SF Parking Meter Recommendation System

By Atrin Sarmadi - Metis DATA Engineering Project

Problem

- Parking regulations, signs and meters are confusing
- You might end up paying more than you need
- You might drive around trying to find a parking spot that fits your schedule

Data Science solution

Creating a system that allows you to:

- Check parking meters near your destination in advance!
- Find the best price a couple of blocks away!
- Make sure you can park in that spot for the full duration!

Workflow

Tools and Techniques

DATA Acquisition

Python
Pandas
Sodapy API
Schedule
Time

Gathered from data.sfgov.org

DATA Storage

SQLite
SQLAlchemy
Python

Two datasets:
(updated weekly)

- Parking Meter List
(~ 32k parking meters)

- Parking Meter policies
(~1m policies)

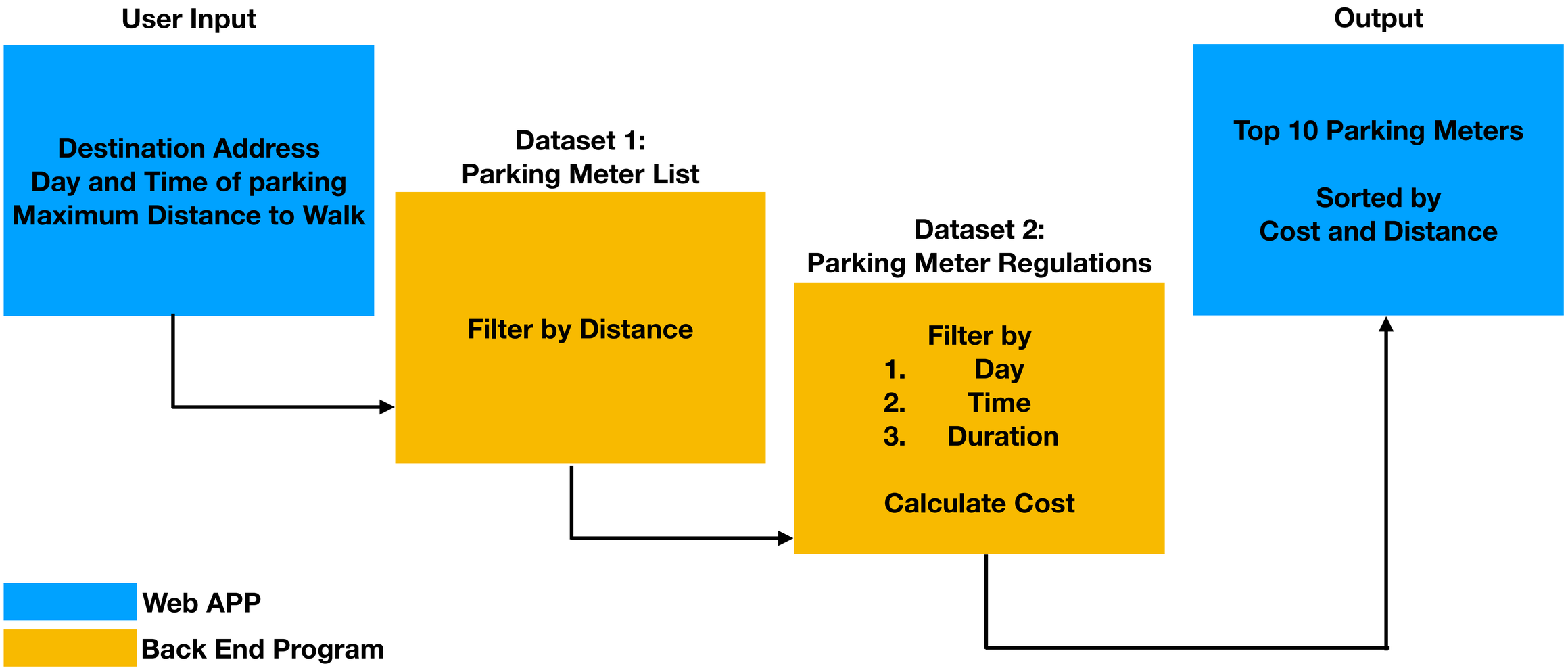
DATA Processing

Python
Pandas
Numpy
Requests (w/ Google Maps API)
Math
Datetime
Geopy (w/ Google Maps API)

