

PyCK Abstract

1) Problem Statement :

We are going to write a letter on air using some object (maybe a pen with a red coloured tip) or colored fingertips of hand in real-time using a webcam. Furthermore, we will write a python code that will recognize the letters that we will make using object/fingertips. In the end, we will just write some letter in the air and the program will detect that letter. If time permits, we will also add some creativity like the program will suggest names of movies or songs beginning with that letter.

Domain - Computer Vision, Machine Learning

2) Libraries: OpenCV, Numpy, Keras, Matplotlib, Pandas

3) A brief walkthrough project :

We will use Keras for training MLP and CNN models by loading the data from a dataset(EMNIST). We will use OpenCV, Numpy to recognize the object and pass on the information to the models to predict the alphabet written. We will use Pandas for data handling related to the creativity part.

4) Timeline: In the first 3 to 4 days (till 30 June maybe) we will learn some important concepts of ML-like CNN, MLP, and training the models for letter recognition. After that, we will read the documentation of OpenCV and Keras to list out some useful functions or classes of these libraries(till 3 July maybe). Maybe from 4 July onwards, we will divide our project into two parts(letter recognition and object tip detection) and we will work on them accordingly. We will try to complete Object tip recognition, printing that letter on screen and letter recognition till 10 July. We will complete the movies and songs suggestion part by 14 July.

5) Extra Libraries that we will be studying: OpenCV and Keras

6) Motivation: Our main motivation is to learn some new libraries and improve our Python coding skills