CS4287 Neural Computing

TEAM-BASED PROJECT

Specification V1

Semester 1: 2021-2022

J.J. Collins

6th October 2021 (Week 5)

1. Objectives

- To build a "traditional" Machine Learning (ML) pipeline using a "traditional" MuiltLayer Perceptron (MLP) for classification.
- Explore the impact of varying hyperparameter(s).

2. Submission

Submit a **pdf** describing

1. The Data Set
    a. Visualisation of some of the key attributes is necessary for a top grade
2. Any pre-processing such as normalisation applied to the data
3. The network structure and other hyperparameters
4. The Cost / Loss / Error / Objective function
5. The optimiser
6. Cross Fold Validation
7. Results – accuracy and/or precision and/or recall
    a. Include graph(s) if opting for a top grade.
8. Evaluation of the results
9. Impact of varying a hyperparameter(s)

Submit a **Jupyter notebook** with the code where:

- The book is named CS4287-Prj1-ID1-ID2
    - Where ID1 and ID2 are the student id numbers of the team members
- The first line in the book is a comment with names and ID numbers of the team members

- The second line in the book should be a comment stating if the code executes to the end without an error.
- The third line in the book should be a comment with a link to the original source where you opted to reuse an existing implementation.
- Every critical line of code MUST be commented by **YOU**. To demonstrate a deep understanding of that code.

3. Sample Data Repositories

Open Data Repositories

- UC Irvine Machine Learning Data Repository
- Kaggle datasets
- Amazon's AWS datasets

Metaportals that list open data repositories

- Data Portals
- Open Data Monitor
- Quandl

Other

- Wikipedia's listing of data repositories

4. Notes and Guidelines

- This assignment **constitutes 20%** of the total marks awarded for this module.
- You will work in a team of 2.
- **Submission deadline is 12:00 Wednesday 20th October (Week 7).**
- NO SUBMISSIONS WILL BE ACCEPTED AFTER THIS DATE!
- Submission is via the Sulis Assignment tool.
- You MAY be required to provide the lecturer with a walk through of your project submission during an interview in Teaching Week 8-10.
    - The project will be awarded an F grade if a walkthrough is not provided when requested to do so.
- Programming language is Python.
- A grading rubric will be published prior to the end of Week 5.