



8th Workshop on Positioning, Navigation and Communication 2011

7/8th of April 2011, Dresden, Germany

Workshop programme for 7th/8th of April 2011

Sessions 1-6 take place at HTW Z107

Poster Sessions, exhibitions and lunch/coffee breaks take place at HTW PAB

Day 1 - 7th of April 2011

08:00 – 08:45	Registration
08:45 – 09:00	Welcome words from the organizers

SESSION 1 - Motion Tracking and Inertial Localization

09:00 – 09:20	S1MTIL1: A reduced DCM Based Attitude Estimation Using Low-cost IMU and Magnetometer
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Ezzaldeen Edwan, University of Siegen
 Jieying Zhang, University of Siegen
 Junchuan Zhou, University of Siegen
 Otmar Loffeld, University of Siegen

09:20 – 09:40	S1MTIL2: On the Fusion of Inertial Data for Signal Strength Localization
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Johannes Schmid, Karlsruhe Institute of Technology
 Tobias Gädeke, Karlsruhe Institute of Technology
 Wilhelm Stork, Karlsruhe Institute of Technology
 K.D. Müller-Glaser, Karlsruhe Institute of Technology

09:40 – 10:00	S1MTIL3: Positioning with an Inertial Measurements Unit using Interacting Multiple Models Filtering
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Furrukh Sana, Universitat Politecnica de Catalunya

10:00 – 10:20	S1MTIL4: Study on UWB/INS Integration Techniques
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Lukasz Zwirello, Karlsruhe Institute of Technology
 Christian Ascher, Karlsruhe Institute of Technology
 Gert F. Trommer, Karlsruhe Institute of Technology
 Thomas Zwick, Karlsruhe Institute of Technology

10:20 – 10:40	S1MTIL5: UAV real-time location using a Wireless Sensor Network
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José-Luis Rullán-Lara, Université de Technologie de Compiègne
 Sergio Salazar, LAFMIA UMI CNRS
 Rogelio Lozano, Université de Technologie de Compiègne

10:45 – 11:15	Coffee break
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SESSION 2 - Ranging Techniques

11:15 – 11:35	S2RT1: A Time Difference of Arrival System Architecture for GSM Mobile Phone Localization in Search and Rescue Scenarios
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Alexander Goetz, University Erlangen-Nuremberg
 Stefan Zorn, University Erlangen-Nuremberg
 Richard Rose, University Erlangen-Nuremberg
 Georg Fischer, University Erlangen-Nuremberg
 Robert Weigel, University Erlangen-Nuremberg

11:35 – 11:55	S2RT2: High Resolution Approach for Phase Based TOF Ranging using Compressive Sampling Markus Wehner, Dresden University of Applied Sciences Sven Zeisberg, Dresden University of Applied Sciences Robert Richter, Dresden University of Technology Oliver Michler, Dresden University of Technology
11:55 – 12:15	S2RT3: TDoA Subsample Delay Estimator with Multiple Access Interference Mitigation and Carrier Frequency Offset Compensation for OFDM based Systems Emanuel Staudinger, German Aerospace Center (DLR) Christian Gentner, German Aerospace Center (DLR)
12:20 – 13:00	Lunch break
13:00 – 13:50	Poster Session 1
	PS1: An RSS-comparison Based Localization in Wireless Sensor Networks Quan T. Hoang, Soongsil University Tan N. Le, Soongsil University Yoan Shin, Soongsil University
	PS2: Closed form Expressions for the Symbol Error Rate for non-coherent UWB Impulse Radio Systems with Energy Combining Mingjun Li, Dresden University of Technology Rainer Moorfeld, Dresden University of Technology Adolf Finger, Dresden University of Technology
	PS3: Solving the Train Localization Problem via TDoA Algorithms Jani Saloranta, University of Oulu Giuseppe Abreu, University of Oulu
	PS4: Design space exploration and hardware aspects of local positioning systems Ralf Eickhoff, Dresden University of Technology Niko Joram, Dresden University of Technology Jens Wagner, Dresden University of Technology Axel Strobel, Dresden University of Technology Frank Ellinger, Dresden University of Technology
	PS5: Enhanced TOA-based Indoor-Positioning Algorithm for Mobile LTE Cellular Systems Francesco Benedetto, University of Roma Tre Gaetano Giunta, University of Roma Tre Elena Guzzon, University of Roma Tre
	PS6: Evaluation of Algorithms for UWB Indoor Tracking Juan Cholz, University of Zaragoza Ángela Hernández-Solana, University of Zaragoza Antonio Valdovinos, University of Zaragoza
	PS7: Multitarget Tracking with the Cubature Kalman CPHD Filter Davide Macagnano, University of Oulu Giuseppe Abreu, University of Oulu

PS8: GNSS for Automotive Applications

Andreas Kahmann, OECON Products & Services GmbH
Stephan Ritter, OECON Products & Services GmbH
Timo Nels, OECON Products & Services GmbH

SESSION 3 – Cooperative and Distributed Localization

13:50 – 14:10

S3CDL1: Bayesian Outlier Detection in Location-aware Wireless Networks

Yi Li, Chalmers University of Technology
Dapeng Liu, Chalmers University of Technology
Henk Wymeersch, Chalmers University of Technology

14:10 – 14:30

S3CDL2: Multihop versus Message-Passing: a Complexity and Accuracy Comparison for Distributed Localization

Stefano Severi, University of Bologna
Giuseppe Abreu, University of Oulu
Giuseppe Destino, University of Oulu
Davide Dardari, University of Bologna

