

ASSESSMENT BRIEF

Programme	BSc Computer Science		
Module Title	Artificial Intelligence		
Module Code	CMP-N206-0		
Module Level	5	Assessment Type(s)	Practical coursework (Jupyter Notebook + Documentation)
Word Length / Duration	~1,500 words documentation (excluding references); Jupyter Notebook with code and visualisations	% contribution to module mark	50%
Deadline (date & time) for Submission	Thursday March 12, 6pm	Format/Location of submission	Moodle (PDF documentation + .ipynb Notebook)
Assessment Feedback date:	Within 20 working days of submission		
Learning Outcomes This assessment has been designed to provide you with an opportunity to demonstrate your achievement of the learning outcomes listed below. By successfully completing this assessment, you will be able to: LO2: Synthesise and implement AI models and solutions, demonstrating advanced skills in developing intelligent		Employability and Professional Skills This assessment has been designed to provide you with an opportunity to demonstrate your achievement of the following skill(s) which is(are) critical in professional context and jobs. By successfully completing this assessment, you will be able to:	

<p>systems while critically reflecting on their design and effectiveness.</p> <p>LO3: Apply advanced mathematical and computational techniques to develop, analyse, and optimise AI/machine learning models.</p> <p>LO4: Critically analyse supervised and unsupervised learning methods and evaluate their effectiveness using appropriate performance metrics and validation techniques.</p> <p>LO5: Design and optimise machine learning solutions to address complex, real-world challenges across diverse domains.</p>	<ul style="list-style-type: none"> • Analyse complex problem spaces and identify suitable classical AI approaches. • Implement and document AI pipelines using industry-standard tools (Python, scikit-learn, pandas, matplotlib). • Critically compare methodologies and justify technical decisions. • Communicate results effectively through technical reporting, visualisation, and reflection. • Reflect on fairness, inclusivity, and sustainability in AI applications.
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Assessment Requirements

This assessment requires you to prepare a **case study analysis** of a real-world dataset, framed around the **agent + environment + rationality** paradigm. This framing mirrors how AI researchers formulate real-world decision-making problems before selecting a modelling approach. You will frame a real-world problem as an agent–environment interaction and compare rational strategies.

Coursework 1

In this coursework you will design and implement a **rational taxi agent** that operates in a simplified “Grid-London”.

Your taxi must:

- perceive its environment
- choose actions
- pursue goals
- justify its decisions

This coursework is about **thinking like an AI agent designer**, not about building a perfect system.

You will:

- model an environment
- design an agent
- implement basic search

- define a performance measure
- evaluate rational behaviour

2. The Scenario

Your taxi operates in a **grid-based London**.

Environment

A grid world representing parts of London:

- cells = locations
- some cells = traffic (blocked)
- some cells = pickup/dropoff points

Passengers

Passengers appear at locations and request a destination.

Agent Goal

Transport passengers efficiently.

3. Your Agent Must Include

A. Environment Model

- Grid world (minimum 5×5)
- Start location
- Pickup/dropoff locations
- Some blocked cells (traffic)

B. Percepts

Your agent must perceive:

- its current location
- passenger location
- passenger destination
- blocked roads

C. Actions

At minimum:

- Move North, South, East and West
- Pick up passenger
- Drop off passenger

D. Performance Measure (Utility)

You must define one.

Examples:

- +20 for successful drop-off
- -1 per move (fuel cost)
- -5 for hitting traffic

You must explain why the measure you defined makes sense.

E. Decision-Making Method

Use at least one search strategy:

- BFS
- DFS
- A* (optional but encouraged)

Explain:

- why you chose it
- when it works well
- when it fails

F. Evaluation

Run at least **3 scenarios** and report:

- total score
- steps taken
- whether goal achieved

G. Explainability (for stronger submissions)

Your agent must be able to answer:

“Why did you choose that move?”

Example:

“I moved East because it was the shortest path to the passenger.”

4. Deliverables

Notebook (.ipynb)

- working code
- readable structure
- comments explaining logic

Short Report (~1500 words)

Include:

- agent design
- performance measure
- evaluation results
- reflection on rationality

Formatting requirements:

- Report must use 11pt Arial or Calibri, 1.5 line spacing, standard margins.
- Referencing in **IEEE style**.
- Clearly label all documents with student name and ID.

Marking Criteria

Marks will be awarded using the University’s categorical marking scheme. A short a video explaining the assessment criteria can be found at: <https://www.youtube.com/watch?v=JrA0Dotq1p8>

This coursework rewards **understanding and effort**, not perfection. You will have the opportunity to provide evidence during an in-person demo towards the following grades:

42, 45, 48 (Third work)

You show:

- a simple working environment

- some agent behaviour
- basic explanation

AI tools may have helped heavily, but you understand what your code does.

