

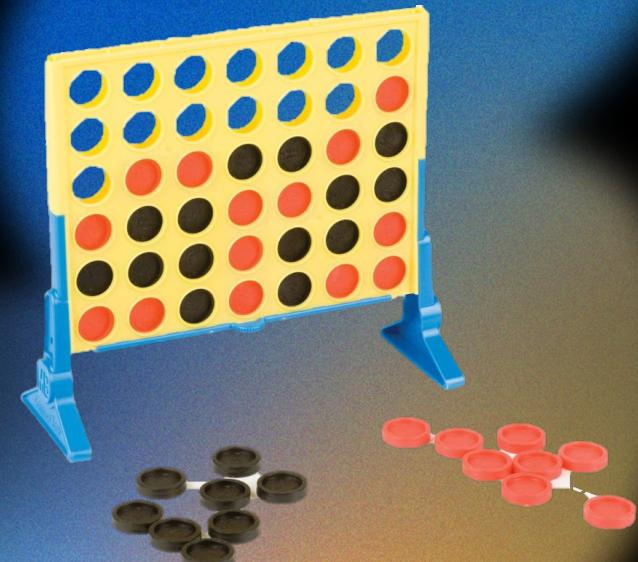
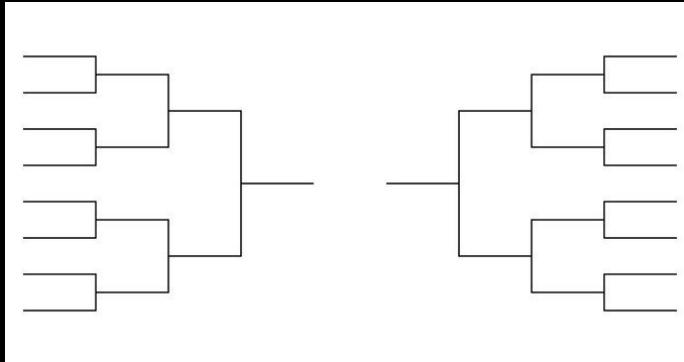
Connect4 AI Tournament



Harrison Stewart, JT Adams, Nicholas Seidl, Justin Saye

General Motivation

- Online webapp for developers to test AI Connect 4 agents against other uploaded agents in a tournament format
- Designed for UA Students in the CS 465 class



General Motivation

- AI Agents are critically important in many applications
- There is a need for robust data collection to analyze AI Agent fitness
- Key Metrics
 - Repeatability
 - Scalability
 - Ease of Use

Core Features

- User Login System (UA DUO)
- Connect4 Game Engine
- Support for User-uploaded AIs
- Tournament system to test uploaded AIs
- Human Readable Tournament Results & Statistics



Possible Features

- Individual Game Analysis
- User vs AI game mode
- Most recently uploaded AI vs old AIs
 - Store past uploads by each user and allow the user to challenge the old versions



Technical Details

- Backend - Python-based backend that will handle the Connect4 simulations.
 - Frameworks: Flask or Django - will allow simulating Connect4
 - Django is more complex, but feature-rich framework
 - Need custom built API
- Database: PostgreSQL - Users, Game History, Upload History, etc.
- Sanitize user-uploaded Python code
 - Utilize Docker for sandboxing
- Deploy to AWS or Azure
- Frontend - React-based front end that will offer a clean interface
- Serve a visual output of the simulations, displaying the game happening in real time
- Allow for a user to play the game manually
- Utilize custom-built API calls to serve responses to user actions

Development Environment

- VS Code for Python/JS
- Docker
 - Locally host and test server
- Version Controlling w/Github

Languages

- Python - Backend
 - AI logic
 - Game Engine
 - User-Uploads
- Javascript/Typescript
 - Frontend Development

Frameworks

- Django
 - Custom API
 - Database Connection
- Postgresql
- React



Related Apps / Competitors



- Our App is unique in allowing users to use their own AIs
 - Also exclusive to UA Students
- There are several online apps that allow for online Connect4
 - Boardgames.io
 - papergames.io
 - playconnectfour.com
- Our unique features will set our product apart

High Priority Challenges/Obstacles



- Finding the correct web-hosting service
- Creating an programming interface for student AI's
- Connect 4 is largely a solved game
- How to determine AI bracket and winners
- Security concerns with student AIs