Rock Paper Scissors

Project Overview:

This project implements a Rock-Paper-Scissors (RPS) game with an AI opponent that learns the player's behavior using machine learning. The goal is to predict the player's next move and play the winning counter-move.

AI Method

- **Type:** Supervised ML (Classification)
- **Algorithm:** Logistic Regression (scikit-learn)
- **Features:** Player's last 3 moves
- **Prediction:** Next move → AI plays the counter to win
- **Model File:** model.pkl (trained from game_data.csv)

Tools Used

- **Language:** Python
- **Game Engine:** Pygame
- **Libraries:** pandas, scikit-learn, joblib

Results

- AI starts randomly.
- After training (50+ rounds), AI improves and beats repetitive patterns.
- In tests, AI reached over **60% win rate** against predictable play styles.

Challenges

- Class imbalance when player repeats same moves
- Hard to train AI with random player behavior
- Initial CSV file format issues (solved with header fix)

GitHub : : https://github.com/harunkiyagan/rock-paper-scissors-withAI

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