A logo for a university

AI-generated content may be incorrect.

**Tishk International University Slemani**

**Relevant Courses:**

**Database II**

**and**

**Programming Paradigm, Object Oriented Programming**

**Report Title:**

**Car Recognition**

**Prepared by:**

**Darw Kamal & Muslim Mahmood & Mohammed Twana & Ahmed Jabar**

**Course Lecturer:**

**Ms. Yusra Mohammed & Ms. Bakhan**

**Assigned Date:**

**May 18, 2025**

**Submission Due:**

**May 27, 2025**

**Table of Contents**

[**Introduction** 4](#_Toc199177930)

[**Literature Review** 4](#_Toc199177931)

[**Problem Statement** 4](#_Toc199177932)

[**Proposed Solution** 5](#_Toc199177933)

[**Database EER Diagram** 6](#_Toc199177934)

[**Java Classes** 7](#_Toc199177935)

[**GIU Design** 8](#_Toc199177936)

[**UML Diagram** 16](#_Toc199177937)

[17](#_Toc199177938)

[**Conclusion and Future Work** 19](#_Toc199177939)

[**References** 20](#_Toc199177940)

# **Introduction**

**This project beholds the development of the Car Recognition System in Java for the automatic recognition of license plates. It is devised to be fast and reliable, and could possibly be incorporated into intelligent parking systems, traffic surveillance, and toll gates.**

# **Literature Review**

**Different researchers have studied car-plate-recognition systems using various technologies such as OpenCV, Python, or deep learning. The conventional systems used image-processing techniques and OCR to work on the detection and reading of the license plates. The Java-based ones are very few but, on the contrary, offer sound GUI support and database integrations.**

# **Problem Statement**

The manual recognition of vehicle license plates is time-consuming, prone to human error, and cannot be implemented in large-scale applications. There is a need for an automated system that can:

- Detect car plates from images

- Accurately recognize text using OCR

- Integrate into a user-friendly Java interface

# **Proposed Solution**

**We propose a Java application for processing car images to detect and recognize license plates. The system will:**

**Allow the user to upload car images**

**Automatically detect the area where the license plate is**

**Skip to the preprocessing stage (grayscale, thresholding, etc.)**

**Recognize the characters using OCR**

**Show the results in the GUI window**

# **Database EER Diagram**

**A screenshot of a computer

AI-generated content may be incorrect.**

# **Java Classes**

Admin

User

Login

Employee

Car

Truck

Vehicle

Database

Searching

BackEndCarRegon

# **GIU Design**

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screen shot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

# **UML Diagram**

A screenshot of a graph

AI-generated content may be incorrect.

# **A screenshot of a computer AI-generated content may be incorrect.**

A screenshot of a computer

AI-generated content may be incorrect.

# **Conclusion and Future Work**

The project successfully demonstrates a basic Java-based car plate recognition system. The system demonstrates image processing along with OCR techniques which operate through a Java GUI application to detect and extract license plate information from images. The system uses its capabilities to detect car plates and present its findings through an interface that is easy for users to understand.

This implementation creates a stable foundation which supports automated vehicle recognition systems while delivering value to smart cities and parking management and law enforcement applications. The system's modular structure facilitates simple adjustments to accommodate additional features and different platform connections.

Future work may include:

Real-time video input and detection using camera streams

Improved OCR accuracy using machine learning and AI models

Cloud database integration for centralized data management

Mobile or web application versions for broader accessibility

Multilingual plate recognition and support for various plate formats

# **References**

Smith, R. (2007).  
*An Overview of the Tesseract OCR Engine.*  
Proceedings of the Ninth International Conference on Document Analysis and Recognition (ICDAR).  
 <https://ieeexplore.ieee.org/document/4376991>

Java Swing Documentation – Oracle  
*Lesson: Swing Features (The Java™ Tutorials)*  
 <https://docs.oracle.com/javase/tutorial/uiswing/>

GitHub – JavaANPR Project  
Open-source Java implementation for number plate recognition.  
 <https://github.com/openalpr/openalpr> (or search “JavaANPR”)