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**CCT College Dublin Continuous Assessment**

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| **Programme Title:** | Data Analytics / AI Higher Diploma | | |
| **Cohort:** | Sep 2023 Part-Time | | |
| **Module Title(s)**: | Strategic Thinking | | |
| **Assignment Type:** | Individual | **Weighting(s)**: | 60 % |
| **Assignment Title:** | CA 3 Final Submission | | |
| **Lecturer(s)**: | James Garza [james@cct.ie](mailto:james@cct.ie) | | |
| **Issue Date:** |  | | |
| **Submission Deadline Date:** | 10th May 2024 23:59 | | |
| **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:** | Your work must be uploaded to Moodle.   * Report 5000 words (Word Only) / Poster presentation A1 size (.pptx, .ppt or PDF) / Jupyter Notebook code (.ipynb) * ZIP or RAR files will not be accepted. Files must be submitted separately. | | |
| **Feedback Method:** | **Results posted in Moodle grade book** | | |
| **Feedback Date:** |  | | |

**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:

1. Critically evaluate the relationship between information technology infrastructure and organisational

competitive advantage.

2. Critically analyse and select open source and proprietary software with a view to developing IT

solutions for business and business-related IT problems.

3. Utilise tools of strategic business analysis to evaluate the current macro and micro business

environment with a view to formulating future action plans.

4. Research emerging technologies and critically evaluate their impact on business and business information systems in general.

5. Understand the relationship between data gathering / utilisation and business intelligence and its impact on industry policy.

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** | **Level 9 awards** |
| 90% + | Exceptional | Achievement includes that required for a Pass and in **most** respects is significantly and consistently beyond this | 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 | 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 | Attains all the minimum intended programme learning outcomes |
| 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 | 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 | 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**

This assessment aims to evaluate your ability to apply project management methodology to evaluate and enhance the capstone project developed in semester one. You should be able to identify the strengths and weaknesses of the capstone project from semester one and make improvements based on additional knowledge. Additionally, machine learning results should improve based on understanding the dataset, which machine learning models are best used, and why. Improving the model’s performance with hyper-tuning parameters with an understanding of the performance metrics and dataset. Finally, validate the results and report on your findings.

The final report should build on from semester one and include your findings of machine learning implementation, results validation, model comparison, and any future recommendations. The report should be presented in a clear and concise manner, and it should demonstrate your ability to use a project management methodology.

The poster presentation should present your findings in a clear way for stakeholders.

You are now required to present your findings and initial results with the aid of 4 elements: a poster presentation, report paper, and artefact.

You will create a **maximum 5-minute** presentation where you will include the following items. Remember that this is a guideline. You can include other items not mentioned below or remove items irrelevant to your project as long as you are within the allocated 5 minutes.

* + Introduction.
  + Business description.
    - Hypothesis.
    - General goal.
    - Success criteria/indicators.
  + Technologies used.
    - Models
    - Libraries
    - Machine Learning Algorithm **(at least 3 used and compared is required).**
    - **Hyperparameter tuning and cross-validation (required).**
    - etc...
  + What has been accomplished so far?
    - **Data: datasets, source, attributes, dimensions, descriptive statistics, data visualisation, data preparation (required).**
    - Models.
  + Challenges encountered.
    - Including strategies used to overcome them.
  + Results and analysis… next steps.
  + Conclusion.

**\*\* Note that there should be NO code on the poster.**

* You will also have to finalise the report that includes the following:
  + All the elements that apply from the presentation described above.
  + Citations and references where necessary (i.e., where you make claims or statements about technology and its performance).
  + Professional structure, clear, easy to follow, with coherent flow between sections.

