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| **Academic Year:**  **2024-25** | **Project Synopsis** | | **Sem-V** |
| **Department : Computer Science and Engineering** | | **Date of Preparation:** |
| Roll No | CS3002,CS3003,CS3004,CS3005 | Class | TY B.Tech |
| Project Title | PARKING VEHICLE DETECTION USING ANDROID APPLICATION | | |
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# Introduction:

The goal of this project is to create an Android application that can detect vehicles parked in a parking area. This app will help users quickly find available parking spaces and monitor parking conditions in real time.

# Literature Review :

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| --- | --- | --- | --- | --- |
| Sr No. | Title of Paper | Author | Published Year | Paper Gist |
| 1 | High-Density Parking for Automated Vehicles: A Complete Evaluation of Coordination Mechanisms | José Azevedo | 2020 | This paper explores how electrification and low-level automation can significantly reduce the parking footprint of privately owned cars by more than doubling parking density. |

# Relevance of the Work:

1. Solving Urban Parking Challenges:

- High Demand for Parking: In densely populated areas, the demand for parking often exceeds the supply, leading to frustration and wasted time. An Android application that detects available parking spots can help drivers quickly find a place to park, alleviating some of this stress.

2. Future Developments:

-Integration with Smart Cities: As cities move toward becoming "smart cities," integrating parking detection with other smart infrastructure components, like traffic management systems, will be increasingly important

# Proposed Work:

1. Study existing vehicle detection systems and mobile applications.

2. Set up the Android development environment (e.g., Android Studio).

3. Implement user authentication and profile management.

4. Monitor system performance and user feedback.

# Proposed Methodology:

1. Data Collection: Gather sample images or video feeds of parking areas to train the image processing algorithms.

2. Algorithm Development: Develop or use existing machine learning algorithms to analyze images and detect vehicles in parking spaces.

3. App Development: Build the Android application with features for capturing images, processing data, and displaying results.

4. Testing and Validation: Test the application in various parking environments to ensure accuracy and reliability.

5. Integration: Integrate mapping services to show the locations of available parking spots on a map.

# HW/SW Requirement:

**Software:-**

* Android Studio
* .Java
* Google map API
* Windows 11

**Hardware:-**

* Processor- AMD Ryzen 5 5500U with Radeon Graphics 2.10 GHz
* RAM -16 GB

# System Architecture:

Parking lot images captured by web camera

Car detection using trained faster R-CNN+YOLOv3

Display total available slots

Crop images to identify free parking slots

For each image

Is car detected

Parking slot occupied

Parking slot available

Save log as parking date

Display available parking slot number

Figure 1.1

# References:

# <https://takeoffprojects.com/project-details/parking-vehicle-detection-using-android-application--10667>

# https://www.irjmets.com/uploadedfiles/paper//issue\_5\_may\_2023/40583/final/fin\_irjmets1685266303.pdf

**Journal Paper:**

Sinha Shambhu, (2004) “Seismic Applications of Energy Dampers”, Defense Science Journal, Vol. 54, No. 1,

**Conference Paper: -**

Malu Girish and Murnal Pranesh (2012) “Comparative study of sliding isolation system for low frequency ground motion”, Proceedings of 15th World Conference on Earthquake Engineering, Lisbon, Portugal, Paper No. 4606

**Book reference: -**:

Punmia B. C., Jain A. K. and Jain A. K. (2004) “The Column Analogy Method”, Theory of Structures, 12th Edition, Ch. No. 11, pp. 253-279

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