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Keen City Vehicle Positioning Inhabitance Tracking and Managing System

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ABSTRACT

Finding an available parking spot in a congested parking lot can be a daunting and time-consuming task, leading to frustration, traffic congestion, and increased environmental pollution. This problem is exacerbated in urban areas, where parking spaces are in high demand, and traditional methods of parking spot detection fall short in providing efficient solutions. To address this issue, we propose the development of a web application that leverages Machine Learning (ML) and Image Processing technologies to assist users in locating vacant parking slots within a specific area.

Our Keen City Vehicle Positioning Inhabitance Tracking and Managing System aims to revolutionize the parking experience by providing real-time information about available parking spaces. Through the use of cameras and image processing algorithms, the system continuously monitors the parking lot, identifying occupied and vacant spots. The mobile app, linked to this system, allows users to access up-to-date parking availability information, saving time and reducing the stress associated with parking.

Keywords: Machine learning, Deep learning, edge detection, coordinate bound pixels, image processing.

I. INTRODUCTION

Urbanization and the increasing number of vehicles on the road have led to a pressing problem in metropolitan areas worldwide parking congestion. The struggle to find available parking spaces contributes significantly to traffic congestion, air pollution, and the overall stress experienced by urban commuters. In response to this challenge, modern technology, particularly computer vision and machine learning, offers a promising solution. Traditionally, parking management relied on manual checks or simple sensors, which often provided limited and inaccurate information regarding parking availability. In contrast, our proposed Keen City Vehicle Positioning Inhabitance Tracking and managing System leverages real-time data collected from strategically positioned cameras within parking lots and structures. These cameras capture images of parking spaces and feed them into a sophisticated image processing pipeline. The core of our system lies in machine learning and deep learning algorithms, which are employed to analyze these images. These algorithms can accurately detect the presence or absence of vehicles in each parking space, classify the types of vehicles, and even predict parking durations. By continuously processing this information, the system generates up-to-the-minute parking

occupancy data.One of the notable advantages of our approach is its adaptability and scalability. The system can be easily customized to suit different types of parking facilities, from open lots to multi-story parking garages. Additionally, it can seamlessly integrate with mobile applications, websites, and electronic displays, allowing drivers to access real-time parking availability information on their smartphones or other devices. Cyberattacks surge. Cybercriminals seek efficient channels to spread malware via images. JPEGVigilant, a machine learning method, identifies malicious JPEGs using 10 derived properties.[15]

The benefits of the Keen City Vehicle Positioning Inhabitance Tracking and Managing System are manifold. By reducing the time and effort required to find parking, it helps alleviate traffic congestion, thereby decreasing fuel consumption and greenhouse gas emissions. Furthermore, it improves the overall driving experience by reducing the frustration associated with circling for parking spots.

In this paper, we present a comprehensive overview of the Keen City Vehicle Positioning Inhabitance Tracking and Managing System, detailing its architecture, image processing techniques, and the machine learning models employed. We also report the results of extensive testing and evaluation, demonstrating the system's accuracy, efficiency, and real-world applicability. The proposed system innovates plant species classification using Deep Learning and leaf vein features, aiming to automate identification, accelerate research, aid conservation, and foster education in botany and technology.[16]

II. LITERATURE SURVEY

Proper management of outdoor parking issue with an inefficient parking slot availability and occupancy. System uses a combination of Laplacian operator to edge and HAAR Cascade classifier for object identification and motion tracking. The system proposes an effective methodology to check availability using a camera placed for a lamppost view.

The primary focus of the work lies in reducing the model training time and outlining the classification model that is used to detect the vehicles**,** for this, we have designed a new FMRCNN model that detects multiple cars in an image. A mobile application on Android and iOS platforms could be developed displaying the real time parking information.

During busy hours in the city finding a parking spot, becomes a tedious process. Convolutional Neural Network; Artificial Neural Network; Image Processing. The Neural Network; Artificial Neural Network; Image Processing. The overall aim was to develop an automatic system that counts the empty spaces in a parking lot, by giving the image of the parking lot as the input. The output will be obtained as a display on the output console.

