UVM Innovations
The University of Vermont Office of Technology Transfer

Information Technology

Case # 349

Traffic Volume Forecasting Tool Simulates Human Memory

Competitive Advantages

- ☑ Forecasts traffic volumes quickly and accurately.
- ☑ Very low computational and storage requirements.
- ☑ Longer range of predictions.
- ☑ Transferable to other sites.
- ☑ Applicable to other fields that require accurate real-time forecasting.

A new statistical data modeling tool increases the predictive accuracy and lowers the computational requirements for real-time traffic volume forecasting.

Emulating Human Memory

The Spinning Network (SPN) approach is based on the understanding that human memory is an essential part of human intelligence. Thus, it seeks to enhance artificial intelligence by emulating several features of human memory. These include the imprecise nature of information received, the association of ideas, and the improvement of information retrieval through an investment of time and effort.

Organizing the Database

SPN continually observes data and organizes it into memory. Conceptually, this approach consists of concentric data storage "rings" that spin asynchronously, with the outmost ring spinning fastest and having the greatest storage capacity. Each ring has an input window for receiving new data, and a "To Next Ring" window which merges similar data, deletes it from the current ring, and moves it to an inner ring.

In output mode, new inputs are compared to existing data. Each ring supplies its own output, and the most similar data is selected and output by the SPN.

Fast & Efficient

SPN offers several advantages over existing approaches to traffic flow forecasting. Unlike the nearest neighbor approach, for example, SPN uses a relatively small database that significantly improves runtime speed. Also, in contrast to the neural network approach, SPN does not require a time-consuming training period.

Commercialization

Additional applications for SPN data modeling include weather forecasting, market forecasting, human memory simulation, and online data clustering.

The licensed product can be delivered as a customized computer program, software module, or web-based application.

Patent/Licensing Status

Patent pending. Exclusive rights available.

Learn More

Traffic volume forecasting abstract
www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VGJ-4W8KHJC-2&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&_docanchor=&view=c&_

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