TORRENS UNIVERSITY AUSTRALIA

ASSESSMENT 3: PROJECT BRIEF	
Subject Code and Title	MFA501
Assessment	Assessment 3: Solve an AI Problem set
Individual/Group	Individual
Length	Project and supporting document
Learning Outcomes	The Subject Learning Outcomes demonstrated by successful completion of the task below include: a) Formulate key mathematical concepts used in Artificial Intelligence. b) Interpret and transmit standard mathematical notations and terminologies in statistics, probabilities, linear algebra, vectors, matrices, differential calculus, and logical reasoning. c) Compute accurately standard computations in statistics, probabilities, linear algebra, vectors, matrices and differential calculus.
Submission	Due by 11:55pm AEST Wednesday end of Module 12 .
Weighting	40%
Total Marks	100 marks

Task Summary

The second assessment allowed you to show your understanding on how to choose the correct AI method to solve simple case studies. Assessment 3 has been designed to assess your ability in choosing and using the best AI methods to solve larger and more challenging problems. The AI method that you will be using is more challenging to implement as compared to those in the second assessment. Solving real-world problems using AI techniques requires more sophisticated skills, and you will demonstrate these in this assessment.

Your subject facilitator will provide you with the scenario/topic/focus for this assessment during the first few weeks of this subject. Regardless of the content that will be provided, you will have to first understand the problem and formulate it in a suitable manner for AI techniques. The next step is to choose the correct AI method to solve the problem. As a part of development, you have to test and analyse the performance of the AI technique to ensure that it gives optimal results. In summary, you will be required to program an AI method, solve a problem using it, and write a reflective report.

Context

Facilitator will advise you of the exact task you are required to complete during the first few weeks of the subject.

Task Instructions

The source code that you will be submitting should be free of build warnings, build errors, and all intermediate files (.obj, .pdb, etc), crashes, and errors (compile, run-time, logical, etc.). Your code should be structured and written with the best practices in the field of programming. There should be enough number of comments in the source files to show your understanding of the program. Any third-party code should be appropriately attributed.

When you submit the electronic version of your project make sur to use the following names:

- Name the source code folder as: Source – Student Name
- Name the solution as: YourGameName.sln

Submission Instructions

You are supposed to submit a ZIP file including:

- **Release Build Zip:** A release build executable must be zipped and included with the submission. Ensure that project settings are set to Release when creating this build.
- **Source Code Zip:** All relevant source code files and project files must be zipped and included with the submission
- **Reflective report:** PDF or Word
- Naming & File structure for the zip file.
    - MFA501_Assessment3_LastName_FirstName.zip
        - Assessment3_Build_LastName_FirstName.zip
        - Assessment3_Source_LastName_FirstName.zip
        - Assessment3_report_LastName_Firstname.pdf
        - Assessment3_ report _LastName_Firstname.docx

Assessment Rubric

Assessment Attributes	Fail (Yet to achieve minimum standard) 0-49%	Pass (Functional) 50-64%	Credit (Proficient) 65-74%	Distinction (Advanced) 75-84%	High Distinction (Exceptional) 85-100%
Work demonstrates the knowledge and understanding of the best mathematical notations and representation methods in AI for the case study 35%	Little or no use of mathematical and/or problem representation techniques The implementation is mostly wrong	Acceptable use of mathematical and/or problem representation techniques, but they are not the most suitable ones for the case study and the AI model The implementation is correct but includes errors and flaws	Good use of mathematical and/or problem representation techniques, but they are occasionally not efficient for the case study and the AI model The implementation is correct but not done in an efficient manner	Very good use of mathematical and/or problem representation techniques, but they are occasionally not efficient for the case study and the AI model The implementation is efficient but do not follow the best practices in programming and AI	Excellent use of mathematical and/or problem representation techniques, but they are occasionally not efficient for the case study and the AI model Excellent implantation without any error using the best practices in programming and AI
Work demonstrates the knowledge and understanding of the most suitable calculations methods in AI for the problem 35%	Little or no use of mathematical methods and techniques The implementation is mostly wrong The AI method implemented does not give correct results	Acceptable use of mathematical and/or problem representation techniques, but they are not the most suitable ones for the case study The implementation is correct but includes errors and flaws The AI method implemented occasionally gives correct results	Good use of mathematical and/or problem representation techniques, but they are occasionally not efficient for the case study The implementation is correct but no in an efficient manner The AI method implemented gives correct results, but does not handle exceptional cases.	Very good use of mathematical and/or problem representation techniques, but they are occasionally not efficient for the case study The implementation is efficient but do not follow the best practices in programming and AI The AI method implemented gives correct results and handles exceptional cases, but it is not efficient	Excellent use of mathematical and/or problem representation techniques, but they are occasionally not efficient for the case study Excellent implantation without any error using the best practices in programming and AI The AI method implemented is highly efficient, gives correct

					results, and handles exceptional cases
The reflective essay demonstrates the knowledge and understanding of the whole process of implementing and using the mathematical models and methods to develop the AI technique and solve the case study. 30%	The reflective essay includes no or little sections and concepts required. There is no or little elaborations or justifications on the use of the mathematical models and methods to develop the AI technique and solve the case study	The reflective essay includes some of the sections and concepts required. There is little elaborations or justifications to demonstrate the knowledge and understanding of the whole process of implementing and using the mathematical models and methods to develop the AI technique and solve the case study	The reflective essay includes all the sections and concepts required. Elaborations and justifications are good but not enough to show the knowledge and thorough understanding of the whole process of implementing and using the mathematical models and methods to develop the AI technique and solve the case study	The reflective essay includes all the sections and concepts required. Elaborations and justifications are very good but not thorough and in-depth to demonstrate the mastery of the whole process of implementing and using the mathematical models and methods to develop the AI technique and solve the case study	The reflective essay includes all the sections and concepts required. Elaborations and justifications are thorough and show the mastery of the whole process of implementing and using the mathematical models and methods to solve the case study.

The following Subject Learning Outcomes are addressed in this assessment	
SLO a)	Formulate key mathematical concepts used in Artificial Intelligence.
SLO c)	Interpret and transmit standard mathematical notations and terminologies in statistics, probabilities, linear algebra, vectors, matrices, differential calculus, and logical reasoning.
SLO d)	Compute accurately standard computations in statistics, probabilities, linear algebra, vectors, matrices and differential calculus.