

2019 16th Workshop on Positioning, Navigation and Communications (WPNC 2019)

**Bremen, Germany
23 – 24 October 2019**



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Day 1 - 23th of October 2018
IRC Conference Room – Jacobs University Bremen

08:30 – 12:00 Registration

Located inside the conference room and operational continuously from 8:30 to 12:00.

08:50 – 09:00 Welcome and Opening Message

Giuseppe Abreu, Jacobs University Bremen
 Sven Zeisberg, Dresden University of Applied Sciences
 Valérie Renaudin, IFSTTAR
 Jérôme Härr, Eurecom

KEYNOTE Invited Keynote Talk

09:00 – 9:50 Robot Localization in Challenging Environments

Prof. Dr. Francesco Maurelli, Jacobs University Bremen, Germany

SESSION 1 Positioning in 5G Networks
 Chair: Prof. Dr. Giuseppe Abreu

09:50 – 10:10 S1P1: Enabling Angle-based Positioning to 3GPP NR Systems

Yi Wang, Huawei Technologies Co., Ltd;
 Zhenyu Shi, Huawei Technologies Co., Ltd;
 Yingjie Yu, Huawei Technologies Co., Ltd;
 Su Huang, Huawei Technologies Co., Ltd;
 Lei Chen, Huawei Technologies Co., Ltd

10:10 – 10:30 S1P2: 5G Positioning -A Machine Learning Approach

Magnus E Malmström, Linköping University;
 Isaac Skog, Linköping University;
 Sara Modarres Razavi, Ericsson Research;
 Yuxin Zhao, Ericsson Research;
 Fredrik Gunnarsson, Ericsson Research

10:30 – 10:50 S1P3: High Precision Synchronization between Commercial WiFi-ICs and External Device

Alexey M. Romanov, RTU MIREA;
 Francesco Gringoli, Università degli Studi di Brescia;
 Axel Sikora, Offenburg University of Applied Sciences

10:50 – 11:10 S1P4: A New Position Quality Metric for NR RAT Dependent OTDOA Positioning Method

Ritesh Shreevastav, Ericsson;
 Giuseppe Destino, King's College Londo;
 Deep Shrestha, Ericsson;
 Iana Siomina, Ericsson;
 Toktam Mahmoodi, King's College London

11:10 – 11:30 Coffee Break (20 mins)

Coffee, tea and other drinks served along with fruits, cookies and more.

SESSION 2 Advanced Algorithms for Positioning and Ranging
 Chair: Prof. Dr. Francesco Maurelli

11:30 – 11:50 S2P1: Statistical Analysis of Noise in Triaxial Magnetometers and Calibration Procedure

Nhan D Nguyen, Tampere University;
 Philipp Müller, Tampere University;
 Jussi Collin, Tampere University



11:50 – 12:10	<p>S2P2: Indoor distance estimation using LSTMs over WLAN network</p> <p>Pranav M Sankhe, IIT BOMBAY; Saqib Azim, IIT BOMBAY; Sachin Goyal, IIT BOMBAY; Tanya Choudhary, IIT BOMBAY; Kumar Appaiah, IIT BOMBAY; Srikant Sukumar, IIT BOMBAY</p>
12:10 – 12:30	<p>S2P3: Detection of Feature Areas for Map-based Localization Using LiDAR Descriptors</p> <p>Constanze Hungar, Volkswagen AG; Jenny Fricke, Volkswagen AG; Stefan Jürgens, MAN Truck & Bus AG; Frank Köster DLR e.V.</p>
12:30 – 12:50	<p>S2P4: Robust Elliptic Localization using Worst-Case Formulation and Convex Approximation</p> <p>Wenxin Xiong, University of Freiburg; Hing Cheung So, City University of Hong Kong; Christian Schindelhauer, University of Freiburg; Johannes Wendeberg, University of Freiburg</p>
12:50 – 13:50	<p>Lunch Break</p> <p>Lunch at one of the serveries at Jacobs Campus (voucher included with registration)</p>
13:50 – 14:00	<p>Pre-session Coffee (10 mins)</p> <p>Coffee, tea and other drinks served along with fruits, cookies and more.</p>
SESSION 3	<p>Positioning in IoT and Industrial Networks Chair: Dr. Igor Dotlic</p>
14:00 – 14:20	<p>S3P1: A Reproducible Comparison of RSSI Fingerprinting Localization Methods Using LoRaWAN</p> <p>Grigorios G. Anagnostopoulos, Geneva School of Business Administration, HES-SO Geneva; Alexandros Kalousis, University of Applied Sciences, Western Switzerland</p>
14:20 – 14:40	<p>S3P2: Benchmarking of Narrowband LPWA Ranging Technologies</p> <p>Florian WOLF, CEA-Leti/University of Limoges; Kévin Le Déroff, CEA-Leti; Sébastien De Rivaz, CEA-Leti; Nicolas Deparis, CEA-Leti; François DEHMAS, CEA-Leti; Jean-Pierre Cances, University of Limoges</p>
14:40 – 15:00	<p>S3P3: A Parametric TDoA Technique in the IoT Localization Context</p> <p>Ahmed Abdel Ghany, University of Rennes 1</p>
15:00 – 15:20	<p>S3P4: E-SALDAT: Efficient Single-Anchor Localization of Dual-Antenna Tags</p> <p>Leo H Botler, Graz University of Technology; Konrad Diwold, Pro2future; Kay Römer, Graz University of Technology</p>



15:20 – 15:40 Coffee Break (20 mins)

Coffee, tea and other drinks served along with fruits, cookies and more.

