CS 480, Senior Project Proposal

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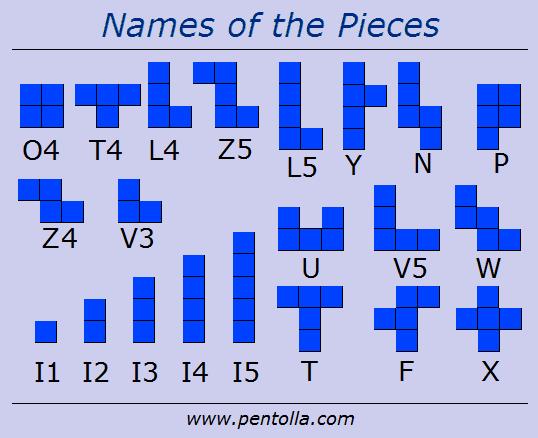
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# Project Introduction

We would like to make an online replica of the turn-based strategy game [Blokus](https://en.wikipedia.org/wiki/Blokus). Players own an identical set of polyominoes. Players take turns placing a polyomino on the board. The first move is in a designated location; depending on the game variation, this could be a corner or closer in to the center of the board. Following polyominoes must be placed at the corner of the player’s previously placed polyominoes. However, the same piece may border opponents’ polyominoes anywhere. A player is out when they can no longer make valid moves. The game ends when all players are out of moves. Each square of a polyomino is worth one point. The player with the most points on the board wins.

The game will be one versus one; human versus human, AI versus human, and AI versus AI.

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# Core Functionality (end goals) – 40%

Server manages game state - 7

Start screen with settings - 2

Ability to go human vs human or human vs AI

Detect possible moves

Players place polyominoes -

Text chat -

Any player can surrender at any time.

Detect when the game is over, determine winner, and display win screen.

Create a notation for recording match moves.

Download match as a file.

Replay system

* Review recorded match from uploaded file.
* Step through turns.
* Live tally of each players’ scored points.

# Polish – 20%

Pretty UI

User on client-side can rearrange unused polyominoes

Notify the play when it is their turn.

Editable username

Sound effects

AI profile pictures

Some way to contact us, the creators.

Highlight the player’s open corners.

Highlight the possible placements of the selected piece at specific orientation.

Highlight each players’ most recently placed polyomino.

# AI – 40%

Learn the fundamentals of machine learning

AI has different difficulties

Read Mitchell’s Machine learning chapter 1.2

Teach the AI using Machine Learning

# Extra Credit

Research generated evaluation algorithms

Live preview of piece in hand

Blunder detection

AI has chat personalities (taunts and applaud good and bad moves)

AI profile animated reactions

Polyomino rotation animation

Polyomino flip animation

Store previous matches on server

# AI works with four players

Create an evaluation algorithm that works for four players