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16. Abstract MIOH UTC TS21p1 2010-Final An understanding of traffic flow in time and space is fundamental to the development of strategies for the efficient use of the existing transportation infrastructure in large metropolitan areas. Thus, this project involved developing the methods necessary to systematically describe, explain, and predict the flow of traffic with respect to time and space. The utility of this knowledge was demonstrated in routing voluminous traffic. Achieving these objectives required the collection, management, and analysis of traffic data concerning volume, speed, and traffic sensor occupancy. Management of this data required the design and implementation of a large scale database management system as well as assuring the quality of the collected data. Descriptive, explanatory, and predictive statistical models were developed to help gain the desired understanding of traffic flow. Application efforts focused on the Detroit metropolitan area. Traffic data was regularly obtained from the Michigan Intelligent Transportation System Center. Statistical models of traffic flow in the Detroit area I-75 corridor were constructed. <p align="right">Continued On Next Page...</p>		

A previously developed routing model was extended and adapted to the I-75 corridor and the newly developed statistical models incorporated to help compute traffic flow metrics. Both a software solver and a hardware solver for the model were implemented. In addition, a framework for traffic simulation was developed and applied to the development and calibration of a micro-simulation model including the same part of the I-75 corridor. This model was used to demonstrate the benefits of guidance in re-routing traffic as a result of a traffic incident.

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