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Scalability evaluation of forecasting methods applied to Bicycle Sharing Systems

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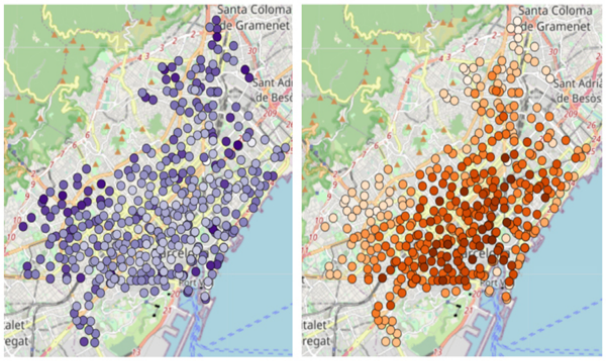

(a) RMSLE (b) Usage Ratio

Public Bicycle Sharing Systems (BSS) have spread in many cities for the last decade. The need of analysis tools to predict the behavior or estimate balancing needs has fostered a wide set of approaches that consider many variables. Often, these approaches use a single scenario to evaluate their algorithms, and little is known about the applicability of such algorithms in BSS of different sizes. In this paper, we evaluate the performance of widely known prediction algorithms for three sized scenarios: a small system, with around 20 docking stations, a medium-sized one, with 400 docking stations, and a large one, with more than 1500 stations. The results show that Prophet and Random Forest are the prediction algorithms with more consistent results, and that small systems often have not enough data for the algorithms to perform a solid work.

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