IN-COURSE ASSESSMENT (ICA) SPECIFICATION

Module Title: **Artificial Intelligence Foundations**	Module Leader: **Dr Alessandro Di Stefano** Module Code: **CIS4049-N**
Assignment Title: **AI solution**	Deadline Date: **07/01/2025** Deadline Time: **5:00pm** **Submission Method:** Online (Blackboard) ☑ Middlesbrough Tower ☐

Online Submission Notes:

- Please follow carefully the instructions given on the Assignment Specification
- When Extenuating Circumstances (e.g., extension) has been granted, a fully completed and signed Extenuating Circumstances form must be submitted to the School Reception or emailed to scedt-assessments@tees.ac.uk.

Central Assignments Office (Middlesbrough Tower M2.08) Notes:

- All work (including DVDs etc) needs to be secured in a plastic envelope or a folder and clearly marked with the student's name, number and module title.
- An Assignment Front Sheet should be fully completed before the work is submitted.
- When Extenuating Circumstances (e.g., extension) has been granted, a fully completed and signed Extenuating Circumstances form must be submitted to the School Reception or emailed to scedt-assessments@tees.ac.uk.

FULL DETAILS OF THE ASSIGNMENT ARE ATTACHED INCLUDING MARKING & GRADING CRITERIA

Artificial Intelligence Foundations

CIS4049-N

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In-course Assessment

Overview of the Requirements

Assessment for **Artificial Intelligence Foundations** (CIS4049-N) requires you to implement the Artificial Intelligence (AI) techniques to a case study of your choice and critically evaluate the selection, implementation, and experimental validation of the results.

The implemented AI solutions will be assessed by one in-course assessment consisting of:

- A **written report** with a word limit of **4,000 words** and an **artefact** or examples. Your report should investigate and document the implementation of AI techniques to a real-world case study of your choice, where you are required to critically evaluate and reflect on the selection and the application of AI techniques, justify the utilisation of these techniques, and experimentally validate the results. The artefact consists of either a single AI solution or a portfolio of work (usually 2-3), demonstrating application of the AI techniques to one or a small collection of real-world case studies chosen by students (see section 'Requirements for the AI solution' for further details). Moreover, students are required to produce brief voice over **walk-through video** (between 2 minutes and 5 minutes), showing and demonstrating what has been done in the ICA. It is expected that the student will introduce his work and discuss what has been achieved. It is also recommended that the student highlights the issues and limitations encountered during implementation **[100 points].**

Further details are given below and there will be a supporting briefing session on the ICA.

Submission of materials must be made via Backboard to the link provided. The submission date is specified in the submission schedule.

Requirements for the AI solution

Your assessment requires you to produce a **written report** and a **walkthrough video**:

AI solution (report equivalent to 4,000 words and walkthrough video) [100 points]

Design and implement AI techniques to a real-world case study of your choice. Provide a reflection on your module experience and how you met the in-course assessment

requirements. Your **report** should document your learning and personal development, providing evidence (e.g., screenshots or images of practical or in-course assessment work) where appropriate to support your solution. You should concentrate on what you learned and how your knowledge and skill developed as you addressed the in-course assessment and module content. Document the challenges you encountered and what you did to resolve them. You could also consider how your experience may affect your future studies and employment options or choices. You could also design a personal development learning plan based on your self-evaluation. This should be in the form of a MS Word or PDF document or an alternative document in a readable format. The artefact consists of either a single AI solution or a portfolio of work (usually 2-3), demonstrating application of the AI techniques to one or a small collection of real-world case studies chosen by students (see section 'Requirements for the AI solution' for further details). Moreover, you will also upload the file containing all the **source code** of your solution (e.g., the .r and/or .py file(s)), and please submit also the other files used for your experiments in a readable format.

The student is also required to produce a voice over brief **walk-through video** (2-3 minutes), showing and demonstrating what has been done in the implemented AI solution. It is expected that the student will introduce his work and discuss what has been achieved. It is also recommended that the student highlights the issues and limitations encountered during implementation.

This in-course assessment will meet all the learning outcomes: 1, 2, 3, 4, 5, 6, 7, 8.

Learning Outcomes

Personal and Transferable Skills (PTS)

1. Effectively communicate and evaluate complex information related to AI theory.

2. Use personal reflection to analyse self and own actions in the course of working as a group or individual in a real-world AI case study.

3. Reflect upon, take ownership of and critically appraise the outcome of an implemented solution against a given brief for a simulated or real-world problem using appropriate AI technologies.

Research, Knowledge and Cognitive skills (RKC):

4. Critically analyse a solution to a given real world case study.

5. Utilise effectively AI software and techniques in problem solving.

6. Critically appraise of recent scientific literature in AI in the context of a given scenario.

Professional skills (PS):

7. Critically evaluate the commercial risks and opportunities related to solving an AI problem.

8. Autonomously evaluate improvements to performance drawing on innovative or best practice in applied AI related skills.

Outline Marking Scheme

Your submission will be assessed according to the following criteria:

1. Systematic review of relevant scientific literature **[40 points]**.
2. Critical evaluation and discussion of the significance of the application of AI techniques **[40 points].**
3. Coverage of relevant commercial risks and professional issues **[20 points].**

Below is a provisional indication of the criteria applied to determine points for each element.

Please note:
Exceptionally, whilst points are allocated to specific parts, outstanding work in one area may be used to trade-off points against poorer work in another area.

