

(414447) Lab Practice – IV

Few Guidelines for smooth conduction of University Practical Examination

- For University final practical examination, **consider assignments 2,3,4,5**. Don't keep assignment 1. **Assignment 6 can be skipped or kept depends on lab setup / configuration.**
- Before the LP-IV exam, make sure mandatory installation of required packages and datasets.
- Preferred datasets – MNIST, ECG, Credit Card, Animal, CIFAR10, Imagenet etc.
- Use Internet facility as and when required but with proper discussion between Internal and External examiners.
- Reduce the number of epochs for timely execution of programs.
- While evaluating the candidate's code and output, do it in step by step manner.
- Examine following part carefully:
 - His/her understanding of assignment, used dataset, code steps, code execution, number of errors(if any), output and related plots / graphs/ visualization.
- Assignment chits should be in details without any ambiguity.
- Reference steps for assignments chits:

2. Implementing Feedforward neural networks with Keras and TensorFlow

- a. Import the necessary packages
- b. Load the training and testing data (MNIST/CIFAR10)
- c. Define the network architecture using Keras
- d. Train the model using SGD
- e. Evaluate the network
- f. Plot the training loss and accuracy

3. Build the Image classification model by dividing the model into following 4 stages:

- a. Loading and preprocessing the image data
- b. Defining the model's architecture

- c. Training the model
- d. Estimating the model's performance

4. Use Autoencoder to implement anomaly detection. Build the model by using:

- a. Import required libraries
- b. Upload / access the dataset
- c. Encoder converts it into latent representation
- d. Decoder networks convert it back to the original input
- e. Compile the models with Optimizer, Loss, and Evaluation Metrics

5. Implement the Continuous Bag of Words (CBOW) Model. Give any 4-5 lines paragraph. Stages can be:

- a. Data preparation
- b. Generate training data
- c. Train model
- d. Output

6. Object detection using transfer learning. Use Suitable dataset. (This assignment is not compulsory)

- a. Load in a pre-trained CNN model
- b. Freeze parameters (weights) in model's lower convolutional layers
- c. Add custom classifier
- d. Train classifier layers on training data available for task
- e. Fine-tune hyper parameters