



Planning to Avoid Jams

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U of MD College Park Researchers Creating Software to Improve Highway Efficiency

By JOHN O'CONNOR
Daily Record Business Writer

A tractor trailer overturns on the Interstate 83 off-ramp. But instead of snarling traffic for thousands of commuters, a state traffic engineer loads software that coordinates the traffic signals of alternate routes and beams maps to the cell phones and PDAs of those trying to avoid the mess.

This is the dream of anyone caught in an unexpected jam -- and a group of University of Maryland College Park civil researchers designing software that could improve highway efficiency.

The research is being conducted in a brand new lab at the school's Center for Advanced Transportation Technology, where a cross-section of civil engineers, computer programmers, mathematicians and others are working on "intelligent traffic systems" that use volume, speed and vehicle data to improve traffic flow.

"We have tremendous potential in front of us in terms of what the lab can do for us," said Neil J. Pedersen, the state highway administrator. "We're very excited about the lab making the best use of current technology and developing technology."

Through a partnership between the school and the State Highway Administration, the basis for the research will be data collected through the state's CHART -- Coordinated Highways Action Response Team -- live highway monitoring system.

SHA has no way to archive all the information flowing through its cameras and monitors, but one project the transportation lab will work on this summer is how to archive the data CHART collects. Researchers hope that examining such data will allow them to respond better to accidents, and even predict what traffic might look like an hour from now.

For instance, if an accident happens at 3:30 p.m. on rainy Interstate 70 in Howard County with a volume of 430 cars per minute, analyzing archived data from incidents occurring in similar conditions might help predict how traffic will respond.

The ultimate goal of researchers -- one several years in the future -- is to create software that helps traffic engineers anticipate traffic and not just react to the latest accident or breakdown, and puts the latest information at the fingertips of commuters. CHART already posts such information on its Web site, and provides cell phone text messaging, but providing maps and alternate routes is the next step.

Pedersen and school officials hope the lab could also become a training ground for new transportation engineers and professionals. This summer, 15 students will volunteer their time to help with research.

Summer projects include reconfiguring existing cameras to allow them to pan, zoom and rotate without losing their original point of reference for data collection. They'll also write software for first generation cameras that allows them to recognize vehicle patterns and collect data.

"We're not sure on the timeline," said Michael Pack, lab manager for the transportation research. Projects should be "at least in an advanced stage by the end of the summer."

It is technology that is already drawing interest from the private sector, said Tom Jacobs, program manager. Virginia, California and Texas already have similar laboratories, Jacobs, a former Federal Highway Administration official, said, but few states have a program as advanced as the research underway at UMCP.

"Very impressive, very important, very progressive," said Cliff Eby with the Washington office of Parsons, an infrastructure and transportation engineering firm. "There's just a lot that needs to be done. When you look at the cost of building infrastructure, the only way we're going to make improvements is through intelligent transportation."

Parsons was awarded a contract to upgrade Interstate 15 near Salt Lake City for the last Olympics, Eby said, and the company won the contract not because they were cheapest, but because they analyzed data to find how construction would least impact traffic.

UMCP has made transportation research one of its priorities during the next five years, and other state universities have established programs to handle one of Maryland's most troublesome issues. The Johns Hopkins University Applied Physics Laboratory has designed intelligent traffic system programs to track commercial trucks and vehicles to maintain safety standards, and Morgan State University has an Institute for transportation.

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