<Capstone Project Name>

Design Document

<student and mentor names>  
<submission date>  
<version>

# Introduction

In the introduction, you provide an overview of the document, its purpose, and scope. Then, you summarize briefly the main design decision you make for your system or experiment.

# Design Considerations

In this section, you state the areas that may affect the requirements, design, or operational concept of your projects. Key areas for design considerations to be addressed are

1. Assumptions
2. Constraints
3. System Environment
4. Design Methodology

# System Architecture/Design Overview

This section can be thought of as a fundamental organization of the system and its components. In this section, you provide [the system design and architecture diagrams with both high-level and low-level components/modules](https://drive.google.com/file/d/1JqrchfPR3QGdSlQad9nqFMWS9jpuhPsW/view?usp=sharing).

# Data Design

Include descriptions, format, and flow diagrams of the data used for the project.

# Implementation Overview

Include an overall workflow diagram that clearly shows how your system is intended to operate at the module level; you may include, as necessary:

1. A domain model (e.g., UML, ERD, etc.);
2. A dataflow diagram for the overall system or for each use case (e.g., UML sequence diagrams);
3. Component design: UML package diagrams, UML static structure diagrams, Javadoc APIs;
4. Interface design: site maps, screenshots, storyboards, service APIs.
5. Activity/Entity/Class/Sequence Diagrams

# Design Models

The section of the design documents can be thought of as expansions of parts of the overview diagram. Which design models are relevant depends on the type of project. Examples are

1. Detailed Explanation of the System’s Object Model
2. Detailed Explanation of the System’s Data Flow model
3. Detailed Explanation of the System’s feature engineering for data
4. Detailed Explanation of the System’s machine learning training and testing setup
5. Detailed Explanation of how additional/external data/services are integrated to help satisfy the requirements

# Test Design

Describe the procedure to test the results' models, metrics, data scheme, etc. Then, present the results in a result table.

# Deployment Model

Consider how and where the project will be deployed and outline your deployment strategies in this section.

# Risks/Challenges

Explain which risks and challenges you anticipate over the course of the project and how you intend to tackle them. Please refer to the resource on **Risk Types on OLI** for examples of risks to be considered.

# Tools & Dependencies

Explain the libraries, datasets, services, or other resources your system depends on. Provide information on pre-existing code repositories, versions of the libraries, versions of Python/Java, etc., and explain the rationale for why use such libraries.

# Terminology, Definitions, Acronyms, and Abbreviations

Include all definitions, acronyms, and abbreviations necessary to understand your solution easily. You can use a table to organize your definitions if necessary. For example, define the NFRs, the metrics that are going to be used in the project, words associated with Data Structures (e.g., what is a feature vector?), terms used in the project (e.g., what is meant by a classifier?), etc.

# References

[C&I, 2016] Complicated & Important, If you have many references, they should go into a bibliography appendix such as this one!, Proceedings of Whatever, 67-98, 2016.

[Also-Important, 2016] Also-Important et al., How you format these individual references is not that important as long as it is consistent, Journal of Meaningful Studies, Vol. 16, 112-120, 2016.

References should follow the IEEE standards. Follow [this guideline](https://ieee-dataport.org/sites/default/files/analysis/27/IEEE%20Citation%20Guidelines.pdf) to cite references.

# Reflection

Use this section to write a brief description of what you learned in the process of making this document: what will I do differently next time, what I learned from working in a team, etc. Then, reflect on the decision-making process when making this document. Reflection points to consider:

1. What is your rationale for choosing this design?

2. Did you consider any alternate designs but had to let go? Why did you pick the current design over the discarded one?

3. Explain the design process the team adopted. How did you go about it? Was it self-evident? How did you resolve conflicts?

4. What would you do differently next time?

# Appendix

This section contains any additional information you’d like to preserve in this document for context. For example, consider including a Glossary, long diagrams, data schemes, or any additional materials you discovered or created in the process of making this document.

# Changes To Previous Deliverables

Use this section to outline any changes you had to make in your previous documents, the Vision Document and Requirements Document, because of your activities as part of this deliverable. It is also recommended to make the changes right now to ensure there is no backlog for the last submission. In addition, it is a good idea to use the traceability you added in the previous documents to refer to them here.

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# Writing, Style, and Formatting

### Overall writing requirements

Make sure your writing is brief and easy to understand. 1 to 3 paragraphs per section. The entire document (not including references and appendix) should be about 2 to 5 pages. The document should be versioned. Please take time to edit and proofread your work before submitting it. Also, please include legends for all diagrams and ensure diagrams are properly formatted for readability.

### As always, if you produce subsections

Make sure that you use the proper sub-heading style.[[1]](#footnote-0)

### The same goes for Sub-sub-headings

This is important because the documents you produce may be read by people who are not close collaborators and for whom a well-structured document is helpful to understand things. Also, remember to cite the things you use [C&I, 2016].

1. It may not appear necessary at first but it is part of learning how to communicate your work. Sometimes you may want to add auxiliary information into footnotes such as this one. Examples include technical things like URLs, reference numbers of any kind or citations to papers and external documentation. [↑](#footnote-ref-0)