NewChess Manual

Programming in C#, MFF UK

Norbert Horváth

Table of contents

1 Introduction

NewChess is a digital chess platform designed to cater to both novice and experienced players, offering a modern and intuitive interface for this classic game of strategy. The application provides two distinct game modes: Player vs. Player, where two human opponents can compete against each other, and Player vs. AI, where a human player can challenge the computer's artificial intelligence. This artificial intelligence utilizes the minimax algorithm and for a faster computational speed, it also uses the alpha-beta pruning mechanism, which automatically leaves out those leaves of the minimax tree which would have provided the computation with a worse result already present.

The user interface is designed with simplicity and ease of use in mind, allowing players to focus on the strategic elements of the game rather than navigating complex menus or controls. The board is also showing the player the available position for a piece according to the rules of chess. This helps new players, who are just beginning to learn the basics of chess.

NewChess strives to be accessible to a wide range of players, from beginners who are just discovering the game to seasoned players who seek a new digital arena to test their strategies. The application provides a welcoming environment for learning, practicing, and mastering the intricacies of chess.

2 Getting started

To successfully install and run the NewChess application, please consult the README.md file for detailed instructions. Prior to installation, ensure that your system meets the following requirements:

- .NET Framework (version 6.0 or later)
- MonoGame framework (version 3.8 or later)

Upon verification of these prerequisites, proceed with the installation steps outlined in the README.md file to enjoy the NewChess experience.

3 Using the application

Upon starting the application, the user is presented with the following user interface:

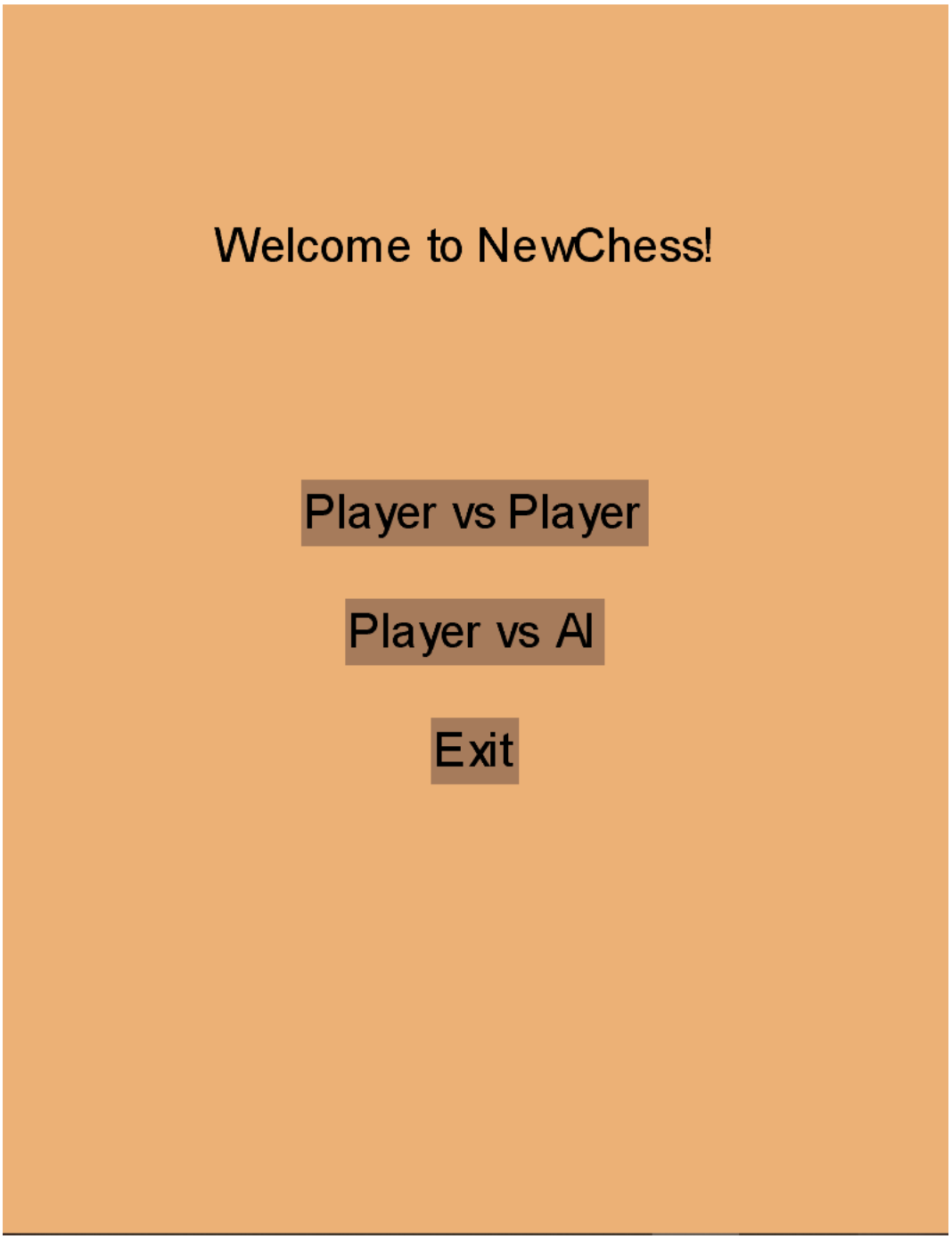

Figure 1: The main menu of the application

The user can see three buttons here. The Player vs Player button and the Player vs AI button both redirect the user to the chess board shown later. The buttons only determine, if the user wants to play against another human, in which case

the black pieces also must be moved using the mouse, or against the AI described in the introduction.

The exit button closes the application.

Figure 2 The chessboard of the application

After clicking the appropriate button, the user will be presented with the board shown on **Figure 2**. The user will see two buttons. The exit the game button will exit the game, while the restart the game will reset the position of the chessboard and will start a new game.

Figure 3 The possible moves of a pawn visualized on the board

If you drag a piece, you will see noted with red squares the possible moves of a piece you are currently dragging. The application automatically checks if your move doesn't cause a check for your own king and automatically disables these moves. Also, when you are in check, the only viable moves are to move away from the check with the king or to block the check. Every move, the whole board is checked for a checkmate and for stalemate, if any of them happens, the following text will appear under the buttons:

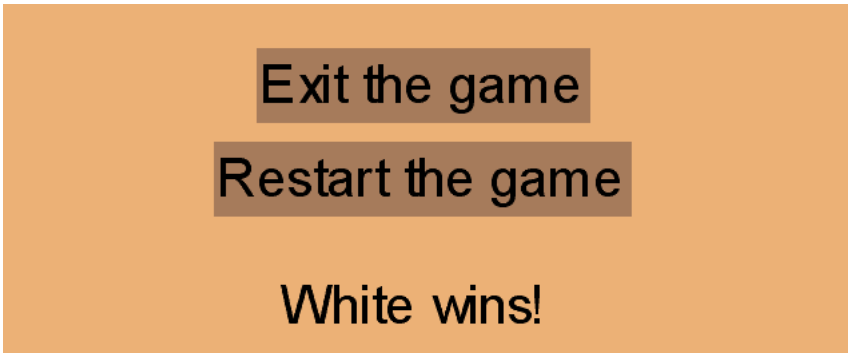

Figure 4 The induction of a win for the white player

I hope you will enjoy this application! If you encounter any errors, feel free to submit an issue on github:

https://github.com/NoPleaseNorbi/NewChess