Architectural Design

Project Name: Classification of Plant Seedlings

1. 1.The required datasets is given as an input to the specific required ML/AI model.
2. 2.The implementation is divided into Preprocessing data stage and classifier training stage
3. 3.The ***preprocessing data stage*** consist of :

**a] Resizing images:** As all images don’t have any specific size so to give input to neural network the all images must be resized.

**b] Creation of mask for images:** This returns the image mask i.e. matrix with shape(image\_height,image\_width). The matrix consists of only 0 and 1 values.

**c**] **Morphological Operations:** It is used to close all small holes in the images.

**d] Segmentation:** It is useful for image analysis and interpretation. Segmentation is partitioning an image into distinct regions containing each pixel with similar attribute.

**e] Sharpening:** It is used to increase contrast between bright and dark regions to bring out features.

**f] Splitting of data:** The data will split into training set and testing set as per requirement and after that testing data will split into 50% testing data and 50% validation data. Validation data is done to avoid overfitting.

4.The ***classifier training stage*** consist of:

**a]** Loading training and validation images into memory.

**B**] Defining network architecture and training parameters.

**c]** Defining loss function and accuracy.

**d]**Training the network, logging the validation/training loss and validation accuracy.

**e]** Plotting the logged values.

**f]** If accuracy is not high enough then return to step c

**g]** Save and freeze the trained network.