Detect vehicles that are on the side of the parking lot so that it can be used as a smart parking system for parking management and find out information on the availability of parking spaces**,** Haar Cascade Classifier, and YOLOv3 then compared them to get the best accuracy in detecting parked cars**,** Therefore, in order not to cause congestion and spend time searching for parking slots, management, and information about the availability of parking spaces on the roadside is very important for drivers and parking attendants to find out how long a parking vehicle is.

Finding a free on-street parking spot is an everyday chore for drivers in populated cities. The traditional method of circling around the parking lots or streets to find a spot (blind search) is inefficient, time consuming, and frustrating, it proposed system by describing the design and implementation of CNN, mobile, and server applications., Deep learning can be efficiently applied to the on-street parking management problem The server

will be placed in the Cloud to make it accessible from anywhere. In addition, the mobile application will have an improved user interface such that user can choose the location or system selects the closest location.

Traffic congestion has become one of the main problems in many big cities. Traffic jam contributes to many economic, environmental and social problems such as noise and air pollution., Deep Neural Network, CNN, Smart Parking, Smart Camera, Machine Learning, used to mitigate the traffic congestion problems by reducing time for drivers to look for vacancy positions in car parking lots and providing efficient parking space utilization.

For multistore parking garages. Car drivers spend a considerably long amount of time finding an available parking space where slots are spread throughout multiple stories which causes longer queues and traffic congestion, Python IDLE and the OpenCV library, Edge detection, coordinate bound pixels, image processing, multistore parking, The system can be used to efficiently determine open parking spaces spread across multiple floors in indoor building garages without much added cost by utilizing surveillance camera feeds from each floor.

An increasing number of cities struggle with traffic congestion and inadequate parking availability. For urban dwellers, few things are more irritating than anxiously searching for a parking space, Deep learning, edge devices, smart cities, smart parking. System can automatically detect when a car enters the parking space, the location of the parking spot, and precisely charge the parking fee and associate this with the license plate number.

In highly populated cities, finding available car parking slots is time consuming and may cause severe traffic congestions at the parking entrance, Car detection, Haar Cascade, image processing, internet of things, smart parking, a smart parking system with automated car detection is required so that the car drivers would have minimum effort and time to access the available parking location.

Searching a suitable parking space in populated metropolitan city is extremely difficult for drivers. Serious traffic congestion may occur due to unavailable parking space., automatic parking; slot recognition; parking space detection; machine learning, Optimize the identification of available parking slots to possibly reduce the congestion in parking arena. Due to advancement in machine learning and vision base technology cost effective automatic parking systems facilitate the drivers to locate available spaces at parking arena.

III.PROPOSED SYSTEM

Urban environments worldwide face a complex set of challenges that include traffic congestion, resource allocation inefficiencies, and environmental sustainability concerns. These challenges demand innovative solutions that harness cutting-edge technologies to transform urban management. The Keen City Vehicle Positioning, Inhabitant Tracking, and Managing System, which utilizes deep learning and image processing, addresses the following key problems:

Traffic Congestion and Inefficiency, many cities suffer from chronic traffic congestion, resulting in increased travel times, air pollution, and decreased quality of life for inhabitants. The system aims to alleviate traffic congestion by optimizing vehicle routing, traffic signal control, and public transportation services through real-time data analysis. Resource Allocation and Waste Management: Inefficient resource allocation, such as energy consumption and waste management, can lead to unnecessary costs and environmental degradation. The system employs data-driven insights to optimize resource allocation, reduce energy consumption, and streamline waste management processes.

Block Diagram:

