

## Stochastic Modeling for Parameters of Modified Car-Following Model in Area-Based Traffic Flow

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**Abstract :** The driving behavior in area-based (i.e., non-lane based) traffic is induced by the presence of other individuals in the choice space from the driver's visual perception area. The driving behavior of a subject vehicle is constrained by the potential leaders and leaders are frequently changed over time. This paper is to determine a stochastic model for a parameter of modified intelligent driver model (MIDM) in area-based traffic (as in developing countries). The parametric and non-parametric distributions are presented to fit the parameters of MIDM. The goodness of fit for each parameter is measured in two different ways such as graphically and statistically. The quantile-quantile (Q-Q) plot is used for a graphical representation of a theoretical distribution to model a parameter and the Kolmogorov-Smirnov (K-S) test is used for a statistical measure of fitness for a parameter with a theoretical distribution. The distributions are performed on a set of estimated parameters of MIDM. The parameters are estimated on the real vehicle trajectory data from India. The fitness of each parameter with a stochastic model is well represented. The results support the applicability of the proposed modeling for parameters of MIDM in area-based traffic flow simulation.

**Keywords :** area-based traffic, car-following model, micro-simulation, stochastic modeling

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