KEN KOSHY VARGHESE

PhD Candidate - Transport Systems Engineer

ABOUT ME

Civil Engineer with a Master's in Transportation Systems Engineering and a current PhD candidate in Transportation Engineering. Specialized in transportation modelling, traffic engineering, and leveraging advanced technologies like machine learning and deep learning. Dedicated to innovating transportation systems and solving intricate challenges through cutting-edge research.

CONTACT

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SKILLS

Machine Learning

Python

Data Analysis

C Sharp

Java Script

C++

Visum

Vissim

WORK EXPERIENCE

Researcher Phd Candidate — **Jan 2022 - Present**
Sapienza Università di Roma, Rome (Italy)

- Investigated the impact of spaces and time granularity for demand forecasting, utilizing deep learning models like Long Short-Term Memory (LSTM), Convolution Neural Networks (CNN), and Temporal-Guided Networks (TGNet) with a grid-based tessellation strategy.
- Developed an innovative method for transport mode detection in urban areas using mobile magnetometer sensor data from metro riders. Implemented a station counter algorithm to accurately count the number of metro stations in trips where GPS, internet, and wireless positioning were unavailable.
- Pioneered a study predicting road traffic accident severity in Rome, leveraging a comprehensive dataset spanning 2006 to 2022. Employed advanced techniques like one-hot encoding, Synthetic Minority Over-sampling Technique (SMOTE), and conformal prediction to enhance model performance, reliability, and interpretability.

Software Developer Internship — **April 2022 - Present**
PTV Group, Rome (Italy)

- Maintained and gained expertise in the adaptive traffic signal control software, "Balance" and "Epics," developed by PTV Group.
- Assisted in identifying and resolving software bugs to ensure smooth and efficient traffic signal operations.
- Provided exceptional support to clients, addressing their inquiries and concerns promptly and effectively.
- Contributed to a proof of concept assignment with RTA in Dubai, successfully testing and implementing the traffic signal software on real traffic junctions.
- Developed and implemented robust Continuous Integration/Continuous Deployment (CI/CD) pipelines using Jenkins for Balance and Epics software.

Graduate Engineer — **Oct 2017 – Sep 2018**
Ecocoast, Dubai (UAE)

- Implemented and monitored project progress and used MS Excel to prepare daily assessment reports.
- Checking technical designs and drawings to ensure that they are followed correctly.

CERTIFICATES

Machine Learning: Introduction

Coursera: Credential ID AZR-BQAD XVPJ7

Sequences, Time Series and Prediction

DeepLearning.AI: Credential ID 7SYVSA4QEYKQ

PTV Vissim

PTV Group

PTV Visum

PTV Group

Clustering Geolocation Data Intelligently in Python

Coursera: Credential ID 75EYV6UTSCG5

Autodesk Certified User: AutoCAD®

Certiport - A Pearson VUE Business: Credential ID 74v7-uGex

- Managed a team of 15 personnel during construction activities. Observed existing processes, analysed staff performance and addressed deficiencies as per HSE, equipment and labour requirements.
- Liaising with consultants and subcontractors for approval of works, inspections and RFI.

EDUCATION

Doctor of Philosophy - PhD, Transportation/Mobility Management — **2022 - ongoing**
Sapienza Università di Roma - Rome, (Italy)

Master's degree, Transport Systems Engineering — **2018 - 2021**
Sapienza Università di Roma - Rome, (Italy)

- Thesis: Demand Forecasting for On-Demand Mobility using Deep Neural Network (CNN and LSTM).
- Projects Done: Viterbo Provincial Public Transportation Plan and Signal Setting Design of Via Cristoforo Colombo, Rome

Bachelor of Technology, Civil Engineering — **2013 - 2017**
S.C.M.S. School of Engineering Technology - Kerala, (India)

Thesis: Carbon Footprint Estimation of a high-rise building: Planning low carbon measures.

PUBLICATIONS

Predictive Analytics for Road Traffic Accidents: Exploring Severity through Conformal Prediction — **2024**
TRB Annual Meeting 2024

Status: Accepted

Inferring Station Numbers in Metro Trips Using Mobile Magnetometer Sensor via an Unsupervised K-means Clustering Algorithm — **2023**
IEEE (ISBN: 978-1-6654-5530-5) 2023

Status: Accepted and Published, DOI: 10.1109/MT-ITS56129.2023

Effect of Spatio-Temporal Granularity on Demand Prediction for Deep Learning Models — **2023**
Transport and Telecommunication Journal (ISSN: 1407-6179) Vol 24, Issue 1, 2023

Status: Accepted and Published, DOI: https://doi.org/10.2478/ttj-2023-0003

WORKSHOPS & CONFERENCES

2024 Transportatiion Research Board Annual Meeting (TRB 2024) — **Jun 2024**
Washington D.C, USA

8th International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS) — **Jun 2023**
Nice, France