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Sensing Vehicle Conditions for Detecting Driving Behaviors

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Sensing Vehicle Conditions for Detecting Driving Behaviors

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- The book gives strong motivation for applying smartphone sensing technology in sensing vehicle dynamics and driving behaviors, which provides readers new direction for improving driving safety and convenience
- The book provides varies approaches for digging sensor readings of smartphones to sense vehicle dynamics and driving behaviors, which may give readers new ideas for processing similar data.
- All methods described in this book are implemented as Android Apps, which can be useful for readers who wants to turn the methods to products
- All approaches described in this book involves month-level data collection and performance evaluation in real driving environments, which can be meaningful to readers who cares abo

This SpringerBrief begins by introducing the concept of smartphone sensing and summarizing the main tasks of applying smartphone sensing in vehicles. Chapter 2 describes the vehicle dynamics sensing model that exploits the raw data of motion sensors (i.e., accelerometer and gyroscope) to give the dynamic of vehicles, including stopping, turning, changing lanes, driving on uneven road, etc. Chapter 3 detects the abnormal driving behaviors based on sensing vehicle dynamics. Specifically, this brief proposes a machine learning-based fine-grained abnormal driving behavior detection and identification system, D3, to perform real-time high-accurate abnormal driving behaviors monitoring using the built-in motion sensors in smartphones. As more vehicles taking part in the transportation system in recent years, driving or taking vehicles have become an inseparable part of our daily life. However, increasing vehicles on the roads bring more traffic issues including crashes and congestions, which make it necessary to sense vehicle dynamics and detect driving behaviors for drivers.

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