Project Number: P3

Project Title: Optimising Electric Vehicle Charging Station Locations in NSW

Project Clients: Dr Hao Xue, School of Computer Science and Engineering

Project Specializations: Big Data Analytics and Visualization, Machine Learning, Deep Learning NLP

Background:

Optimising Electric Vehicle Charging Station Locations in NSW Australian consumers are interested in Electric Vehicle ownership. A 2021 consumer attitudes study found that 54% of respondents would consider an Electric Vehicle as their next vehicle purchase. Despite this only 20,000 Electric Vehicles (EVs) have been sold in Australia over the last decade. One of the key barriers to EV ownership is the lack of charging infrastructure and availability to recharge. To support the Electric Vehicle, transition the NSW government plans to deliver an additional 30,000 Electric Vehicle chargers by 2026. Over the years, researchers have explored strategic modelling and multiple approaches to determine where to install EV charging infrastructure location and charging stations. Governments have published guidelines to support charging station installations, recommending locations and place. In 2021, the NSW Electric Vehicle Fast Charging Infrastructure Master Plan was published to assist developers identify potentially appropriate areas for the development of Electric Vehicle fast charging infrastructure. Data and information available in the 'Master Plan' is presented on a map and was published to promote the new EV fast charging infrastructure. Used as a guide, all data used to compile the Master Plan was publicly sourced and is freely available. The master was the first step in the roll out of guaranteed widespread fast charging, highlighting where stations could be optimally placed. This meant that EV drivers could be confident they could drive their vehicles whenever and wherever they needed to. The National Electric Vehicle Strategy was published in April 2023 and paves the way for greater access to charging stations amongst other priorities.

Requirements and Scope:

The goal of this project is to find where new charging stations should be placed to meet future consumer demands. In this project, various public data sources (e.g., the ABS data, NSW traffic volume viewer, NSW EV Fast Charging Infrastructure Master Plan, flood data) will be explored to propose new charging locations in NSW. Further details will be discussed in the client meetings.

Required Knowledge and skills:

Machine Learning, Python, Data Visualization, Algorithms, Optimization

Expected outcomes/deliverables:

Source code and a demo with visualizations (like the Master Plan), project documentation and guide