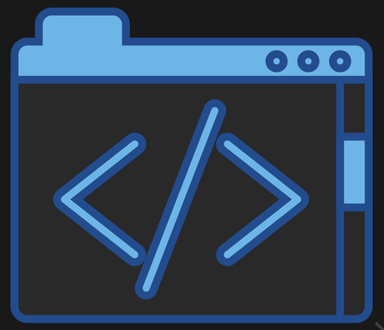
A Mini Project Report

HANDWRITTEN DIGIT RECOGNITION USING PYTHON

Artificial Intelligence and Robotics

MAEER'S MAHARASHTRA INSTITUTE OF ENGINEERINGDEPARTMENT OF COMPUTER ENGINEERING*
2020 - 2021 *

DEVELOPED BY



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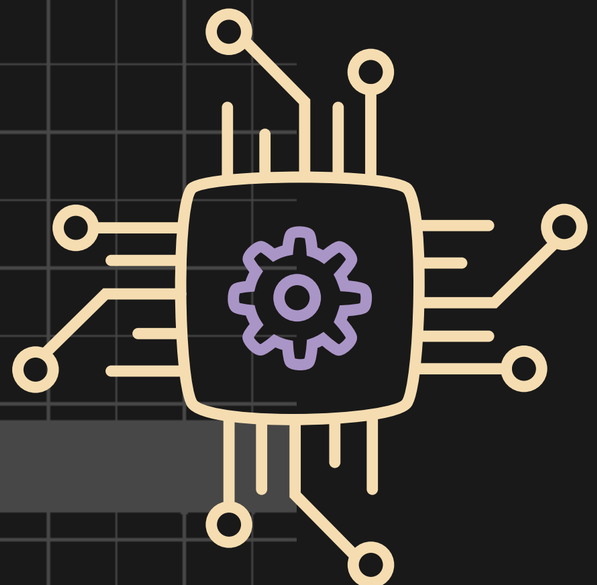
WHAT IS HANDWRITTEN DIGIT RECOGNITION ?

- The handwritten digit recognition is the ability of computers to recognize human handwritten digits. It is a hard task for the machine because handwritten digits are not perfect and can be made with many different flavors.

- The handwritten digit recognition is the solution to this problem which uses the image of a digit and recognizes the digit present in the image.

SYSTEM OVERVIEW.

