

Estimation of electric vehicle turning radius through machine learning for roundabout cornering

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ABSTRACT

This paper presents an alternative approach for estimating the turning radius using machine learning technique. While on-board sensors are unable to offer adequate information on vehicle states to the algorithm, vehicle states other than those directly detected by on-board sensors can be inferred using machine learning (ML) approaches based on the collected data. A compact electric vehicle model is used to obtain data and measurements of the vehicle states for different sets of road radius. The augmented basic measurements is fed to an Extra Tree Regression to predict the turning radius of the vehicle. The feasibility of the developed algorithm was tested and validated using performance metrics. The results show that the regression accuracy for the turning radius is 99% and can be obtained with sufficient vehicle dynamics information.

KEYWORDS

Predictive modelling; Electric vehicle; Machine learning

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