**Similarities:**

Three researchers (Badii et al., 2018; Bock et al., 2017; Shao et al., 2019) have already proposed their solutions in similar fields. They all collected data sets from the CBD or city center for machine learning. The difficulty of the research is that the data sets may also include some complex environmental information. Therefore, the data sets used for these three articles need to be processed and to prevent it from harming the prediction model.

**Dissimilarities:**

The methodologies are dissimilar.

Bock et al. (2017) proposed a two-step method to increase the availability of parking spaces. In this method, the first step is to apply support vector regression (SVR) with adjusted parameters to the collected data set. In the second step, Bock et al. (2017) trained the fitted trend curve using a multi-dimensional model to predict the vacancy of parking spaces. This method handles noisy data problems and optimizes the model to help significantly improve its accuracy.

Shao et al. (2019) did a novel framework to predict vacant parking spaces. The procedure of the framework was divided into two parts. First, the temporal datasets from censors was divided to small part time slots, and then applied an algorithm to cluster these time slots. Second, Shao et al. (2019) used a simple recurrent neural network (RNN) to train the clustering data obtained in the first step and trained the LSTM model. Finally, the proposed LSTM model could be used to predict parking occupancy and duration. Besides, after evaluation, the recurrent neural network model was superior to the previous conventional model.

Badii et al. (2018) used Bayesian regularized ANN to explore the data and predict the number of parking slots for each garage in Florence. The writers compared different kinds of datasets, such as traffic censored data sets and weather conditions data sets. These datasets were demonstrated to help improve the precision of the model and related to the prediction of the number of vacant parking slots.

**Reference:**

Badii, C., Nesi, P., & Paoli, I. (2018). Predicting Available Parking Slots on Critical and Regular Services by Exploiting a Range of Open Data. *IEEE Access*, *6*, 44059–44071. <https://doi.org/10.1109/ACCESS.2018.2864157>

Bock, F., Di Martino, S., & Origlia, A. (2017). A 2-Step Approach to Improve Data-driven Parking Availability Predictions. *Proceedings of the 10th ACM SIGSPATIAL Workshop on Computational Transportation Science - IWCTS’17*, 13–18. <https://doi.org/10.1145/3151547.3151550>

Shao, W., Zhang, Y., Guo, B., Qin, K., Chan, J., & Salim, F. D. (2019). Parking Availability Prediction with Long Short Term Memory Model. In S. Li (Ed.), *Green, Pervasive, and Cloud Computing* (Vol. 11204, pp. 124–137). Springer International Publishing. <https://doi.org/10.1007/978-3-030-15093-8_9>