Capstone Project Report: Dynamic Pricing for Urban Parking Lots

This project aims to address inefficiencies in static parking pricing by building a dynamic pricing system using real-time data.

We developed three models:

1. Baseline Linear Model: Increases price proportionally with occupancy.

2. Demand-Based Model: Incorporates queue length, traffic, special events, and vehicle type.

3. Competitive Pricing Model: Factors in nearby lot prices and adjusts pricing accordingly.

The system is simulated in real-time using timestamped data and visualized using Bokeh plots.

Key Features:

- Real-time simulation

- Smooth price variation

- Rerouting recommendations when overburdened

- Implementation using Pandas, NumPy, Bokeh

Input: Dataset of 14 parking lots over 73 days

Output: Dynamic prices per lot saved in a CSV and visualized.

Platform Compatibility: Google Colab, Jupyter, and Kaggle.

For more details, refer to the source code and README file.