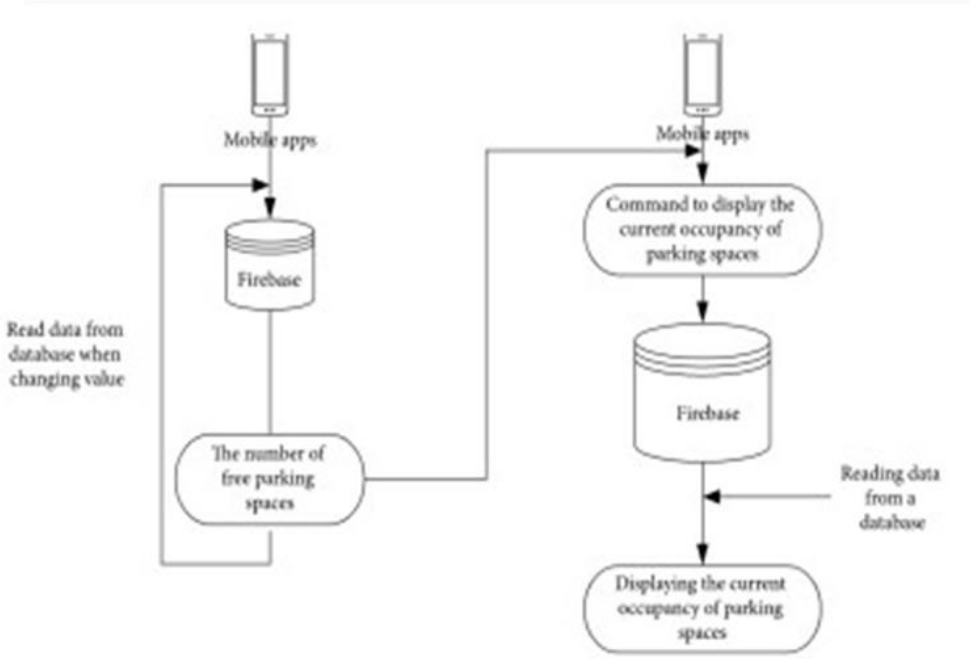

Figure1.1:System Architecture

IV. RESULT

Login Page:

