



## PROJECT TITLE: AUTOMATING WEB COLLECTION AND VALIDATION OF GPS DATA FOR LONGITUDINAL URBAN TRAVEL STUDIES

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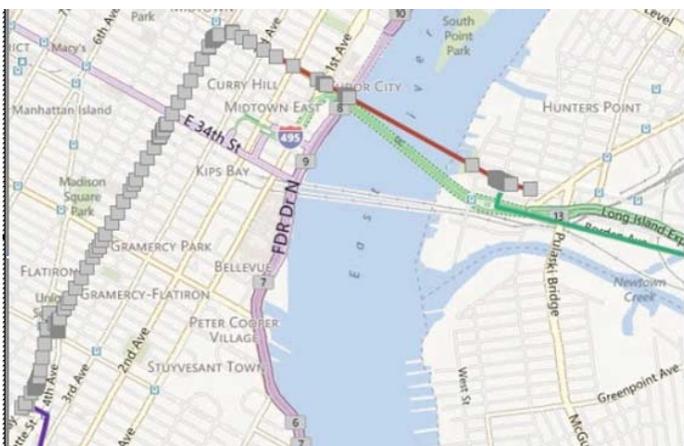
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GPS-based travel surveys can avoid many problems of traditional paper and phone surveys and are becoming increasingly popular in major cities worldwide. We developed a Web GIS prototype in this project to collect GPS data from survey participants, detect travel modes and trip purposes, and allow survey participants to modify the results in a Web GIS.

The prototype has three main sets of functions. First, it provides a Web page for a survey participant to register for an account at the computer server located at Hunter College, login or logout the account, and upload GPS data to the account. Secondly, the prototype preprocesses the GPS data, run algorithms to detect travel modes and trip purposes from the GPS and other transportation and land use data, and display the results on a base map.

Better than Google Map or Bing Map that allows only single mode (by car, by public transit, or walking), the prototype developed in the project allows multiple travel modes in a trip to fit the situation of big cities like New York City. The map on the left shows a home to work trip by car, walking to a transit station, by subway, and then walking from the transit station to work place.



Although we are able to achieve good success rates in detecting travel modes (see our publication at doi:10.1016/j.compenvurbsys.2011.05.003) and trip purposes (see doi:10.1016/j.tra.2010.08.004), we realize that without feedbacks from the participants, it would be almost impossible to obtain accurate travel information in a complex urban environment such as New York City where urban canyon effect is obvious, transportation network is sophisticated, and mixed land use is common.

The prototype therefore provides the third set of functions for participants to modify the results and save the updated data. A participant can add a trip segment, merge two trip segments, or edit a selected segment (see below). For example, the subway segment on the map is currently selected so that the participant can change the travel mode from subway to bus, or click and drag any of those gray squares to change the start or end point and/or the path of that trip segment.

While reducing the burdens on survey participants by mining GPS data but providing the flexibility of modification in a Web GIS, our prototype can provide accurate and validated travel information for transportation modeling and planning.

