MPA'10
1st Workshop on Movement Pattern Analysis

September 2010

Preface

Recent developments in movement pattern analysis reflect the broad interest in this field. Just as broad seems to be the methodological spectrum scientists develop to investigate movement patterns. Although the plethora of application fields, in fact, calls for a wide spectrum of methodologies, it is difficult to find a common strategy in the community that would help in sharing results, exchanging methods as well as heading towards what would be an established theory on movement pattern analysis. It is the goal of this workshop to contribute to such a common view on methods of movement pattern analysis. For this purpose, concrete datasets will be moved into the centre of this workshop. The idea is to arrive at an answer to the question of what makes a useful benchmark dataset for movement pattern analysis. Such benchmark datasets could significantly help in the long-term goal to work on a common theory of movement pattern analysis, since benchmark datasets provide means to compare different methods. Generally, movement pattern analysis endeavors to explicitly capture the space-time structure in data in order to meaningfully analyse moving objects.

Repositories of reference movement datasets are rare, partly due to privacy, security or copyright restrictions. Also, for datasets that are available in the public domain metadata is often scarce, as semantically annotating movement data is expensive and hence mostly copyrighted. It is assumed, however, that the spatial information science community, with a lot of data acquisition techniques available today, is in the position to have among its members significant amounts of movement data that could be potentially developed into reference datasets. It is, however, not entirely clear what defines a useful benchmark dataset, for evaluating and comparing methodologies.

These proceedings show the accepted workshop papers which have been presented and discussed in Zurich. In total 8 out of 20 papers have been selected by the Committee. The different contributions cover several kinds of movement of trackable entities in unconstrained and network spaces, including

- Traffic and transportation, e.g. car tracking data, fleet management data,
- People, e.g. pedestrians, shoppers, crowds,
- Mobile phone applications,
- Animal movement.

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Björn Gottfried,
Patrick Laube,
Alexander Klippel,
Nico Van de Weghe,
Roland Billen

Programme Committee

- **Gennady Andrienko**
- **Eliseo Clementini**
- **Eduardo Dias**
- **Matt Duckham**
- **Andrew Frank**
- **Joachim Gudmundsson**
- **Leonidas Guibas**
- **Kai Nagel**
- **Donna Peuquet**
- **Sabine Timpf**
- **Erik Willems**
- **Stephan Winter**

Invited Speakers

- **Christophe Claramunt**, Naval Academy Research Institute, Brest, France

- **Harvey Miller**, University of Utah, Salt Lake City, USA

- **Kathleen Stewart**, The University of Iowa, Iowa City, USA

Papers

- **Identifying Unusual Pedestrian Movement Behaviour in Public Transport Infrastructures**
  A. Millonig, G. Maierbrugger

- **Potential and Implications of Bluetooth Proximity-Based Tracking in Moving Object Research**
  M. Versichele, M. Delafontaine, T. Neutens, N. Van de Weghe

- **Identifying Characteristics of Collective Motion from GPS Running Data**
  Z. Wood, A. Galton

- **Spatio-temporal knowledge discovery from georeferenced mobile phone data**
  Y. Yuan, M. Raubal

- **Network Structure Discovery for Vehicular Ad-Hoc Networks**
  I. Downes, L.Guibas

- **From Trajectories of Moving Objects to Route-based Traffic Prediction and Management**
  G. Gidófalvi, E. Saqib

- **An Approach to Semantic Processing of GPS Traces**
  K. Rehrl, S. Leitinger, S. Krampe, R. Stumptner

- **Modeling the relationships between patterns of movement of Panthera tigris and its behavioral states**
  S.C. Ahearn, J.L.D. Smith, A. Simchareon, S. Simchareon, J. Garcia