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**Assessment Cover Page**

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| *Student Number* | 24275 |
| *Module Title* | AI Concepts to Implementation |
| *Assessment Title* | CA1 |
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I further confirm that this work has not previously been submitted for assessment by myself or someone else in CCT College Dublin or any other higher education institution.

Contents

[Introduction 3](#_Toc182166081)

[Task 1 3](#_Toc182166082)

[Task 2 3](#_Toc182166083)

[Task 3 3](#_Toc182166084)

# Introduction

# Task 1 – AI and Chess (500words)

Artificial Intelligence (AI) has been inspired by chess for decades, sparked by the IBM’s Deep Blue program one point victory over then chess world champion Garry Kasparov in 1997. (Campbell, et al., 2002) This section will use to two the chess engines, Leela Chess Zero (LCZero) and Stockfish, to analyse two different AI strategies that have been applied to chess gameplay.

The first chess engine is LCZero. This is an AI based chess engine that uses deep neural networks and Monte Carlo Tree Search to play chess. It was developed from its predecessor AlphaZero. It uses neural networks to appraise moves and make decisions. The neural networks are trained through self-play. This is where the engine plays against itself then learns and adjusts based off the findings within those games. By using this strategy, LCZero continuously becomes a better chess engine. A variety of algorithms, including the Monte Carlo Tree Search and temporal difference learning, implement the self-play and re-enforced learning. (Degni, 2023)

*Research two Artificial Intelligence (AI) strategies that have been used to play chess. Describe the theory and concepts used within these strategies and how they relate to AI.*

# Task 2(b) – Computer Games and AI (500words)

*AI has been essential in computer games since the 1960s. Provide an example of two AI strategies that are used in modern games. You should identify the algorithm being used, provide a high-level description of the algorithm and provide an example of a game where this algorithm has been implemented.*

# Task 3 – AIBO (500words)

*SONY has developed a robot puppy named AIBO. You can find information about this robot at https://us.aibo.com/. a) Discuss the AI characteristics that you think the AIBO exhibits. [15 marks] b) Discuss AI characteristics that you think it still lacks. [15 marks]*

# References

Campbell, M., Hoane Jr, A. & Hsu, F., 2002. Deep Blue. *Artificial Intelligence,* 134(1-2), pp. 57-83.

Degni, R., 2023. *The Ultimate Checkmate: AI and Chess Engines.* [Online]   
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[Accessed 10 November 2024].