

# Tristan Van Cise Homework 1 - Games

Repository

GitHub

## Connect4

Play connect 4 against some breadth first search oriented AI!

## Report

Three trials were carried out for each AI. Blue always represents the AI the statistics correspond to. Red always represents the control group, which is a 'Defense AI' that blocks three in a rows.

## AI Types

Defense - Blocks three in a rows, otherwise uses random moves.

Defense Agro - Blocks three in a rows and forces a win if it has a three in a row, otherwise uses random moves.

Mobile Defense Agro - Blocks three in a rows and forces a win if it has a three in a row, otherwise places pieces in the most mobile locations i.e. locations that open up the most options for future moves.

## Statistics

Defense						
1000 Games Per Trial	Evaluated Mover Per Second	Agent Score Over Time	Total Run Time (seconds)	Blue Wins	Red Wins	Ties
Trial 1	89855	1067288	11.88	423	451	126
Trial 2	77748	1071164	13.78	433	455	112
Trial 3	85070	1068709	12.56	431	461	108
Average	84224.33333	1069053.667	12.74	429	455.6666667	115.3333333
Defense Agro						
1000 Games Per Trial	Evaluated Mover Per Second	Agent Score Over Time	Total Run Time (seconds)	Blue Wins	Red Wins	Ties
Trial 1	100303	1826048	18.21	611	342	47
Trial 2	110609	1806912	16.34	552	397	51
Trial 3	101693	1802482	17.72	570	391	39
Average	104201.6667	1811814	17.42333333	577.6666667	376.6666667	45.66666667
Mobile Defense Agro						
1000 Games Per Trial	Evaluated Mover Per Second	Agent Score Over Time	Total Run Time (seconds)	Blue Wins	Red Wins	Ties
Trial 1	150755	2274115	15.08	696	283	21
Trial 2	146593	2276647	15.53	707	271	22
Trial 3	148083	2280726	15.4	698	281	21
Average	148477	2277162.667	15.33666667	700.3333333	278.3333333	21.33333333

