QUARTERLY PROGRESS REPORT

For 4th Quarter, Fiscal Year 2014/15

Caltrans Task Manager: Frank Law Project ID:

Task Order No.: TO 012 Contract No.: 65A0529

- Task Title: Demand forecasting and activity-based mobility modelling from cell phone data

- Describe last quarter's tasks/deliverables:

We developed a methodology for demographic and sampling biases correction for the estimates of the working population home and workplace locations based on cell phone data.

Cellular data present spatial coverage biases due to differences in the areal support of mobile communication networks and population distribution within the geographies of a given set of TAZs. We have developed a method that rescales the estimated from cell antennas into spatial units, assuming a given model of an antenna coverage. A distance decay parameter that captures the decreasing likelihood of a phone being connected to a distant antenna has to be set by the user.

Next, we have used iterative proportional fitting to rescale the estimated population coverage based on the Census data used as a ground truth.

The resulting home-to-work OD trip matrices have been produced and a corresponding micro-simulation based on MATSim has been developed and evaluated. Reasonable fit with the PEMS data has been observed.

This work is described in a paper draft that is in preparation for publication. We can release an early draft of this publication as a technical report at request.

These results have been also presented with a video clip explaining the goals and the workflow of the process.

- Describe next quarter's tasks/deliverables and their due dates:

Next quarter deliverable (Deliverable 2) is to develop and implement algorithms to infer individual daily activity chains using machine learning methods. We will develop methods based on hiden semi-Markov models.

Describe Project Status:

The project is on schedule.

GSR student employed with the project (Andrew Campbell) took a 3 months summer internship with SFCTA. Campbell will resume his GSR work starting 09/15.

Are you on time with your schedule?

_X_ YES
___ NO

Are you on budget? A method to correct for spatial coverage and demographic biases in cell phone records based on census data, implemented in software and described in a technical report.

_X_ YES
____ NO

Are you on scope?

_X_ YES
____ NO

4.0 If the answer to any of the above is NO, please explain below:

5.0 Estimated percent of work completed: 5 %
Estimated percent of budget expended: 0 %

6.0 What are your expenditure projections for the next two (2) quarters?

$ 31000	$ 31000
FY 15/16; Q 1	FY 15/16; Q 2

Use this area for additional information. Clearly identify which Section this information applies to.

Submitted By: Date: __07/15/15___

Prof Alexey Pozdnukhov