School of Information Technology, Deakin University

SIT320 — Advanced Algorithms

High Distinction Task 13: Building your own Module

To demonstrate that you are worthy of achieving a high-distinction, we expect that you take one of the following activities.

Your unit chair / tutor will then review your submission and will give you feedback. If your submission is incomplete they will ask you to include missing parts. They can also ask follow-up questions, either to clarify something, or to double check your understanding of certain concepts

Make sure your P , C and D tasks are either under-discussion or completed.

Option A

You can continue working on tic-tac-toe problem from (distinction) Module 12, and attempt following extensions:

(1) Integrate the idea of deep representation learning in your code. For this you can use a deep convolutional neural network to represent the state of the board, and integrate it in your implementation of Q-Learning algorithm.

(2) Implement a policy gradient algorithm. You can use simple REINFORCE algorithm, but you are expected to do your own research and decide which algorithm you will be implementing.

(3) Compare the performance of your policy gradient algorithm with deep Q-Learning algorithm.

Option B

Some of you might be interested to work in one of the following areas in future - Bioinformatics, AI, Machine Learning, Cryptography, IoT, Distributed Computing, Software Engineering, etc. Choose a topic and algorithm of interest, and present your report in one of following two formats:

a) Write it as a research proposal for your Hons or PhD applications for your future research supervisors. A good proposal provides a concise overview of the problem, existing solutions and what you intend and propose to do as an extension of existing state of the art.

   a) You will be considered for $5000 summer scholarship to work on your proposed research in T3 2023.

b) Write it as a medium post open to public.