



IEEE ICC 2017 Workshop on Advances in Network Localization and Navigation (ANLN)

Localization, tracking, and navigation – for indoor and outdoor environments – have been gaining relevance thanks to the steadily expanding range of enabling devices and technologies, as well as the necessity for seamless solutions for location-based services. Internet of Things, cyber-physical systems, and 5G communication networks will all benefit from localization, tracking, and navigation capabilities, leading to a vast range of new and heterogeneous application scenarios. A current trend in the design of solutions for localization, tracking, and navigation is to use standard, low-cost, and already deployed technologies. These technologies are highly heterogeneous as well, encompassing, to name a few examples, inertial measurement units, sonar, laser, IR, visible light communications, or RF signals. The RF signals typically include WiFi, UWB, RFID, Bluetooth, NFC, 3GPP/LTE, 802.11x, digital TV, or, in general, so-called available signals of opportunity. The availability of such technologies clearly entails that the latest challenge in localization, tracking, and navigation is not only to develop specialized sensors for these tasks but also to design and implement methods that exploit the cooperation of the already available systems. Data fusion, cross-layer optimization, and new application environments are therefore the key aspects for further advances of the field and present exciting challenges for wireless communications and signal processing practitioners and researchers.

The goal of this workshop is to solicit the development of new positioning algorithms based on short-range wireless communications as well as new position-aware techniques to enhance the efficiency of communication networks. The workshop will bring together academic and industrial researchers to identify and discuss technical challenges and recent results related to these issues.

- Simultaneous localization, tracking, and mapping (SLAM)
- Data fusion schemes for heterogeneous technologies
- Cooperative localization and cloud SLAM
- Cooperative navigation
- Multi-agent control
- Fundamental limits
- Online Bayesian filtering
- Methods with robust performance
- Position-dependent parameter estimation techniques
- Learning algorithms for environmental mapping
- Localization via signals of opportunity
- Location-awareness for wireless networks
- Hybrid IMU and magnetic pedestrian navigation
- Ultra-wideband technology
- Passive and active RFID
- Spectrum/Energy efficient positioning systems
- Wireless sensor radar
- Localization methods for the Internet of Things and 5G networks
- Scheduling techniques for cooperative localization
- Security and privacy issues
- Mobility models for tracking
- Radio channel models
- Testbeds and experimentation

Important Dates:

Paper Submission: 18 November 2016
Notification Date: 17 February 2017
Final Paper: 10 March 2017
Workshop Date: 25 May 2017

Organizing Committee:

Klaus Witrals, Graz University of Technology, Austria
Yuan Shen, Tsinghua University, China
Stefania Bartoletti, Univ. of Ferrara, Italy and MIT, USA
Moe Z. Win, Massachusetts Institute of Technology, USA