

Visualization of Urban Transportation Data Generated by Wireless Sensor Network Using Modern Approaches

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Abstract

Distributed wireless sensor networks are one of the first real world examples of pervasive computing, the notion that small, smart, and cheap sensing and computing devices will eventually permeate the environment. Nowadays, it has proved to be useful in various applications. In a large sensor network, no matter the sensors are large or small, the data are especially complicated and unintelligible. We should make it easy to understand with the help of technologies of existence. Certainly, data visualization, which is defined as the interactive graphical presentation of data, could present data in the forms of aesthetic layout rather than traditional tables, pie charts and bar graphs, making the data more beautiful, elegant and descriptive. Attempting to visualize the data generated by wireless sensor networks, the audience will not be simply restricted to experts, but also all the people.

This dissertation aims to demonstrate the technology of both wireless sensor network and data visualization with the basis for the critical problems, challenges and future goals of development and applications. And we propose a simulative model integrated the two above technologies, emphasis on the processing. The framework is based on Google Maps; thus it allows robust navigation and communications within several different spatial ontologies. Our approach factors the problem into the following sub goals: deploying the sensors in urban crossroad, acquiring and analyzing data, and representing the data with aesthetic forms.