
Relation between longitudinal and lateral action points

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Delay on the motorways can be reduced by traffic management measures changing driving behaviour, which need to be tested before implementation. Microscopic traffic simulation is well suited for this, if sufficiently accurate. Recent studies show that drivers do not continuously change their acceleration, but rather at specific moments in time. These moments are called longitudinal action points. Also for lane changing, moments in time can be identified when drivers start and end changing lanes, so called lateral action points. Current models not incorporating this discontinuous behaviour correctly, might produce incorrect predictions.

We collected measurements of driving behaviour using a video camera mounted under a helicopter. We developed a methodology to fit piecewise linear functions in (\dot{x}, t) and (y, t) , revealing the longitudinal and lateral action points (see figures). It can be hypothesised that drivers accelerate or decelerate in order to perform a lane change. The full paper will show the relationship between the longitudinal and lateral action points and show their correlation.

The approach using action points can be reproduced in a microscopic traffic flow simulation model. The final goal of this research is thus to help in developing more accurate simulation models in order to correctly assess the impact of traffic management measures.

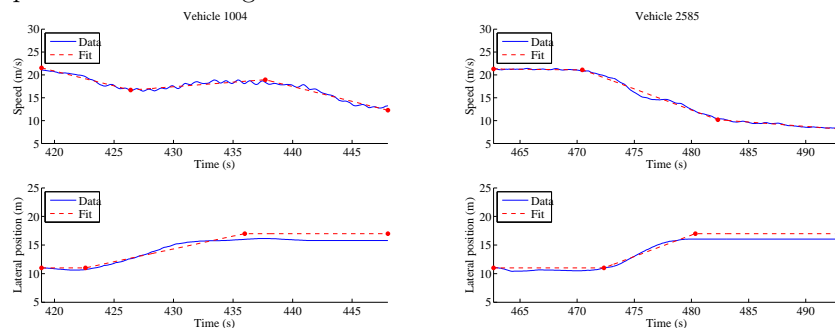


Figure 1: examples of the speed and lateral position over time for 2 vehicles