MCAST UNIVERSITY COLLEGE,
INSTITUTE OF INFORMATION TECHNOLOGY AND COMMUNICATION TECHNOLOGY

B.Sc. (Hons.) 2nd Year Project - Initial proposal

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1 PERSONAL DETAILS

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2 PROJECT DETAILS

Research Question / Aim: Identifying and implementing an efficient Battleship AI algorithm by using educated guessing and a probabilistic approach.

Objectives:

1. **Research** different techniques that can reduce the amount of shots it takes to win the game.
2. **Develop** a prototype that uses two basic techniques based on guessing and has the ability to play the game for a given number of times to gather data.
3. **Analyse** the effectiveness of each guessing algorithm.

Rationale: There are many different variations of Battleship AI, each taking a different approach to solve the problem. This research will compare the most common approaches and an implementation that combines the most efficient approaches will be developed, tried and

tested against the existing algorithms. This will be done by analysing the average amount of shots each algorithm takes to win a single games for a set amount of times. This data will be compared with the new algorithm and its efficiency is deduced.

Current Solutions/Alternatives: Many implementations can be found on websites such as Github.

Desired End Product: A fully functional AI that implements a probabilistic approach along with calculated guessing.

TimeFrame:

Task	**Deadline**
Literature Review	Mid March
Prototype Development	End of April
Data Analysis	Mid May
Write-up	End of May

Table 2.1: Schedule

Research Method

1. Develop a console application that has the functions of a Battleship game with the ability to simulate a set number of games and output the data gathered.
2. Implement the algorithms that will be analysed.
3. Run the algorithms for large number of times and gather the results.
4. Tabulate and analyse the results gathered.