

Where is That Car Parked? A Wireless Sensor Network-Based Approach to Detect Car Positions

Reference:

D. Burgstahler, F. Knapp, S. Zöller, T. Rückelt, and R. Steinmetz, "Where is That Car Parked? A Wireless Sensor Network-Based Approach to Detect Car Positions (accepted for publication)", in 9th IEEE LCN International Workshop on Practical Issues in Building Sensor Network Applications (IEEE SenseApp 2014), Edmonton, Canada, 2014, p. NN-NN.

Abstract:

The global trend of increased urbanization makes space rare in city environments in general and for parking in particular. In addition, cars become bigger and often use more than one parking space. As a result neighboring parking spaces can be affected by a parked car. So, a basically free parking space might be too narrow for an arriving car depending on the arriving car's size. Therefore, means to detect car positions on parking spaces in a fine granular way are required to detect such situations and avoid inefficient parking space searches. Wireless sensor networks provide the possibility to sense the exact occupation of a parking space and potential influences on neighboring parking spaces. However, current solutions focus only on the detection if a parking space is occupied or not. In our work, we present a sensor deployment and a machine learning-based approach able to provide the mentioned more fine-granular detection level. We have conducted an extensive real-world evaluation of our solution, in particular considering different characteristics of today's car bodies. In our tests, our approach achieved an accuracy of more than 98%.