BABEŞ-BOLYAI UNIVERSITY CLUJ-NAPOCA
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE
SPECIALIZATION COMPUTER SCIENCE

DIPLOMA THESIS

Using artificial intelligence to assist chess players

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ABSTRACT

Abstract: un rezumat în limba engleză cu prezentarea, pe scurt, a conţinutului pe capitole, punând accent pe contribuţiile proprii şi originalitate

Contents

Chapter 1

Introduction

Introducere: obiectivele lucrarii si descrierea succinta a capitolelor, prezentarea temei, prezentarea contributiei proprii, respectiv a rezultatelor originale si mentionarea (daca este cazul) a sesiunii de comunicari unde a fost prezentata sau a revistei unde a fost publicata.

Chapter 2

Background

2.1 Techniques/Algorithms used

Techniques/algorithms used in programming and training chess engines.

2.2 State of the art chess engines

Stockfish, AlphaZero etc. - overview and AI techniques used in them

Chapter 3

Methodology

Description of the approach taken to build the chess engine
Explanation of the AI techniques used and why they were chosen

3.1 Training

Algorithms/techniques used for training the engine

3.1.1 Min-max algorithm

Used to search for best move to a given depth

3.2 Optimizing

Algorithms/techniques used for optimizing the engine

3.2.1 Alpha-Beta pruning

Used to detect and cut off branches that will lead to worse results than the ones already analyzed

Chapter 4

Technologies

Details of the programming languages, libraries, and tools used

4.1 Chess game

Description of tools used in building the chess game - Unity, C#

4.2 Chess engine

Description of tools used in building the chess engine - Python

Chapter 5

Results and evaluation

Description of the testing methodology used
Analysis of the results obtained
Comparison with existing chess engines
Evaluation of the strengths and weaknesses of the chess engine

Chapter 6

Conclusions

Summary of the main findings and contributions of the thesis
Discussion of potential future improvements to the chess engine

Bibliography