

Title of Invention: Method and System for Taxi Demand Prediction Using A
Neural Network Model

Abstract

5 Disclosed herein is a computer-implemented method for predicting taxi demand,
and system and apparatus for implementing the method. The method includes
generating, by a three-dimensional spatiotemporal model, a current demand count
for a plurality of unit grids based on a current taxi dataset comprising current
demand and supply of a taxi fleet, wherein the three-dimensional spatiotemporal
10 model comprises a convolutional neural network trained on a first dataset of demand
and supply of taxis at the plurality of unit grids over a plurality of time periods to
output a demand count, wherein the first dataset is encoded as a plurality of three-
dimensional images, and each three-dimensional image represents one unit grid
over the plurality of time periods. In addition, a micro-movement model that
15 determines the probability of current taxi demand in the road links and a LSTM-TCN
hybrid model that quantifies the impact of exogenous factors on the demand and
supply of taxis may be used. An integrating neural network may be used to combine
and assign weightage when two or more models are used, to generate a combined
taxi demand prediction value.

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FIG. 2