**Data Science Project 7PAM2002-0509-2023**

**Semester C 2023**

**Logbook (Activities and GitHub submissions)**

**Student Name and ID: Devi Manamthanam Dhanapalan 22076129**

**Project Title: Optimising Electric Vehicle Charging Infrastructure through Predictive Analytics and Usage Pattern Analysis**

**Supervisor: Vandana Das**

**Student GitHub URL:** [**https://github.com/dm23aau**](https://github.com/dm23aau)

**Number of versions of the code submitted on GitHub: 4**

**User documentation has been submitted on GitHub: YES / NO**

**Student GitHub URL has been shared with markers: YES**

**Log of Activities**

**Must record attendance at lectures and supervisions**

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| **Week** | **Date** | **Activity**  **incl. lectures & supervisions** | **Reason if not attend lecture or supervision** | **Weekly project progress.**  **How lecture/supervision was helpful to your project.** |
| 1 | 14-05-2024 | Lecture 1 |  | The lecture provided a thorough introduction to the module, covering key topics such as assessments, choosing project and dataset, academic misconduct, doing a literature search and referencing, which were essential for understanding how to begin the project. |
| 2 | 21-05-2024 | Lecture 2 |  | The lecture was about the Project and Data Management Plan. This lecture provided valuable guidance on how to create the PDM plan and prepare for presentation. |
| 3 | 30-05-2024 | Supervision 1 | Authorised Absence | The topic and dataset was mailed to the supervisor. |
| 4 | 03-06-2024 | Lecture 3 | Authorised Absence |  |
| 5 | 06-06-2024 | Supervision 2 | Authorised Absence |  |
| 6 | 12-06-2024 | Supervision3 (PDM) |  | The PDM talk was done. The supervisor had gone through the dataset and requested the literature review. She gave a positive feedback on my talk. |
| 7 | 17-06-2024 | Lecture 4 |  | The lecture was on Data Ethics. It was informative and helpful to prepare for the Ethics quiz which will be on July 3.It offered valuable information on the application of data ethics in the project. |
| 8 | 25-06-2024 | Supervision 4 |  | During this supervision, data validation and handling missing data were covered. The supervisor asked me to prepare log book, complete the literature review, decide on the ML models, and email her the GitHub link. |
| 9 | 03-07-2024 | Ethics Quiz |  | Attended the ethics quiz scheduled at 5pm in K110, which was very helpful for understanding data ethics and making progress on the project. |
| 10 | 10-07-2024 | Supervision 5 (online) |  | The meeting was conducted on Microsoft Teams at 2 pm. During this session, I presented my exploratory data analysis and sent the GitHub link to the supervisor. She reviewed my work, expressed satisfaction with my progress, asked to maintain the logbook, and informed me about the supervision scheduled for next week and the mock viva that will be on August 8th. |
| 11 | 15-07-2024 | Supervision 6 |  | During this supervision, I informed her about the machine learning models that will be implemented for checking the station availability. She informed that the mock viva updates will be mailed soon. Furthermore, she asked to maintain the logbook and GitHub regularly. |
| 12 | 15-07-2024 | Lecture 6 |  | The lecture provided valuable guidance on preparing the Final Project Report in accordance with the guidelines and standards, and it also outlined the structure and marking criteria for both the FPR and viva. |
| 13 | 09-08-2024 | Supervision 7(Mock viva) |  | The mock viva provided insight into how the final viva will be conducted and helped in understanding the question patterns likely to be asked. The supervisor reviewed my codes and was happy with my progress. She informed about the final viva that will be conducted before September 19th. |
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**Log of GitHub Submissions**

**Record the versions of code and user documentation submitted on GitHub**

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| **Date** | **Filename and version submitted to GitHub** | **Description of code and/or documentation submitted (what has been added since the previous version).** |
| 25-06-2024 | | <https://github.com/dm23aau/Project-on-EV-charging-Infrastrucure/blob/a0282bb00a2784706f3e7ef5d3fbb446fac1de09/Project1.ipynb> | This repository contains a Python script for cleaning and analysing a dataset related to EV (Electric Vehicle) charging sessions. The script specifically focuses on handling missing data, visualizing distributions, and understanding the general structure of the dataset. |
| 10-07-2024 | | <https://github.com/dm23aau/Project-on-EV-charging-Infrastrucure/blob/a0282bb00a2784706f3e7ef5d3fbb446fac1de09/Project2.ipynb> | This repository provides a comprehensive analysis of a dataset containing information on charging station usage. The code performs data cleaning, visualization, statistical analysis, and forecasting using various machine learning techniques. The main objectives of this project are to explore the dataset, clean it for missing values, visualize important trends, and forecast future usage of charging stations |
| 15-07-2024 | | <https://github.com/dm23aau/Project-on-EV-charging-Infrastrucure/blob/a0282bb00a2784706f3e7ef5d3fbb446fac1de09/Project3.ipynb> | This repository contains Python code for analysing and forecasting the usage of electric vehicle charging stations. The analysis is based on a dataset containing various features related to charging sessions, such as the total kilowatt-hours (kWh) consumed, the duration of the charging sessions, the distance travelled, and more. |
| 09-08-2024 | | <https://github.com/dm23aau/Project-on-EV-charging-Infrastrucure/blob/8fa50e8b4a1672679f3bf11e2eab8a9188ca670c/Code_for_Project_on_Optimising_Electric_Vehicle_Charging_Infrastructure_through_Predictive_Analysis_and_Usage_Pattern_.ipynb> | This project aims to predict the availability of electric vehicle charging stations using various machine learning models. It includes implementations of Random Forest, Logistic Regression, and a Convolutional Neural Network (CNN) to determine the most effective model for predicting charging station status based on historical usage data. |
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