# Dynamic Travel Time Estimation Model for Real Time Travelers

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A broad range of diverse technologies, known collectively as intelligent transportation systems (**ITS**), holds the answer to many of our society's transportation problems. ITS are comprised of existing and new technologies, including information processing, sensors, communications, control, and electronics. Combining these technologies in innovative ways and integrating them into our multimodal transportation system will save lives, time, and resources. Transportation is the backbone of our society—the movement of people and goods provides the foundation of our quality of life and economic prosperity.

Various methodologies have been developed for dynamic travel time prediction. With the development of the Advanced Travelers Information Systems (**ATIS**), short-term travel time prediction is becoming increasingly important. As a key input for the dynamic route guidance system, travel time information enables the generation of the shortest path (or alternative paths) connecting the origins (or current locations) and destinations. **Traffic estimation and prediction system** (**TrEPS**) have the potential to improve traffic conditions and reduce travel delays by facilitating better utilization of available capacity. Moreover, a Short-term travel time prediction is incredibly significant to the real time travelers' information and route guidance system to hang on to the finest path during their route to the desired destination.

In this research, to fulfill the first objective a model for estimating path flows and modifying O-D flows simultaneously is proposed based on probabilistic information (Route selection behaviour of drivers) and traffic counts. The probabilistic information is accumulated to obtain prior information on path proportions. The link traffic counts are used as sectional volume information of links. The proposed model is constructed as a two stage model. The first stage model is estimation model of path flows and the second stage model is modification model of O-D flows. Moreover, it was clarified that the proposed two stage model had enough ability to estimate path flows and to modify O-D flows accurately even when prior O-D flows had inconsistency with the current traffic conditions.

By satisfying the Second objective, improved speed flow relationship employed which was focused on refining the speed estimates of network assignment models by using the modified Akçelik speed-flow model along with the literature findings. This Akçelik model produces significantly improved traffic assignment run times and provides more accurate speed estimates which lead accurate travel times to assure the last objective of identify the best path based on travel time using minimum real time information available.

In Conclusion, the estimation of link flows and modifying the O - D flows can be performed by two stages modal and travel time will be projected by the improved speed flow relationship. Projected travel time facilitates the selecting best path or the alternative for the user destination. Furthermore, integrate a method which will automatically update the system data base with the latest traffic data corresponding to road links and give the most up-to-date best travel time path to the road user is proposed as future development.

***Key words:*** *Intelligent Transportation System, O – D Flow, Link Traffic Flow, Travel Time*

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