CSCI218: Group Project
School of Computing and Information Technology
University of Wollongong
SIM Session 1, 2026

1. Introduction

The goal of this assignment is to help students
1. Understand the fundamental concepts and principles in various areas of AI;
2. Appropriately choose and implement the classic AI methods and algorithms;
3. Design, create and assess an AI system for a specific task;
4. Learn to work in a team environment.

The following topics have been provided for selection. Meanwhile, students are welcome to propose new topics that are interesting to them.

Machine Learning (UCI data sets)

1. Adult data set: https://archive.ics.uci.edu/ml/datasets/Adult
2. Dry Bean data set: https://archive.ics.uci.edu/ml/datasets/Dry+Bean+Dataset
3. Rice data set: https://archive.ics.uci.edu/ml/datasets/Rice+%28Cammeo+and+Osmancik%29
4. Wine quality: https://archive.ics.uci.edu/ml/datasets/Wine+Quality
5. Bank marketing: https://archive.ics.uci.edu/ml/datasets/Bank+Marketing
6. Abalone data set: https://archive.ics.uci.edu/ml/datasets/Abalone

Computer Vision (with some weblinks as example)

1. Bird species recognition: https://paperswithcode.com/dataset/cub-200-2011
2. Car model recognition: https://paperswithcode.com/sota/fine-grained-image-classification-on-stanford
3. Airplane model recognition: https://paperswithcode.com/sota/fine-grained-image-classification-on-fgvc
4. Dog breed recognition: https://paperswithcode.com/sota/fine-grained-image-classification-on-stanford-1
5. Scene recognition: https://paperswithcode.com/sota/scene-recognition-on-mit-indoors-scenes
6. Face-based identity recognition: https://paperswithcode.com/dataset/orl ; https://paperswithcode.com/task/face-identification
7. Facial expression recognition: https://paperswithcode.com/task/facial-expression-recognition
8. Hand gesture recognition to play games: https://paperswithcode.com/task/hand-gesture-recognition ; https://arxiv.org/abs/2204.11119
9. Style transfer for images: https://arxiv.org/pdf/2209.11224.pdf ; https://www.mmlab-ntu.com/project/vtoonify/ ;

Natural Language Processing (with some weblinks as example)

1. Spam email detection: https://link.springer.com/article/10.1007/s10462-022-10195-4
2. Sentiment analysis: https://link.springer.com/article/10.1007/s10462-022-10144-1
3. Part-of-speech tagging: https://journalofbigdata.springeropen.com/articles/10.1186/s40537-022-00561-y
4. Machine Translation: https://arxiv.org/abs/1901.01122 ; https://arxiv.org/pdf/2012.15515.pdf
5. Word embedding: https://arxiv.org/pdf/1901.09785.pdf ; https://towardsdatascience.com/word-embeddings-in-2020-review-with-code-examples-11eb39a1ee6d
6. Building a chatbot: https://arxiv.org/abs/2201.06657 ; https://link.springer.com/chapter/10.1007/978-3-030-22354-0_47

Others (with some weblinks as example)

1. Travelling salesman problem in NSW: https://medium.com/@siddhantmittal_78686/traveling-salesman-a-survey-paper-c30f5edf1af8 ; https://towardsdatascience.com/how-to-solve-the-traveling-salesman-problem-a-comparative-analysis-39056a916c9f
2. Understand AlphaGo: https://medium.com/betacom/the-game-of-go-and-alphago-6fc3d10b821 ;

The following points give you an idea of what is expected
1. Form a group of 3-5 students.
2. Search for papers from UOW library and/or the Internet on the topic your group has chosen.
3. A review paper is usually a good starting point to learn the background of the topic.
4. Quickly read about the topic to give you an idea of what it is about.
5. **You are free to utilise any resources that you could find to help you complete this project. Meanwhile, you must reference them clearly to avoid any issues related to plagiarism.**
6. Once choosing the topic, your group is required to effectively work together to carry out the project. Every member shall make technical contributions to this project.

2. What to be submitted

Each group shall produce a set of slides that is suitable for a presentation.

Each group should meet with the lecturer at least once before submitting the work.

Deliverables:

- **Slides**: You are to create a set of presentation slides which are suitable for presentation. The slides must be submitted via the submission link on Moodle. Your group must submit the slides on or before the due time either as a PDF or PPT file. Only one member from each group is to submit the slides.
- **Presentation** (15 minutes, including 3 minutes for Q&A): The presentation will be held during the time indicated in Moodle. Each group is to present their findings. For the presentation your group must use the slides that has been submitted. All members of a group are required to participate in the presentation and present one part of it.
- Your group can choose either online presentation or offline presentation. The time and venue will be announced on Moodle.
- Your presentation and slides will be assessed. (marking guidelines will be provided on Moodle).
- You do **NOT** need to submit a pdf report. However, your group may be asked to show source code and demonstration when needed.
- All students shall attend (online or offline) all the presentations including those delivered by other groups.

Your slides shall consist of the following parts:

1. **The first slide** must show the title of this project (with other information you would like to add)
2. **The second slide** must show the full student name, student number, percentage of contribution of each group member, and the key tasks completed by each group member.
3. **Introduction**: talk about this project, its background, the aims, the significance, etc.
4. **Literature review:** review what has been done in the literature (techniques, approaches, methods, the performance, etc.) for this or similar projects. Talk about their advantages and drawbacks.
5. **Our method:** describe your approach and method to complete this project. Introduce the design of your implementation and the structure of the code you have used or developed. Particularly, highlight any changes or improvements you have made if you use the code from a third party.
6. **Our result:** describe the result of your project, including experimental setting, the datasets, the performance, the examples of results, and so on. Particularly, discuss and analyse the results (for example, for what cases does your method work best or worst? Are you satisfied with the result? Any ideas to further improve it?)
7. **Conclusion:** Summarise what your group has done and your findings related to this project. Point out the future directions that your group could follow to make this project better.

3. Plagiarism

A plagiarised assignment will receive a zero mark and be penalised according to the university rules.

--- END ---