FUSION 2023 Conference Awards

In 2023, Charleston, South Carolina welcomed the 26th International Conference on Information Fusion. This year, 153 papers were presented at the conference and published in the conference proceedings. All of these were nominally eligible for the Best Paper awards, in either the Student or Regular Paper categories.

The selection of the Best Student and Regular Paper and the runners-up was overseen by the Awards Committee, chaired by Samuel Shapero and Zoran Sjanic, that also included Yaakov Bar-Shalom, Chee-Yee Chong, and Jean Dezert. Downselection of the Best Papers occurred in multiple stages. Following peer review, the conference Technical Chairs ranked the papers by an average of the reviewers' scores and sent the top twelve papers in each category to the Awards Committee Chairs. To avoid a potential conflict of interest for the Best Student Paper award, Dr. Sjanic handled the regular papers, and Dr. Shapero handled the student papers.

Dr. Sjanic selected six regular papers, and Dr. Shapero selected eight student papers for the final ranking of the committee, based on their own close reading and more detailed metrics from the reviewers, while including the recommendation for awards and the reviewer's confidence in their assessment. The 14 finalists were sent to the remaining Awards Committee members, who independently reviewed and scored the finalists for rigor, technical excellence, and inspiration. The Awards Chairs used these scores to select the winner and two runners-up in each category.

The winners and runners-up were recognized at the Gala Dinner of the FUSION 2023 conference. On behalf of ISIF, we offer congratulations to all candidate papers with an obvious special mention to the winners!

2023 Jean-Pierre Le Cadre Best Paper award was presented to Marco Cominelli and Lance Kaplan by Sam Shapero and Zoran Sjanic.

JEAN-PIERRE LE CADRE BEST PAPER AWARD

▶ Best Paper: Marco Cominelli, Francesco Gringoli, Lance M. Kaplan, Mani B. Srivastava, and Federico Cerutti, "Accurate Passive Radar via an Uncertainty-Aware Fusion of Wi-Fi Sensing Data"

▶ First Runner-up: Anne-Laure Jousselme, Pieter de Villiers, Allan de Freitas, Erik Blasch, Valentina Dragos, Gregor Pavlin, Paulo C. Costa, Kathryn B. Laskey, Claire Laudy, "Uncertain about ChatGPT: enabling the uncertainty evaluation of large language models"

▶ Second Runner-up: Kisung You, Dennis Shung, "On the Spherical Laplace Distribution"

Zoran Sjanic
Saab AB, Sweden
Linköping University, Sweden
zoran.sjanic@liu.se

Samuel Shapero
Georgia Tech Research Institute, USA
samuel.shapero@gtri.gatech.edu

BEST PAPER (JEAN PIERRE LE CADRE AWARD)

Marco Cominelli, Francesco Gringoli, Lance M. Kaplan, Mani B. Srivastava, and Federico Cerutti, "Accurate Passive Radar via an Uncertainty-Aware Fusion of Wi-Fi Sensing Data"

Abstract—Wi-Fi devices can effectively be used as passive radar systems that sense what happens in the surroundings and can even discern human activity. We propose, for the first time, a principled architecture which employs Variational Auto-Encoders for estimating a latent distribution responsible for generating the data, and Evidential Deep Learning for its ability to sense out-of-distribution activities. We verify that the fused data processed by different antennas of the same Wi-Fi receiver results in increased accuracy of human activity recognition compared with the most recent benchmarks, while still being informative when facing out-of-distribution samples and enabling semantic interpretation of latent variables in terms of physical phenomena. The results of this paper are a first contribution toward the ultimate goal of providing a flexible, semantic characterization of black-swan events, i.e., events for which we have limited to no training data.

Erik Blasch, Anne-Laure Jousselme, Paulo Costa, Claire Laudy, Gregor Pavlin, and Valentina Dragos were awarded First Runner-up, pictured with Sam Shapero.

Frida Viset was awarded the 2023 Tammy L. Blair Best Student Paper award by Zoran Sjanic and Sam Shapero.

BEST STUDENT PAPER (TAMMY L. BLAIR AWARD)

Frida Viset, Rudy Helmons and Manon Kok, "Distributed Multi-Agent Magnetic Field Norm SLAM with Gaussian Processes"

Abstract—In indoor environments, accurate position estimation of multi-agent systems is challenging due to the lack of Global Navigation Satellite System (GNSS) signals. If the multiagent system relies upon noisy measurements of the change in position and orientation, the integrated position estimate can drift potentially unboundedly. Magnetic field simultaneous localization and mapping (SLAM) has previously been proposed as a way to compensate for position drift in a single agent. We propose two novel algorithms that allow multiple agents to apply magnetic field SLAM using their own and the other agents' measurements.

Our first algorithm is a centralized algorithm that uses all measurements collected by all agents in a single extended Kalman filter. The algorithm simultaneously estimates the agent's position and orientation and the magnetic field norm in a central unit that can communicate with all agents at all times. In other applications, there is no central unit available, and there are communication drop-outs between agents. Our second algorithm is therefore a distributed algorithm for multiagent magnetic field SLAM, that can be employed even when there is no central unit, and when there are communication failures between agents.

TAMMY L. BLAIR AWARD

▶ Best Student Paper: Frida Viset, Rudy Helmons and Manon Kok, "Distributed Multi-Agent Magnetic Field Norm SLAM with Gaussian Processes"

▶ Best Student Paper Runner-up (tie): Anton Kullberg, Isaac Skog and Gustaf Hendeby, "Iterated Filters for Nonlinear Transition Models"

▶ Best Student Paper Runner-up (tie): Joseph Johnson, Yaman Kindap and Simon Godsill, "Inference for Variance-Gamma Driven Stochastic Systems"

Anton Kullberg and Joseph Johnson were recognized as runners-up (tie) for Best Student Paper, pictured with Zoran Sjanic.