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

Further details of the assessment:

1. **A GitHub repo must be created, and the Jupyter Notebook and report Word document must be put into a GitHub repo for version control. The lecturer will be added to the repo as a collaborator. GitHub's activity tracking ensures transparency in contributions. There should be at least 20 to 30 commits throughout the semester.**
2. [Example Poster link](https://www.posterpresentations.com/free-poster-templates.html)
3. **Exploratory data analysis of your dataset and use descriptive statistics.**
4. **Use at least three hypertuned and cross-validated machine learning algorithms implemented.**
5. **Support your analysis with references and properly reference ALL sources that you have used. WARNING – If you do not support your work, you will not receive a high mark!**
6. **The order of presentations will be decided by your lecturer.**
7. You should record your presentation, which can be shown in class to your peers or presented live, followed by a brief Q&A.
8. TIMING: You may lose marks if your presentation is too short or longer than the specified time limits.
9. NOTE – IF YOU ARE UNABLE TO RECORD YOUR PRESENTATION, THEN YOU WILL BE GIVEN THE OPPORTUNITY TO PRESENT 'LIVE' DURING THE CLASS TIME. THE SAME SLIDES MUST BE PRESENTED THAT WERE SUBMITTED.
10. (You must attend the session when your presentation is scheduled – even if you have pre-recorded it. If you do not attend, then you will score zero for your presentation)
11. WORD COUNT: 5000 words (Word or PDF)
12. If your report is too short or long, you may *lose up to 10% of your marks*!
13. If you go over the allotted time, you may lose up to 10% of your marks.

* The use of generative AI tools (e.g. ChatGPT, Dall-e, etc.) is permitted in this assignment for the following activities:
  + Brainstorming and refining your ideas;
  + Fine-tuning your research questions;
  + Finding information on your topic;
  + Drafting an outline to organise your thoughts; and
  + Checking grammar and style.
* The use of generative AI tools is not permitted in this course for the following activities:
  + Impersonating you in classroom context
  + Completing group work that your group has assigned to you
  + Writing a draft of a writing assignment
  + Writing entire sentences, paragraphs or papers to complete class assignments.
* You are responsible for the information you submit based on an AI query. Your use of AI tools must be properly documented and cited.
* Any assignment that is found to have used generative AI tools in an unauthorised way will be subject to college disciplinary procedures as outlined in the QA Manual.
* When in doubt about permitted usage, please ask for clarification.

**Marking Scheme Summary**

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| **Description** | **Weighting** |
| Artefact.   * Data has been properly pre-processed. * Data visualisation tools have been used. * Algorithms used are suitable for the task. * Models have been fine-tuned to increment accuracy. * Code is well structured and commented. * The code runs properly. | 20 |
| Presentation.   * Poster is comprehensive and includes all the relevant information. * Data/data processing/feature engineering has been explained correctly with the aid of visualisation tools and metrics. * Methodology and results have been explained properly. * Able to handle questions. * Poster presentation covers all relevant topics of the project. | 30 |
| Report Paper   * The report is comprehensive and includes all the relevant technical information. * Data/data processing/feature engineering has been explained correctly with the aid of visualisation tools and metrics. * Methodology is sensible and explained appropriately. * Multiple models have been discussed, compared, and contrasted. * Analysis of results and conclusions are sensible. * Referencing and citations have been done correctly. | 50 |
| * Poor referencing, spelling, grammar, and layout will incur marking penalties. |  |
| **TOTAL** | **100** |

**Submission Requirements**

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

* Include a report paper of about 5,000 words in Word format ONLY.
* Poster used in the presentation in PDF or PPTX format size A0.
* Jupyter Notebook(s) and dataset(s).
* ZIP or RAR files will not be accepted. Files must be submitted separately.
* You must submit your work by the deadline date specified. Otherwise, you will be subject to late submission penalties.
* Use [Harvard Referencing](http://40.115.124.2/sp/subjects/guide.php?subject=harvardref) when citing third-party material.
* Make sure you submit your own work**. No plagiarism will be tolerated.**
* Include the CCT assessment cover page.

**Additional Information**

* Avoid having slides that are heavy on text or code. Remember that slides are meant to be a tool for the presenter and the audience as a guide for the presentation.
* In any situation, the lecturers are entitled to call you in for further explanation of your code/report/slides.
* 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 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](http://learningspace.cct.ie/subjects/index.php).
* For additional support with subject matter content students are advised to contact the [CCT Student Mentoring Academy](https://moodle.cct.ie/mod/forum/view.php?id=55148)
* For additional support with IT subject content, students are advised to access the [CCT Support Hub](https://moodle.cct.ie/course/view.php?id=1861).