**Automatic Number Plate Recognition System**

ABSTRACT:

In Today’s Day and Age Security has become one of the biggest concerns for any organization, and automation of such security is essential. However, many of the current solutions are still not robust in real-world situations, commonly depending on many constraints. In the following project, we will understand how to recognize License number plates using the Python programming language. We will utilize **OpenCV** for this project in order to identify the license number plates and the python **pytesseract** for the characters and digits extraction from the plate. By harnessing the capabilities of these open-source technologies, the project aspires to enhance traffic management, security, and various vehicular operations.

As well this project will presents a robust and efficient ALPR system based on the state-of-the-art YOLO object detector. We will Web App with a Python program that automatically recognizes the License Number Plate by the end of this journey.The results have shown that the trained neural network is able to perform with high accuracy of nearly 90-95 percent in recognizing license plates in low resolution images using this system. The ANPR project holds great potential for real-world applications, such as traffic control, parking management, and law enforcement. The goal of the ANPR system is to provide efficient and accurate recognition of license plates, enhancing various aspects of vehicle-related operations

**The Real-Time Sign Detection using TensorFlow**

ABSTRACT:

Deaf and hard-of-hearing persons, as well as others who are unable to communicate verbally, utilise sign language to communicate within their communities and with others. The dilemma of real-time finger-spelling recognition in Sign Language is discussed. The system accepts a hand gesture as input and displays the identified character on the monitor screen in real time. This project falls under the category of human-computer interaction (HCI) and tries to recognise several typical ISL hand gestures. In the vast majority of situations, we constructed a robust model that consistently classifies **Sign language**.Without a controlled background and low light, the system can detect chosen Sign Language signs with an accuracy of 70-80%. This research intends to bridge the communication gap by building algorithms that can anticipate alphanumeric hand motions in sign language in real time. The main goal of this research is to create a computer-based intelligent system that will allow deaf persons to interact effectively with others by utilising hand gestures. In this paper, we propose a method to create an Indian Sign Language dataset using a webcam and then using transfer learning, train a TensorFlow model to create a real-time Sign Language Recognition system. This project aims to develop a robust and efficient system capable of recognizing and interpreting signs in real-time using the power of machine learning and the **TensorFlow framework**. This endeavor focuses on enhancing safety, accessibility, and convenience across various contexts where sign language or symbolic communication is crucial.

**MAJOR PROJECT**

**ENHANCING CROP YIELD THROUGH MACHINE LEARNING**

ABSTRACT:

Farming is one of the major sectors that influences a country's economic growth.

In country like India, majority of the population is dependent on agriculture for their livelihood. Many new technologies, such as Machine Learning and Deep Learning, are being implemented into agriculture so that it is easier for farmers to grow and maximize their yield.

In this project, we build a crop recommendation system using machine learning algorithms and integrate it into a web application using **the Flask framework**. The system takes in input data such as soil type, rainfall, temperature, and humidity, and recommends the best crop that can be grown in that particular region based on the machine learning model trained on historical data. By analyzing historical data and using predictive models, the system provides personalized recommendations tailored to the specific conditions of a farm or agricultural area.The crop recommendation system is useful for farmers who want to maximize their crop yield and minimize crop failure by selecting the best crop based on the conditions of their land. The system uses machine learning algorithms such as **decision trees, random forests, and support vector machines** to make predictions and recommend the best crop for the given input data.The project showcases the power of machine learning and how it can be used to solve real-world problems in the agricultural industry. The web application created using Flask allows farmers to easily input their data and get crop recommendations quickly and efficiently , and explore additional information

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**CUSTOMER CHURN DETECTION**

ABSTRACT:

Customer churn is a major problem for businesses. By predicting which customers are likely to churn, businesses can take steps to prevent it. This paper describes the steps involved in building a machine learning model to predict customer churn. The steps include gathering data, cleaning data, choosing a machine learning algorithm, training the model, evaluating the model, and deploying the model. Customer churn analysis is the process of predicting customers who tend to cancel the service (subscription) they receive for various reasons, especially in sectors such as telecommunications, finance and insurance, and determining the necessary operational steps to prevent this cancellation. The study uses two separate datasets from kaggle.com to identify customers who tend to unsubscribe in the telecommunications industry. The analysis process carries out by applying machine learning methods such as Logistic Regression, K-Nearest Neighbor, Decision Trees, Random Forest, Support Vector Machines,and Naive Bayes methods on the relevant datasets. It was seen that the most successful method in the customer loss analysis performed on both datasets was the Random Forest method. The paper also provides some tips for building a successful model, such as using a large dataset, balancing the dataset, using a regularization technique, and using a validation set.