Android App For Automatic Vehicle Number Plate Recognition

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Abstract- *Automatic Vehicle Number Plate Recognition (AVNPR) is a technology that has gained popularity due to its wide range of applications, including law enforcement, parking management, and toll collecting. This abstract describes the creation of an Android application that uses AVNPR technology to efficiently and accurately recognise vehicle number plates.*

The proposed Android app seeks to provide a user-friendly interface for capturing photographs of automobiles and extracting their licence plates via powerful image processing and machine learning algorithms. The app's primary features include:

Image Capture: The software allows users to capture photographs of vehicles using their Android device's camera. It includes features like autofocus and picture stabilisation to assure high-quality image capture

I. INTRODUCTION

Automatic vehicle identification is one type of number plate recognition. A vehicle's number plate serves as its distinct identity. Maintaining traffic laws and law enforcement depends heavily on real-time number plate recognition. It is widely applicable in regions like border crossings, parking lots, toll plazas, and areas with high levels of security. There are two main components to automatic number plate recognition:

Extracting the vehicle's number plate Character Recognition Through Optical Means When a vehicle's number plate is found and its text is retrieved, this process is known as number plate extraction. An OCR algorithm receives the segmented characters after they have been normalized. Finally, encoded text will be created from the optical character information. Using template matching, the characters are identified. A character string must be the final product's format.

1.1 Scope: Law enforcement agencies worldwide can use this software to verify a vehicle's registration or license status, among other legal enforcement functions. In pay-per-use roads, it can also be utilized for electronic toll collection. Additionally, highway agencies can use it to categorize traffic movements.

1.2 Objective: The Android app's goal is to recognise vehicle number plates automatically. Effective Number Plate Recognition: Create methods and algorithms that reliably identify and extract car number plates from photos taken by the Android device's camera, making sure that the system operates well in a range of lighting and viewpoints. High-Performance Optical Character Recognition (OCR): Apply cutting-edge OCR algorithms to reliably identify car registration numbers by quickly and accurately recognising alphanumeric characters from the extracted number plate regions.

II. LITERATURE REVIEW

When Android originally debuted in 2008, it was almost viewed as a less attractive version of Apple iPhone's far more fashionable iOS. However, the number of Android users immediately skyrocketed as a result of a variety of phone offers that catered to both the pragmatic and budget-conscious customers as well as the stylish and tech-hungry ones. After eight significant releases, the number of Android devices sold annually is already rising nearly yearly. The nature of the devices is the reason there is such a buzz about programming for Android. They are quite intimate. It is possible to develop applications that truly enhance users' lives. We are able to plan, amuse, instruct, and more. They are used by all age groups, including seniors.

III. EXISTING SYSTEM

The current system handles the industrial system's daily operations. Thus, it is quite challenging to keep an eye on the stock levels. It is also quite tough to maintain the essential activity schedule of various maintenance operations in the factories and other connected structures. Calculating the quantity of work required for each maintenance task associated with different activities is highly challenging. It can

be challenging to get historical data, and keeping records up to date is quite expensive. Thus, computerization is quite essential.

Drawbacks of existing system

1.Time consuming and expensive
2.Prone to errors
3.Requires more number of resources and man power

IV. PROPOSEDSYSTEM

Online activity schedules for various maintenance tasks in factories and other associated structures are maintained by the suggested system. Additionally, it records the different maintenance tasks that have previously been completed by the accountable maintenance authority at different levels, such as updating workers, reporting on annual returns, and maintaining factory information.

The suggested system's benefits

1. The car number plate can be scanned with this application to obtain user and vehicle details.
2. Police may designate a car as being on a "Black List" if a driver violates traffic regulations.
3. Blacklisted vehicles can automatically notify all traffic personnel about them. To other traffic officials, an SMS with information on the car and its owner is delivered.
4. Quicker control of traffic at parking lots
5. Permitting the introduction of new and improved law enforcement

V. SYSTEM ARCHITECTURE DIAGRAM

The conceptual model that outlines a system's behaviour, structure, and other aspects is known as a systems architecture. A formal representation and explanation of a system, structured to facilitate inference about the architecture's behaviours and structures, is called an architecture description.

The software's architecture is contained in the design document that we create at this stage. It explains how the client problem should be solved and how to build the solution. As soon as the software requirements document is available, the design process starts. Design is the initial stage of transitioning from the problem domain to the solution domain, whereas requirements definition activity is fully contained within the problem domain.

VI.MODULES

The system is made up of the following two main modules and theirsub-modules:

1.ADMINISTRATOR

a. Add Traffic Officer: The administrator may add a new traffic officer by providing their information and legitimate logincredentials.
b. Admin has the ability to add a car and its owner details.
c. Manage Traffic Officers: By changing their details, the admin can oversee each additional traffic officer. A traffic cop may also be deleted by the admin.
d. View Blacklisted Vehicles: Provides access to all the vehicle's information.
g. Notification: The admin receives notification with the vehicle's position and date/time when it is blacklisted.
f. Dashboard: To graphically track, analyse, and show metrics to monitor a particular process, this information management tool is utilized.