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## Player 1's Turn

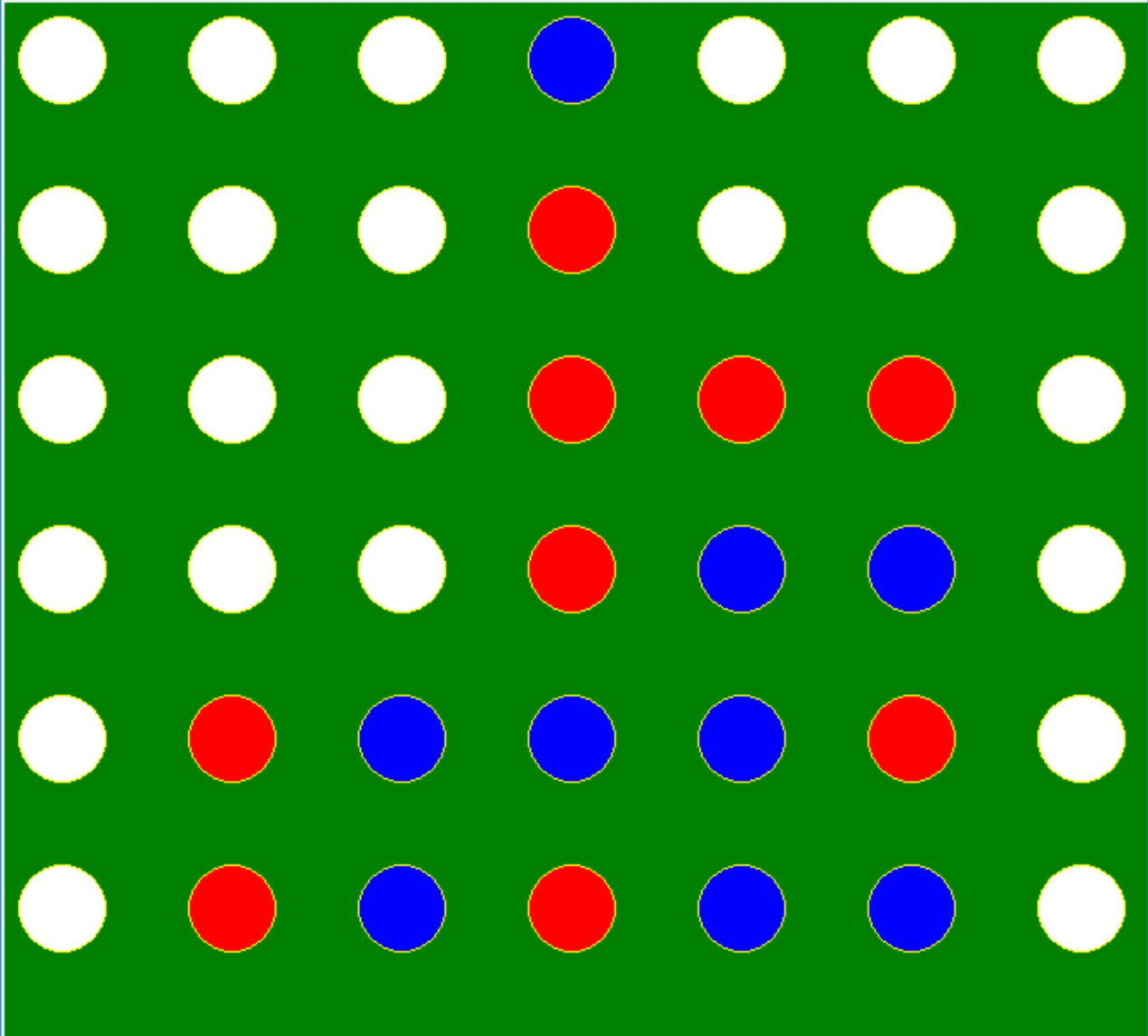
Tristan Van Cise

Player

Mobile Defense Agro

Blue Wins: 0  
Red Wins: 0  
Ties: 0

Evaluated Moves: 0  
Total Time: 0 seconds  
Moves/Second: 0



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If you are a player, all you need to do to start playing is click a column on the board.

Individual AlvsAI games can be stepped through by clicking on the board instead of pressing the "Start AI Battle!" button.

Blue goes first. Red goes second.

## Sample CLI Output

```
Piece Placed: (2, 5)
AGGRO: 9000
MOBILE: 3
Piece Placed: (3, 5)
Piece Placed: (3, 5)
AGGRO: 9000
MOBILE: 3
Piece Placed: (3, 4)
Piece Placed: (4, 5)
AGGRO: 9000
MOBILE: 3
Piece Placed: (3, 3)
Piece Placed: (4, 5)
AGGRO: 9000
MOBILE: 3
Piece Placed: (3, 2)
Piece Placed: (3, 1)
AGGRO: 9000
MOBILE: 3
Bad AI move generated, regenerating...
AI placed piece in column: 2
Piece Placed: (1, 5)
Piece Placed: (2, 5)
CheckThreeInARow: 1
Piece Placed: (1, 5)
Piece Placed: (5, 5)
CheckThreeInARow: 5
Piece Placed: (5, 5)
Piece Placed: (4, 4)
vertical
CheckThreeInARow: 4
Piece Placed: (4, 3)
Piece Placed: (5, 4)
downUpDiagonal
CheckThreeInARow: 5
Piece Placed: (5, 3)
```

## Notes

CheckThreeInARow corresponds to the AI deciding to play defensively and block the

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The type of win the AI is blocking is specified directly above the

CheckThreeInARow print out.

Example of blocking a vertical three in a row in column 5:

```
vertical
```

```
CheckThreeInARow: 5
```

AGGRO corresponds to the AI making an aggressive move to advance its win condition

Example of the AI completing a four in a row in column 1:

```
AGGRO: 1
```

MOBILE corresponds to the AI placing a piece in a location with as many adjacent slots open as possible.

Example of the AI placing a mobile piece in column 3:


```
MOBILE: 3
```

## Bugs

Don't play as `player` for red team, its clunky.

The code is disgusting :)

Probably a lot more :D

README.md hosted with  by [GitHub](#)

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