

# Mechatronics Engineering and Automation Program

CSE480: Machine Vision

Lab Assignment #05



## Task 1:

Implement a Convolutional Neural Network to classify the Fashion-MNIST dataset, using `keras.datasets.fashion_mnist.load_data()`.

1. Use convolutional layers followed by max pooling layers.
2. Train and test the CNN model.
3. Plot the training and validation loss and accuracy curves.
4. Display sample predictions with their true labels.

### Hint:

A shallow CNN architecture is sufficient. Train the model for 10 epochs only.

## Task 2:

Use a pre-trained CNN model (VGG16, ResNet50, or MobileNet) for image classification on CIFAR-10 dataset.

1. Load the pre-trained model without the top classification layer using `keras.applications`.
2. Freeze the convolutional base and add custom fully connected layers for CIFAR-10 (10 classes).
3. Train only the new layers and evaluate the model performance.
4. Compare the results with Lab Exercise 1 in terms of accuracy and training time.

### Hint:

Use `include_top=False` when loading the pre-trained model. Train for 5-10 epochs only.