

Advanced Search Techniques

Choose a baseline search algorithm for comparison (for example, alpha-beta search with iterative deepening, etc.). How much performance difference does your agent show compared to the baseline?

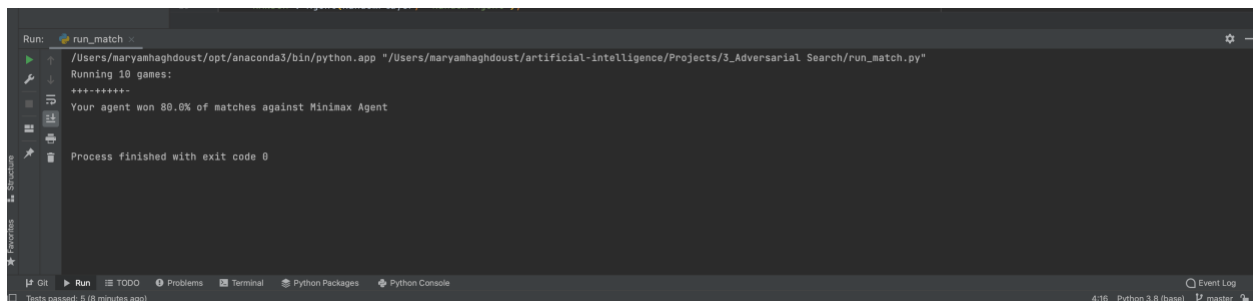
I tried different depths(3,4,5,6,7,10) with different 'NUM_ROUNDS'. Results were similar at same depth, and increasing NUM_ROUNDS made a little changes to results. The results ranged around 50%(at higher depths) to 80%(at 6th depth).

Why do you think the technique you chose was more (or less) effective than the baseline?

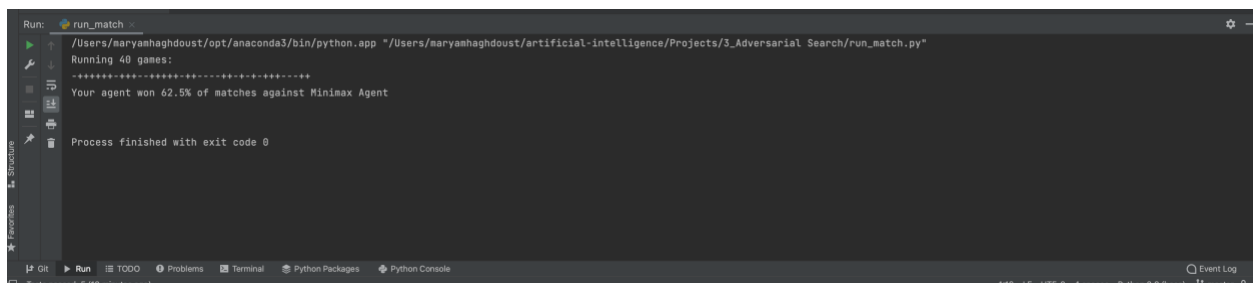
Adding Alpha-Beta algorithm and a function that chooses the best possible move to minimax improved the results.



```
Run: run_match
/Users/maryamhaghdoust/opt/anaconda3/bin/python.app "/Users/maryamhaghdoust/artificial-intelligence/Projects/3_Adversarial Search/run_match.py"
Running 20 games:
+++++
Your agent won 60.0% of matches against Minimax Agent
Process finished with exit code 0
```



```
Run: run_match
/Users/maryamhaghdoust/opt/anaconda3/bin/python.app "/Users/maryamhaghdoust/artificial-intelligence/Projects/3_Adversarial Search/run_match.py"
Running 10 games:
+++++
Your agent won 80.0% of matches against Minimax Agent
Process finished with exit code 0
```



```
Run: run_match
/Users/maryamhaghdoust/opt/anaconda3/bin/python.app "/Users/maryamhaghdoust/artificial-intelligence/Projects/3_Adversarial Search/run_match.py"
Running 40 games:
+++++
Your agent won 62.5% of matches against Minimax Agent
Process finished with exit code 0
```

```
Run: run_match
/Users/maryamhaghdoust/opt/anaconda3/bin/python.app "/Users/maryamhaghdoust/artificial-intelligence/Projects/3_Adversarial Search/run_match.py"
Running 60 games:
*****
Your agent won 76.7% of matches against Minimax Agent
*****
Process finished with exit code 0
```

Tests passed: 5 (29 minutes ago)

```
Run: run_match
/Users/maryamhaghdoust/opt/anaconda3/bin/python.app "/Users/maryamhaghdoust/artificial-intelligence/Projects/3_Adversarial Search/run_match.py"
Running 100 games:
*****
Your agent won 68.0% of matches against Minimax Agent
*****
Process finished with exit code 0
```

Tests passed: 5 (44 minutes ago)

```
Run: run_match
/Users/maryamhaghdoust/opt/anaconda3/bin/python.app "/Users/maryamhaghdoust/artificial-intelligence/Projects/3_Adversarial Search/run_match.py"
Running 10 games:
*****
Your agent won 70.0% of matches against Minimax Agent
*****
Process finished with exit code 0
```

Tests passed: 5 (a minute ago)