

COMP5950/8260 AI System Implementation

AI System Project

Group (60% of total marks)

Instructor Team: Dr. Matteo Migliavacca (mm53@kent.ac.uk)
& George Remzi (G.Ramzi@kent.ac.uk)

Duration: Monday TW13/KW25 – Monday TW24/KW36 (KW: Kent Week, TW: Teaching Week)

Group Size: 4-5 students

Description:

Develop an AI/ML system for your chosen application domain. The project should involve machine learning on a public dataset (e.g. taken from Kaggle/UCI) or the development of an artificial intelligent agent trained on a simulated environment (e.g. Open AI Gym). You are encouraged to experiment with different techniques for the implementation, however the project should use one of the baseline techniques presented during the lectures and classes for either the implementation or for performance comparison.

List of baseline techniques: PCA, Decision Trees, Random Forest, Neural Networks, Genetic Algorithms, Neuroevolution, Deep Learning, Reinforcement Learning.

Timeline:

TW13: Form groups, discuss application domain and overall project ideas. Email group name and members at mm53@kent.ac.uk and G.Ramzi@kent.ac.uk

TW16: Research existing approaches, high level design, techniques and technology exploration, feasibility study.

Submission by Thursday 23:55 – Submit a 1-page overview to instructors on Moodle for project approval. It should include: PM, members, and a project brief composed of project goals, requirement list, feasibility analysis, project plan.

TW16-19: (*First sprint*) Fully working pipeline draft for proof-of-concept.

TW20-23: (*Second sprint*) Refinement of PoC, comparison with baseline, report writing and presentation. **Final submission on Friday 28th March 2025 23:59** - Submission of report, presentation, and source code. Look on Moodle for submission instructions.

TW24: **Presentation/Demo on Monday 31st March/Friday 4th April 2025 (class hours)**

Deliverables:

1x Report (Research, Design, References) You are to hand up a report as a group (max 15 pages) excluding references. Your report should include but not be limited to: rationale, architectural design, implementation, performance evaluation including runtime performance, project management, development flow. The report should include a Cover page with each member Student ID, Name and Email. References should adopt the Harvard Style.

1x Source Code: project sources should be hosted on git.cs.kent.ac.uk. We expect regular commits from each team member.

1x Presentation As a group you are expected to deliver a 10-minutes presentation of your work to the class.

Marking Scheme (60 marks):

Presentation 20/60
Development 20/60
Report 20/60

Late Submissions and Group issues

There is penalty for late work submission according to standard submission deadlines.

You are to report to the Instructor Team if there are any problems in teamwork such as breakdown of communication or non-contributing members.

Plagiarism and Duplication of Material

Senate has agreed on the following definition of plagiarism:

“Plagiarism is the act of repeating the ideas or discoveries of another as one's own. To copy sentences, phrases or even striking expressions without acknowledgement in a manner that may deceive the reader as to the source is plagiarism; to paraphrase in a manner that may deceive the reader is likewise plagiarism. Where such copying or close paraphrase has occurred the mere mention of the source in a bibliography will not be deemed sufficient acknowledgement; in each such instance it must be referred specifically to its source. Verbatim quotations must be directly acknowledged either in inverted commas or by indenting.”

The work you submit must be your own, except where its original author is clearly referenced. We reserve the right to run checks on all submitted work in an effort to identify possible plagiarism, and take disciplinary action against anyone found to have committed plagiarism.

When you use other peoples' material, you must clearly indicate the source of the material using the Harvard style (see <http://www.kent.ac.uk/uelt/ai/styleguides.html>).

In addition, substantial amounts of verbatim or near verbatim cut-and-paste from web-based sources, course material and other resources will not be considered as evidence of your own understanding of the topics being examined.

The School publishes an on-line Plagiarism and Collaboration Frequently Asked Questions (FAQ) which is available at: <https://www.cs.kent.ac.uk/students/plagiarism-faq.html>