Borsa di studio attivata ai sensi di quanto disposto dal D.M. n. 1061 del 10/08/2021

Titolo del progetto: Taxi rides forecast through machine learning: anticipating demand for a better supply availability

La borsa sarà attivata sul seguente corso di dottorato accreditato per il XXXVII ciclo:
INFRASTRUTTURE E TRASPORTI

Responsabile scientifico: Guido Gentile
Area per la quale si presenta la richiesta: GREEN
Numero di mensilità da svolgere in azienda: 12
Numero di mensilità da svolgere all'estero: 6 presso Technical University of Denmark - DTU
Azienda: Moving Projects srl
Il Dipartimento è disponibile a cofinanziare per un importo pari a euro: 10000
Dipartimento finanziatore: DIPARTIMENTO DI INGEGNERIA CIVILE, EDILE E AMBIENTALE con delibera del 22.09.2021

Progetto di ricerca:
Ride sourcing is one of the most used transport mode in the world despite the fact, it is highly uneconomical mode that has serious environmental issues. This research is focused to address these negative impacts with the help of technological advancements like Artificial intelligence and GPS system in rides that help to record enormous data which is utilized to understand human behavior and plan the supply accordingly. With the advancement in Machine Learning researchers are able to find efficient methods to model transport demand and predict the future demand accordingly. Deep Neural Networks are heart of this technological breakthrough specifically RNNs like LSTM which are very accurate in predicting time series data. This research analyses NYC yellow taxi data and its spatio-temporal correlation with the help of Unsupervised K-means clustering technique and Supervised LSTM Network and the model was evaluated based on prediction accuracy and MSE. The research highlights the importance of data cleaning and preprocessing which plays vital role in increasing accuracy along with understanding data for feature engineering. All the results confirm the superiority of neural networks for delivering accurate predictions.

Titolo del progetto (inglese): Taxi rides forecast through machine learning: anticipating demand for a better supply availability

Progetto di ricerca (inglese):
Riding taxis is one of the most used transport mode in the world despite the fact, it is a highly uneconomical mode that has serious environmental issues. This research is focused to address these negative impacts with the help of technological advancements like Artificial intelligence and GPS system in rides that help to record enormous data which is utilized to understand human behavior and plan the vehicle supply accordingly. With the advancement in Machine Learning researchers are able to find efficient methods to model transport demand and predict the future demand accordingly. Deep Neural Networks are heart of this technological breakthrough specifically RNNs like LSTM which are very accurate in predicting time series data.
This research project is aims at analyzing existing data sets, like NYC yellow taxi data, as well as exploit new data sets, like the taxi rides in Rome, and their spatio-temporal correlation with the help of Unsupervised K-means clustering technique and Supervised LSTM Network. The models will be evaluated based on prediction accuracy and MSE. The research highlights the importance of data cleaning and preprocessing which plays vital role in increasing

accuracy along with understanding data for feature engineering. Preliminary results confirm the superiority of neural networks for delivering accurate predictions.