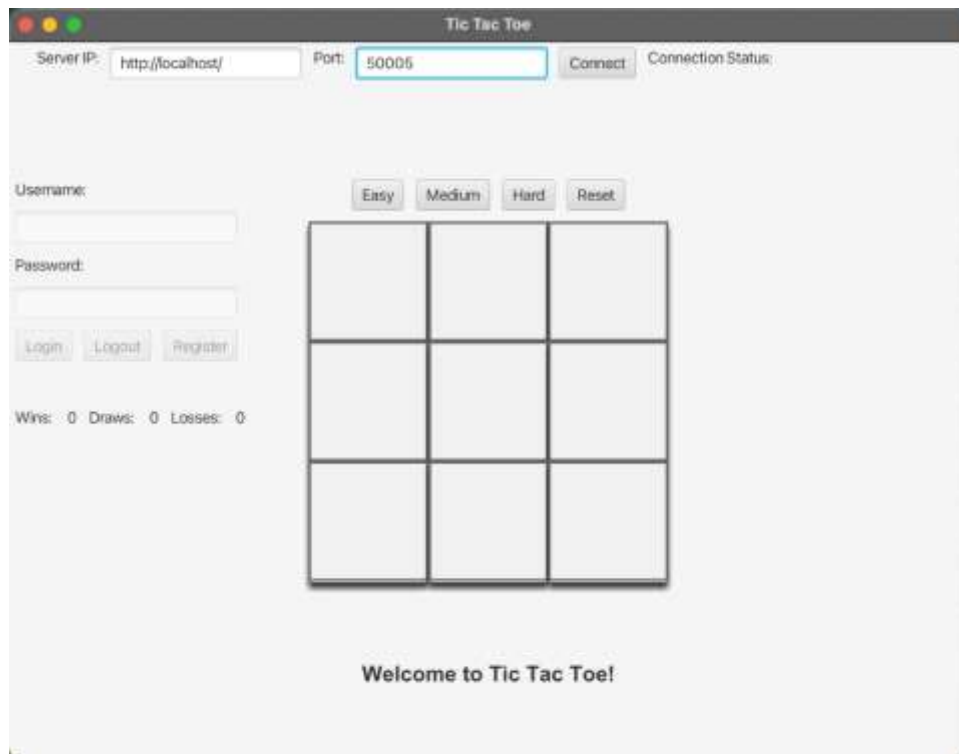# Project Dokumentation: TicTacToeGUI

Stefan Ilic, Kenan Ahmetasevic

31.12.2023

FHNW School of Business

Bradley Richards

Business Information Technology

Software Engineering Leadership

Usage

Installation:

1. Clone the repository:

   git clone https://github.com/0x63s/TicTacToeGUI.git

2. Build the Project
3. Make sure JavaFX runtime components are set

Running the Client:

1. Start the AIGS-Spring-Server
2. Navigate to the LaunchApp.java in the TicTacToeGUI project
3. Run the LaunchApp.java and interact with the Client

Design Overview

Structure

The Tic-Tac-Toe GUI Application is structured around the Model-View-Controller (MVC) architectural pattern, providing a modular and organized approach to the implementation. The primary components include:

Model:

- User: Represents user data, including authentication details and game statistics.
- GameBoard: Represents the game board as a multi-dimensional array of buttons

View:

- FXML Files: Define the layout and structure of different screens, such as Connection, Login, PlayerRecord, InfoLabel, and GameBoard.

Controller:

- GameController: Serves as the controller for the game logic, managing user moves and outcomes.
- RecordController: Controls the display and update of user records.
- Connection, Login, DifficultySelector Controllers: Handle user inputs and interactions on their respective screens.
- NetworkHandler: Handles communication with the aigs-server through HTTP requests.
- InfoController: Controls the information and instructions for the player.

Interaction Flow

Connection Screen:

- User Configurations: Set server IP and port for connection to the aigs-server.
- Connect Functionality: Allows users to check server availability.

Login Screen:

- User Authentication: Provides fields for username and password, enabling users to log in or register.
- Buttons: Options to log in, log out, or register a new account.

Difficulty Selector:

- Buttons: Choose from different difficulty levels (Easy, Medium, Hard).
- Reset Button: Reset the game board and settings.

Game Board:

- Grid of Buttons: Represents the Tic-Tac-Toe game board, allowing users to make moves.
- Game Logic: Orchestrated by the GameController, ensures fair gameplay and interaction with the aigs-server.

Player Record:

- Labels: Display the user's game records (wins, draws, losses).

Information:

- Label: Displays useful instructions and information for the player.

Key Concepts

GameController: Controls the core game logic, including move validation, checking for wins/losses/draws, and updating the board and communicates with the NetworkHandler to interact with the aigs-server.

NetworkHandler: Manages HTTP requests to the aigs-server, facilitating game creation, moves, and quitting.

User: Represents user data, including authentication details and game statistics and utilized for user-specific interactions and record updates.

Technologies Used

JavaFX: Enables the creation of a rich and interactive user interface.

JSON: Facilitates structured communication with the aigs-server through data exchange.

Networking: Implements communication between the client and aigs-server using HTTP requests.