Capstone Report: Dynamic Parking Pricing

This project implements a real-time dynamic pricing engine for 14 parking spaces based on historical and real-time features. We used Python, Pandas, Numpy, and the Pathway streaming framework.

Models Implemented

1. Model 1: Linear Pricing — price increases linearly with occupancy ratio.

2. Model 2: Demand-Based Pricing — considers occupancy, queue length, traffic, special day, and vehicle type.

Architecture Overview

The system uses Pathway to stream data row-by-row, simulates real-time processing, applies custom pricing logic, and visualizes results using Bokeh in Panel.