Project Area Domain: Real-Time Parking Finder System

Background of the Domain

Parking is a daily problem in many large areas like universities, hospitals, or cities. As the number of vehicles continues to increase, drivers often waste a lot of time driving around to find a free parking spot. This not only wastes fuel but also increases traffic and stress.

The idea of smart parking became more popular in the last 10–15 years, especially with the rise of Smart City projects. Some commercial areas have signs showing the number of free spots in garages, but they do not show the exact location or status of outdoor parking spaces. Most current systems also depend on sensors in each spot, which are expensive and not suitable for large outdoor lots or roadside parking.

Gaps and Needs in Current Solutions

Today, parking is often handled manually or with basic digital counters. These do not give real-time updates for each spot or show a map. Many drivers rely on luck or personal experience. Current systems also do not perform well in open parking areas or along streets. There is a strong need for a low-cost, camera-based system that can detect spot availability and show it to users in real time through an app or website.

Competing Companies in This Domain

- **ParkMobile** – A mobile app that allows users to find and pay for parking in some cities and campuses. However, it does not show individual spot availability in real time.

  Source: ParkMobile

- **Bosch Mobility Solutions** – Develops smart parking technologies including camera-based systems for indoor garages. They focus on automated parking but mostly for commercial garages, not large outdoor areas.

  Source: Bosch Mobility Parking Solutions

Project Title and Description

Title: Smart Park: Real-Time Parking Finder for Campuses and Streets

Description: A camera-based system that detects free parking spots and updates a mobile/web app in real time, helping drivers find available parking spaces easily and quickly in large open areas or streets.

Group Members and Roles

Contact Information

Name	Course Section	Email Address
Sai Nikhil Reddy Kunduri	CPS 622	kunduris1@udayton.edu
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Roles and Responsibilities

- **Sai Nikhil Reddy Kunduri** – **Project Manager & Backend Developer**

  Will handle overall project coordination, timeline, and backend setup for processing real-time parking data from the cameras. Will also manage cloud database and system deployment.

- **Darshan Jigala Channa Reddy** – **Computer Vision Lead & Frontend Developer**

Will work on detecting vehicle presence using image processing, camera calibration, and real-time data integration with the frontend. Also responsible for building the app/web interface and user experience.

We will work together on testing, documentation, and demo preparation.