1. Identify the problem area:

Handwritten digit recognition .It is mainly caused by writing style variations of every single individual .This is not easy for machine to recognize the handwritten digits accurately like us. To improve the accuracy of detection. It is mainly usefully in postal mail sorting, bank check processing, and form data entry.

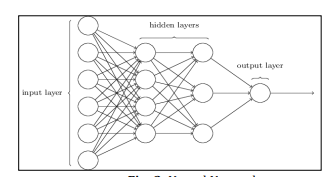
2. Write up on the problems to be explored:

To develop a method which is independent of digit size image and write style independent by using different type of Convolutional Neural Network algorithm on Modified National Institute of Standards and Technology (MNIST) dataset used for the training and testing to identify the accuracy numerical .

3. Write up on the deep learning architecture in the selected area:

Deep learning is the acronym for Neural Networks, the network connected with multilayer. A node is just a perception which takes an input performs some computation and then passed through a node’s activation function, to show the context signal progress proceeds through the network to perform classification.

Neural network :



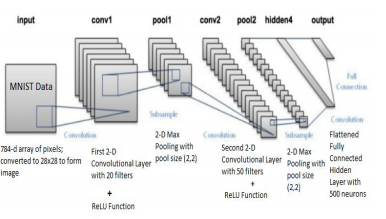
Simple convolution architecture:

A simple neural network is complex when it consists of many layers performing operations. Each layer performs dot product of input pixel and passed to the next layer.

Types of layer named: Convolution Layer, pooling layer, fully connected layer.

The input is image of *a x a x n* size, where ais width and height and *n* stands for number of channels.

Convolution layers has x filters having size *b x b x*  c here b is smaller than the dimension of image and ccan either be same or smaller than number of channels.



**References:**

[Frank Rosner](https://dev.to/frosnerd) “handwritten-digit-recognition-using-convolutional-neural-networks”

Shashank Mishra “digit-recognition-using \_deep\_ learning”

Mayank Singh1, Rahul2 ”Handwritten Digit Recognition using Machine Learning”