

A Methodology to Obtain a Synthetic Driving Cycle through GPS Data for Energy Analysis

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Abstract

This paper proposes a methodology to obtain a synthetic driving cycle by using GPS data as input. The aim is to obtain a driving cycle that is representative of a given condition when used for energy consumption studies. The methodology begins with a data acquisition phase, where an adequate sampling frequency is proposed. Velocity raw data are processed and clustered to capture a mobility global pattern. A synthetic driving cycle is generated from the clustered information using a two level energy model optimization. For a case study, a representative synthetic driving cycle was determined for a Bus Rapid Transit (BRT) route.

Keywords

Global Positioning System, Vehicles, Estimation, Frequency estimation, Energy consumption, Optimization, Vehicle dynamics.