevin Bongiovanni, Andrew Wilby, Raytheon Technologies, USA; Jonathan King, Daniel Sternlicht, US Naval Surface Warfare Center, USA

1120 Comparison of model selection techniques for seafloor scattering
Derek Olson, Naval Postgraduate School, USA; Marc Geilhufe, FFI Norwegian Defence Research Establishment, Norway

1140 Quantification of the environmental effects on synthetic aperture imagery
Nicholas La Manna, University of New Hampshire, USA

1200 Lunch

Session 2

1245 Laboratory multistatic SAR CCD investigation
Alexander Hagelberg, Daniel Andre, Mark Finnis, Cranfield University, UK

1305 Intensive resolution measurements with the SAMDIS multi-aspect synthetic aperture sonar
Nicolas Burlet, Yann Le Gall, Sebastien Delayes, Thales DMS, France; Samantha Dugeloy Thales, UK; Fabien Novella, DGA TN, France

1325 Large aperture, sparse MIMO pulse-coded sonars: principles, feasibility and imaging
Oleksander Malyshkin, Adrian McKernan, David Cooper, Alex Noel Raj, Queen’s University Belfast, UK

1345 Laboratory multistatic sparse 3D SAR investigation
Richard Welsh, Daniel Andre, Mark Finnis, University of Cranfield, UK

1405 Coffee
**Session 3**

**1425 Interoperable image-based change detection**  
Rolf Klemm, Johannes Groen, Atlas Elektronik, Germany; Holger Schmaljohann, Bundeswehr Technical Center for Ships and Naval Weapons, Germany

**1445 Drone-borne SAR change detection techniques**  
Ali Bakar, Michail Antoniou, Christopher Baker, University of Birmingham, UK

**1505 Challenges of automated change detection in repeat-pass SAS imagery**  
Øivind Midtgaard, Torstein Sæbø, Narada Warakagoda, FFI Norwegian Defence Research Establishment, Norway

**1525 Study of spatial coherence from a 2D Rx antenna of a LF wideband side looking sonar**  
Fabien Novella, DGA Naval Techniques, France; Isabelle Quidu, Gilles Le Chenadec, Lab-STICC UMR CNRS, France; Yan Pailhas, NATO STO CMRE, Italy

**1545 Impacts of scene stability and backscatter coherence on automated seabed change detection**  
Emma Shouldice, Anna Crawford, Defence Research and Development Canada Atlantic Research Center, Canada; Sanja Smith, Daniel Sternecklitch, Jonathan King, Naval Surface Warfare Center, USA; Torstein Sæbø, Roy Hansen, Øivind Midtgaard, Norwegian Defence Research Establishment, Norway; Shawn Johnson, Pennsylvania State University, USA; Anthony Lyons, University of New Hampshire, USA

**1605 Questions and discussion**

**1615 Close**

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**THURSDAY 7 SEPTEMBER 2023**

**0800 Coffee**

**Session 4**

**0830 Keynote Lecture - Sonar Synthetic aperture sonar simulation: History and Future Directions**  
Alan Hunter, University of Bath, UK

**0910 Model validation for simulated synthetic aperture sonar time series data**  
Brian Rheinhardt, Joonho Park, Thomas Blanford, Pennsylvania State University, USA

**0930 SeaSAR: A high-fidelity simulation of maritime SAR images**  
David Pate, Georgia Tech Research Institute, USA

**0950 3D reconstruction from synthetic aperture sonar images using deep learning: a simulation study**  
Oscar Bryan, Tom Fincham Haines, Alan Hunter, Narada Warakagoda, Roy Hansen, University of Bath, UK

**1010 Coffee**

**1040 GPU ray tracing for high-fidelity acoustic simulation**  
David Pate, Georgia Tech Research Institute, USA

**Session 5**

**1100 Long range interferometric synthetic aperture sonar**  
Torstein Sæbø, Roy Hansen, Ole Lorentzen, FFI Norwegian Defence Research Establishment, Norway

**1120 Centimetric resolution interferometric synthetic aperture sonar bathymetry maps using ensembles**  
Shannon-Morgan Steele, Richard Charron, Krackan Robotics, Canada

