

Developing a Geographic Information System (GIS) for Simulating City Bus Movements

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http://www.csm.ornl.gov/Internships/posters05/j_hemby_pa.pdf

Abstract

The Oak Ridge National Laboratory's (ORNL) Geographic Information Science and Technology (GIST) Group has been developing and refining a high-resolution population distribution model and database, called LandScan USA. It is in a geographical information system raster and ASCII data formats. LandScan USA provides detailed demographic information to support geographic analysis anywhere in the United States. It is important to understand the effects of environmental exposure on school kids, as they commute from residences to schools. The research process will begin with searching the internet for Philadelphia, PA bus route schedules to get the exact times of each stop and the location. This information will be used to create a GIS, using ArcView GIS, of each bus route. Once that is completed, the information needed out of each GIS will be put into an excel file. That information will then be applied to a model that will simulate the buses on each of its routes with exact times and stop locations. The results of this project will be used to calculate how much environmental exposure school kids are exposed to as they commute between residences to schools.

Objective

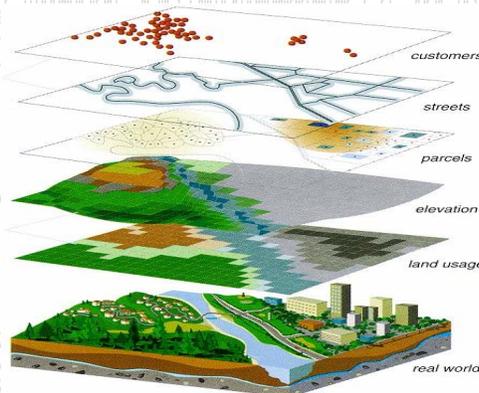
Create a GIS of Philadelphia, PA school bus routes in order to understand what effect environmental exposure has on school kids. Once a GIS is created, that information will be applied to a model that will simulate the movement of each bus with exact times and stops.

Approach

1. Search Internet for Philadelphia, PA bus route schedules
2. Use bus route schedules to create GIS, using ArcView GIS, of each bus route
3. Examine each GIS and gather information needed that will be applied to a model that will simulate the movement of each bus with exact times and stops
4. Consolidate all the information into one folder to make it easy to locate
5. Apply the information to C++, OpenGL, and cGal files to simulate the bus movement

Software

- ArcView GIS – software used to create GIS
- Layers information on top of each other in the order you see fit
- GIS links location to information (such as people to addresses, buildings to parcels, or streets within a network)



Purpose

- To understand the potential hazards in the environment that school kids are exposed to as they travel to and from school.

Benefits

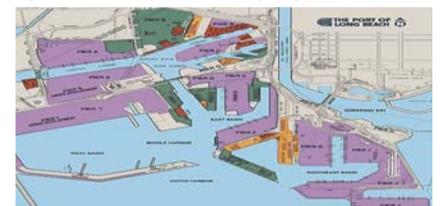
Enhanced space-time visualization for understanding different hazards school kids are exposed to at different times of the day.

Expected Results

The expected results of this project will be a high-resolution population distribution model for U.S metropolitan areas that will simulate school bus routes behavior with exact times and distances.

Similar Project

- Development of High-Resolution Daytime Population Estimates for US Ports
- http://www.csm.ornl.gov/Internships/posters05/j_brown_pa.pdf



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