2. POLICE OFFICER

a. Log in:
For the purpose of using the program, Traffic   Officer must log   in using their legitimate login credentials.
b. Scan the Vehicle:
All of the vehicle's information can be viewed by using an Android smartphone to scan the number plate. Here, the number plate is scanned right away. The characters   are identified with OCR, and text is obtained. The car details are

then shown to the traffic officer after it has been compared to the automobiles in the database.

c. Car on the Blacklist: If a car breaks any traffic laws, a traffic officer may put it on a blacklist. All of the officers who are using the app will receive an SMS in this scenario. Details about the car, its specifications, and its

VII. IMPLEMENTATION

In order for a computer to carry out the computation specified by the design, the implementation phase aims to translate the system design produced during the phase into coded form in a specific programming language. The coding phase has a significant impact on both testing and maintenance. Well-written code can lower the cost of maintenance and testing. The successful implementation of the system design is an important stage in the system lifetime. Converting the system designs into an operational state is the essence of implementation.

The process of making the designed system available to users and putting it into operation is known as implementation.
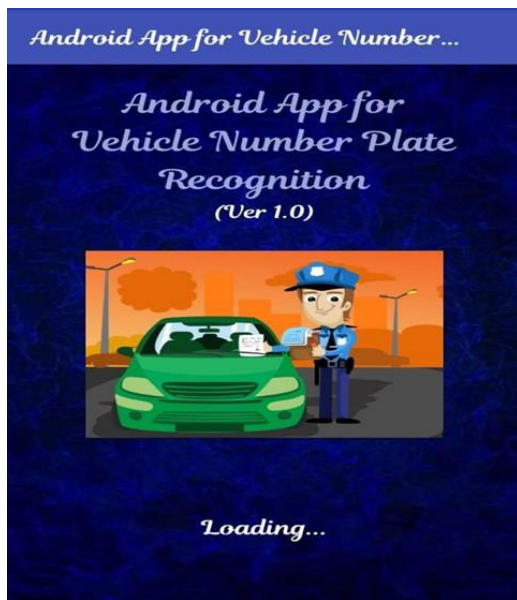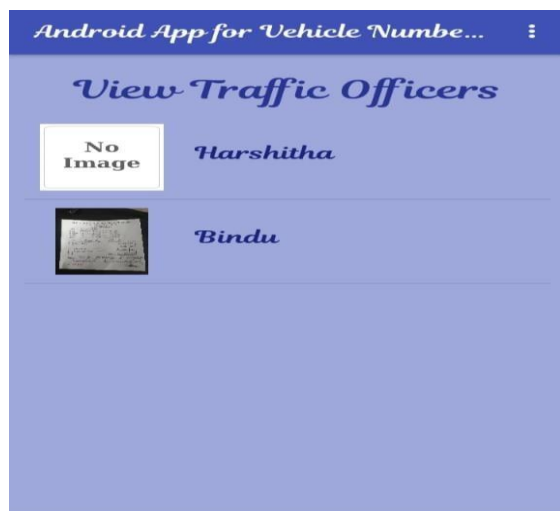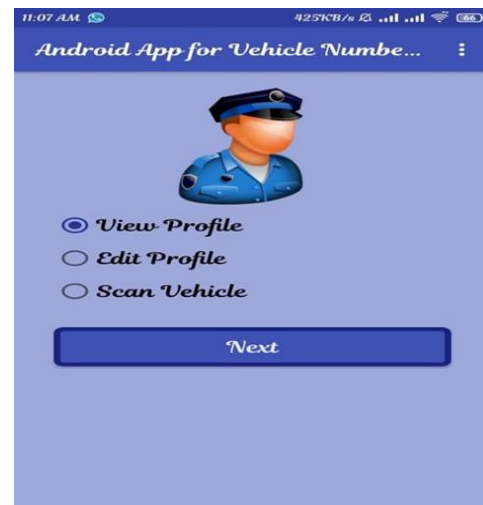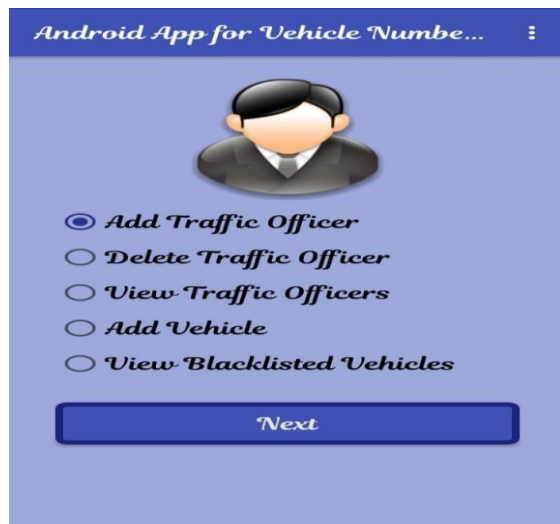
VIII. CONCLUSION

With the intention of providing states, cities, and municipalities with control tools that enable enhancing mobility, safety, and traffic management, an Android app with automatic vehicle number plate recognition is being created. It aids in the identification of cars that break traffic laws. Additionally, it has the ability to ban cars that pose a risk to other drivers' and pedestrians' lives.

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