CCT College Dublin Continuous Assessment

Programme Title:	*BSc(Hons)CompIT Year 4*		
Cohort:	*Sept22*		
Module Title(s):	*Machine Learning for AI*		
Assignment Type:	*Individual*	**Weighting(s)**:	*40%*
Assignment Title:	*ML_CA1*		
Lecturer(s):	*David McQuaid*		
Issue Date:	*14th March 2023*		
Submission Deadline Date:	*10th April 2023*		
Late Submission Penalty:	Late submissions will be accepted up to **5** calendar days after the deadline. All late submissions are subject to a penalty of **10%** of the mark awarded. Submissions received more than 5 calendar days after the deadline above **will not** be accepted and a mark of 0% will be awarded.		
Method of Submission:	**Moodle**		
Instructions for Submission:	*Assessment must be submitted before 11.55pm 10th April 2023 as a Jupyter Notebook file*		
Feedback Method:	**Results released on Moodle**		
Feedback Date:	*3 weeks after final submission inc PMC/late submissions*		

Learning Outcomes:
Please note this is not the assessment task. The task to be completed is detailed on the next page.
This CA will assess student attainment of the following minimum intended learning outcomes:

MLO 1 - Distinguish between the different types of machine learning and the underlying concepts that enforce their limitations.
(Linked to PLO 1 (Stage 4 SLO 1))

MLO 2 - Understand how to use analytics for AI with the inclusion of labelled and unlabelled data.
(Linked to PLO 3 (Stage 4 SLO 3))

MLO 5 - Develop a machine learning strategy for a given domain, communicate this strategy effectively to peers and project stakeholders
(Linked to PLO 4, PLO 6 (Stage 4 SLO 4 / SLO 6))

Attainment of the learning outcomes is the minimum requirement to achieve a Pass mark (40%). Higher marks are awarded where there is evidence of achievement beyond this, in accordance with QQI *Assessment and Standards, Revised 2013*, and summarised in the following table:

Percentage Range	**CCT Performance Description**	**QQI Description of Attainment** **Level 6, 7 & 8 awards**
90% +	Exceptional	Achievement includes that required for a Pass and in **most** respects is significantly and consistently beyond this
80 – 89%	Outstanding	
70 – 79%	Excellent	
60 – 69%	Very Good	Achievement includes that required for a Pass and in **many** respects is significantly beyond this
50 – 59%	Good	Achievement includes that required for a Pass and in **some** respects is significantly beyond this
40 – 49%	Acceptable	Attains all the minimum intended programme learning outcomes
35 – 39%	Fail	Nearly (but not quite) attains the relevant minimum intended learning outcomes
0 – 34%	Fail	Does not attain some or all of the minimum intended learning outcomes

Please review the CCT Grade Descriptor available on the module Moodle page for a detailed description of the standard of work required for each grade band.

The grading system in CCT is the QQI percentage grading system and is in common use in higher education institutions in Ireland. The pass mark and thresholds for different grade bands may be different from what you have experience of in the higher education system in other countries. CCT grades must be considered in the context of the grading system in Irish higher education and not assumed to represent the same standard the percentage grade reflects when awarded in an international context.

Assessment Task
Students are advised to review and adhere to the submission requirements documented after the assessment task.

Scenario:
This is a data set which contains all the transactions occurring between 01/12/2010 and 09/12/2011 for a UK-based and registered non-store online retail. The company mainly sells unique all-occasion gifts. Many customers of the company are wholesalers.

Requirements

You are required to use the dataset contained within the file "E_Commerce_data.csv" and then perform the following analysis by testing at least 2 classification algorithms:

- Perform an initial analysis of the data (EDA) using python in your Jupyter notebook. Discuss your findings and what relevance they might have on your planned classification algorithms. **[0-20]**
- Perform any preparation of the data, that you feel is necessary, using python in your Jupyter notebook. Explain your rationale behind your data preparation and how it will assist you.**[0-30]**
- Create and implement at least 2 classification algorithms that will output a classification based on the Country: (class attribute) feature. Test these models and try to improve it as you see fit. Discuss your findings and final rational for choosing a particular classification algorithm.**[0-40]**
- Make a classification using your test data, using your final classification algorithm and comment on the accuracy differential between the training and testing set.**[0-10]**

Note

- All written work MUST be completed in Jupyter Notebook Markdown (please review "Jupyter Notebook Tutorial" Notes in Moodle if you are unsure of this).
- All data wrangling, analysis, and visualizations must be generated using python.
- All Code must be included in code blocks (As normal). No other upload will be accepted.
- All written work MUST be detailed in your Jupyter Markdown (NOT in code comments).

Submission Requirements

All assessment submissions must meet the minimum requirements listed below. Failure to do so may have implications for the mark awarded.
All assessment submissions must:

- Be submitted before **11.55pm 10th April 2023** as a Jupyter Notebook file.
- The Jupyter Notebook File Must be saved as "YourName_ML_CA1.ipynb", and the dataset you have used.
- Be submitted by the deadline date specified or be subject to late submission penalties
- Be submitted via Moodle upload
- Use Harvard Referencing when citing third party material
- Be the student's own work.
- Include the CCT assessment cover page.

Additional Information

- Lecturers are not required to review draft assessment submissions. This may be offered at the lecturer's discretion.
- In accordance with CCT policy, feedback to learners may be provided in written, audio or video format and can be provided as individual learner feedback, small group feedback or whole class feedback.
- Results and feedback will only be issued when assessments have been marked and moderated / reviewed by a second examiner.
- Additional feedback may be requested by contacting the lecturer, Additional feedback may be provided as individual, small group or whole class feedback. Lecturers are not obliged to respond to email requests for additional feedback where this is not the specified process or to respond to further requests for feedback following the additional feedback.
- Following receipt of feedback, where a student believes there has been an error in the marks or feedback received, they should avail of the recheck and review process and should not attempt to get a revised mark / feedback by directly approaching the lecturer. Lecturers are not authorised to amend published marks outside of the recheck and review process or the Board of Examiners process.
- Students are advised that disagreement with an academic judgement is not grounds for review.
- For additional support with academic writing and referencing students are advised to contact the CCT Library Service or access the CCT Learning Space.
- For additional support with subject matter content students are advised to contact the CCT Student Mentoring Academy
- For additional support with IT subject content, students are advised to access the CCT Support Hub.