University of Lincoln Assessment Framework
CMP9132M Assessment 2 Briefing 2021-22

Module Code & Title: CMP9132M Advanced Artificial Intelligence
Contribution to Final Module Mark: 50

Description of Assessment Task and Purpose:
The assessment is a report describing your solutions to the given problem (see below), accompanied by the software you implemented. This assessment evaluates your knowledge and skills in Advanced AI.
 	
# Problem 	
 	
Imagine that you are part of a team writing a new game "Mean Arena". Your job is to write code to control a character, who we will call "Tallon". The Arena is populated by monsters, called "Blue Meanies", and is filled with sludge pits and bonus stations. Tallon's objective is to survive for as long as possible, collecting bonuses, and avoiding both the pits and the Blue Meanies: if Tallon encounters either a pit or a Meanie they will immediately die and the game ends. To complicate matters, the number of Meanies increases over time --- every few seconds another Meanie spawns in the Arena.
 	
You will be provided with Python code that implements the Mean Arena (including Meanies, pits and bonus stations) and which provides an API that allows Tallon to move, and provides information on the location of pits, bonus stations and Meanies as well as Tallon themself. Note that Tallon's movement is non-deterministic, so that they do not always manage to move in the direction that they wish to.
 	
You should:
 	
    a)   Provide control code for Tallon that allows them to navigate the Arena for as long as possible when the dungeon is fully observable, meaning that Tallon can see everything in the Arena. **[30 points]**
 	
    b)   Provide control code for Tallon that allows them to navigate the Arena for as long as possible when the dungeon is partially observable, meaning that Tallon cannot see everything in the Arena. They can only see objects within a certain distance. **[30 points]**
 	
        The solution to a) and b) may be the same piece of code, or two separate pieces of code, the choice is yours.
 	
    c)   Evaluate the performance of your code for a range of values of the size of the Arena, the numbers of pits and bonus stations, and the speed with which the Meanies spawn. **[40 points]**
 	
Note that your solutions(s) to a) and b) should be AI methods (see the marking criteria), and that you need to justify your choices in the report. The report should also include your evaluation, justify the choices that you made in your evaluation, and state what conclusions you can draw about your solution from your evaluation.

Learning Outcomes Assessed:
LO1, LO2

Knowledge & Skills Assessed:
- Knowledge of advanced methods and applications of AI
- Critical appraisal of advanced AI algorithms and techniques
- Practical software skills for the implementation of advanced AI systems

Assessment Submission Instructions:
You must make an electronic submission of your work in PDF format by using the assessment link on Blackboard for this component. You must attend the lectures and workshops for further details, guidance and clarifications regarding these instructions.
DO NOT include this briefing document with your submission.
The deadline for submission of this work is included in the School Submission dates on Blackboard.

Date for Return of Feedback:
See the School Submission spreadsheet on Blackboard.

Format for Assessment:
This assessment comprises one assessed Problem, as detailed in the following pages.
Your submission should include a concise report (maximum 3 pages, font size of 11 or 12 points, not including the cover sheet, references, and appendixes), to be submitted as a PDF on Blackboard, that describes your work on the given problems. Whenever possible, you should cite previous works from the related literature to backup your arguments or choices.
The software implemented to solve the problems should be submitted as a ZIP file in the assignment support documentation on Blackboard.

Feedback Format:
See Feedback to User on Blackboard.

Additional Information for Completion of Assessment:
This assessment is an individually assessed component. Your work must be presented according to the Lincoln School of Computer Science guidelines for the presentation of assessed written work. Please make sure you have a clear understanding of the grading principles for this component as detailed in the accompanying Criterion Reference Grid. If you are unsure about any aspect of this assessment component, please seek the advice of a member of the delivery team.

Assessment Support Information:
Assessment support will be provided during the workshop sessions near the time. Please consult the delivery team for any questions regarding this assessment.

Important Information on Dishonesty & Plagiarism:
University of Lincoln Regulations define plagiarism as 'the passing off of another person's thoughts, ideas, writings or images as one's own...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. Students are directed to the University Regulations for details of the procedures and penalties involved.

For further information, see www.plagiarism.org