EXAM NAVIGATION SYSTEM

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ABSTRACT

Exam navigation system is a project deployed to navigate a student in the campus from the entrance to the examination hall. Exam navigation system project uses the concept of objection detection and optical character recognition combined in an android application to complete the purpose of navigation. This project aims on efficiently utilizing the techniques of object recognition and text detection to navigate till exam hall which helps the test takers navigate through unfamiliar campuses easily. The objective of this approach is to provide a stress-free and efficient experience for the test taker, allowing them to focus on the exam rather than worrying about finding their way.

Keywords: *Object detection, Text recognition, Android application……*

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1. INTRODUCTION

With the development of technology over the past few decades, notably the development of GPS and mobile devices, mobile navigation systems have undergone substantial evolution. Here is a quick summary of how mobile navigation systems have changed

Standalone GPS units: In the early 2000s, GPS units that did not require an internet connection and could give turn-by-turn directions were brought to the market. For car navigation, these gadgets were quite well-liked.

Mobile GPS: With the development of cell phones, GPS became more widely available. In the late 2000s, the first GPS mobile navigation apps, like Google Maps and Waze, were released. These apps offered users real-time traffic updates, step-by-step directions, and the opportunity to look up nearby attractions.

Augmented Reality: Mobile navigation systems are increasingly utilizing augmented reality (AR), a technology that has gained popularity recently. Through their Smartphone camera, users can view their real-world surroundings while directional arrows and other information are superimposed to direct them to their destination.

Voice aid: Most mobile navigation systems now come with voice aid as a basic feature, enabling users to get turn-by-turn directions without having to look at their phone.

Integration with other technologies: Ride-hailing services and smart home gadgets are only two examples of the other technologies that mobile navigation systems are now integrated with. Users may now instantly operate their smart home devices from their navigation app, for instance, or order an Uber.

Overall, since their introduction, mobile navigation systems have advanced significantly.

2. LITERATURE REVIEW

The recognition and location of objects inside digital pictures or videos falls under the category of object detection in the field of computer vision. The early years of computer vision research in the 1960s and 1970s are when object detection first emerged. Early object recognition systems relied on hand-crafted heuristics and characteristics like edge detection and template matching. The adaptability of these methods to novel items and settings was constrained. Researchers started looking at the application of machine learning techniques for

object detection in the 1990s. The Viola-Jones technique, which swiftly identified faces in photos using a cascade of classifiers, was one famous method. With its novel speed and accuracy, this method cleared the path for upcoming machine learning-based object identification methods. Convolutional neural networks (CNNs), a type of deep learning approach, revolutionized the area of object identification in the 2000s and 2010s. Without the requirement for manually created features, these strategies enabled for end-to-end learning of object identification models. Since then, there have been advancements in the field of object detection, including work on real-time detection, multi-object tracking, and 3D object identification. In many modern applications, such as autonomous driving, surveillance, and augmented reality, object detection is a crucial technology.

3. PROBLEM DEFINITION AND METHODOLOGY

The current examination system does not have an improved or technologically based navigation system that truly directs the student to the exam seat. One of the main issues with the test system is seating allocation for the exam hall and directing pupils to their designated seats. Exam hall seating management becomes difficult as there are more students, disciplines, departments, and rooms. One of the challenging tasks for the universities is to maintain a quality exam setting with the appropriate seating arrangement

In addition to saving time over the traditional method of locating the precise location of the examination seat, this project aims to reduce the chaos that has been generated around the notice board by giving students a way to access information about their seating arrangements directly from their hands. This causes the majority of students to feel anxious about checking their designated seat during an exam. The issue with exam hall administration is the potential for confusion and turmoil when students can't find their designated seats. In big exam rooms, it is possible for students to waste significant time looking for their seats, delaying the start of the exam and producing stress and aggravation for both students and examiners.

