Assignment 1

1) To put a smile on your face :) .ipynb
Feature 1: Distance between the left and right corners of the mouth
Feature 2: Deviation in distances between the line joining the corners and top/bottom lip
Feature 3: Openness ratio of the mouth

2) assignment 655 LeNet.ipynb

Modified LeNet Model

Architecture:

- **Convolutional Layers:**
  - `conv1`: 1 → 6 channels, `3x3` kernel, `padding=1`
  - `conv2`: 6 → 16 channels, `3x3` kernel, `padding=1`
  - `conv3`: 16 → 64 channels, `3x3` kernel, `padding=1`
- **Pooling:** `MaxPool2d(2,2)` after each convolutional layer
- **Fully Connected Layers:**
  - `fc1`: 64*3*3 → 120
  - `fc2`: 120 → 84
  - `fc3`: 84 → 10
- **Activation:** Swish activation function

Results:

- **Test Accuracy:** 98.30%
- **USPS Dataset Accuracy (Unseen Data):** 75.98%

3) Robert edge detection.ipynb
rf model.ipynb
Applied hyperparameter tuning to optimize performance
Best Accuracy Achieved: ~70% (test data)
Training Data (60% split) Accuracies: Reported
Accuracies on 60% training data

4) objects.ipynb Used **Flood Fill Algorithm** to determine the number of objects (islands)