Assessment Brief – Coursework

Module:	AINT351 Machine Learning	
Assignment Title:	Laboratory journal	
Individual/group assignment:	Individual assignment	
Submission Deadline:	1. Lab report P1.1:	5pm, 14th October 2016
	Return date:	Within 20 days
	2. Lab journal:	5pm, 13thJanuary 2017
	Return date:	Within 20 days
Submitted at:	DLE module site	
Contribution to module grade:	70%	

Assessed learning outcomes AINT351:

LO1. Have an understanding in the basic concepts in unsupervised, supervised and reinforcement learning.

LO2. Demonstrate the ability to implement and apply machine-learning techniques to make decisions and predictions on real data sets and real-time control scenarios.

Specification

This assignment requires you to keep a journal documenting your work for the module practicals. It is crucial to keep this journal up-to-date as you will not have sufficient time to do all the work towards the end of the module. The journal must include seven individual lab reports as detailed in Table 1. The detail of the individual lab practicals will be distributed as the module progresses.

Laboratory practicals set by Ian Howard	**Laboratory practicals set by Torbjorn Dahl**
P1.1 Generate and plot 1 and 2D distributions	
P1.2 Linear regression	**P2.1** Classification with Decision Trees
P1.3 KMeans clustering	**P2.2** Q-learning
P1.4 Naïve Bayes and Perceptron Classifier	**P2.3** Nearest Sequence Memory Learning

Table 1: Individual Lab Reports

Lab Reports

Each lab report should contain roughly 400 words and a set of images showing the plots requested by the individual practical exercises. Each report should have the following overall structure:

1. **Tasks –** In your own words you should describe the tasks you have undertaken and the actions you took, demonstrating that you have understood what the tasks involve. You should also describe your Matlab implementation of the machine-learning algorithm.
2. **Results –** Describe the results of the tasks undertaken, including relevant values/tables and any required plots with titles and any axes and lines labelled.
3. **Conclusions –** Analyse the results and discuss any implications, e.g.,:
    - What do the results say about the problem or data?
    - Do they conform to expectations or compare to 'standard' data such as flat or normal distributions or random performance?

Requirements

R1 Lab Report P1.1

In order to get quick feedback on writing lab reports, you must submit the first report on its own.

Lap report P1.1 must be submitted separately to the DLE as a PDF with embedded Matlab code you developed as part of the practical.

To tackle the laboratory assignments you must write your own Matlab code. Getting help to write the code or using other peoples code may result in actions against you under the University's regulations on examination and assessment offences[1].

R2 Lab Journal and Code

The final lab journal should contain all the individual lab reports detailed in Table 1. Each of them should conform to the format given above. It is important that you take your feedback from Lab Report P1.1 into account for the remaining lab reports in order to avoid losing marks. The final lab journal should be a single document with page numbers and a front page containing a table of content showing the number of the first page of each individual lab report included.

For the final submission, you must submit a single PDF containing the complete lab journal of ALL practicals, include P1.1. Please embed your Matlab code inline into the report – do not submit it as an extra set of files!

Marking Criteria

The total mark for this coursework will be the sum of the marks for each individual report with each report contributing 1/7 of the total coursework mark. The mark for each report will be awarded based on the criteria below:

Task (50%) – This will be based on the completeness and correctness of your Matlab source code and the task description in your report. It will also be based on how well these demonstrate an understanding of the purpose of each task.

Results (40%) – This will be based on the completeness and correctness of the results, including the clarity and quality of values, tables and plots.

Analysis (10%) – This will be based on the correctness and completeness of the analysis as well as the level of understanding demonstrated in interpreting the results.

The coursework will be marked anonymously, so it is important that you use only your student number and not your name on any files and documents submitted.

[1] Further detail on the University's assessment regulations can be found at https://www1.plymouth.ac.uk/essentialinfo/regulations/Pages/Plagiarism.aspx.