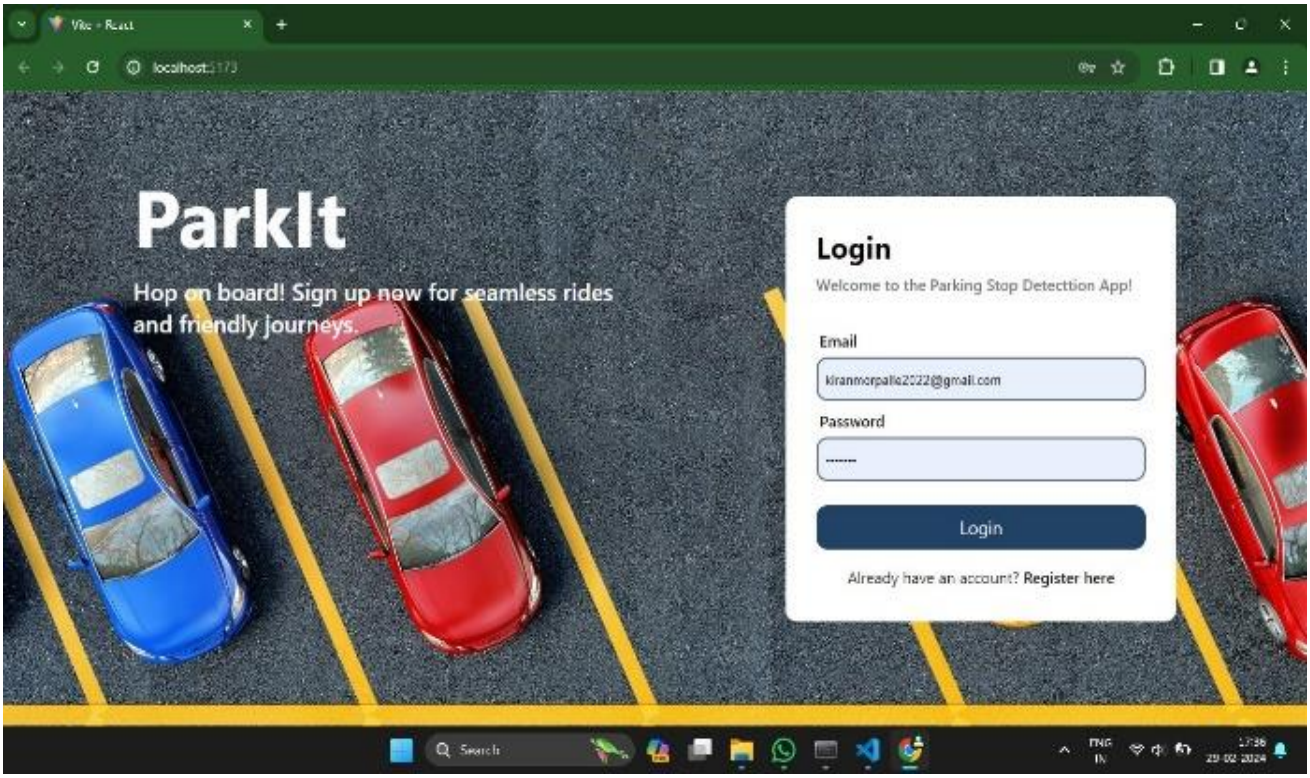

Fig 1.2 Login page

Only authorized users can access specific features, ensuring the protection of sensitive user data and maintaining system integrity. Firebase Authentication is used to enhance the security of the web application.

Video Uploading Page:

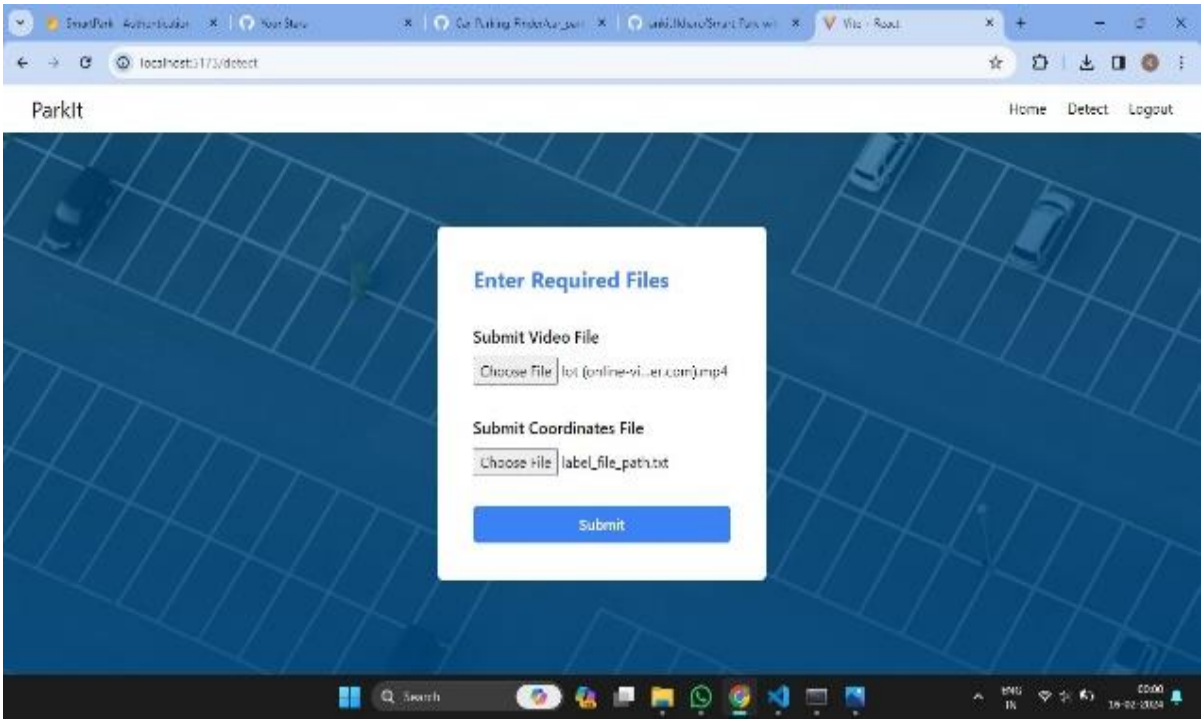

Fig 1.3 Video Uploading Page

System takes input as camera video footage and coordinates of footageimage to make system more flexible so as system can work for many different types of parking system instead of for one specific.