The Exam Navigation System using an android application to addresses this problem by providing a streamlined and efficient solution to exam navigation and exam hall management. By allowing students to access a seating chart and receive real-time updates on seat assignments, the android application reduces the risk of confusion and delays, and ensures that students are seated in their assigned seats and also helps the student to navigate himself to the allotted hall in an unfamiliar exam campus.

4. FLOWCHART

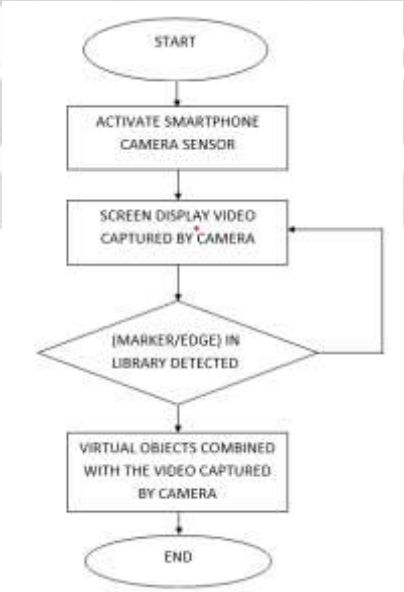

Fig 4.1: General flowchart depicting the working of the project

5. OBJECT DETECTION

Object recognition is a computer vision task that involves identifying and locating objects of interest in images or videos. Tensor Flow is a popular open-source machine learning framework that provides pre-trained models for object detection.TensorFlow's Object Detection API provides several pre-trained models that you can use for your object detection tasks. These models are trained on large data sets and can recognize objects in real time.

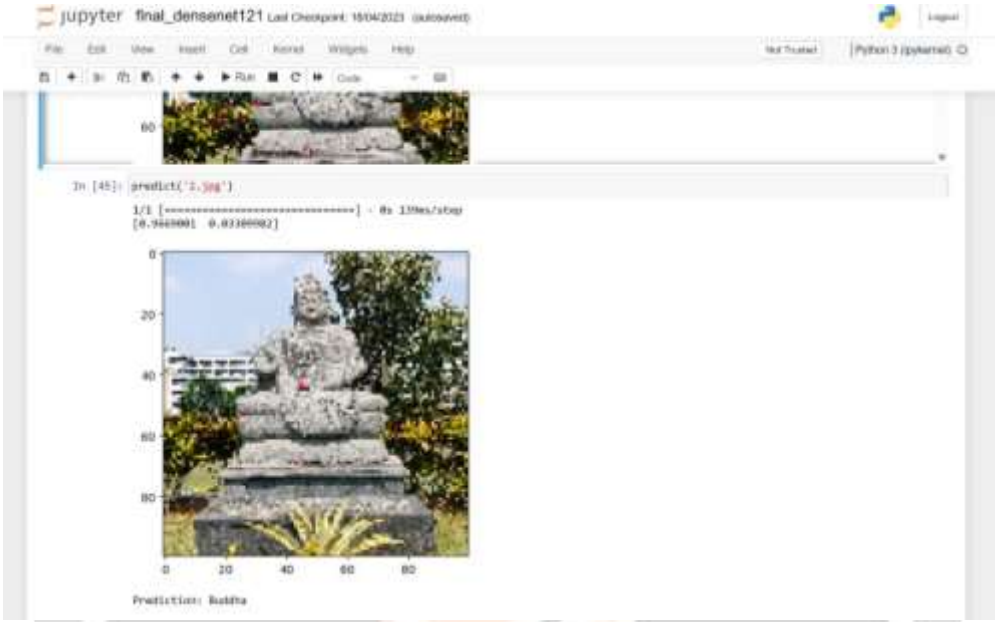

Fig 5.1: Figure depicting correctly identified object

Fig 5.2: Figure depicting wrongly identified object

6. TEXT RECOGNITION

Optical Character Recognition (OCR) is a technology that converts scanned images or printed text into editable and searchable digital text. OCR is used to extract text from images and convert it into machine-readable text.OCR technology has been over for decades and its accuracy has improved significantly over the years. The OCR process includes several steps such as image pre-processing, character segmentation, character recognition, and post-processing.


