SEMESTER PROJECT:

ROCK PAPER SCISSOR (GAME PLAYING AI USING JS & BRAIN.JS)

Course Title: Web Engineering

Faculty Name: Dr Muhammad Asif

Semester: Spring 2024

Deadline: 20 May 2024

Group Members: **Tehfeez Sadik (01-134212-186)**

Report:

Tools used:

- HTML
- CSS
- JavaScript
- Brain.js
- VS-code

Platform:

(**Browser**)Web Based

The game does not need to be installed.

This web-based rock-paper-scissors game operates entirely within your browser, eliminating the need for external applications. Users can enjoy the game directly from their web browser without any additional downloads or installations, making it convenient and accessible.

Model: Model-based AI

Goal of the Project:

The goal of your project is to create an interactive rock-paper-scissors game in JavaScript, employing brain.js to develop an AI opponent. The AI will engage players in the game, learning and improving its moves by memorizing the player's actions over time. This will offer users an interactive and dynamic gaming experience as they face an increasingly challenging opponent.

Working of the project:

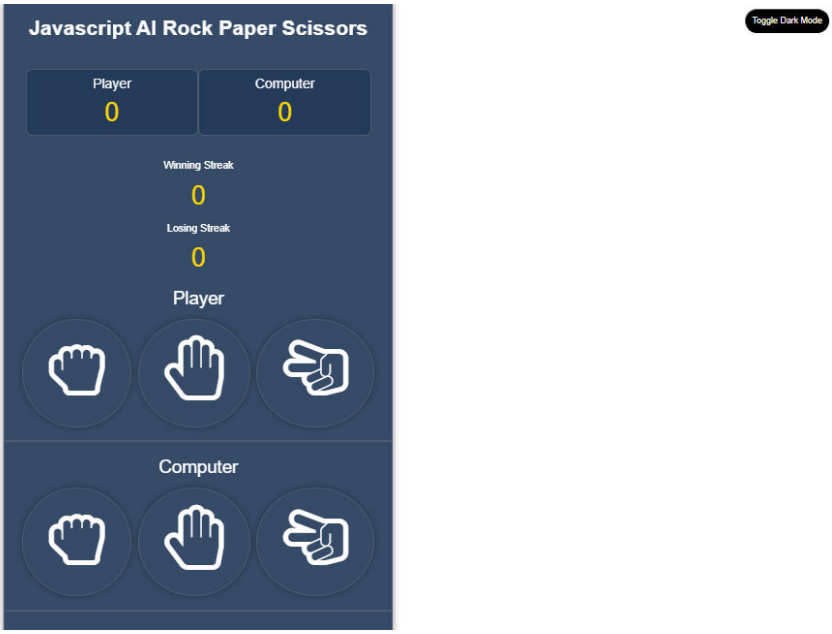
1. **Data Collection**: Whenever the player makes a move (rock, paper, or scissors), the game records this move along with the corresponding move of the AI opponent.
2. **Data Encoding**: Convert these moves into a format suitable for training the neural network. For example, you could encode "rock" as **[1, 0, 0]**, "paper" as **[0, 1, 0]**, and "scissors" as **[0, 0, 1]**.
3. **Training the Neural Network**: Use brain.js to create a neural network model. You'll feed it with the player's moves as input and the AI's corresponding moves as the expected output. Train the neural network using this data.
4. **Prediction**: Once the neural network is trained, it can predict the AI's move based on the player's move. After each round, record the player's move and use the trained neural network to predict the AI's move for the next round.
5. **Feedback Loop**: After each round, update the training data with the new move information and retrain the neural network periodically to improve its accuracy based on the latest data.

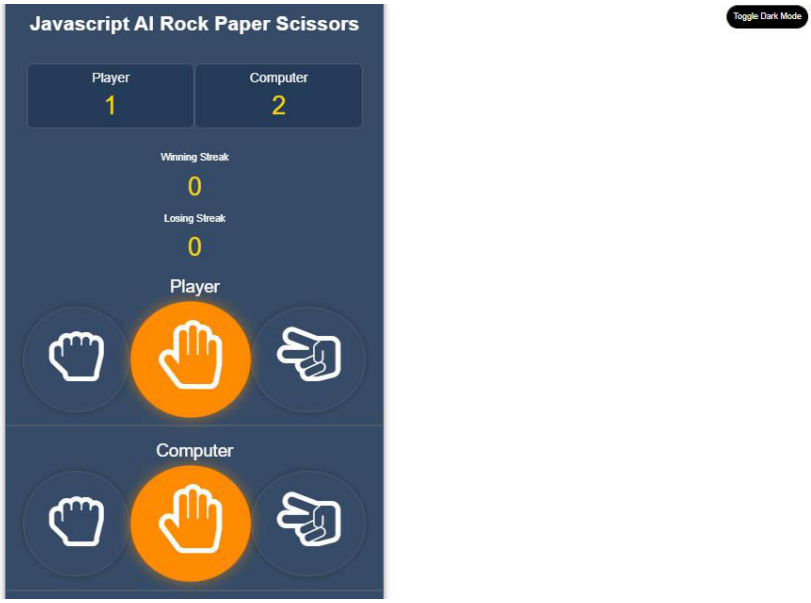
Controls:

The controls are quite simple, just like in rock, paper and scissor in real life. Click on your choice and wait for the computer (AI Model) to take its turn.

Snapshots:

Light mode:




Javascript AI Rock Paper Scissors
Toggle Dark Mode
Player
1
Computer
2
Winning Streak
0
Losing Streak
0
Player
Computer

Dark Mode:


Javascript AI Rock Paper Scissors
Toggle Dark Mode
Player
1
Computer
2
Winning Streak
0
Losing Streak
0
Player
Computer


Javascript AI Rock Paper Scissors
Toggle Dark Mode
Player
3
Computer
3
Winning Streak
1
Losing Streak
0
Player
Computer