**1140 Separation of layover in synthetic aperture interferometry**  
Stig Synnes, Marc Geilhufe, FFI Norwegian Defence Research Establishment, Norway

**1200 Lunch**

**Session 6**

**1245 Deep learning based SAS image classification with supplementary information of imaging geometry**  
Narada Warakagoda, Øivind Midtgaard, FFI Norwegian Defence Research Establishment, Norway

**1305 Proxy-label semi-supervised deep learning for object detection and mapping in synthetic aperture sonar imagery**  
Shannon-Morgan Steele, Krackan Robotics, Canada

**1325 Deep-learning-based focus improvement metric for synthetic aperture sonar auto-focus algorithms**  
Jeffrey Dale, Matthew Emigh, James Prater, Naval Surface Warfare Center, USA

**1345 Deep transfer learning across targets and sensors with synthetic aperture sonar data**  
David Williams, Pennsylvania State Applied Research Laboratory, USA

**1405 Coffee**

**Session 7**

**1425 The effect of label corruption on synthetic aperture sonar object recognition**  
Issac Gerg, Benjamin Cowen, Penn State Applied Research Lab, USA

**1445 Weakly supervised automatic target masking for synthetic aperture sonar**  
Matthew Emigh, NSWC PCD, USA; Carlos Mendoza-Cardenas, Austin Brockmeier, University of Delaware, USA
Using shadows in circular synthetic aperture sonar imaging for target analysis
Yann Le Gall, Burlet Nicolas, Mathieu Simon, Jean-Philippe Malkasse, Thales DMA, France; Fabien Novella, DGA Naval Techniques, France; Samantha Dugelay, Thales UK

Self-supervised learning for improved SAS target recognition
Brandon Sheffield, NSWC, USA

Advanced autonomy for UUV-based synthetic aperture sonar
Bryan Todd, Ivan Rodriguez-Pinto, Joshua Weaver, Daniel Sternlicht, US Naval Surface Warfare Center, USA

Questions and discussion

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Questions and discussion

Shadow based phase gradient autofocus for synthetic aperture sonar
James Prater, Darshan Bryner, Naval Surface Warfare Centre, USA; Stig Synnes, FFI Norwegian Defence Research Establishment, Norway

Advanced phase-based algorithms in SAR data for maritime surveillance
Andrea Radius, Leszek Lamentowski, Risto Vehmas, Ozan Dogan, Vladimir Igantenko, Darren Muff, Pierre Leprovost, Matthew Nottingham, Patrik Vija, Tino Selinonent, ICEYE, Finland

Passive synthetic aperture sonar processing with a thin towed array
Agni Mantouka, Giles Verwey, Chris Tucker, SEA Ltd, UK

Target recognition in SAR images with low-SWAP processing hardware
Richard Lane, Wendy Holmes, Tim Lamont-Smith, QinetiQ, UK

Coffee

Improved platform trajectories and consistent imaging based on DPCA estimates
Holger Schmaljohann, Bundeswehr Technical Center for Ships and Naval Weapons, Germany; Blair Bonnett, Thomas Fickenscher, Helmut Schmidt University, Germany

Adding SAS image processing capability to SAR image processing software
Anna Crawford, Emma Shouldice, Defence Research and Development (DRDC), Atlantic Research Centre (ARC); Jeff Secker, Defence Research and Development (DRDC), Ottawa Research Centre (ORC); Shawn Gong, MDA Systems Ltd, Canada

A wavelet shrinkage approach to detect candidate point scatterers in synthetic aperture sonar images for resolution estimation
Marc Geilhufe, Ray E. Hanson Stig Synnes, FFI Norwegian Defence Research Establishment, Norway; Derek Olson, Naval Postgraduate School, USA

Isolation of resonant wave features in low-frequency wideband SAS data products from cylindrical shells
Alan Hunter, Zuhayr Rymansalab, Benjamin Thomas, Aiden Burt, Richard Brothers, University of Bath, UK

Augmentation of down-looking 3D SAS data with a high frequency multibeam sonar
Timothy Marston, University of Washington, USA

Questions and discussion

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