

Online Person Trip GIS Data Provider and Analyzer: A Study of Human Mobility from Spatial Perceptive

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Abstract: This presentation will discuss about progress report of our ongoing project “Online Person Trip Data Provider and Analyzer” which is jointly research with Centers for Spatial Information Science, University of Tokyo. We will discuss about handling of large scale public survey data (approximately 600,000 records per minute for one day in Tokyo-Kanto area) into Geographical Information System and construction of a web-based GIS system to provide, visualize and analyze those huge person trip data for any online decision makers in urban and transportation planning, disaster mitigation process, retail market analysis and human mobility studies with space-time perceptive.

Keywords: Person trip, Space-time Analysis, data provider and Web-GIS

1. Introduction

Recently many spatial information users and researchers show the interesting about human mobility studies with space-time perceptive. Although some studies show the estimation of real-time based person flow status using mobile log data, internet access, etc., there are still limitations are exist such as privacy concerns, can't expect all persons will make phone calls or internet access. We hope that to get the real-time person flow status is using train ticket passed machine at the stations and linked to a GIS server. This is especially suitable in Tokyo-Kanto area where many people are travelling along with well-connected train and sub-way systems. This automatic monitoring of person flow information can help for disaster preparedness and retail market analysis.

In our project, we are mainly focused on analysis of huge person trip data with GIS. Understanding of human mobility is important for effective transportation planning, public facility management, retail market analysis and other urban and regional development planning. Person trip data is originated from large amount of public survey records which includes rich of spatial and non-spatial attribute information such as gender, occupation, age group and purpose to trip in every one minute with their location information using Global Positioning System GPS and stored in Comma Separated Value format CSV.

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Conversion of large amount public survey data into Geographical Information System allows spatial information users to integrate with other geospatial data such as transportation network and public facility locations which will improve understanding of human mobility from spatial perceptive.

2. Overview

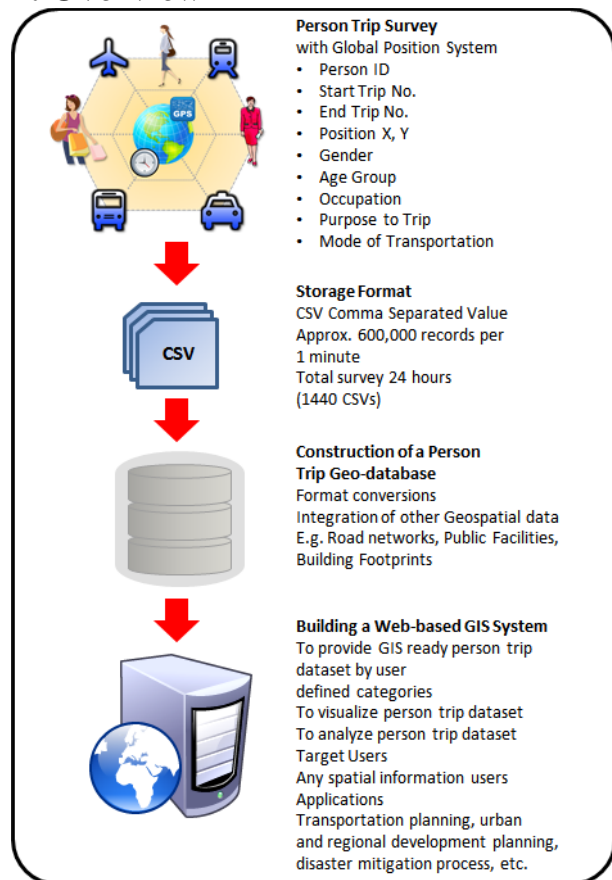


Figure 1: Project Overview

Figure 1 illustrates the overview of Online Person Trip Data Provider and Analyzer project. This project aims to provide huge person trip GIS ready dataset to any spatial information users and to allow online interactive decision making by integrating with other geospatial data.

3. Current Work

Currently we are working on conversion of huge public survey data into GIS system and construction of a test bed of Web-based GIS system to provide those GIS ready dataset. Figure 3 shows the batch processing of adding a header line into original CSV files, in order to assign the field name in GIS dataset. This utility program also can extract the desire specific field category such as male or female only, specific age group, specific occupation and so on by user defined time interval, one or five or ten minutes etc. Figure 4 shows the specific one person movement by user defined search category, such as male, age between 25 and 30, Occupation is office worker.

Project Homepage:

<http://giswin.geo.tsukuba.ac.jp/teacher/murayama/projects/persontrip/index.htm> (Under Construction)

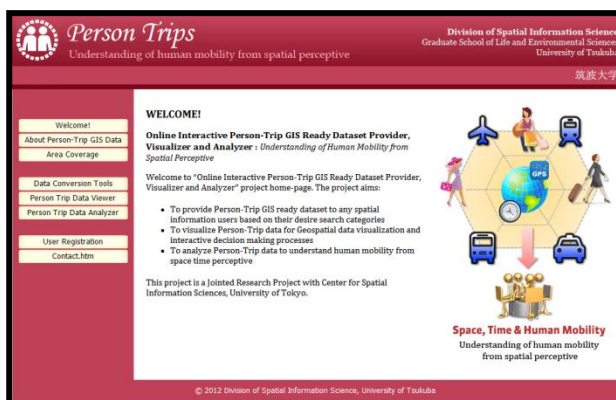


Figure 2: Project homepage (Under construction)

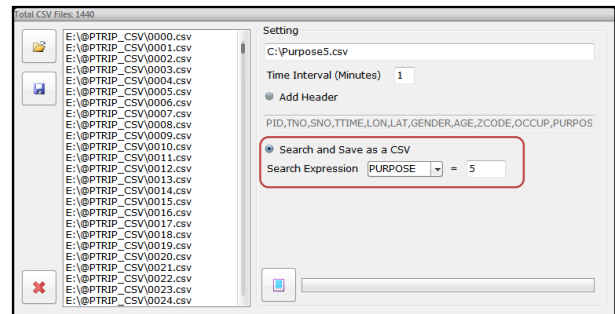


Figure 3: Adding a header line into CSV files and extract user defined search category

