

Thesis title:

A quantitative approach for predicting the reliability of travel time estimations with large-scale traffic data collection.

Abstract:

Travel time is an important parameter in effective trip planning. Departure time, travel route and transport mode are the key decisions involved in the planning process. Past experiences and user instincts can provide a basis to these choices. Otherwise, this is aided by services such as web maps, vehicle-to-everything communication and sensor-based Internet-of-Things that provide estimated travel times and other traffic data. However, a level of uncertainty or an error component is involved in such forecasts due to numerous unforeseen factors. Hence, the estimates deviate from the actual travel duration of the trip. Consequently, concerns are raised with regards to the reliability of travel times. This research aims to study and develop a methodology to compute the reliability as a quantity. The end goal of the research is to establish a decision-making model for trip planning. As the first step, the current context of travel time reliability was studied and reviewed. Secondly, a database enriched with frequently collected travel times between a predetermined origin-destination pair was obtained by means of crowdsourced data collection. Preliminary studies conducted paved the way for the successful development of the intended algorithm and the model for decision making. The statistical computations of the proposed method can be accelerated with data mining and learning techniques.