

## DELTA Summer Workshop 2023

University of Vaasa, Palosaari, Vaasa, June 12-13, 2023

Address: Yliopistonranta 10, Fabriikki, F119, classroom EPV Energia

### Agenda

#### Monday June 12

- 10:30        **Opening** (Jari Nurmi, TAU; Heidi Kuusniemi, Uwasa)
- 10:45        **Keynote 1: CEO Pasi Tuominen, Wapice Ltd., "Latest experiences using Artificial Intelligence in Wapice"**
- 11:30        Coffee
- 11:50        **Hardware/Software Systems** (Chair: Jari Nurmi, TAU)
- 11:50 Topi Leppänen, TAU: AFOCL: Portable OpenCL Programming of FPGAs via Automated Built-in Kernel Management
- 12:10 Hans Jakob Damsgaard, TAU: Modeling Generic CGRAs for Mapping and Hardware Generation
- 12:30 Antoine Grenier, TAU: Hard SyDR, moving from software to hardware
- 12:50        Lunch
- 13:45        **Keynote 2:**  
**Dr. Lucie Klus, TAU: Compression of Fingerprint Datasets for Indoor Positioning**
- 14:30        **Satellites and Positioning** (Chair: Heidi Kuusniemi, Uwasa)
- 14:30 Kannan Selvan, Uwasa: Assessing machine learning approach for GNSS satellites orbit prediction
- 14:50 Mahmoud Elsanhoury, Uwasa: Towards Precision Positioning for Smart Logistics Using Fusion-Based Ultra-Wideband and MIMO-Assisted LEO Satellites Technologies
- 15:10 Anna Gaydamaka, TAU: On the Optimal Antenna Beamwidth for UAV Localization using Millimeter Wave Radars
- 15:30        Coffee
- 15:50        **Machine Learning Applications** (Chair: Lucie Klus, TAU)
- 15:50 Aditi Site, TAU: Diabetes classification using multi-sensor and machine learning algorithms
- 16:10 Fabliha Bushra Islam, TAU: Privacy-Preserved Smart Healthcare System Using Federated Learning
- 16:30 Abol Basher, Uwasa: DC-DFFN: Densely Connected Deep Feature Fusion Network with Sign Agnostic Learning for Implicit Shape Representation
- 16:50 Sayawu Diaba, Uwasa: Cyber Security in Power Systems Using Meta-Heuristic and Deep Learning Algorithms
- 17:10        end of day1 program
- 18:00        **Archipelago Cruise & Dinner**
- M/S Tiira (from Sisäsatama) + Jannen Saluuna (buffet dinner archipelago style) at island Kuusisaari (return at 22:00)

Tuesday June 13

- 9:00           **Keynote 3: Achim Behr, Engineering Manager, Hitachi Energy, “Hitachi Energy Finland - Electrifying the future world”**
- 9:45           **Positioning and Sensing 1** (Chair: Heidi Kuusniemi, Uwasa)
- 9:45 Bo Sun, TAU: RIS-Aided Near Field Localization
- 10:05 Zaeed Khan, Aalto: Respiration measurement using a low-resolution thermal camera and an optical camera
- 10:25 Luca Ferranti, Uwasa: An algebraic geometry perspective on Doppler positioning
- 10:45           Coffee
- 11:00           **Wireless Systems** (Chair: Jari Nurmi, TAU)
- 11:00 Nikita Tafintsev, TAU: Joint Path Selection and Resource Allocation in Multi-Hop mmWave-based IAB Systems
- 11:20 Talal Saleh, Uwasa: 5G Communication Infrastructure for Smart Grids: A Protection Use Case
- 11:40 Ritayan Biswas, TAU: Sensitivity Analysis of Ambient Backscattering Communications in Heavily Loaded Cellular Networks
- 12:00 Tomi Salo, Uwasa: A Lightweight Private Blockchain based secure communication architecture for Internet of Things in the Context of Smart City
- 12:20 Mikko Laakso, Aalto: Empirical evaluation of OFDM waveforms for VLC in the presence of LED nonlinearities
- 12:40           Lunch
- 13:30           **Positioning and Sensing 2** (Chair: Jani Boutellier, Uwasa)
- 13:30 Akpo Siemuri, Uwasa: Proposing the use of Factor Graphs in Hybrid GNSS/UWB/IMU Integration for Seamless Positioning
- 13:50 Roman Klus, TAU: Robust NLoS Localization in 5G mmWave Networks: Data-based Methods and Performance
- 14:10 Tiago Troccoli, TAU: Indoor Localization Systems based on Direction of Arrival
- 14:30 Hadeel Obaid, TAU: Using the 3D Vector Antenna as a Direction-Finding Sensor
- 14:50           Coffee
- 15:10           **Some Other Systems** (Chair: Mohammed Elmusrati, Uwasa)
- 15:10 Nikita Zeulin, TAU: Resource-Efficient Federated Hyperdimensional Computing
- 15:30 Xiaoguo Storm, Uwasa: Predictive Modeling and Control of RCCI Engines
- 15:50           end of workshop