COS30018 - Option B - Task 4: Machine Learning 1

After you have completed Tasks 2 and 3, our code base has moved to version **v0.3**. We will now explore better ways to construct our Deep Learning model. Instead of having to construct the Deep Learning (DL) network manually by explicitly adding the layers of the network, it is possible to write a function that takes as input the number of layers, the size of each layer, the layer name (e.g., LSTM, RNN, GRU, etc.). In this task, you are also required to explore different DL networks and experiment with different hyperparameter configurations.

Your tasks this week:

1. Write a function that takes as input several parameters including the number of layers, the size of each layer, the layer name and return a Deep Learning model. Again, our reference project (**P1**) will give you an example of how this can be done. You can reuse this example, extend it, and most importantly, explain in detail all the code in your program.

2. Use the above function to experiment with different DL networks (e.g., LSTM, RNN, GRU, etc.) and with different hyperparameter configurations (e.g. different numbers of layers and layer sizes, number of epochs, batch sizes, etc.)

3. Upload your Task 4 Report (as a PDF file) to the project Wiki before the deadline and email your project leader to notify that it is ready for viewing and feedback.

Your Task 4 Report will contain the following details:

- Summary of your effort to implement the function to create DL models and explain the less straightforward lines of code, focusing especially on those lines that require you to do some research on the Internet (with proper references to the online resources you used).

- Summaries of the results of your experiments with different configurations of DL models and model training.

Due date: 11:59pm Friday 6 September 2024

Assessment Criteria:
You can get up to 10 marks for successfully completing Task B.4.