Contents

Part I  Positioning

Wi-Fi Fingerprinting with Reduced Signal Strength
Observations from Long-Time Measurements .................. 3
Guenther Retscher and Florian Roth

Situation Goodness Method for Weighted Centroid-Based
Wi-Fi APs Localization ............................................. 27
Germán M. Mendoza-Silva, Joaquín Torres-Sospedra, Joaquín Huerta,
Raul Montoliu, Fernando Benítez and Oscar Belmonte

Smartphone Sensor-Based Orientation Determination
for Indoor-Navigation .............................................. 49
Andreas Ettlinger, Hans-Berndt Neuner and Thomas Burgess

SubwayAPPS: Using Smartphone Barometers for Positioning in
Underground Transportation Environments .................... 69
Kris van Erum and Johannes Schöning

Part II  Outdoor and Indoor Navigation

Effects of Visual Variables on the Perception of Distance
in Off-Screen Landmarks: Size, Color Value, and Crispness ...... 89
Rui Li

Investigation of Landmark-Based Pedestrian Navigation Processes
with a Mobile Eye Tracking System ............................. 105
Conrad Franke and Jürgen Schweikart

Increasing the Density of Local Landmarks in Wayfinding
Instructions for the Visually Impaired ........................... 131
Rajchandar Padmanaban and Jakub Krukar
Identifying Divergent Building Structures Using Fuzzy Clustering of Isovist Features .................................. 151
Sebastian Feld, Hao Lyu and Andreas Keler

Generation of Meaningful Location References for Referencing Traffic Information to Road Networks Using Qualitative Spatial Concepts .... 173
Karl Rehrl, Richard Brunauer, Simon Gröchenig and Eva Lugstein

Efficient Computation of Bypass Areas .................................. 193
Jörg Roth

A Heuristic for Multi-modal Route Planning .......................... 211
Dominik Bucher, David Jonietz and Martin Raubal

Part III Spatial-Temporal Data Processing and Analysis

Development of a Road Deficiency GIS Using Data from Automated Multi-sensor Systems ........................................ 233
Alexander Mraz and Abdenour Nazef

Identifying Origin/Destination Hotspots in Floating Car Data for Visual Analysis of Traveling Behavior .......................... 253
Mathias Jahnke, Linfang Ding, Katre Karja and Shirui Wang

Part IV Innovative LBS Applications

Enhancing Location Recommendation Through Proximity Indicators, Areal Descriptors, and Similarity Clusters ............... 273
Sebastian Meier

Connecting the Dots: Informing Location-Based Services of Space Usage Rules ........................................ 293
Pavel Andreevich Samsonov

Concept Design of #hylo—Geosocial Network for Sharing Hyperlocal Information on a Map ..................................... 309
Hanna-Marika Halkosaari, Mikko Rönneberg, Mari Laakso, Pyry Kettunen, Juha Oksanen and Tapani Sarjakoski

Multimodal Location Based Services—Semantic 3D City Data as Virtual and Augmented Reality ............................. 329
José Miguel Santana, Jochen Wendel, Agustín Trujillo, José Pablo Suárez, Alexander Simons and Andreas Koch

Part V User Studies, Privacy and Motivation

Ephemerality Is the New Black: A Novel Perspective on Location Data Management and Location Privacy in LBS ................. 357
Mehrnaz Ataei and Christian Kray
Classes for Creating Location-Based Audio Tour Content: A Case of User-Generated LBS Education to University Students ............................... 375
Min Lu, Masatoshi Arikawa and Atsuyuki Okabe

Gamification as Motivation to Engage in Location-Based Public Participation? ................................................................. 399
Sarah-Kristin Thiel and Peter Fröhlich