Proposal: Road Trip Planning system for Traveling with an Electric Vehicle

Problem:

With the rapid increase of electric vehicles (EV) and their charging system's development, owning an EV has become a popular trend. While people are happily shopping between different fancy EV brands, they run into difficulties when planning a road trip with their EV, due to several reasons, such as, vehicle mileage restrictions, charging station density distribution difference between suburbs and cities, and battery capacity persistence under fluctuating weather conditions. Due to these issues, most households prefer owning a gas vehicle for road trips while owning an EV for mostly city traveling usage.

Proposed Solution:

In order to increase the usage of electrical vehicles, which also leads to decreasing usage of fossil fuels, we would like to propose a system to assist EV owners on road trip planning. We will be gathering data for all charging site locations in California, including all EV charging brands, level 2 AC and level 3 DC fast charging units, and analyze the average fastest charging time, lowest kilowatts usage and cost in US dollars for each EV charging site location. In addition, we propose to pull information out of the dataset and estimate the distance between each EV charging site. From the user's perspective, the user can input their vehicle maximum mileage, their road trip starting location and destination. Then our system should analyze and recommend to the user their fastest road trip solution, which include stopping/resting/charging points, best estimation time, and estimated charging costs.

Dataset:

Electric & Alternative Fuel Charging Stations 2022:
https://www.kaggle.com/datasets/saketpradhan/electric-and-alternative-fuel-charging-stations

The relevant data that we will be taking, is the location (used for generating a path from start to goal), type of charger (used to find time required to charge), and price (used for calculating total cost).

Project Steps:

Step	Detail	Estimated Time
1	Data cleaning, extract the required data from dataset	1 week
2	Find a method of inputting user's parameter	1 week
3	Build a model to calculate the routes and charging spots	2 weeks
4	Provide information of suggested routes	1 week