PERFORMANCE METRICS

Team ID	PNT2022TMID41730
Project Name	A Novel Method for Handwritten Digit Recognition System
Maximum marks	10 marks

MODEL PERFORMANCE METICS:

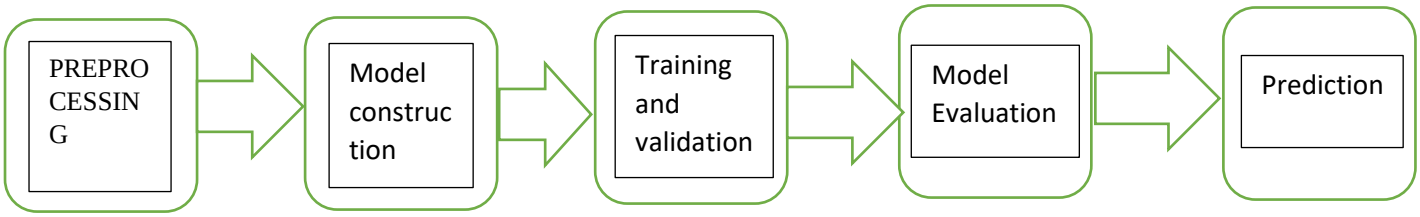
- Handwritten digit recognition is one of the essentially significant issues in pattern recognition application.
- The main purpose of this project to build and automatic handwritten digit recognition method for the recognition of handwritten digit strings.
- The applications of digit recognition include postal mail sorting, check processing, form data entry,etc.

Methodolgy:

- We used MINIST as a primary dataset to train the model,and it consists of 70,000 handwritten raster images from 250 different sources out of which 60,000 are used for training,and the rest are used for training validation.
- Our proposed method mainly separated into stages:
- Pre-Processing
- Model construction
- Training&Validation
- Model Evaluation&Prediction

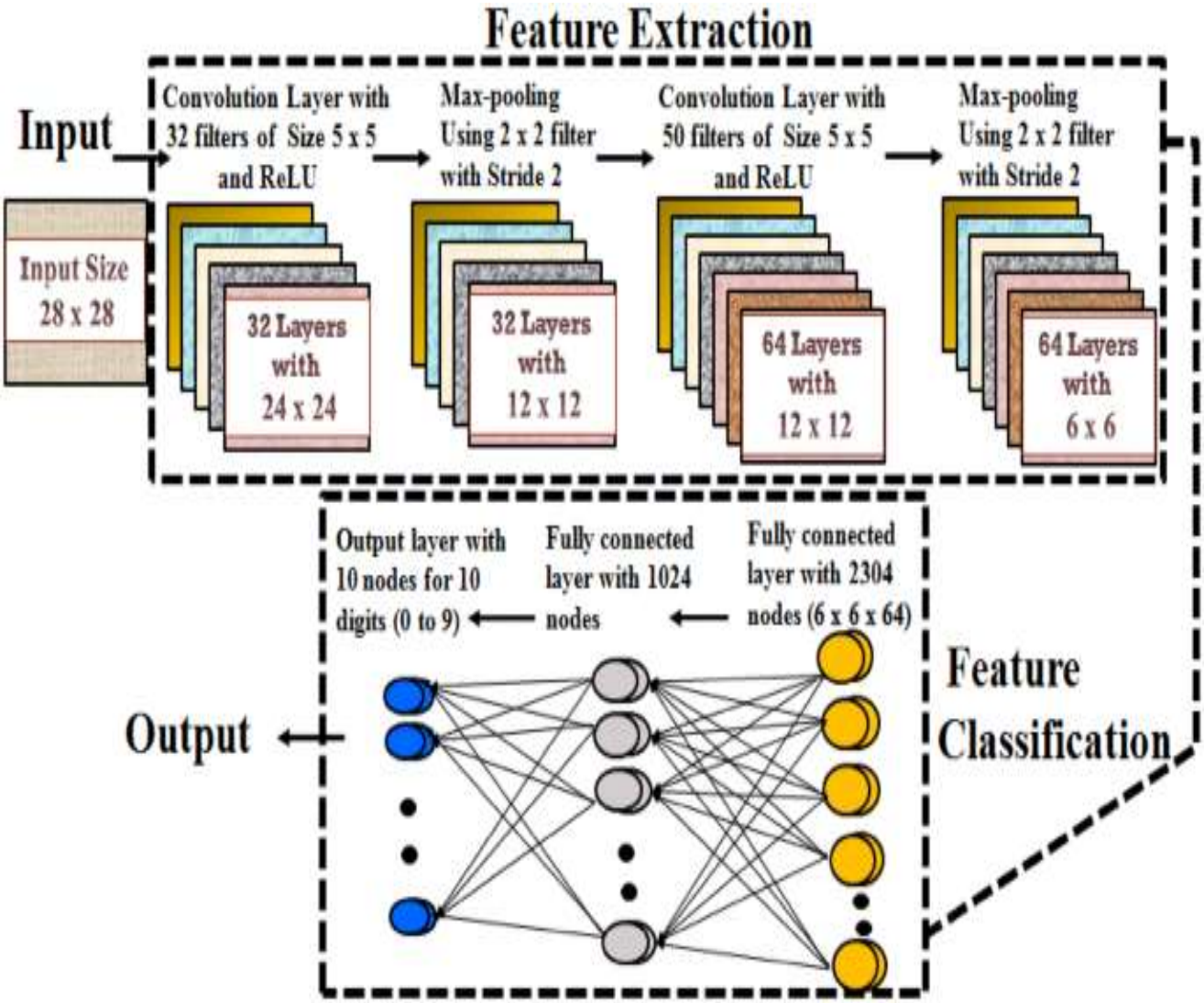
PRE-PROCESSING:

- Data processing place a key role in any recognition process.
- Data pre processing is a data mining procedure that is used to change the raw data to a useful and efficient format.
- To shape the input images in a structure appropriate for segmentation,pre processing is used.



MODEL CONSTRUCTION:

- ❖ After preprocessing the images and lables are ready to be fed into our model.
- ❖ A CNN model was built using the keras library.
- ❖ A CNN model usually consists of convolutional and pooling layers.



TRAINING&VALIDATION:

- After building the model,we compiled a model with adam optimizer and particular cross-entropy loss function which are standard in making a convolution neural network.
- Once the model is successfully constructed,then we can train the model with training data for the required number of iterations,but as the number of iterations increase there is a chance for overfiting.

MODEL EVALUATION:

- Model evaluation is an important part of CNN model development.
- It is used to find the efficient model that represents our data and how well the constructed model will work in the future.
- The MINIST dataset consists of 10,000 images which will be used to evalute how well our model works.

PREDICTION:

- The tkinter library in the python standard library is used for this task

- A function predict_digit() is defined that takes the image as input and then trained model is used to predict the digit.
- Then an App class is defined which is responsible for building the GUI for our project.