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INDICEE - International Doctorate in
"Civil and Environmental Engineering"
Dottorato Internazionale
Ingegneria Civile e Ambientale



3rd

**NOV
2022**

**Workshop
Mobile Mapping and
Autonomous Vehicle
Technologies: Sensor
Integration and Crowdsourcing
Charles Toth**

**10,30-
12,00**
(CET Italy time)

**Room 175 – Scuola di Ingegneria
Via S. Marta 3 – Firenze**

**Workshop organized by GeCo Lab - Geomatics for environment and
conservation of cultural heritage laboratory**

www.geomaticaeconservazione.it

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Abstract

With the recent proliferation of smart devices and smart platforms, geospatial data acquisition has entered a new phase, as Crowdsourcing/Crowdsensing are on track to become a major source of mapping data in the future. Smartphones are already acquiring huge amount of geospatial data, the use of UAS is on the rise, and Autonomous Vehicle (AV) technologies started offering increasingly growing volume of mapping data recently. In a sense, AV is gradually taking over the functionality of Mobile Mapping Technologies. Conventional processing methods and practice, however, are not ready and inadequate to handle this extremely large volume of data, and developments in Data Science, and particularly in Deep Learning, have the potential to create efficient workflows to support map production soon. This presentation reviews the sensing aspects of smart platforms, sensor integration trends, the key characteristics of crowdsourced data and the geospatial processing aspects.



Charles K. Toth is a Research Professor in the Department of Civil, Environmental and Geodetic Engineering, The Ohio State University. He received a M.Sc. in Electrical Engineering and a Ph.D. in Electrical Engineering and Geo-Information Sciences from the Technical University of Budapest, Hungary. His research interest and expertise cover broad areas of spatial information sciences and systems, including photogrammetry, multi-sensor geospatial data acquisition systems, LiDAR, high-resolution imaging, surface extraction, modeling, integrating and calibrating multi-sensor systems, georeferencing and navigation, 2D/3D signal processing, and UAS and mobile mapping technologies.

Widely known worldwide in the mapping community, he was a key architect of the concept development of mobile mapping, and then did significant research in sensor georeferencing and digital imaging technologies. In fact, he is generally credited with the introduction of the term “direct and indirect georeferencing” in the photogrammetric community. He has held many senior leadership positions in national and international societies, and is Past President of the American Society of Photogrammetry and Remote Sensing, served as the ISPRS Technical Commission I President for 2012-2016, and is the 2nd Vice-President of ISPRS, 2016-2022. He is an ASPRS Fellow, ION Fellow, ISPRS Fellow, the recipient of numerous awards, including the 2009 APSRS Photogrammetric Award, United States Geospatial Intelligence Foundation (USGIF) Academic Achievement Award 2015, ISPRS Schwidofsky Medal Winner 2016, several Lumley Research Awards from OSU, and various best papers awards.

Participation is free but please send an email to register yourself to andrea.masiero@unifi.it.