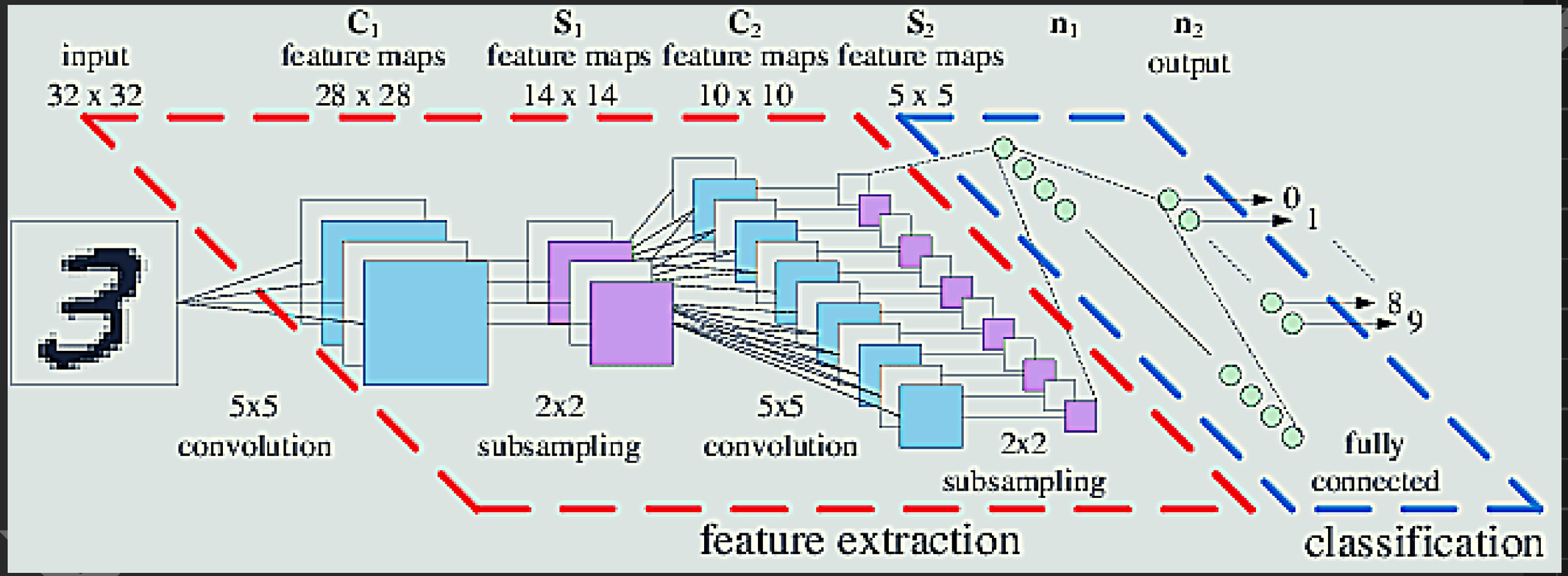
- In this mini project, we are going to implement a handwritten digit recognition program using the MNIST dataset. We will be using a special type of deep neural network that is Convolutional Neural Networks. In the end, we are going to build a GUI in which you can draw the digit and recognize it straight away.



THE MNIST DATASET ?

This is probably one of the most popular datasets among machine learning and deep learning enthusiasts. The MNIST dataset contains 60,000 training images of handwritten digits from zero to nine and 10,000 images for testing. So, the MNIST dataset has 10 different classes. The handwritten digits images are represented as a 28×28 matrix where each cell contains grayscale pixel value.

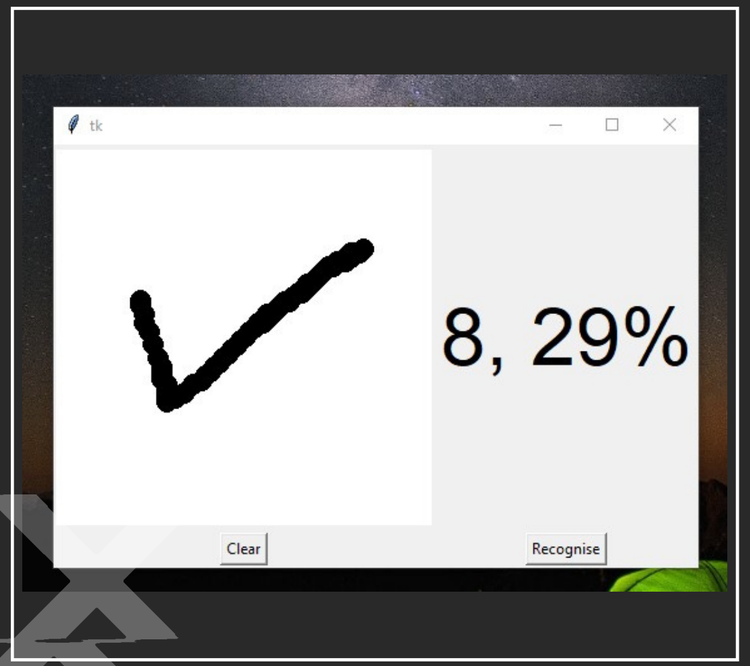
Architecture of the handwritten digit recognition program