Review of Scientific Literature [40 points]	*Concerns a critical analysis of the scientific literature in the real-world case addressed, and whether the implementation of the AI solution derives from this thorough evaluation*
Excellent *70% and above*	The implemented AI solution derives from an extremely thorough evaluation and review of the scientific literature. The implemented solution is very well connected with the related scientific literature. The produced walk-through video demonstrates the excellent understanding of the scientific literature, related to the chosen case study.
Very Good *60%-69%*	The implemented AI solution correctly models the addressed real-world case and meets all necessary requirements and performs consistently as intended. Nevertheless, there is some missing references to the scientific background. The produced walk-through video demonstrates a very good understanding of the scientific literature, related to the chosen case study.
Satisfactory *50-59%*	Satisfactory implementation of the AI solution modeling the real-world problem, even though the AI techniques adopted are not in line with the scientific literature. Nevertheless, the implemented solution and code meet a good proportion of the requirements. The produced walk-through video demonstrates a satisfactory understanding of the scientific literature, related to the chosen case study.

Fail *Less than 50%*	Insufficient. The proposed solution is not supported by any scientific literature. The produced walk-through video demonstrates a poor understanding of the scientific literature, related to the chosen case study.
NS *NON-SUBMISSION*	N/A

Evaluation and discussion of the significance of the application of AI techniques [40 points]	*Concerns whether the AI solution derives from a critical evaluation and discussion of the AI techniques in a real-world case study, and also if the implemented solution is significant.*
Excellent *70% and above*	The proposed AI solution demonstrates a thorough evaluation, management, discussion, and correct application of AI techniques in the real-world case study. The AI solution operates without fatal error at run time and fully satisfies the real-world case requirements. The solution meets all necessary requirements and performs consistently as intended. The code is clear with enough comments. of the scientific literature, related to the chosen case study. The produced walk-through video shows an excellent understanding of the implemented AI solution.
Very Good *60%-69%*	The proposed AI solution demonstrates a very good evaluation, management, discussion, and correct application of AI techniques in the real-world case study. The implemented AI solution operates at run-time without fatal error with some minor logic errors. The solution meets all necessary requirements and performs consistently as intended. The code is not clear since there are not enough comments. The produced walk-through video shows a very good understanding of the implemented AI solution.
Satisfactory *50-59%*	The proposed AI solution demonstrates a satisfactory evaluation, management, discussion, and application of AI techniques in the real-world case study. The implemented AI solution fails to operate or contains mistakes which cause it to crash under certain conditions during run-time but contains evidence of ability to employ fundamental techniques to design an AI solution. The produced walk-through video shows a satisfactory understanding of the implemented AI solution.
Fail *Less than 50%*	Insufficient. The proposed AI solution does not satisfy the minimum requirements.
NS *NON-SUBMISSION*	N/A

Coverage of relevant commercial risks and professional issues **[20 points]**	*Concerns the reflection on the relevant commercial risks and professional issues of the implemented AI solution.*
Excellent *70% and above*	There is extensive commentary on the relevant commercial risks and professional issues associated with the implemented AI solution, demonstrated by a critical and elaborated discussion. The produced walk-through video shows an extensive and critical reflection on relevant commercial risks and professional issues.
Very Good *60%-69%*	There is substantial commentary on the relevant commercial risks and professional issues of the implemented AI solution demonstrated by a consistent discussion. The produced walk-through video shows a substantial reflection on relevant commercial risks and professional issues.
Satisfactory *50-59%*	There is some useful commentary about the relevant commercial risks and professional issues of the implemented AI solution and the whole learning experience of the ICA and studying the module. Nevertheless, it tends to be descriptive rather than reflective and needs to concentrate more on personal evaluation and development. The submitted report would benefit from including more supportive evidence (e.g., schematics, screenshots, research, etc.). It could also benefit from identifying more learning needs and how they might be addressed. The produced walk-through video shows a satisfactory reflection on relevant commercial risks and professional issues.
Fail *Less than 50%*	Insufficient. Any reflection of relevant commercial risks and professional issues of the implemented AI solution.
NS *NON-SUBMISSION*	N/A

Deliverables & Submission

You are required to submit your work to Blackboard via the assessments link by the due date. Regarding the submission of your AI solution, you will upload a report (equivalent to 4,000

words) that should document the AI solution and your personal reflections. Also, in this case you are free to choose the title of your report, but do not forget to always include your student ID, name, and surname: "studentID_lastname_firstname_title_of_your_report.docx".

Moreover, you will also upload the R or Python file containing all the source code of your solution (e.g., the .r and/or .py file(s)). Please label this file with your student ID, name and surname: " studentID_lastname_firstname.r (or .py)" or, alternatively, if you prefer, you can include also the name of your solution, so: "studentID_lastname_firstname_name_of your_solution.r (or .py)". Please submit also the other files used for your experiments in a readable format.

Moreover, you will upload a voice over brief walk-through video (2-3 minutes), showing and demonstrating what has been done in the distinct parts of the project. It is expected that the student will introduce his work and discuss what has been achieved. It is also recommended that the student highlights the issues and limitations encountered during implementation.

You may use a zip file to package your submission artefacts (i.e., the zip file containing your report, the source code and all the other files used for your experiments, and the walk-through video).

All the submitted files within the zip file should be labelled as follows for identification purposes:

studentID_lastname_firstname.zip (e.g. *x1234567_smith_jane.zip*)

Your report, the source code of the implemented AI solution and all the other files used for your experiments, and the walk-through video should also be labelled in a similar manner with your student ID.

Make sure your student ID and name is present on all documentation you submit.

Logistics

After the ICA briefing has been given, you will be provided with opportunities to progress your in-course work during some timetabled sessions. Feedback – but not points – will be given on your work in progress to assist you in submitting a considered and well-developed ICA submission.

Academic Misconduct and Plagiarism

Please note that the University takes the issue of academic misconduct and plagiarism very seriously. You should not copy anyone else's work or use copyright materials without due acknowledgement.