# TRAFFIC SIGN CLASSIFICATION USING DEEP LEARNING


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# AIM AND OBJECTIVE

The ultimate aim of the project is to alert the driver by the automatically recognizing the traffic signs which is present along the road using deep learning.

# PROBLEM IDENTIFICATION IN THE DOMAIN

- Traffic sign detection is the process of automatically recognizing traffic signs along the road, including speed limit signs, yield signs, merge signs, etc.

- Being able to automatically recognize traffic signs and to intimate the driver. So accidents can be avoided.

# METHODOLOGY

- To know about the traffic signs and its purposes and to know about the software.
- To make a study on different algorithm and choose a desired one.
- Learn about python and its libraries.
- To collect the datasets required for our project.
- Pre-processing is been done for the datasets which is collected.
- The training of data is done.

# Modules

**Data collection**

In data collection process we collect a different types of traffic sign images for training purpose.

**Data Preprocessing**

Pre-processing refers to the transformations applied to our data before providing the data to the algorithm. Data Preprocessing technique is used to convert the raw data into an understandable data set. In other words, whenever the information is gathered from various sources it is collected in raw format that isn’t possible for the analysis.

# Modules

## Data Train

Training data is the data you use to train an algorithm or machine learning model to predict the outcome you design your model to predict. Test data is used to measure the performance, such as accuracy or efficiency, of the algorithm you are using to train the machine.

## Model Create

A neural network is a simplified model of the way the human brain processes information. It works by simulating a large number of interconnected processing units that resemble abstract versions of neurons. The processing units are arranged in layers.

# Modules

## Model prediction

Predictive modeling is a mathematical process used to predict future events or outcomes by analyzing patterns in a given set of input data. It is a crucial component of predictive analytics, a type of data analytics which uses current and historical data to forecast activity, behavior and trends.

# Tools

## TensorFlow:

It is an end-to-end Open-Source platform for Deep Learning. It has a different tools, libraries and community resources.

## Keras:

It is a deep learning API written in Python language, running on the top of the machine learning platform i.e., Tensor flow. It is used to create layers in Neural Network.

# Tools

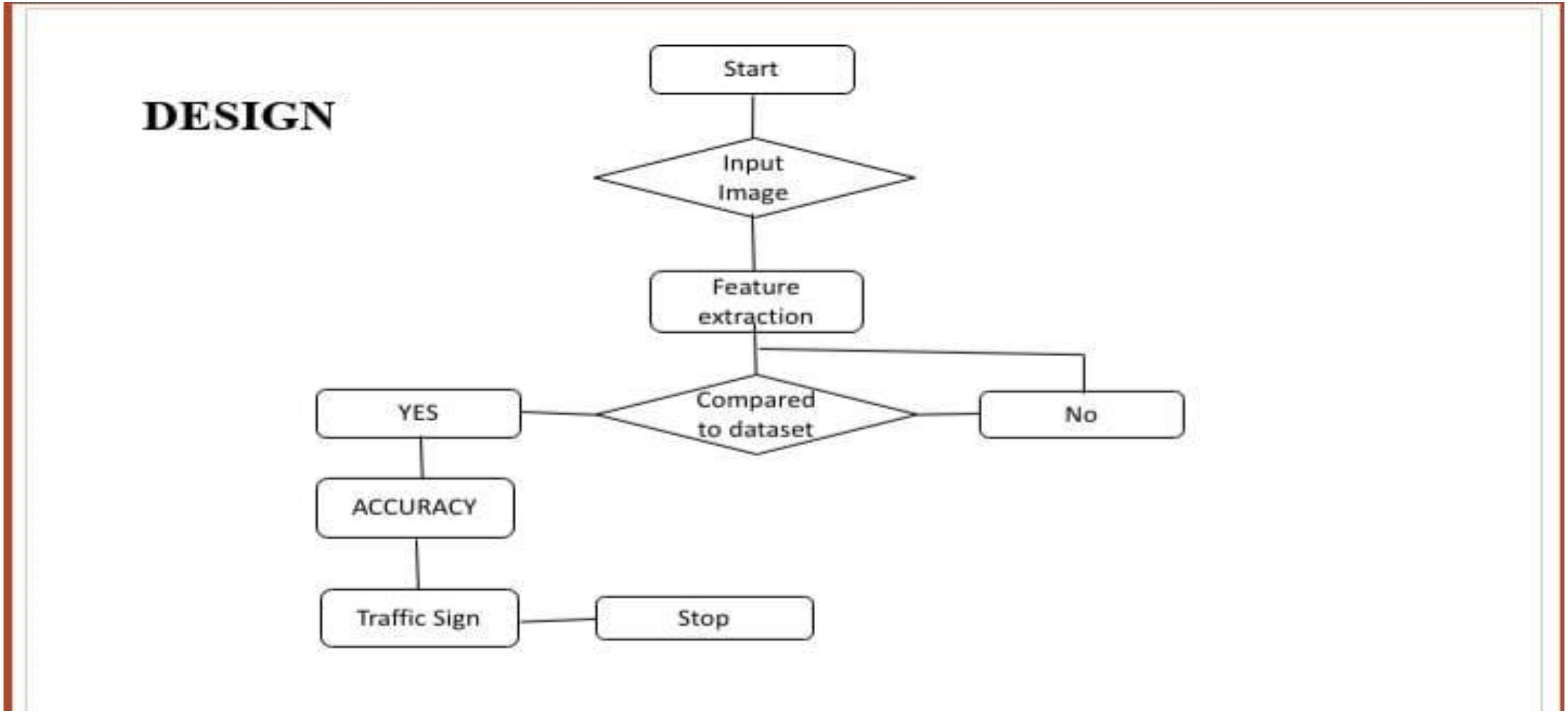
## OPEN CV

OpenCV-Python is a library of Python bindings designed to solve computer vision problems.