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35
abada
AMC
AMC
EDUCATION
Engineering College
MAIN BLOCK
FIRST FLOOR
NORTH WING
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Fig 5.2: Figure depicting OCR results

7. SOFTWARES USED

1. Android studio

Android Studio is an integrated development environment (IDE) designed specifically for Android application development. Android Studio provides a friendly interface and a variety of tools to help developers write, tests, and debug Android applications more efficiently.

2. Tensorflow training model

TensorFlow is a free open source software library for machine learning and artificial intelligence. It can be used for a variety of tasks, but is particularly focused on training and deep neural network inference. TensorFlow was developed by the Google Brain team for Google's internal use in research and production. The original version was released under the Apache License 2.0 in 2015. TensorFlow can be used in many different programming languages, including Python, JavaScript, C, and Java. This flexibility lends itself to many applications in many different industries.

3. Navicat

Navicat is a series of graphical database management and development software produced by CyberTech Ltd. for MySQL, MariaDB, MongoDB, Oracle, SQLite, PostgreSQL and Microsoft SQL Server. It has an Explorer-like graphical user interface and supports multiple database connections for local and remote databases

4. Netbeans

NetBeans is an integrated development environment for Java. Net Beans allows applications to be developed from a set of modular software components called modules

8. CONCLUSION

In conclusion, object recognition technology has the potential to revolutionize the way we navigate exams. By leveraging its capabilities, exam navigation systems can provide students with efficient way finding assistance, object identification, and accessibility support. These advancements can help create a more streamlined and inclusive exam experience, ultimately benefiting students in their academic pursuits. The object recognition technology has the potential to greatly enhance exam navigation systems. By leveraging advanced algorithms and machine learning techniques, these systems can accurately identify and track objects, making it easier for students to locate and access the information they need during exams. This technology can be particularly beneficial for individuals with visual impairments or those who struggle with traditional navigation methods.

