# CHSW LAB WORK

Problem Statement

With the increasing number of vehicles and limited parking spaces, finding a spot is time-consuming, leading to fuel wastage, traffic congestion, and driver frustration. Additionally, manual vehicle checks by security personnel slow down entry and exit, further contributing to inefficiency. Moreover, providing parking services is often not profitable due to ineffective pricing and space utilization.

Relevant Research

- Research Paper 1: *Enabling Smart Parking for Smart Cities Using Internet of Things (IoT) and Machine Learning* (**Published Date: 15 January 2025**)
- Research Paper 2: Two-Stage Efficient Parking Space Detection Method Based on Deep Learning and Computer Vision (**Published: 21 January 2025**)

Proposed Improvements

- **ML-Based Pricing Model –** Implement a dynamic pricing system based on demand, time, and availability.
- **Three-Dimensional Stakeholder Model –** Optimize the system for drivers, parking staff, and service owners.
- **Enhanced Vacant Space Detection –** Improve accuracy using advanced computer vision techniques.
- **Improper Parking Alerts –** Detect and notify about vehicles occupying spaces incorrectly.

ParkQwik
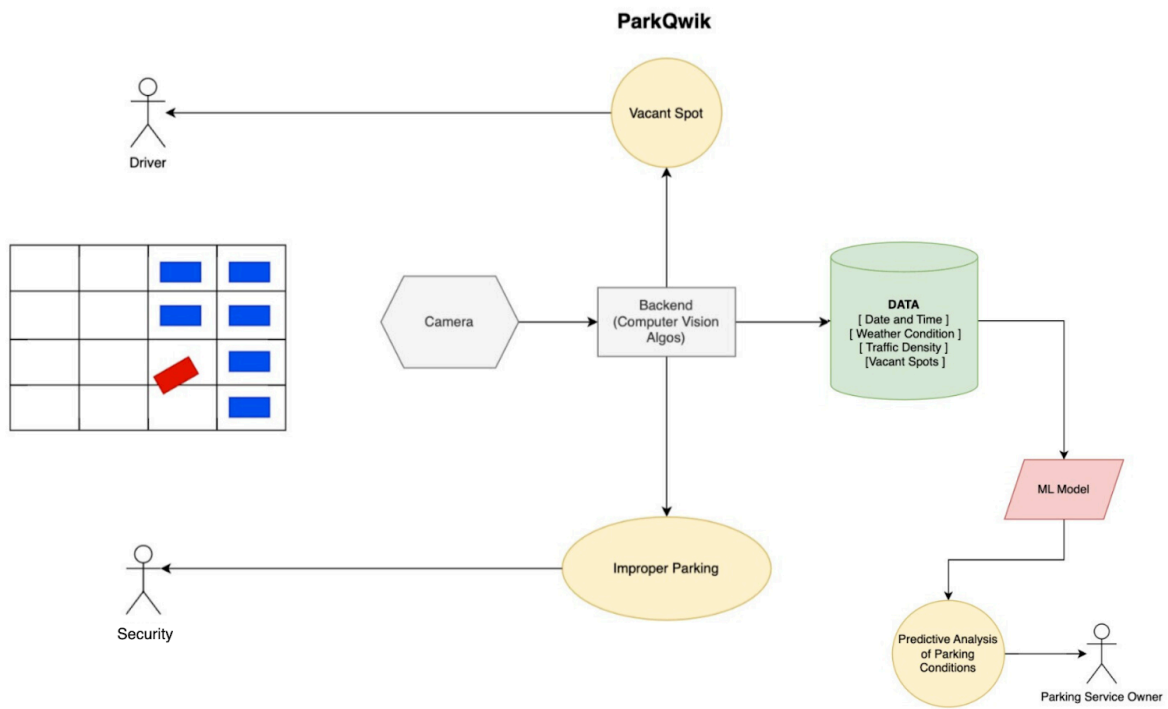
Pricing Model

Factors

(Weather, Time and Date, Road Traffic Density, Price, Profit)