SYNOPSYS : MINI PROJECT -2023-24	
PROJECT NAME(Group Number)	**Number Plate Recognition using Simulink**
ELECTRONICS AND TELECOMMUNICATION ENGINEERING	
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SEM/Year/CAY	VI/TE/2023-24
Problem Statement (Initial Goal)	We want to design and implement a Simulink based simulation for number plate recognition.
OBJECTIVE(s)	1. To develop and test image processing algorithms for number plate recognition. 2. To test the performance of the entire system under different conditions and scenarios. 3. To optimize algorithms and systems that can accurately and efficiently recognize number plates in various real-world scenarios.
SPECIFIC:	The aim of this project is toSimulink based simulation for number plate recognition which is designed to accurately detect and extract license plate information from images. 1. Identification of the blocks required: Anoushka,Utsav,Khushi,Anuraag 2. Procuring the image database : Anoushka,Utsav,Khushi,Anuraag 3. Pre-Processing of images :Anoushka,Utsav,Khushi,Anuraag 4. Simulation : Anoushka,Utsav,Khushi,Anuraag This project is finished before April and remaining time can be utilized for project report and demonstrations.

	This project is a prototype for number plate recognition system
MEASURABLE:	At the end of this project we will produce a Simulink based number plate recognition system which will offer great advantage in accurately identifying and processing number plate information.
ACHIEVABLE:	For this project, we would need softwares like Matlab Simulink .
RELEVANT:	We would like to design a number plate recognition simulation to reduce processing time by dividing the recognition process into distinct stages like image acquisition, preprocessing, feature extraction, and classification.
TIME-BOUND:	*Overview : 02-March-2024* *Study of operations on image : 05-March-2024* *Software : 09-March-2024* *Troubleshooting :18-March-2024*

Introduction:

Simulink-based number plate recognition system involves developing an efficient and accurate solution for automated number plate identification. By harnessing Simulink's intuitive graphical interface and simulation environment,it is a comprehensive system that integrates various image processing algorithms and machine learning techniques. This system aims to accurately detect, extract, and recognize license plate information from images streams in real-time.

Description:

The Simulink-based number plate recognition system entails a multi-stage process designed to accurately detect and extract license plate information from images streams.

- Image Acquisition and Preprocessing: The system begins by acquiring images frames containing vehicles. Preprocessing techniques are applied to enhance image quality, remove noise, and improve the clarity of license plate regions.
- Feature Extraction: Next, the system employs feature extraction algorithms to identify potential license plate regions within the preprocessed images. This involves techniques such as edge detection, morphological operations, and template matching to isolate candidate regions.
- Character Recognition: Machine learning algorithms for pattern recognition techniques are then utilized to recognize and classify these characters.
- Output Display: Finally, the recognized license plate information is either displayed to the user or integrated into a larger system for further processing, such as vehicle tracking or access control.

Block Diagram of Algorithm:

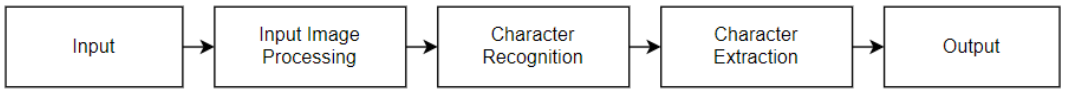
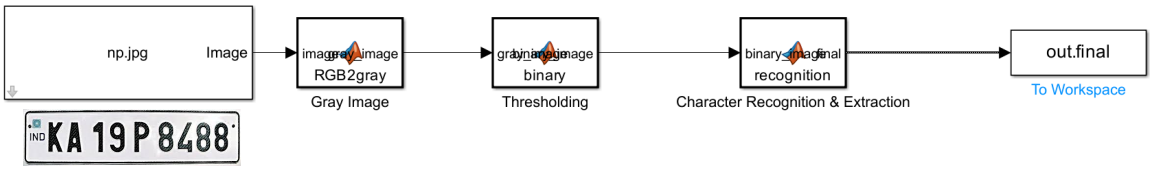


Fig 1. Block Diagram of Number plate recognition

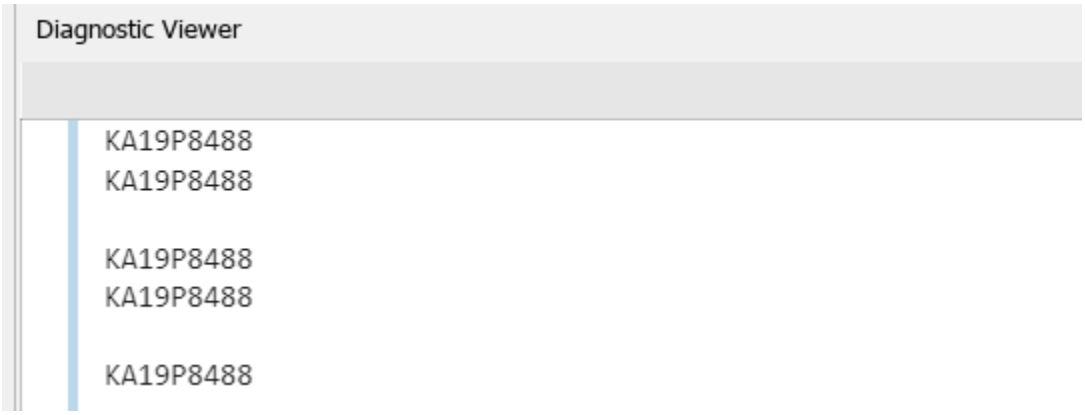
Algorithm used:

1. An image of a number plate is chosen.
2. Pre-processing techniques such as conversion to grayscale and thresholding is performed.
3. Character recognition and extraction is performed using a dataset which is then stored in an array.

Simulink Model



Output of Simulink Model



Mentor Name & Signature with date: