**Department of Computer Science**

**Forman Christian College University**

**COMP360: Introduction to AI**

**Spring 2024**

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Description automatically generated

**Lab 12: Classification through Neural Network Using Keras library.**

**Lab Instructions:**

* This is an individual Lab assignment. Each student must submit their own work.
* Download the files from tmoodle.
* Then populate the below mentioned files with your implementation.
* After you’re done with your implementation, rename it with your name and roll no. (Ali\_Abbas\_243123455) and upload them on tmoodle.

# Objective:

Implementation of Neural Network based Classifier using Keras library.

## Details:

1. Alzheimer’s disease is a long term neural degenerative disease which need to be detected at it’s earlier stage, in order to be managed by the professionals. (Dr. or Health care professionals).
2. In the provided file there is data file named as ***“12\_months\_joint.csv”,*** the neuropsychological medical data of patients***.***
3. The patients with ***“cov = 1”*** are Alzheimer patients and ***“cov = 0”*** are the stable patients.
4. You need to train your neural network model on this data so whenever it gets the medical readings of a new patient, should be able to predict if it is a ***“cov = 1” or “cov = 0”.***

## Manuel:

* Read the dataset “12\_months\_joint.csv” file in **“Pandas library”** which is the data of Alzheimer’s disease patients taken from ADNI.
* Prepare the data for test and train using ***train\_test\_split()*** method from the **“sklearn library”**.
* Implement ***Single layer perceptron*** neural network model in ***Keras***.
* Train your model on the above training data.
* Test the model on test data.
* Check the performance of the model using different parameter provided in the documentation of the model on the library. Parameters in the following:
* Try changing parameters of the neural networks at least for 5 times on different values.
* Report your observations the code file as comments.

**HINTS FOR CODE**

* Implementation should be on google colabs.
* Search and explore Sklearn for data train test split.
* Search and explore Keras for implementation of neural network models.
* Search and explore performance matrices for model’s quality measurement.