SESSION 4 UWB Positioning and Ranging

Chair: Florian Wolf

15:40 – 16:00 S4P1: Localization and communication resource budgeting for multi-user mm-Wave MIMO

Remun Koirala, CEA Leti;
Benoit Denis, CEA-Leti;
Bernard Uguen, University of Rennes 1 - IETR, France;
Davide Dardari, DEIS-University of Bologna, Italy;
Henk Wymeersch, Chalmers Univ. of Techn., Sweden

16:00 – 16:20 S4P2: Periodic Ambiguity Function as a Tool in Designing Periodic Synchronization Preamble

Igor Dotlic, Decawave

16:20 – 16:40 S4P3: A Comparative Study of UWB-based True-Range Positioning Algorithms using Experimental Data

Cung Lian Sang, Bielefeld University;
Michael Adams, Bielefeld University;
Marc Hesse, Bielefeld University;
Timm Hörmann, Bielefeld University;
Timo Korthals, Bielefeld University;
Ulrich Rückert, Bielefeld University

16:40 – 17:00 S4P4: Modeling the Magnitude and Phase of Multipath UWB Signals for the Use in Passive Localization

Marco Cimdins, Technische Hochschule Luebeck - University of Applied Sciences;
Sven Ole Schmidt, Technische Hochschule Luebeck - University of Applied Sciences;
Horst Hellbrück, Technische Hochschule Luebeck - University of Applied Sciences

SPECIAL SESSION WPNC Traditional Beer Session with Exhibitors

2019 Awards Announcements

17:00 – 19:00

Take advantage of the opportunity to discuss further with your colleagues and industry exhibitors while enjoying **free beer** and snacks!



Day 2 - 24th of October 2018
IRC Conference Room – Jacobs University Bremen

08:30 – 10:30 Registration

Located inside the conference room and operational continuously from 8:30 to 10:30.

09:00 – 09:10 Morning Message and Housekeeping Information

Giuseppe Abreu, Jacobs University Bremen

SESSION 5 Positioning for Navigation and Robotics
Chair: Dr. Valérie Renaudin

09:10 – 09:30 S5P1: Location Privacy Preservation and Location-based Service Quality Tradeoff Framework Based on Differential Privacy

Tianyi Feng, National University of Singapore;
Wai Choong Wong, National University of Singapore;
Sumei Sun, Institute for Infocomm Research, A*STAR;
Yonghao Zhao, National University of Singapore;
Zhixiang Zhang, National University of Singapore

09:30 – 09:50 S5P2: System-level Simulation of Cooperative Sensor Data Fusion Strategies for Improved Vulnerable Road Users Safety

Alex P Da Silva, CEA-LETI;
Imane Horiya Brahmi, CEA-LETI;
Sylvain Leirens, CEA-LETI;
Benoit Denis, CEA-Leti

09:50 – 10:10 S5P3: Multi-Mode Antenna Enabled Direction-of-Arrival Estimation for Swarm Navigation

Robert Pöhlmann, German Aerospace Center (DLR) ;
Gonzalo Pedregosa, German Aerospace Center (DLR) ;
Stefano Caizzzone, German Aerospace Center (DLR) ;
Emanuel Staudinger, German Aerospace Center (DLR);
Peter A. Hoehner, Faculty of Engineering, University of Kiel

10:10 – 10:30 S5P4: 3D Performance Analysis of a UWB Positioning System in a Dynamic Robotic Scenario

Markus Pichler-Scheder, Linz Center of Mechatronics GmbH;
Klaus Pendl, Linz Center of Mechatronics GmbH;
Richard Schmidt, Linz Center of Mechatronics GmbH;
Michael Petruzelka, KEBA AG;
Günther Mühlberger, KEBA AG

10:30 – 10:50 Coffee Break (20 mins)

Coffee, tea and other drinks served along with fruits, cookies and more.



SESSION 6 High-precision Positioning and Ranging

Chair: Prof. Dr. Giuseppe Abreu

10:50 – 11:10

S6P1: Precise Probabilistic Grid Positioning based on GNSS Pseudoranges and Digital Elevation Models

Paul Schwarzbach, TU Dresden;
Andrea Jung, TU Dresden;
Richard Weber, TU Dresden;
Oliver Michler, TU Dresden

11:10 – 11:30

S6P2: Efficient Use of SSR RTCM Streams For Real-Time Precise Point Positioning on Smartphones

Antoine Grenier, IFSTTAR;
Valérie Renaudin, IFSTTAR, France

11:30 – 11:50

S6P3: A 400 Msps SDR platform for prototyping accurate wideband ranging techniques

Cherif Diouf, TU DELFT;
Tarik Kazaz, TU DELFT;
Gerard Janssen, TU DELFT;
Han Dun, TU DELFT;
Farnaz Chaman Zadeh, TU DELFT;
Christiaan Tiberius, TU DELFT

11:50 – 12:10

S6P4: Comparative Examination of Iterative and Non-Iterative Algorithms for Partial Discharge Location Approximation in High Voltage Equipment

Máté Szirtes, Budapest University of Technology and Economics;
Richárd Cselkó, Budapest University of Technology and Economics

12:10 – 12:20

Closing Words

Giuseppe Abreu, Jacobs University Bremen
Sven Zeisberg, Dresden University of Applied Sciences
Valérie Renaudin, IFSTTAR
Jérôme Härrí, Eurecom

12:20 – 14:00

Lunch Break

Lunch at one of the serveries at Jacobs Campus (voucher included with registration)