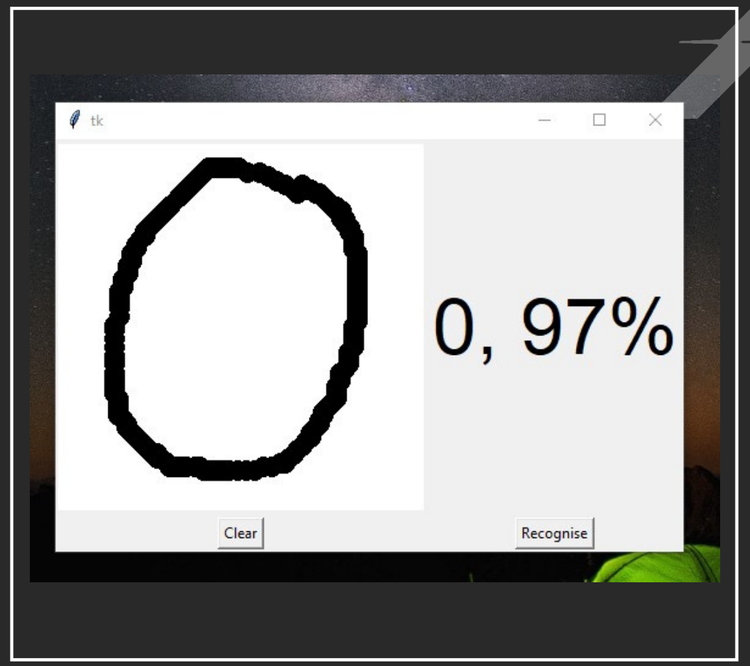


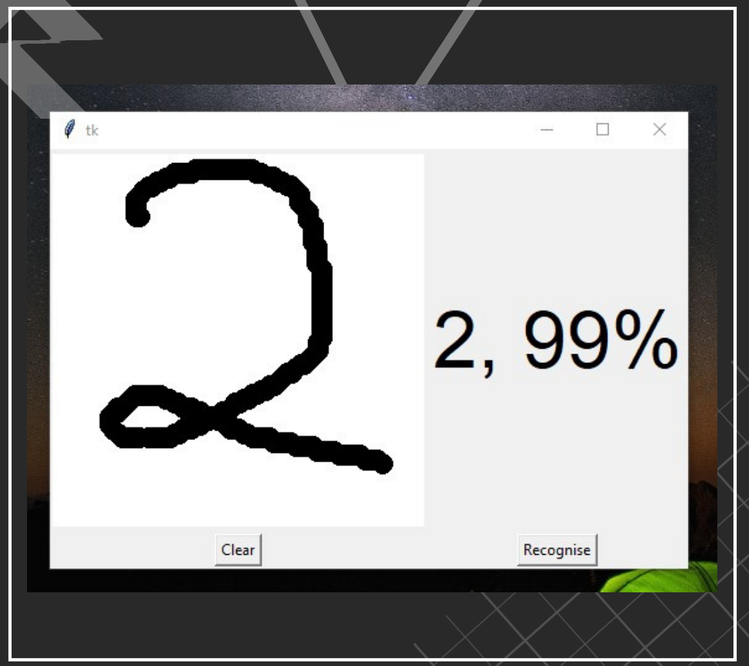
SOFTWARE REQUIREMENTS

- Windows 10 Operating System
- Python Compiler 3.8.6 installed
- PyCharm: the Python IDE installed
- Python Numpy 1.18.5 library installed in python Command Prompt
- Python TensorFlow 2.3.1 library installed in python Command Prompt
- Python Keras 2.4.3 library installed in python Command Prompt
- Python Pillow 8.0.1 library installed in python Command Prompt
- The MNIST dataset.h5 file
- pip install pywin32

GUI DESIGN
FOR THE HANDWRITTEN DIGIT RECOGNITION PROGRAM







SUMMARY

In this mini project, we have successfully built a Python deep learning project on handwritten digit recognition program. We have built and trained the Convolutional neural network which is very effective for image classification purposes. Later on, we build the GUI where we draw a digit on the canvas then we classify the digit and show the results.

THANK YOU