



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Planning
Policy
Programming

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Project Title:
UCCONNECT UTC Crowd-sourced Data to
Activity Models-Human Mobility Prediction
for Real-time Ridesharing

Task Number: 2794

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Crowd-sourced Data to Activity Models-Human Mobility Prediction for Real-time Ridesharing

Crowd source location and text data like Google calendar entries, text messages, Facebook posts, or four square check-in by building a new system called NetDiary-II.

WHAT IS THE NEED?

Most Ride-sharing has worked between co-workers, neighbors, or family – all situations of high reliability. Real-time ride-share systems bring flexibility but without reliability (Amey et al., 2011). Currently, there is not a tool for transportation system management to predict demand in real-time based on the stream of location data and TEXT emanating from the population.

WHAT ARE WE DOING?

This project is to crowd source location and text data like Google calendar entries, text messages, Facebook posts, or four square check-in by building a new system called NetDiary-II. The data will be used to infer the purpose of travel. In addition, we propose to stream this data in quasi-real time for three months from each of 200 people to the cloud and use it to predict the future destinations and activities of the person streaming the data.

The tasks are:

1. Submission of CPHS protocol
2. Develop the Software System for Data Collection (NetDiary-II)
 - Android app development – Location and text messages
 - Facebook data acquisition development
 - Twitter data acquisition development
 - Calendar data acquisition development
 - Server development for secure and reliable data archiving
3. Subject Recruitment – XLAB – Describe XMobile experience.



DRISI provides solutions and
knowledge that improves
California's transportation system

4. Experiment Execution –

- Server and client monitoring
- User support with installation, app shutdowns, or plugin failures.

5. Development of data analysis methods –

- Activity Extraction
- Building the Location and Activity Prediction Models
- Methods for the expected value and standard deviation of the population

6. Data Analysis and Final Report

WHAT IS OUR GOAL?

The goal of this project is to crowd source location and text data like Google calendar entries, text messages, Facebook posts, or four square check-in by building a new system called NetDiary-II. The data will be used to infer the purpose of travel. This will create a new kind of data for Activity-based travel demand modeling. These new data sources also enable Human Mobility Prediction. This kind of prediction could resolve the trust problem in Real-time Ride-sharing.

WHAT IS THE BENEFIT?

These models bring reliability and trust to real-time ride-sharing – a known and important need. Such crowd-sourced data can help transportation system managers estimate demand in real-time if it becomes available for a few thousand people.

WHAT IS THE PROGRESS TO DATE?

Due to the delay in execution of the contract, the kickoff meeting was held on July 30, 2015. The following tasks are in progress:

- Submission of CPHS protocol
- Develop the Software System for Data Collection (NetDiary-II)
 - Android app development – Location and text messages
 - Facebook data acquisition development
 - Twitter data acquisition development
 - Calendar data acquisition development
 - Server development for secure and reliable data archiving

The next quarter's tasks/deliverables are listed below:

- Experiment Execution
 - Server and client monitoring
 - User support with installation, app shutdowns, or plugin failures