Kathmandu University
Department of Computer Science and Engineering
Dhulikhel, Kavre

A Mini-Project Proposal
on

"Traffic Sign Recognition System"

COMP 484

(For partial fulfillment of 4th Year/ 1st Semester in Computer Engineering)

Submitted by:

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Submitted to:

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Submission Date:

December 9, 2019

Project Title: Traffic Sign Recognition System

Dataset

For this project, we are using the public dataset available at Kaggle: Traffic Signs Dataset. The dataset contains more than **50,000** images of different traffic signs. It is further classified into **43** different classes. The dataset is quite varying, some of the classes have many images while some classes have few images. The size of the dataset is around 300 MB. The dataset has a train folder which contains images inside each class and a test folder which we will use for testing our model.

Project Idea

Traffic-sign recognition (TSR) is a technology by which a vehicle is able to recognize the traffic signs put on the road e.g. "speed limit" or "children" or "turn ahead". This is part of the features collectively called **ADAS(Advanced driver-assistance systems)**.In the world of Artificial Intelligence and advancement in technologies, many researchers and big companies like Tesla, Uber, Google, Mercedes-Benz, Toyota, Ford, Audi, etc are working on autonomous vehicles and self-driving cars. So, for achieving accuracy in this technology, the vehicles should be able to interpret traffic signs and make decisions accordingly.

There are several different types of traffic signs like speed limits, no entry, traffic signals, turn left or right, children crossing, no passing of heavy vehicles, etc. Traffic signs classification is the process of identifying which class a traffic sign belongs to. In this project, we will build a **deep neural network model** that can classify traffic signs present in the image into different categories. With this model, we are able to read and understand traffic signs which are a very important task for all autonomous vehicles.

For this project, we are using the public dataset available at Kaggle: Traffic Signs Dataset. The dataset contains more than **50,000** images of different traffic signs. It is further classified into **43** different classes. Our approach to building this traffic sign classification model is discussed in four steps:

- Explore the dataset.
- Build a CNN model.
- Train and validate the model.
- Test the model with the test dataset.

Software and Tools

Programming Language: Python.

IDE: Pycharm, Jupyter Notebook.

Library Used: Keras, Matplotlib, Scikit-learn, Pandas, PIL, Numpy, Tensorflow.

GUI Library: Tkinter.

Teammates and Work division

Teammates:

1. Junth Basnet (05)
2. Sandip Dulal (63)
3. Abin Sainju (65)

Work division:

Name	Work
Junth Basnet	1. Research 2. Model architecture design and visualization 3. Implementing the CNN model using Keras deep learning library
Sandip Dulal	1. Research 2. Data preprocessing and visualization 3. Training and validating model
Abin Sainju	1. Research 2. Testing model 3. Design Traffic Sign Classifier GUI using Tkinter

Gantt Chart:

SN	Work	1	2	3	4	5	6	7	8
1	Research and Analysis								
2	Requirement Gathering								
3	System Design								
4	Coding								
5	Testing								
6	Documentation								