**Project Design Phase-II**
**Technology Architecture**

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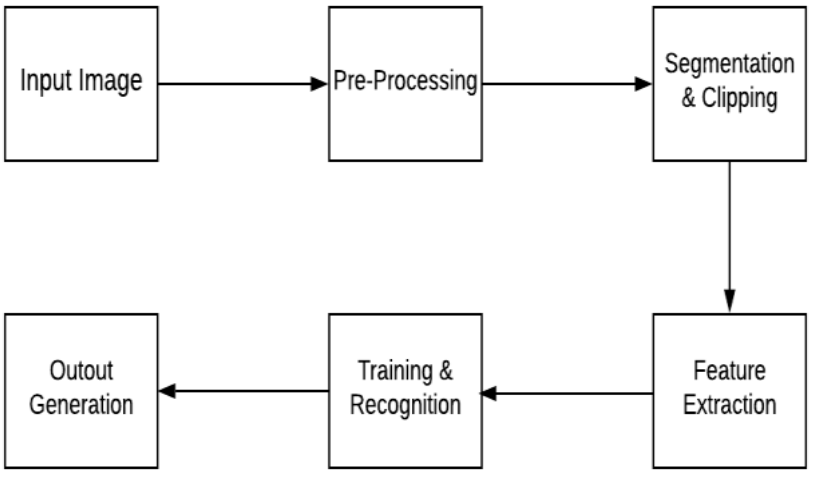
| Date | 13 October 2022 |
| Team ID | PNT2022TMID14249 |
| Project Name | **A Novel Method for Handwritten Digit Recognition System** |
| Maximum Marks | 4 Marks |

# Technology Architecture

The reason behind this document is to look into the

design possibilities of the proposed system, such as architecture design, block diagram, sequence diagram, data flow diagram and user interface design of the system in order to define the steps such as pre-processing, feature extraction, segmentation, classification and recognition of digits



## Architecture of the Proposed System

Illustrates the architecture diagram
of the proposed system. The proposed model contains the four stages in order to classify and detect the digits:

A. Pre-processing
B. Segmentation
C. Feature Extraction
D. Classification and Recognition

### *Pre-Processing:*

The role of the pre-processing step is it performs various tasks on the input image. It basically upgrades the image by making it reasonable for segmentation.
The initial approach to the training set images that are to be processed in order to reduce the data, by thresholding them into a binary image.

### *Segmentation:*

Once the pre-processing of the input images is completed, sub-images of individual digits are formed from the sequence of images.

### *Feature Extraction:*

After the completion of pre-processing stage and segmentation stage, the pre-processed images are represented in the form of a matrix which contains pixels of the images that are of very large size.

### *Classification and Recognition:*

In the classification and recognition step the extracted feature vectors are taken as an individual input to each of the following classifiers. In order to showcase the working system model extracted features are combined and defined using following three classifiers:

- K-Nearest Neighbour
- Random Forest Classifier
- Support Vector