## NUMPY

NumPy can be used to perform a wide variety of mathematical operations on arrays. It adds powerful data structures to Python that guarantee efficient calculations with arrays and matrices and it supplies an enormous library of high-level mathematical functions that operate on these arrays and matrices.

# DESIGN


DESIGN
Start
Input Image
Feature extraction
Compared to dataset
YES
No
ACCURACY
Traffic Sign
Stop

# Effective utilization of the modern tool

## HARDWARE REQUIREMENTS:

- System : I5 Intel
- Ram : 4GB
- Key Board : Standard 104 keys
- Mouse : Optical mouse

## SOFTWARE REQUIREMENTS:

- Operating system : Windows 10
- Ide : python idle
- Language : Python
- Datasets from kaggle

# Cost Benefit Analysis

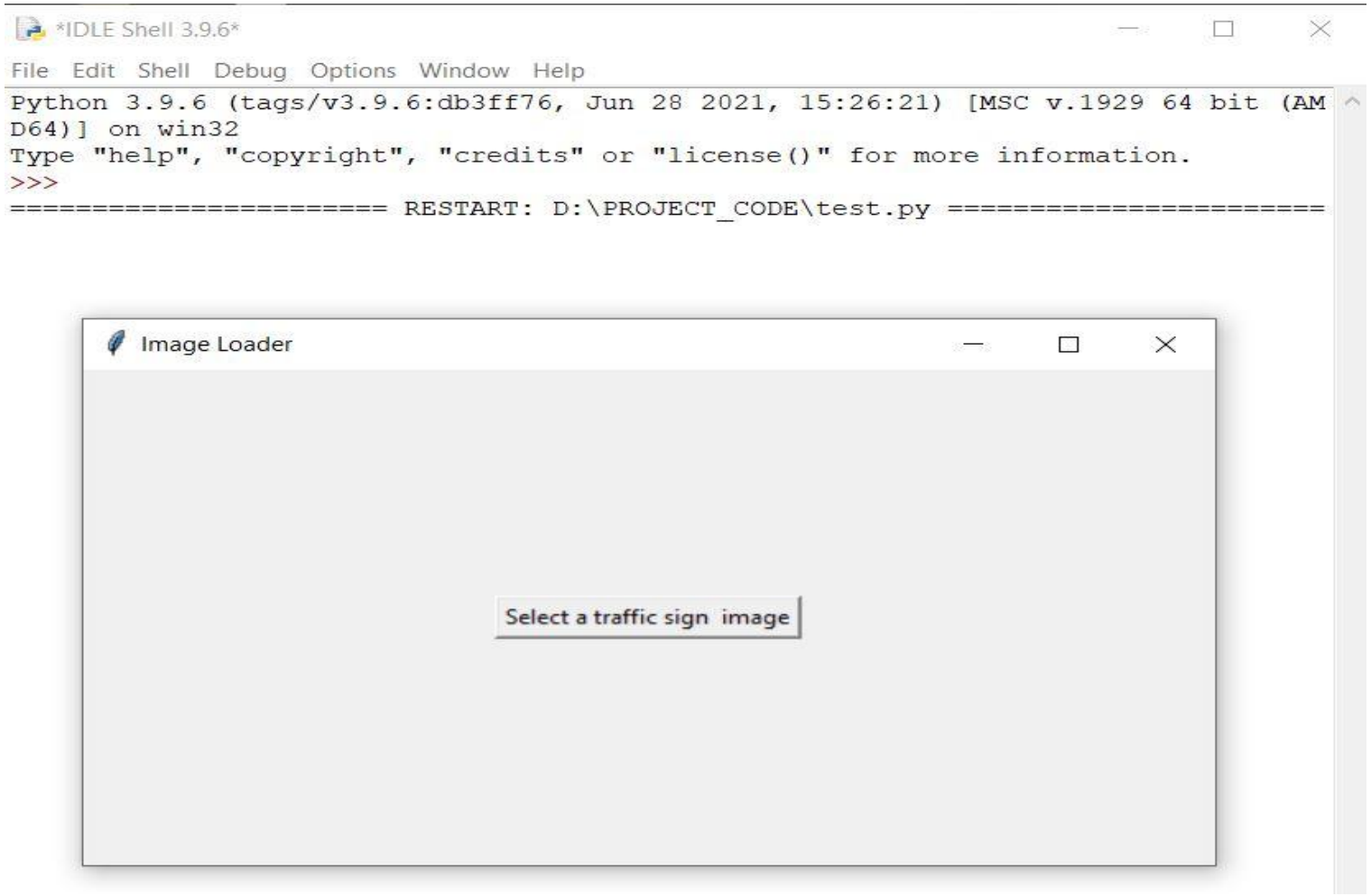
- The software is free to use.
- The only cost benefit is a system and a camera.
- The approximate cost of a camera may range from Rs.3000 to rs.5000.

* varies from region to region

# Analysis of result and discussion

Traffic sign classification is used to recognize traffic signs which is present along the road.Some instructions are also displayed for few traffic signs.If the output image is danger sign then an alert sound will be produced.If the output image is school zone or hospital zone ,then a voice message like “go slow school is near” and “Please don’t horn” will be produced.So it will classify the traffic signs and alert the driver so the risk of accidents can be reduced.

# Analysis of result and discussion



# Analysis of result and discussion


```
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AM
D64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: D:\PROJECT_CODE\test.py ==========
HOSPITAL: 99.85%
```

# Contribution to the work

- I have collected  the datasets of traffic signs for the project.
- Also I have read many reference papers for our project.

# REFERENCES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