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CHAPTER 1: INTRODUCTION

1.1. Introduction

Electric vehicles, EVs, are gaining popularity in recent years. The reduction of taxes by various nations on EVs, the consideration of environment, and the ever-depleting petroleum resources has made EVs a possible vehicle in consideration for many drivers and the easier and cheaper availability of electricity further solidifies the case for the choice of EVs. Similarly, recommendation systems are also nowadays used on almost every walk of digital life. The increasing adoption of electric vehicles (EVs) has led to a growing demand for charging infrastructure. However, finding a charging station that is both conveniently located and available can be a challenge for EV drivers. The aim of this project is to address this challenge by providing a user-friendly and efficient solution for recommending charging stations. The system utilizes the technique of cosine similarity to recommend the most suitable electric vehicle charging stations in a specified location. The report will detail the design, implementation and evaluation of the system, as well as its overall performance and potential future improvements.

1.2. Problem Statement

The big problem of Electric Vehicles (EV), is charging. EV charging is not as easy as filling up fuel as in an internal combustion engine-based vehicle as it takes quite a significant time for the EV to be fully charged. So, picking an EV charging station can be a big personal preference-based choice and finding a right one can be a topic of choice. With the scarce availability of the EV charging stations, it can be very difficult to even look for an EV charging station let alone being recommended one that a person may like, trust, and ultimately prefer.

1.3. Objectives

* To create a web-based recommendation system that recommends EV charging stations in an area
* To implement item-item based collaborative filtering using cosine similarity and weighted average

1.4. Scope and Limitation

The project aims to build a system that can be used to provide ratings to various charging stations and receive recommendation of charging station in a user specified location.

The system will not detect the user location of provide routes to the said charging stations.

1.5. Development Methodology

The project is developed using incremental development approach. Incremental development is a method of building software where the system is broken down into small modules and built module-by-module. Incremental development was favoured over other approaches due to multitude of factors. The team is not very well skilled or trained and is on a constant learning process during the development process itself. This approach allowed so that the system can be developed in smaller modules and functions can be added over the course of development one by one. Similarly, the system could be developed such that the core requirements of the system could be developed first and then other add-ons could be developed as need be. Furthermore, due to the requirements being set and clear, it was easier to implement

the system in incremental approach as client feedback was not a must have requirement for the project. All in all, as requirements are superior, the developers are still learning, and the prioritized requirements need to be developed first, the system is built using incremental approach as small modules.

1.6. Report Organisation

The report of the Electric Vehicle Charging Station Recommendation System is organised into six chapters.

Chapter 1 is the introductory chapter that encompasses the project introduction, the scope, limitation, and development methodology.

Chapter 2 is the background study and the literature review. This section encompasses the summary of the works done which are similar to the project in consideration. It is research-based analysis and summary of similar works or works that may be relevant to the project. This section summarises the works that have been taken as reference, guideline, or as an influence to the project.

Chapter 3 provides a detailed analysis of the system and the project as a whole. This section focuses on identifying the viability of the project and the requirement of the system. This section ensures that the system is viable, the platform to be used is viable, and the project is doable.

Chapter 4 highlights the system and how is it to be developed. It is a study of how should the system be built, which approach is to be taken, and what algorithms are to be studied and implemented to ensure smooth and hassle-free development along with providing a system of proper quality.

Chapter 5 provides an outlook on how was the system actually developed and how was it handled. It provides summary on what tools were implemented and why, how was the algorithm implemented, and how was the database implemented. It also summarises the QA aspects of the project.

Finally, chapter 6 provides an insight about the system and the project and how can the system be further improved.

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