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Parking availability prediction in Smart City

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Content

Smart cities are part of the ongoing advances in technology to provide a better life quality to its inhabitants. Urban mobility is one of the most important components of smart cities. Due to the growing number of vehicles in these cities, urban traffic congestion is becoming more common. In addition, finding places to park even in car parks is not easy for drivers who run in circles. Studies have shown that drivers looking for parking spaces contribute up to 30% to traffic congestion. In this context, it is necessary to predict the spaces available to drivers in parking lots where they want to park. We propose in this paper a new system that integrates the IoT and a predictive model based on ensemble methods to optimize the prediction of the availability of parking spaces in smart parking. The tests that we carried out on the Birmingham parking data set allowed to reach a Mean Absolute Error (MAE) of 0.06% on average with the algorithm of Bagging Regression (BR). This results have thus improved the best existing performance by over 6.6% while dramatically reducing system complexity.

Keywords : Transparent AI, Natural human-machine interaction, Innovative warning systems, Countermeasures, Mixed-initiative planning