DESIGN THINKING

HANDWRITTEN DIGIT RECOGNITION FOR ATTENDANCE ASSISTANCE

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ABSTRACT

- Handwritten Digit Recognition (HDR) is the process of converting images of handwritten digit into digital format. A lot of money is wasted on converting the information that is in paper to digital format. This problem can be solved by using HDR.
- The heart of our project lies within the ability to develop an efficient algorithm that can recognize the handwritten digits which are scanned and sent as input by the user.
- Our aim is to demonstrate HDR through attendance assistance.

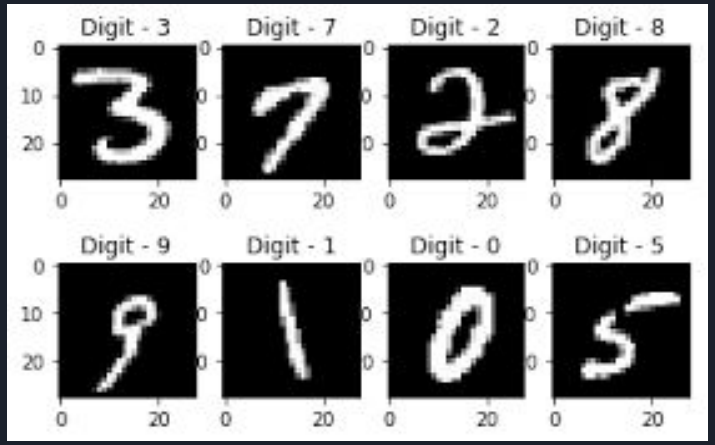
INTRODUCTION

- Handwritten digit recognition has not only professional and commercial applications, but also has practical application in our daily life and can be of great help to the visually impaired. It also helps us to solve complex problems easily thus making our lives easier .

- Handwritten Digit Recognition (HDR) is the ability of a machine to recognize human handwritten digits. It is a hard task for a machine because handwritten digits are not perfect. So, the solution to this problem is our project that uses the image of a digit and recognizes the digit present in the image.

OBJECTIVE

- Recognizing roll nos. from pictures would help us to take attendance easily.
- It saves time from marking absent every single time to marking absent all at once.



TERMINOLOGY

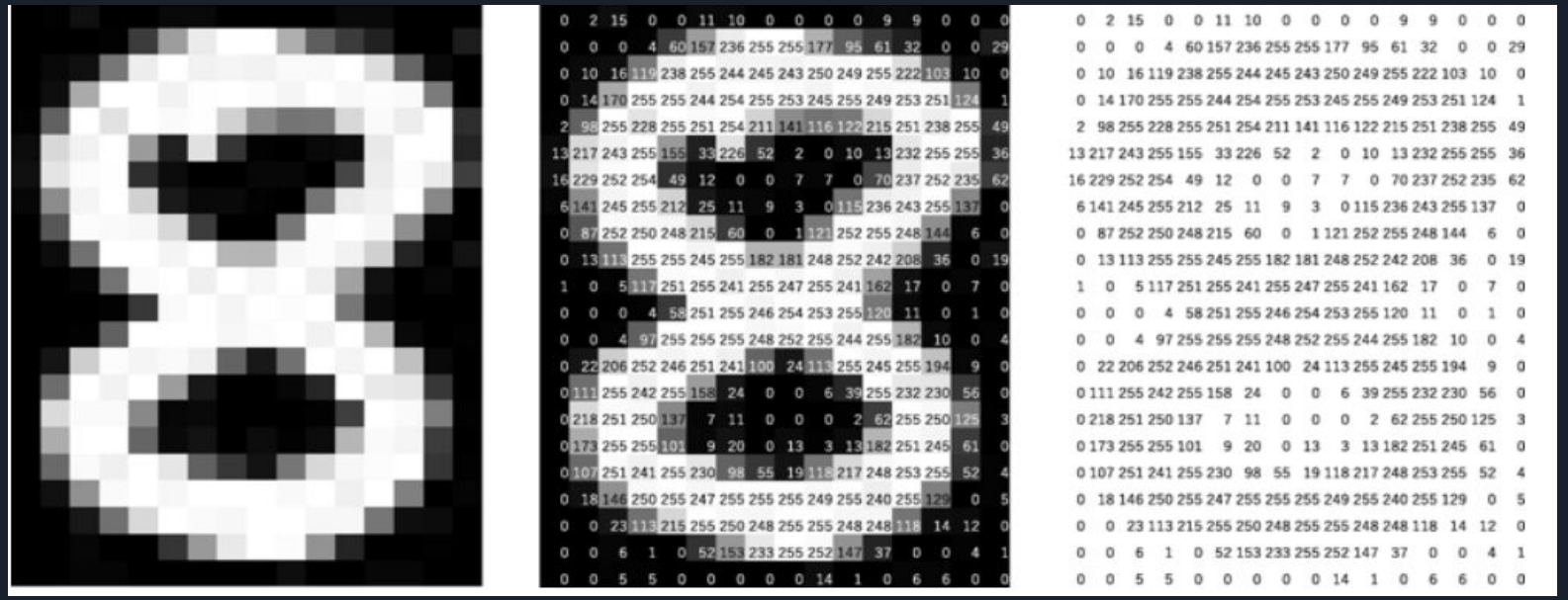
- CNN :- Convolutional Neural Networks are a type of Deep Learning Algorithm that take the image as an input and learn the various features of the image through filters.
- CONVOLUTIONAL LAYER:- A convolutional layer contains a set of filters (or kernels), parameters of which are to be learned throughout the training. Each filter convolves with the image and creates an activation map.
- KERNEL:- Small matrix whose height and width is smaller than the image that needs to be combined.
- POOLING LAYER:- Pooling layers are used to reduce the dimensions of the feature maps. It summarises the features present in a region of the feature map generated by a convolution layer.
- FULLY CONNECTED LAYER (FC LAYER):-The Fully Connected (FC) layer consists of the weights and biases along with the neurons and is used to connect the neurons between two different layers.
- MNIST :-The MNIST database (Modified National Institute of Standards and Technology database) is a large database of handwritten digits that is commonly used for training various image processing systems.

METHODOLOGY

1. IMPORT THE LIBRARIES AND LOAD THE DATASET
2. PREPROCESS THE DATA
3. CREATE THE MODEL
4. TRAIN THE MODEL
5. EVALUATE THE MODEL
6. CREATE GUI TO PREDICT DIGITS

PICTORIAL REPRESENTATION

A computer sees an image as an array of numbers. The matrix on the right contains numbers between 0 and 225, each of which corresponds to the pixel brightness in the left image. Both are overlaid in the middle image.



Any Questions?