# Call for Papers
# IEEE Transactions on Vehicular Technology
# Special Section:
## *"Indoor localization, tracking, and mapping with heterogeneous technologies"*

Indoor localization, tracking, and mapping, has been gaining relevance due to widespread of devices and technologies, as well as the necessity for seamless solutions for location-based services, for example, in the field of automated guided vehicles in manufacturing lines, first-responder navigation, vehicular navigation, asset navigation and tracking, indoor unmanned vehicles, or people-movers. A current trend in addressing indoor localization, tracking and mapping is to use standard, low-cost, and already deployed technologies. These technologies are highly heterogeneous, encompassing inertial measurement units, sonar, laser, IR, visual light communications, or radiofrequency signals to name a few alternatives. The latter set typically includes WiFi, UWB, RFID, Bluetooth, NFC, 3GPP/LTE, 802.11x, digital TV, or, in general, the so-called available signals-of-opportunity. All this entails that the latest challenge in indoor localization, tracking, and mapping is not to design specialized sensors for these tasks but to design and implement data fusion methods using the already available technologies.

Data fusion in indoor localization, tracking, and mapping is a key element for further advances of the field and presents exciting challenges for signal processing practitioners and researchers. Due to the large variety of technologies and standards involved, a data fusion algorithm typically needs to account for several communication channel models, bandwidths, sampling rates, as well as asynchronicity of the recorded data. Online approaches that have been proposed are based on the Bayesian filtering methodology, including variants of the Kalman filter and more recently the much more versatile framework provided by particle filtering. The latter allows for a general way of coping with severe nonlinearities and non-Gaussianities and of forcing the solution to be inside a map.

In this Special Section of the IEEE Transaction on Vehicular Technology, we solicit paper submissions of original works addressing fundamentals, supporting technologies, and technical issues on data fusion of heterogeneous technologies for localization, tracking and mapping. The topics not only cover the design and analysis of data fusion methodologies, but also include practical implementations and deployments.

## Topics of interest

This Special Section of the IEEE Transactions on Vehicular Technology aims at publishing novel results on most recent developments in data fusion for indoor localization, tracking, and mapping with emphasis on the integration of various technologies for improved performance. The topics include, but are not limited to:

- Advanced simultaneous localization, tracking, and mapping
- Advanced data fusion schemes for heterogeneous technologies
- Cooperative localization and distributed systems
- Cooperative and cloud simultaneous localization and mapping (SLAM)

- Indoor unmanned vehicles navigation
- Fundamental limits
- Online Bayesian filtering
- Methods with robust performance
- Position-dependent parameters estimation techniques
- Learning algorithms for environmental mapping
- Localization via signals-of-opportunities
- Acoustic-aided and Vision-aided methods
- Hybrid IMU and magnetic pedestrian navigation
- Ultra-wideband technology
- Passive and active RFID
- Wireless sensor radar
- Localization methods for the Internet of Things
- Security and privacy issues
- Mobility models for tracking
- Testbeds and experimentation

## Submission Instruction

http://winet.ece.ufl.edu/tvt

Authors should follow the IEEE TVT manuscript format and submission procedure which can be found at the IEEE TVT home page http://transactions.vtsociety.org/ under Information for Authors. We recommend that the submitted papers are of length 20 pages or less (in the TVT submission format or 8 pages in final publication format). However, authors who need more space can submit papers up to 35 pages as TVT policy allows. Note that in that case extra page charges apply (see TVT website for details). Prospective authors should submit a PDF version of their complete manuscript via the journal online paper submission system at http://mc.manuscriptcentral.com/tvt-ieee

## Timetable

Deadline for manuscript submissions: ~~30 April 2014~~ → extended to May 15, 2014
First editorial decision: 25 July 2014
Revised manuscript due: 26 September 2014
Final editorial decision: 28 November 2014
Final papers due: 19 December 2014
Estimated publication date: First quarter 2015

## Guest Editors

**Prof. Davide Dardari** (Corresponding Guest Editor),
Dipartimento di Ingegneria dell'Energia Elettrica e dell'Informazione – Guglielmo Marconi - (DEI) - University of Bologna, davide.dardari@unibo.it
**Dr. Pau Closas**, Communications Systems Division, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), pau.closas@cttc.cat
**Prof. Petar M. Djurić**, Department of Electrical and Computer Engineering, Stony Brook University, petar.djuric@stonybrook.edu