

University of Lincoln Assessment Framework

Assessment Briefing Template 2024-2025

1. Module code & title	CMP9764 Advanced Robotics
2. Assessed learning outcomes	<p>[LO 1] Analyse the “state of the art” in advanced robotics, including an understanding of the mathematical principles and current applications;</p> <p>[LO 2] Critically appraise a range of advanced concepts for navigation, state estimation, planning, learning, and control, identifying their strengths and weaknesses, and selecting appropriate methods to serve particular roles;</p> <p>[LO 3] Design a software component for solving complex robot control problems for mobile robotics or robotic manipulators.</p>
3. Assessment title	Assessment Item 1
4. Contribution to final module mark (%)	50%
5. Description of assessment task	<p>This module assessment is comprised of 2 items, one for each block of delivery of the Advanced Robotics module:</p> <ol style="list-style-type: none"> 1. Human Robot Interaction (HRI), and 2. Robot Learning. <p>You must <u>complete both of the assessment items</u> above, and submit your reports as <u>two separate PDFs</u>. You should use the following naming convention for each PDF:</p> <p style="text-align: center;">cmp9764-2425_[asstX]_[studentID]</p> <p>Where [asstX] represents the item number of the assessment that the report addresses, and [studentID] is your student ID number.</p> <p>There is a single submission deadline for the submission of both of the assessment item reports. Please refer to the school hand-in spreadsheet for this deadline.</p>

Assessment Item 1: Human-Robot Interaction report

Description of Assessment Task and Purpose:

In this individual assignment, you will further explore and characterise some of the principles of “learning from humans” that have been explored in the lectures and workshops of the HRI block of the Advanced Robotics module, specifically regarding *Interactive Machine Learning*. In addition to this briefing, you should refer to the Assessment Item 1 CRG.

The output of this assignment will be a single report, a maximum of four pages long. There are three main parts to this assignment:

1. Choose an interesting/innovative problem domain in which to demonstrate the effect of human-guided learning, and implement a grid-world simulation of this domain, in which you will evaluate and compare/contrast the performance of at least two human-guided learning methods (the choice of learning algorithm(s) is yours; Reinforcement Learning algorithms are a recommended starting point);
2. Conduct a literature review relevant to the problem domain you have chosen, and to the learning algorithms/methods you have chosen;
3. Write a report covering both your simulation and your literature review, providing appropriate motivation, justifications, metrics, analyses, and discussions.

In this assignment you have the freedom and opportunity to explore any particular aspect of the “learning from humans” concept of your choosing. For example, you may choose to focus on alternative learning algorithms (given the context of human guidance), different methods of incorporating human guidance (e.g. timing, rewards, etc), a range of learning and performance metrics, etc. It is recommended that you focus on one particular aspect rather than trying to incorporate all possibilities: the intention in this assignment is to demonstrate depth of understanding and not merely a large quantity of work. You should support your arguments and conclusions with appropriate data analysis and visualisation methods, as relevant. You will need to explore, implement, and validate a set of metrics that are appropriate for your chosen problem domain – it is highly likely that these metrics will go beyond those covered explicitly in the lectures and workshop examples.

You may use whatever programming languages/tools that you deem appropriate in order to complete this task. However, it would be acceptable to start from the basic grid-world (Python) simulation

	<p>environment used in the workshops (associated with the HRI lectures) and adapt/extend this as needed for your chosen application/approach.</p> <p>This is an <u>individual assessment</u>. While you are encouraged to discuss your approaches and results with your course colleagues, all code (for the simulations) and reporting thereon (i.e. the report to be submitted) must be your own work. No AI tools are permitted for use in the preparation of any element of your assignment.</p>
6. Assessment submission instructions	<p>You should submit your report as a single “.PDF” file to the “<i>Assessment Item 1 Upload</i>” section. Please refer to the Assessment Item 1 CRG for further guidance. You may structure your report as you deem appropriate in order to describe the work that you have conducted. However, it would be worth considering at least the following sections (following an appropriate title and abstract):</p> <ol style="list-style-type: none"> 1. Introduction (including, for e.g., aim/hypothesis/research question/motivation) 2. Literature Review (or Related Work) 3. Problem Domain Description (or Simulation Setup) 4. Results 5. Discussion 6. Conclusion <p>For the report, you must use the IEEE A4 Conference Proceedings template, which is available online (https://www.ieee.org/conferences/publishing/templates.html). You may use either the Word or LaTeX templates: your submission should be a single PDF document, no more than 4 pages long (including figures and references).</p> <p><i>DO NOT include this briefing document with your submission.</i></p>
7. Date for return of mark and feedback	<p>Please see the Hand In Dates.xls spreadsheet.</p> <p>Note: <i>all marks awarded are provisional until confirmed by the Board of Examiners.</i></p>
8. Feedback format	<p>Individual feedback will be given in written format with the grade. These grades are provisional until final moderation. Further clarifications on the feedback received may be obtained from the module delivery team upon request.</p>
9. Use of Artificial Intelligence (AI)	<p>You may not use Artificial Intelligence (AI) in this assignment. This means that you may not use any AI technologies including Grammarly, CoPilot,</p>

<p>in this assessment</p>	<p>QuillBot and others. If you are not sure whether you should be using a particular tool then ask your module leader first.</p>
<p>10. Marking criteria for assessment</p>	<p>A Criterion Reference Grid (CRG) is used to evaluate your learning against a set of pre-defined criteria.</p>
<p>11. Additional information (support, advice, tips etc)</p>	<p>Each of the assessment items will be introduced in the associated block of delivery of the module. In addition to this, a part of the workshop time will be made available for assignment support within each block of delivery.</p>
<p>12. Important Information on Dishonesty, Plagiarism and AI Tools</p>	<p>University of Lincoln Regulations define plagiarism as <i>'the passing off of another person's thoughts, ideas, writings or images as one's own...'</i>. Examples of plagiarism include the unacknowledged use of another person's material whether in original or summary form. Plagiarism also includes the copying of another student's work'. Plagiarism is a serious offence and is treated by the University as a form of academic dishonesty. For more information on examples of Academic Offences, please see the Academic Offence Guidance.</p> <p>Please note, if you use AI tools in the production of assessment work where it is not permitted, then it will be classed as an academic offence and treated by the University as a form of academic dishonesty.</p> <p>Students are directed to the University Regulations for details of the procedures and penalties involved.</p> <p>For further information, see www.plagiarism.org</p>