Tampereen yliopisto
Tampere University

DELTA Spring Workshop

8.6. – 9.6. 2021

Prof. Jari Nurmi, TAU

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Tampere University

DELTA = Doctoral training network in ELectronics, Telecommunications and Automation

DELTA universities (and liaisons):

- Aalto University (Riku Jäntti)
- Tampere University (Jari Nurmi, director)
- University of Jyväskylä (Tapio Frantti)
- University of Oulu (Juha Röning)
- University of Turku (Jouni Isoaho)
- University of Vaasa (Heidi Kuusniemi)

Over 200 PhD students and 70+ supervisors

Funds joint courses (e.g. summer and winter schools), networking workshops, invited lecturers, researcher exchange, etc. (with a fairly limited – and distributed – budget)

Other Planned DELTA Events in 2021-22

DELTA autumn workshop 2021

- **Turku?, ~November 2021**

DELTA Winter School 2022

- Ruka, February 14-16, 2022

DELTA spring workshop 2022

- **~April-June**

DELTA autumn workshop 2022

- **~August-October**

Piggybacking / co-organizing summer schools and intensive courses provided by the participating universities

Who can be a DELTA student?

PhD students become members of DELTA by their supervisor.

The supervisors may belong to more than one national doctoral training network but **the student to only one national network**.

However, it is possible to belong to local doctoral schools (such as UniOGS), or international networks such as EU ITNs in parallel.

Who can be a DELTA supervisor?

Any volunteering supervisor (employee with the rights to supervise PhD students) at the participating departments/units/groups/faculties/platforms… at the member universities

Also, new member universities and units can be added by the steering committee decision

In the scope of the network:

- **Electronics**
- **Communications engineering**
- **Computer engineering**
- **Automation sciences**

Examples on participating units

- Tampere University
  - Parts of Electrical Engineering Unit (electronics, communications, positioning)
  - Parts of Computing Sciences Unit (computer engineering, positioning)
  - Parts of Physics Unit (optoelectronics)
  - Parts of Automation and Mechanical Engineering Unit (parts of Robotics and Intelligent Machines research)
- University of Oulu
  - Parts of Faculty of Information Technology and Electrical Engineering
- University of Jyväskylä
  - Parts of Faculty of Information Technology
- University of Turku
  - Department of Computing
- University of Vaasa
  - Digital Economy Research Platform
- Aalto University
  - Department of Electronics and Nanoengineering
  - Department of Communications and Networking
  - Department of Signal Processing and Acoustics
  - Department of Electrical Engineering and Automation

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DELTA communication channels

Web pages at https://sites.tuni.fi/delta/

LinkedIn group https://www.linkedin.com/groups/6675984/

Email lists:

delta-students@lists.tuni.fi

delta-supervisors@lists.tuni.fi

you can join with your university email address

Assignment

For students, 1 credits available against the return of an assignment:

- Write a learning diary on two keynotes and what are the main take-aways for your own work (target: 2-3 pages, deadline June 21, 2021). Don’t forget to include your student number.

Return to jari.nurmi@tuni.fi

One credit will be given on the own presentation in the workshop, too

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Agenda 8.6.

9:00 Opening (Jari Nurmi)

9:15 **Keynote 1: Dr. Jani Puttonen, Magister Solutions: Magister SimLab - simulation services for the next generation SatCom networks** (Chair Tapio Frantti, JYU)

10:00 **Computing and Modelling**, Chair Jari Nurmi, TAU

10:00 Daria Alekseeva, TAU: Computing paradigms in the emergency services

10:20 Elham Shamsa, UTU: Concurrent Application Bias Scheduling for Energy Efficiency of Heterogeneous Multi-Core platforms

10:40 Gunjan Chandra, UO: Data Synthesis for precision medicine models

11:00 Break

11:20 **Autonomous Applications**, Chair Jouni Isoaho, UTU

11:20 Siva Ariram, UO: Semantic segmentation of various autonomous applications

11:40 Qingqing Li, UTU: Adaptive Lidar Scan Frame Integration: Tracking Known MAVs in 3D Point Clouds

12:00 Xianjia Yu, UTU: Applications of UWB Networks and Positioning to Autonomous Robots and Industrial Systems

12:20 Lunch Break

14:00 **Keynote 2: Dr. Philip Ginzboorg, Huawei: Topics in 5G security** (Chair Riku Jäntti, Aalto)

14:40 **Human-related Technologies**, Chair Lucie Klus, TAU

14:40 Aditi Site, TAU: Review and graphical analysis on digital health data with its sources and processing techniques

15:00 Pouya Jafarzadeh, UTU: Human Pose Estimation using deep learning

15:20 Abol Basher, UWASA: LightSAL: Lightweight Sign Agnostic Learning for Implicit Surface Representation

15:40 End of day 1

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Agenda 9.6.

09:00 **Keynote 3: Dr. Sanna Härkönen, Bitcomp: New Generation Forest solutions based on Satellite Monitoring and Artificial Intelligence** (Chair Heidi Kuusniemi, UWASA)

09:40 **Satellites and Positioning**, Chair Simona Lohan, TAU

09:40 Kannan Selvan, UWASA: A Review on Precise Orbit Determination of Various LEO Satellites

10:00 Akpo Siemuri, UWASA: Machine Learning Utilization in GNSS—Use Cases, Challenges and Future Applications

10:20 Iñigo Cortes, TAU: Adaptive Techniques in Scalar Tracking Loops with Direct-State Kalman-Filter

10:40 Mahmoud Elsanhoury, UWASA: Review of Recent Advances in Ultra-Wideband Precise Positioning Techniques

11:00 Break

11:20 **Machine Automation**, Chair Aleksandr Ometov, TAU

11:20 Xinyi Tu, Aalto: A mixed reality interface for digital twin based crane

11:40 Reza Taheri, TAU: Reinforcement Learning and Control for Heavy Duty Machines

12:00 Lunch break

14:00 **Keynote 4: Assoc.Prof. Mehdi Bennis, Univ. Oulu: Distributed and communication-efficient Machine Learning over wireless** (Chair Juha Röning, UO)

14:40 **Communications**, Chair Juha Röning, UO

14:40 Ritayan Biswas, TAU: Direct Path Interference Suppression Requirements for Bistatic Backscatter Communication System

15:00 Jean Sant'Ana, UO: Increasing the Reliability of Low Power Wide Area Networks

15:20 Luca Ferranti, UWASA: Homotopy continuation for sensor networks calibration

15:40 Roman Glazkov, TAU: Physical Network Coding testbed implementation for B5G Networks

16:00 Somayyeh Asgari, UO: Graphene based chiral metamaterials in THz region

16:20 End of workshop