

Short Term Scientific Mission - Scientific Report

COST ACTION IC0903-6969: MOVE: Knowledge Discovery from Moving Objects

Visiting Researcher:	Dubravko Čulibrk
Home Institution:	Faculty of Technical Sciences
Host:	Prof. Urška Demšar
Host Institution:	National Centre for Geocomputation
Duration:	February 14 th – February 25 th 2011

Purpose of the Short Term Scientific Mission (STSM)

The goal of the visit is for the visiting scientist to acquaint himself with the spatio-temporal data visualization tools, which are at the focus of the host group research, and current research in this area.

In addition, the goal was for visiting researcher to receive information regarding the possible ways of visualizing and analyzing the tracks present in community-contributed data and discuss ways in which the host group and his own expertise could be pooled to achieve this goal.

Specific objectives set for the visit were:

- Share knowledge on the techniques employed in our research and form grounds for future joint efforts.
- Get to know and learn data visualization algorithms that the host group is using and has developed.
- Analysis of spatio-temporal community-contributed multimedia data using the tools discovered.
- Outlining a joint paper based on the analysis of tracks present in community-contributed multimedia data.

The following sections outline how these objectives have been achieved during this two-weeks-long visit.

Description of the work carried out during the STSM

The first week was spent alternating between two main activities:

1. Writing SQL queries to extract data from the database used in our work at the Faculty of Technical Sciences (FTS), which allowed us to visualize and explore data in increasingly complex ways.
2. Preparing a seminar talk on the subject of “Mining geo-referenced community-contributed data”.

The first activity was conducted in close cooperation with Dr Gavin McArdle of the NCG and allowed us to explore the tracks YouTube users take when visiting Ireland. To do so we used track visualization tools developed at NCG by Dr McArdle in close cooperation with prof. Demšar.

I gave a 60 minute seminar talk at the last day of the first week, attended by most of the NCG postdocs, graduate students and teaching staff. This gave me a chance to introduce the audience to the potential of the fast growing multimedia content available on the Web, as a resource that allows one to infer the behavior and movements of the users of web sites such as Flickr and YouTube. The seminar also provided information about the main research results achieved in this area.

I was also fortunate to be able to attend a seminar talk by another member of MOVE: prof. Christophe Claramunt, who was visiting the NCG at the time.

For the remainder of the STSM, I continued to work on YouTube track visualization and analysis with Dr McArdle. We extended our research to include all geo-referenced videos taken in Africa and were able to identify general trajectories taken.

In addition, I had focused meetings with small groups from the research team at NCG. These sessions highlighted the research and the projects being conducted in NCG but also enabled me to explain in greater detail my research interests.

Throughout the STSM some key areas of common research were identified. From this, a common research agenda for the next several months has been agreed upon. The topic centres on the analysis of different types of visualisations for multimedia-derived movement data. In particular, the techniques developed at NCG will be used to explore both Flickr and Youtube datasets to be compiled at FTS.

Description of the main results obtained

The main results can be broadly split into two distinct areas. Firstly I have received vital support when it comes to visualization and analysis of trajectory data. Crucial SQL interface scripts have been developed at this time that allow us to conduct further joint research using the NCG trajectory visualization tools without the need for preprocessing the data stored at the FTS databases.

Secondly, for the medium term the visit has enabled common research strands to be identified which will be explored further.

Future collaboration with host institution

This STSM, funded by MOVE, has provided the opportunity to combine the research methodologies used at FTS, Novi Sad and NCG in Maynooth. As outlined above, the exploration of this common research agenda will continue. The interface to the FTS data bases developed for the NCG visualization tools will allow us to conduct further research with ease. Several possible improvements both to visualization and data

collection and filtering methodologies were identified as possible venues for future development.

Foreseen publications/articles resulting or to result from the STSM

The study which has been identified as an important area of research and a common strand among the research being carried out at the FTS and NCG will form the basis of a journal article later in 2011.