You meet the minimum learning outcomes.

52, 55, 58 (2:2 work)

You show:

- a mostly working agent
- a performance measure
- some search or decision logic
- reasonable explanations
- some evidence of project management

Not everything is fully correct or complete, but you clearly engaged and learned. Class participation (especially when prompted) counts. Evidence of an acceptable attainment of learning outcomes is needed.

60–69 (2:1 work, a Strong Submission)

You show:

- everything in the specification
- correct search use
- clear rationality explanation
- proper evaluation
- good structure and clarity
- evidence of project management

This is what a solid AI student submission looks like. You demonstrate a convincing attainment of learning outcomes. You provide a full answer to the question, including substantial critical evaluation of material, good understanding of the topic and some evidence of wider reading.

72, 75, 78 (First work Distinction)

You go **beyond** the specification, e.g.:

- compare two or more search strategies

- explore multi agent systems
- implement smarter performance measure
- better explainability
- interesting scenario design (real-world scenarios)
- thoughtful reflection on limitations
- evidence of reading beyond recommended material
- excellent writing of a high academic standard

You demonstrate deeper insight, creative and original elements and consideration of wider issues (real world application). You make sure ideas are supported by highly appropriate sources (not Generative AI).

82, 85, 92 (Upper First High Distinction)

Your work shows:

- originality
- creativity
- rigorous evaluation
- strong writing
- ideas suitable for further development or publication

This is rare and not expected — it reflects exceptional attainment. Please have a chat with your Lecturer for guidance if you are attempting this classification. Your assignment might need to be adjusted and approved.

Assessment Success Guidance

To achieve high marks, you should:

- Frame your problem clearly as an **agent in an environment with objectives**.
- Choose evaluation metrics that connect directly to computational rationality.
- Engage with fairness, inclusivity, and sustainability, not just technical performance.
- Write with clarity, good structure, and correct IEEE referencing.

Reading lists will be provided on Moodle.

This assessment links strongly with employability (critical problem analysis), sustainability (energy impact and fairness in AI), and internationalisation (applications in urban technology).

Assessment Guidance Support and Formative Feedback

Weekly support on class. Drop-in sessions and office hours for 1:1 feedback.

Contact for Queries/ who you can contact for further information or queries

*Module Leader: **Dr Arturo Araujo***

Contact details available via Moodle, along with office hours booking link

Ethical Requirements

Use only ethically approved datasets provided (if any).

Do not use identifiable or confidential data.

Reflect on fairness, inclusivity, and sustainability in your analysis.

Use of Artificial Intelligence (AI)

*The assessment is designed so that the use of AI during the assessment is **possible**. You must acknowledge any use of AI and appropriately cite all AI-generated outputs. Please make sure you read and understand the assessment guidelines and ask your Module Leader if you have any questions.*

Guidance on AI use:

- [*University AI Principles and Guidance for Senate*](#)
- [*Student Guidelines on the Use of AI*](#)

You may use AI tools for:

- debugging
- understanding concepts
- small code suggestions

But you must:

- understand your submission (every line of code and text)
- explain decisions
- document AI use

If you cannot explain your code, you cannot earn high marks.

Referencing

You must use **IEEE referencing** consistently throughout. Guidance can be found on the University Library Referencing Support page:

<https://library.roehampton.ac.uk/referencing>

Mitigating circumstances/late penalties

Sometimes circumstances outside of your control may affect your studies and might prevent you from submitting work on time or attending an exam.

The University offers the ability for students to request additional time to complete an assessment or to defer an examination to a later date. If you are finding yourself in such a situation, please speak to your Academic Guidance Tutor, the Roehampton Student Union (RSU) or someone in the [Wellbeing team](#) first, who can support you. Further details can be found on the [mitigating circumstances portal](#).

If you do not apply for or are not approved for Mitigating Circumstances, late penalties will apply. If work is submitted up to 14 days late, the mark will be capped at 50%; if it is over 14 days late, it will not be marked.

Resubmissions and Reassessment

If you are required to resubmit this assessment or take part in reassessment, you will be notified via Moodle and your student email. Please ensure you check both regularly. Any reassessment tasks will follow the same learning outcomes and criteria.

Submission Checklist

Before you submit, ask yourself:

Have I fully answered the assessment brief?

Have I met the word count and formatting requirements?

Is my referencing complete and accurate?

Have I declared any AI use honestly?

Have I proofread my work?

Am I submitting through the correct platform before the deadline?