

Graduate Certificate in Artificial Intelligence with Machine Learning
AIGC 5503 – AI For Business Decision Making
Summer 2025

Final Project

Due on: August 13, 2025

Plagiarism and the use of any form of generative AI will result in a zero grade for this assignment at the least. Please always cite your sources.

Submission guidelines:

- Submit a copy of your project report. (PDF file format)
 - Submit a copy of your Python code (PDF file format & Jupyter Notebook file format).
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Assignment Description:

You are a senior data scientist tasked with recommending a data analysis system to improve the business decision-making of the organization by developing a system that can help automate the production of business insights through AI and visualization dashboards.

You will present your report to the Director of Data Intelligence, proposing the AI solution. You are tasked with comparing and contrasting different AI solutions and recommending the appropriate AI solution based on your task.

Task Breakdown:

- For this assignment, you will select an area of a business decision-making problem (i.e. customer retention, increasing sales, marketing campaigns, inventory management, etc.).
- Find and select a publicly available dataset for your business decision-making problem.
- Select **two** AI algorithms/models/tools to address the decision-making problem with the following conditions:
 - Select one algorithm that was covered during the course modules
 - Select one algorithm **NOT** covered during the course (Note: You may select the algorithm you selected for your case study in Assignment 2).
 - Both algorithms must be of a similar ML category (i.e. both clustering, or time series, etc.)
- Pre-process data and implement both AI solutions
- Compare and contrast both AI solutions
 - Identify the advantages and disadvantages of both AI solutions and the data-driven insights produced
- Provide a recommendation for the data analysis system based on your comparison

- Recommend the preprocessing pipeline
 - Suggest one of the AI algorithms to be used by the system
 - Recommend dashboards (plots, figures) that the platform will produce to aid in decision-making.
- Prepare 2-3 minute summary presentation of your recommendations that you will present during a 10-15 minute one-on-one meeting.

Report Deliverable

1. Report Structure

Your proposal should include the following sections:

a. Title

- Provide a title for your project
- Include your name and student number

b. Introduction

- **Problem Statement:** Provide a brief description of the selected business decision-making problem and the desired insights that the AI solution should provide to aid in the decision-making process.
- **Dataset:** Provide a brief description of the selected publicly available dataset and how it is suitable for the business decision-making problem.

c. AI Algorithms Comparison

- Provide a brief explanation of both AI algorithms.
- Evaluation Method/Metric used to compare the algorithms.
- The Advantages and Disadvantages of each algorithm.

d. AI System Recommendation

- **Preprocessing Pipeline:** Explain the preprocessing pipeline of the AI system, outlining the reason for each component in the pipeline.
- **AI Algorithm:** Provide a detailed explanation and supporting evidence on the recommended AI algorithm/model/tool.
- **Dashboard:** Provide examples of dashboards that the system will produce and insights that can be gathered from the information presented in the dashboards (i.e. how would a user interpret the dashboard information)

f. Limitations and Ethical Considerations

- Outline some potential limitations to the proposed recommendations and potential solutions for future upgrades to the system.
- Briefly explain any potential ethical issues relating to the proposed AI systems and steps to mitigate the concern.

g. References

- List of citations

2. Report Format

- Length: 2-3 pages (Not Including Title and Reference section). Anything above 3 pages will not be graded.
- Formatting: Use a standard academic format with clear headings for each section.

Citation: Properly cite all sources, including datasets, papers, and tools, using APA or IEEE style.

Oral Examination:

You will present your work during an 10-15 minute meeting. During the meeting, you will have 2-3 minutes to provide a summary of your recommended system. A series of questions relating to your report and implemented code will then be asked.

Evaluation:

- See Final Project Marking Rubric