

**CSE-4155 Introduction to Machine Learning Lab**  
**4th Year 1st Semester, 2024 (Held in March, 2025)**  
**Department of Computer Science and Engineering, University of Dhaka**  
**Course Instructors: Dr. Muhammad Ibrahim, Associate Professor &**  
**Dr. Mosarrat Jahan, Associate Professor**

**Lab 4 (18-5-2025)**

The students are required to demonstrate performance of feed forward neural networks on image datasets using two libraries.

**Datasets**

- 1) <https://data.mendeley.com/datasets/hxsnvwy3r/1> (paper: <https://www.sciencedirect.com/science/article/pii/S2352340923000598>)
- 2) <https://data.mendeley.com/datasets/d7vzpcdzcw/3> (paper: <https://arxiv.org/abs/2211.01551>)

**Libraries for Neural Networks**

- 1) <https://scikit-learn.org/stable/>
- 2) <https://www.tensorflow.org/guide/keras>

**Programming Tasks**

- 1) Classify the leaf images and crime category.
- 2) Plot training and validation loss values and accuracy metric against the number of iterations.
- 3) Report the error metrics such as confusion matrix accuracy, precision, recall, f-1 scores.

**Writing Tasks**

- 1) Write (in handwriting) the pros and cons of keras and scikitlearn for neural networks.
- 2) Draw the architecture(s) of your neural network(s).

You can take help from the LLMs for understanding codes.