EXECUTIVE SUMMARY - updated September 2022

SCOOTER-SHARE TRAVEL DEMAND FORECAST: A CONTEXT-AWARE LSTM RECURRENT NEURAL NETWORK APPROACH

Shared micromobility, including dockless bike-share and scooter-share, has been popular in many cities in the U.S. Due to its small vehicle size and flexible on-demand riding style, it is considered a viable low-carbon transportation alternative to satisfy people's short-travel demand. Research has shown that shared micromobility trips mostly cluster in downtown areas where there are recreational facilities and shopping stores and on university campuses where students live and study. In addition, researchers have pointed out the possibility of a tight connection between shared micromobility travel demand and economic activities. Following this idea, this study builds a context-aware longshort term memory (CALSTM) recurrent neural network to forecast the daily travel demand for scooter-share in Austin, Texas. The CALSTM model considers the historical visit frequency of points-of-interest (POI) near a scootertrip destination as well as the weather on a particular day in order to improve the prediction accuracy. The result of this study could serve as valuable guidance for transportation planning projects aiming at promoting shared micromobility in cities by predicting high-demand areas based on local economic activity patterns.

CM² Cooperative Mobility for Competitive Megaregions

Scooter-Share Travel Demand Forecast: A Context-Aware Lstm Recurrent Neural Network Approach (CM2-79)

Dr. Junfeng Jiao
University of Texas at Austin

09/01/2020 - 09/30/2021

Project Information Form: shorturl.at/hRVYZ

TEXAS The University of Texas at Austin

This study was funded by the consortium of Cooperative Mobility for Competitive Megaregions (CM²). CM² is a USDOT Tier-1 University Transportation Center (UTC). CM²'s consortium partners include the University of Texas at Austin, Louisiana State University, Texas Southern University, and the University of Pennsylvania.