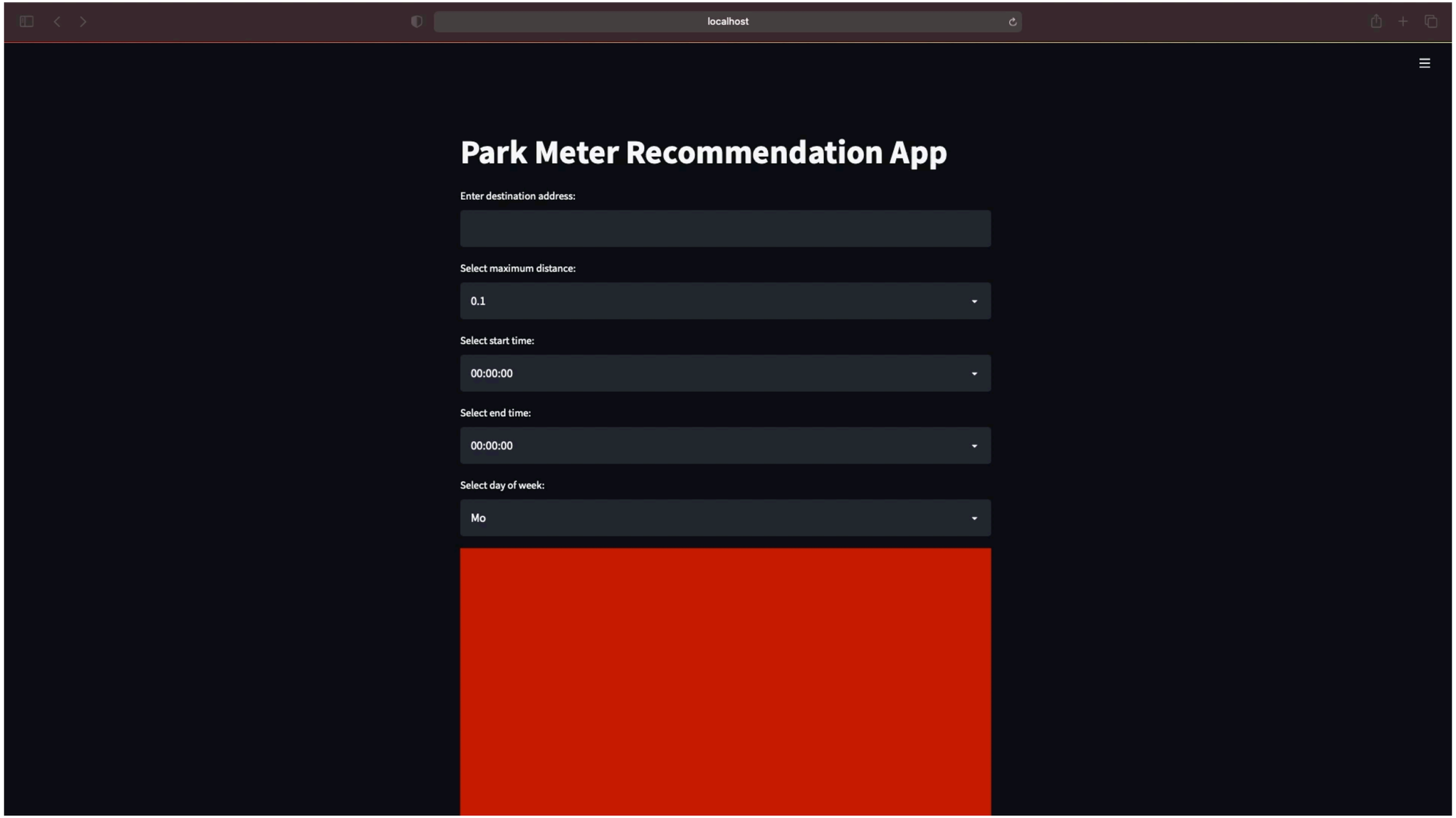
Web App

Streamlit

Algorithm


User Input
Destination Address
Day and Time of parking
Maximum Distance to Walk
Dataset 1:
Parking Meter List
Filter by Distance
Dataset 2:
Parking Meter Regulations
Filter by
1. Day
2. Time
3. Duration
Calculate Cost
Output
Top 10 Parking Meters
Sorted by
Cost and Distance
Web APP
Back End Program

Web App Interface



Future Work

- Include other options such as parking garages and free street parking
- Optimize filtering of top parking spots based on areas rather than individual meters
- Integrate Google Maps with the web app