14:30 – 14:50

S3CDL3: Second Order Cone Programming for Sensor Network Localization with Anchor Position Uncertainty

Ghasem Naddafzadeh Shirazi, University of British Columbia
Michael Botros Shenouda, University of British Columbia
Lutz Lampe, University of British Columbia

14:50 – 15:10

S3CDL4: A Network Traffic Reduction Method for Cooperative Positioning

Kallol Das, Chalmers University of Technology
Henk Wymeersch, Chalmers University of Technology

15:15 – 15:30

Coffee break

15:30 – 16:05

Poster Session 2

PS9: Impact of Mobility on the Performance of Dynamic Cooperative Communications in SC-FDMA Systems

Youssef NASSER, American University of Beirut
Joumana Farah, Holy-Spirit University of Kaslik
Joseph Kirillos, Université Saint-Esprit de Kaslik
Stéphanie Bassil, Université Saint-Esprit de Kaslik
Maryline Helard, INSA Rennes

PS10: Influence of Oversampling on Joint Channel and Parameter Estimation for Combined Communication and Positioning

Kathrin Schmeink, University of Kiel
Rebecca Block, University of Kiel
Peter Adam Hoehner, University of Kiel

PS11: Mobile Sensors in Air Pollution Measurement

Dan Stefan Tudose, Politehnica University Bucharest
Andrei Voinescu, Politehnica University Bucharest
Traian Alexandru Patrascu, Politehnica University Bucharest
Razvan Tataroiu, Politehnica University Bucharest
Nicolae Tapus, Politehnica University Bucharest

PS12: Fourth Order Array Processing Methods for GPS Direction of Arrival Estimation

Ulrich Engel, Fraunhofer FKIE
Manfred Okum, Fraunhofer FKIE

PS13: Coupled laser inertial navigation system for pedestrian tracking

Hichem El Mokni, Fraunhofer FKIE
Felix Govaers, Fraunhofer FKIE

SESSION 4 – UWB Localization

16:05 – 16:25

S4UWB1: A Sub-gigahertz UWB Positioning System with Automatic Network Configuration

Christophe Villien, CEA-LETI
Nicolas Deparis, CEA-LETI
Serge Bories, CEA-LETI
Daniele Norbert, CEA-LETI
David Lachartre, CEA-LETI

16:25 – 16:45

S4UWB2: Automatic anchor calibration in IEEE 802.15.4a networks

Marcel Müller, Dortmund University of Applied Sciences and Arts
Julian Lategahn, Dortmund University of Applied Sciences and Arts
Lars Telle, Dortmund University of Applied Sciences and Arts
Christof Röhrig, Dortmund University of Applied Sciences and Arts

16:45 – 17:05

S4UWB3: Bit and Power Loading for the Multiband Impulse Radio UWB Architecture

Lu Li, Dresden University of Technology
Rainer Moorfeld, Dresden University of Technology
Adolf Finger, Dresden University of Technology

17:05 – 17:25

S4UWB4: Localization via Taylor Series Approximation for UWB Based Human Motion Tracking

Zemene W. Mekonnen, Swiss Federal Institute of Technology (ETH) Zurich
Armin Wittneben, Swiss Federal Institute of Technology (ETH) Zurich

17:30

Reception

SESSION 5 - Radar and Ultrasonic Localization

09:00 – 09:20 S5RUL1: Channel Model-Based Sensing for Indoor Ultrasonic Location Systems

Yun Lu, Dresden University of Technology
Adolf Finger, Dresden University of Technology

09:20 – 09:40 S5RUL2: FMCW System Aspects for Multipath Environments

Jens Wagner, Dresden University of Technology
Niko Joram, Dresden University of Technology
Axel Strobel, Dresden University of Technology
Ralf Eickhoff, Dresden University of Technology
Frank Ellinger, Dresden University of Technology

09:40 – 10:00 S5RUL3: Improving indoor position estimation by combining active TDOA Ultrasound and passive Thermal Infrared Localization

Daniel Hauschildt, TU Dortmund University
Nicolaj Kirchhof, TU Dortmund University

10:00 – 10:20 S5RUL4: Underwater Localization with Time-Synchronization and Propagation Speed Uncertainties

Roe Diamant, University of British Columbia
Lutz Lampe, University of British Columbia

10:25 – 10:55 Coffee break

SESSION 6 - Localization Algorithms and Standardization

10:55 – 11:15 S6LAS1: A Semidefinite Programming Approach to Hybrid Localization using RSSI and TOA

Mohamed Laaraiedh, University of Rennes 1, IETR Lab
Stephane Avrillon, University of Rennes 1, IETR Lab
Nicolas Amiot, University of Rennes 1, IETR Lab
Bernard Uguen, University of Rennes 1, IETR Lab

11:15 – 11:35 S6LAS2: Active Monte Carlo Localization using RF Round-Trip Time-of-Flight Measurements

Daniel Fross, Chemnitz University of Technology
Andre Fross, Chemnitz University of Technology
Ulrich Heinkel, Chemnitz University of Technology

11:35 – 11:55 S6LAS3: Standardization Activities for Radio based Ranging

Michael Mahler, Bosch AG

11:55 – 12:15 S6LAS4: RF-based Positioning and Localization Techniques in Wireless Sensor Networks using a C-MDS Approach

Richard Weber, Dresden University of Technology
Robert Richter, Dresden University of Technology
Oliver Michler Dresden University of Technology
Sven Zeisberg, Dresden University of Applied Sciences