MASTER THESIS WORK - 30 CREDITS

DATA-DRIVEN TRAVEL TIME PREDICTION

The Analytics and Architecture group at Scania Connected services and Solutions drives the advancement of applied data science and machine learning within connected services. A thesis project in our group is a great opportunity to work with applied machine learning at the forefront of the transport industry and an excellent way of making contacts for your future career. Accurate prediction of ETA (estimated time of arrival) is a very important and challenging problem in the domain of heavy road transports and logistics. We think a data-driven approach is key but need your help in developing the solution!

Background

Scania is one of the world’s leading manufacturers of trucks and buses for heavy transports. Transport and logistics services make up an increasing part of our business, providing our customers with cost-efficient and sustainable transport solutions with high availability. More than 300 000 of Scania’s active vehicles today are connected and send data in real-time. Advanced analysis of this data is a key capability and a cornerstone in the development of Scania’s transport and logistics services.

Description

The need for accurate and reliable ETA predictions is ubiquitous in the road transport domain. Knowing how the current traffic and weather situation affect ETA enables a driver to adjust the driving speed and rest stops appropriately, thereby arriving “just-in-time” and potentially reducing fuel consumption and environmental impact. From a planning perspective, knowing for example how the combination of departure time, day of the week and time of the day affect ETA enables better transport planning and reduced driving hours and fuel consumption. However, predicting ETA is known to be notoriously difficult due to the fact that road transportation is a very complex and stochastic domain.

Assignment

We believe that the huge amounts of historical data collected from our vehicles when driving on the road is key to achieving better ETA predictions for heavy road transports. Your main task is to find out:

• how can we make the best use of the data from our connected vehicles in order to improve ETA prediction for a given truck, route and departure time?
• how accurate ETA predictions can we get from this?

Our suggested approach is as follows:
1. Do a survey of state-of-the-art methods for ETA prediction in the road transport domain.
2. Develop a suitable road network model, based on existing opensource package for routing and map data.
3. Develop predictive models for the travel time in the road network model, using data from Scania’s connected vehicles combined with historical weather data and, possibly, ETA predictions from 3rd party services.
4. Evaluate the predictive models above and compare with other from 3rd party ETA prediction services.

Applicants

Education: MSc within computer science or similar.
Courses within statistics, machine learning or data science.
Programming experience in Python and/or Scala/Java.
Number of students: 1-2
Start date: January 2019
Estimated time need: 20 weeks

Applicants will be assessed on a continuous basis until the position is filled.

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