**Problem Statement1:** Image classification problem: Take/ create an image dataset of at least four animals. Increase dataset size using data augmentation method (e.g scale, rotate). Total images in the final dataset should be at least 1000. split the dataset into training and testing. Train any suitable image classification method (e.g. Deep ANN, CNN) on the training dataset. Improve the performance of the model using hyperparameter tuning. Evaluate model performance using the following performance measure viz accuracy, recall, precision, and F1 score. The use of Google Colab and Python is desirable.

**Problem Statement2:** Alphabet recognition: Take/ create an image dataset of the English alphabet. Increase dataset size using data augmentation method (e.g scale, rotate). Total images in the final dataset should be at least 1000. split the dataset into training and testing. Train any suitable image classification method on the training dataset. Improve the performance of the model using hyperparameter tuning. Evaluate model performance using the following performance measure viz accuracy, recall, precision, and F1 score. The use of Google Colab is desirable.

**Problem Statement3:** Digit recognition: Take/ create an image dataset of the English Digit. Increase dataset size using data augmentation method (e.g scale, rotate). Total images in the final dataset should be at least 1000. split the dataset into training and testing. Train any suitable image classification method on the training dataset. Improve the performance of the model using hyperparameter tuning. Evaluate model performance using the following performance measure viz accuracy, recall, precision, and F1 score. The use of Google Colab is desirable.

**Problem Statement4:** Image classification problem using transfer learning: Take/ create an image dataset of at least four animals. Increase dataset size using data augmentation method (e.g scale, rotate). Total images in the final dataset should be at least 1000. split the dataset into training and testing. Train any suitable pre-trained image classification model (e.g. VGG-16, ResNet50) on the training dataset. Improve the performance of the model using hyperparameter tuning. Evaluate model performance using the following performance measure viz accuracy, recall, precision, and F1 score. The use of Google Colab and Python is desirable.

**Problem Statement5:** Alphabet recognition using transfer learning: Take/ create an image dataset of the English alphabet. Increase dataset size using data augmentation method (e.g scale, rotate). Total images in the final dataset should be at least 1000. split the dataset into training and testing. Train any suitable pre-trained image classification model (e.g. VGG-16, ResNet50) on the training dataset. Improve the performance of the model using hyperparameter tuning. Evaluate model performance using the following performance measure viz accuracy, recall, precision, and F1 score. The use of Google Colab is desirable.