UNIVERSITY OF BATH

CM500335: Foundations and Frontiers of Machine Learning
Group Assignment 2 Template

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Name	Student ID	Contribution

Table 1: Individual Contribution in Groupwork

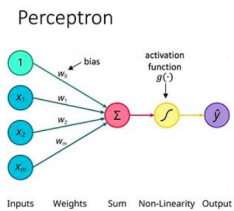

Figure 1: Single layer perceptron (University of Bath, FFoML, 2023)

1 Table of Contributions

2 Data visualisation (Task 1)

Explain the concept of Principle Component Analysis here..... Further, a figure should show the 2D projection of the MNIST dataset.

3 Perceptrons (Task 2)

Please provide an explanation of the necessity of Perceptrons and briefly discuss their predict and optimized functions. Additionally, it would be helpful if you could include a diagram illustrating a single-layer perceptron.

4 Multi-layer Perceptrons (Task 3)

Please provide an explanation of the MLP process and its significance. It would be helpful to include a visual representation, such as a graph with epochs on the x-axis and accuracy on the y-axis

5 CNN (Task 4)

Discuss CNN and then create one using convolutional layers with training and test datasets. Lastly, you can analyse the accuracy of the CNN.

6 Visualising CNN Outcomes (Task 5)

This section will display the Model created in task 4. You can choose a digit class from the MNIST dataset and view the resulting deep dream images.

7 Multi-task learning – Fashion MNIST Task 6)

Brief introduction of the topic. Define a loss function. Figures and results based on the different values of λ. After finishing this section,discuss the advantages and disadvantages of MTL.