9. RESULTS

Fig 8.1: Admin login page interface

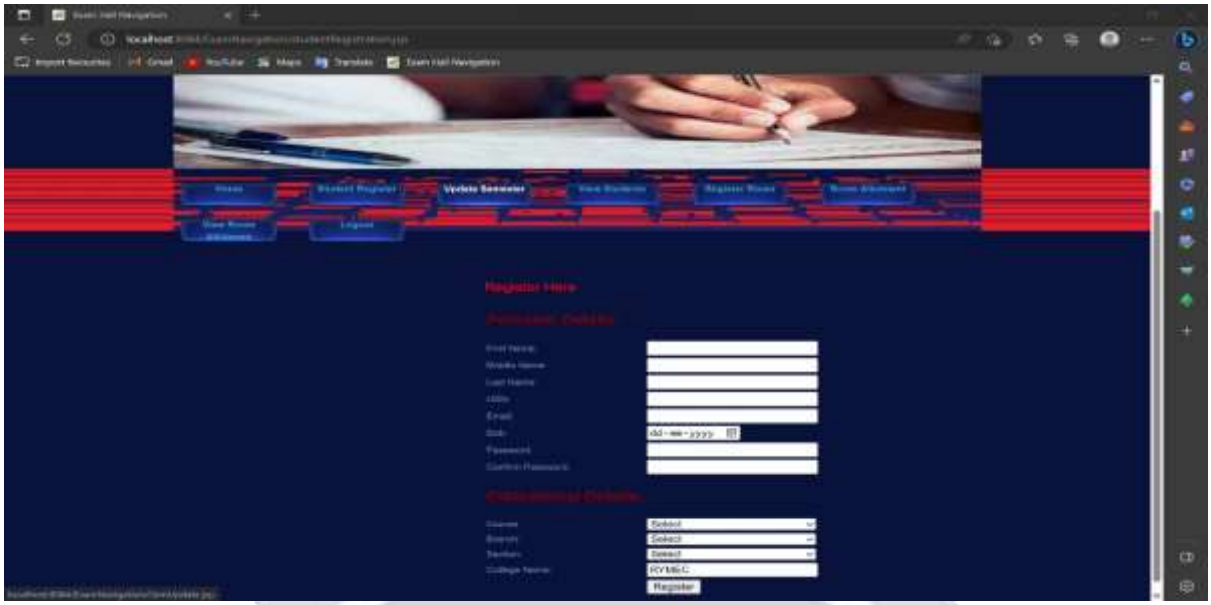

Fig 8.2: Webpage interface depicting the student registration for room allotment

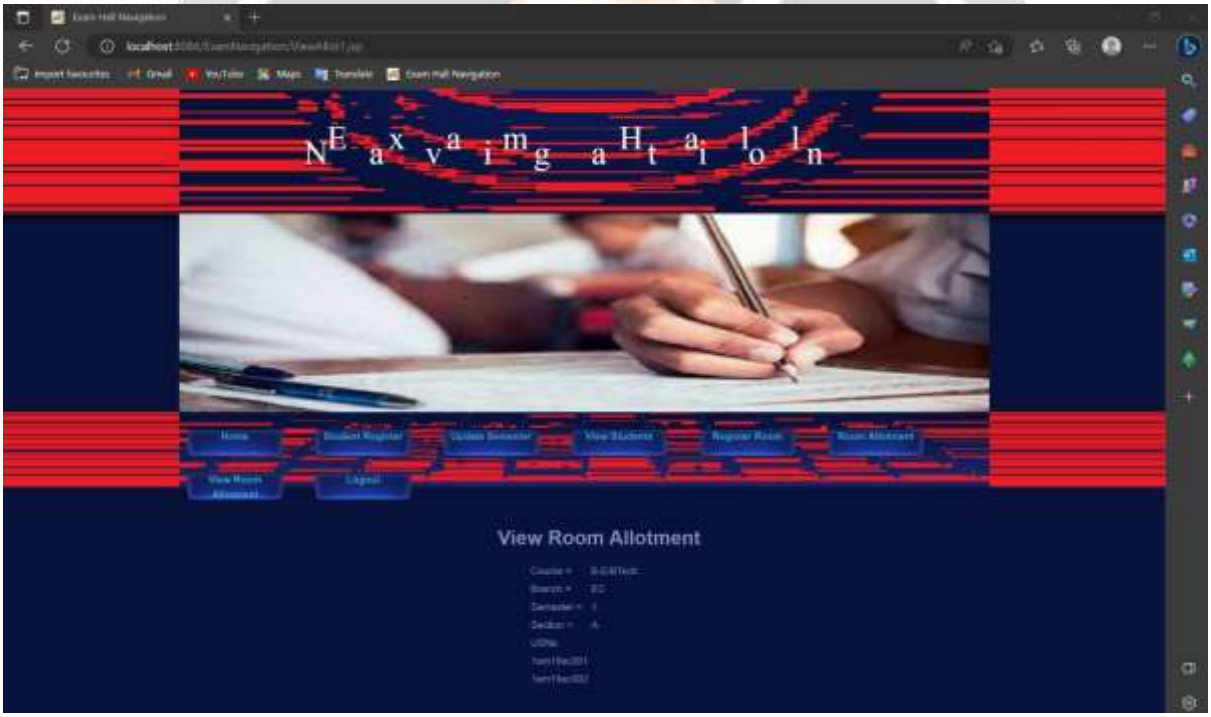

Fig 8.3: Webpage interface depicting the allotted room

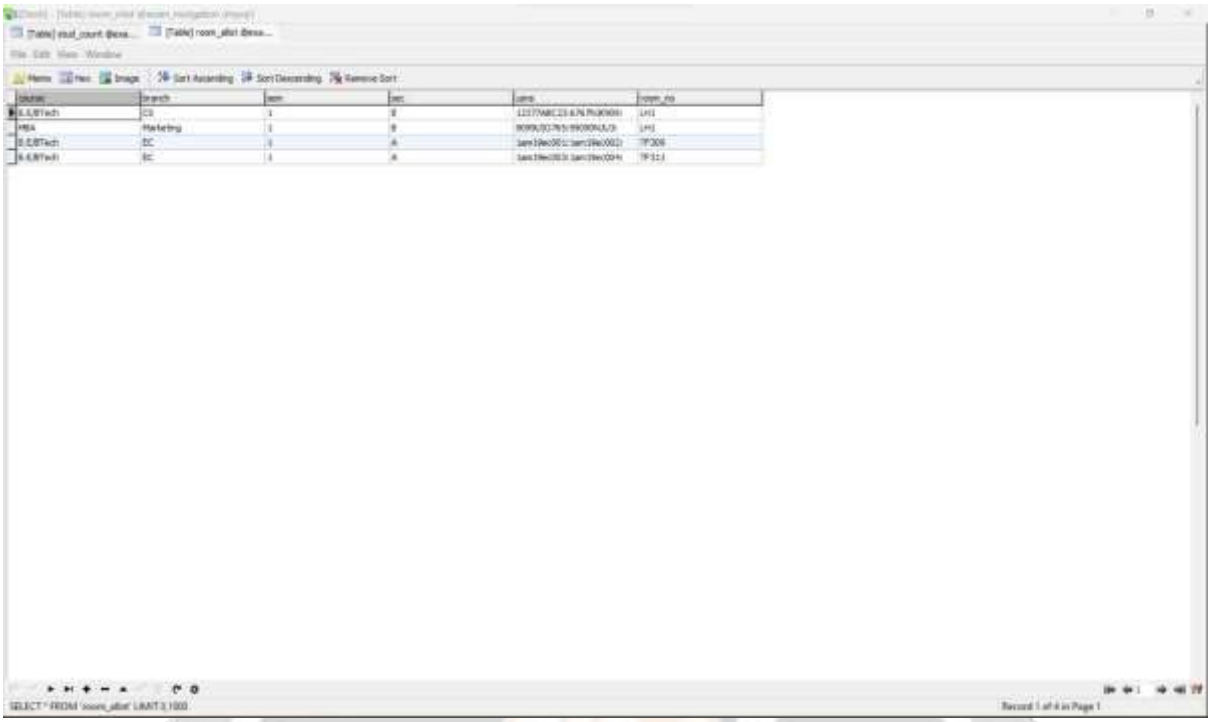

Fig 8.4: Navicat interface showing the data of allotted room

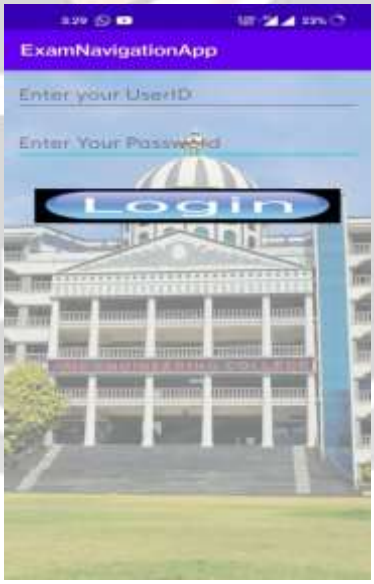

Fig 8.5: Interface of deployed Android application for navigation

10. ACKNOWLEDGEMENT

I would also like to acknowledge the contributions of the engineers, designers, and researchers who have continued to refine and improve object detection, optical character recognition and android software deployment technology over the years, making it more efficient, versatile and easy to use.

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