Output Page:

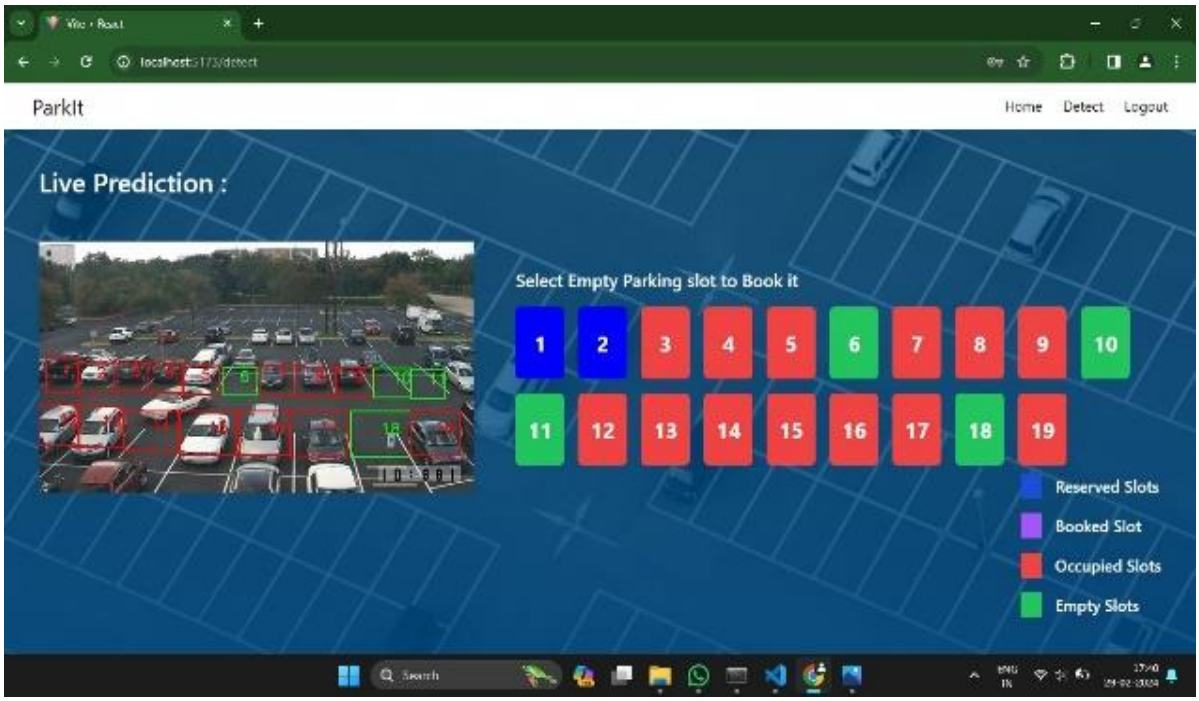

Fig 3. Output Page

System Provides to user a visually appealing and intuitive experience. Users can easily navigate the system, check parking availability, and make reservations without encountering usability issues.

V. RESULT DISCUSSION

User Friendly Interface -The user interface is designed using HTML, CSS, and JavaScript to create a visually appealing and intuitive experience. Users can easily navigate the system, check parking availability, and make reservations without encountering usability issues.

Real-Time Updates - Firebase's realtime Database ensures that users receive instant updates on parking space availability. Real-time updates are crucial for users looking for immediate parking solutions, enhancing the efficiency of the system.

Responsive and Dynamic Feature –
JavaScript is employed to add dynamism and responsiveness to the web application. Users can interact with the system in real-time, receiving dynamic feedback as they perform actions, contributing to an engaging and responsive user experience.

Efficient Backend Processing –
Python serves as the backend scripting language, efficiently managing data processing and logic implementation.Python's versatility contributes to a robust backend, ensuring the seamless processing of user requests and interactions.

Firebase Authentication for Security –
Only authorized users can access specific features, ensuring the protection of sensitive user data and maintaining system integrity. Firebase Authentication is used to enhance the security of the web application.

VI. CONCLUSION

The software stack for the Keen City Vehicle Positioning Inhabitance Tracking and Managing System should be carefully chosen to ensure efficient development, scalability, and real-time performance. By leveraging these technologies, we can create a robust solution that enhances urban parking experiences. The keen city vehicle positioning inhabitance tracking and managing system leverages cutting-edge technologies to transform urban parking. By providing accurate information and reducing search time, it contributes to smoother traffic flow and a more sustainable environment.

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