

# Hearthstone Al Competition

**IEEE Conference on Games 2020** 

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# Task Description

- Program an agent, which is capable of playing the game Hearthstone
- We used the Sabberstone Framework (C#) modified for partial observation
- Evaluation in two separate tracks:
  - "Premade Deck Playing"-track
    - Play all possible matches using 9 decks of which 6 are known at time of submission and 3 were secret
  - "User Created Deck Playing"-track
    - Play your own deck against other agents with unknown decks



#### "Premade Deck Playing" - track

- 23 submissions (6 disqualified)
  - Every agent needs to play 9 decks of which 6 are known at time of submission and 3 are hidden

- Round Robin Tournament
  - 81 games per matchup of two agents (playing each combination of decks) = 2592 per agent
  - The agent with the highest average win-rate against all other non-disqualified agents wins



Rank 3 - 68.71 %

GretiveComp - DL

**Alejandro Romero** 



Rank 2 – 70.91 %

Team CopyCats – DL Nils Bohnhof, Jon-Mailes Graeffe

Rank 3 – 68.71 %

GretiveComp - DL

**Alejandro Romero** 



Rank 1 – 72.34 %

MyAgentSebastianMiller2 – Dynamic Lookahead (DL)
Sebastian Miller

Rank 2 – 70.91 %

Team CopyCats – DL Nils Bohnhof, Jon-Mailes Graeffe

Rank 3 – 68.71 %

**GretiveComp - DL Alejandro Romero** 



# "Premade Deck Playing" - Conclusion

- Submitted agents:
  - Slightly improved in quality in comparison to last year
  - Multiple agents were based on previous entries (e.g. the top 3)
  - Bots now make use of the generous time limits
    - some have been disqualified since they were too generous 🕾

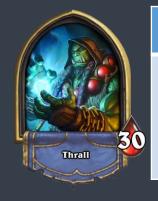
- Most frequent agent types:
  - simulation-based search algorithms, such as MCTS
  - and modifications of dynamic lookahead (winner of last year)



#### "User Created Deck Playing"-track

- 18 submissions
  - Everybody chose his own deck to play against the others
  - Round Robin Tournament
    - 1700 per agent (50 starts per player, per matchup)





Rank 3 – 59.76%

ThreeTypeDynLooker – DL Jade Shaman Maximilian Schotte, Marcel Krebs Rank 3 – 59.76%

MAGEntLookahead – DL RenoKazakus Mage Malik Mann

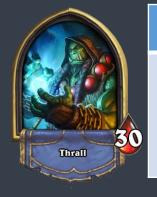




Rank 2 – 63.23 %

LynamicDookaheadAgentV1 – DL – Midrange Shaman Nils Bohnhof, Jon-Mailes Graeffe





Rank 3 – 59.76%

ThreeTypeDynLooker – DL Jade Shaman Maximilian Schotte, Marcel Krebs Rank 3 – 59.76%

MAGEntLookahead – DL RenoKazakus Mage Malik Mann







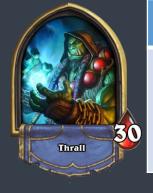
Rank 1 – 65.47 %

DrunkenAggroWarriorAgent – DL – Pirate Warrior Jann-Marten Kias, Alexander Babel

Rank 2 – 63.23 %

LynamicDookaheadAgentV1 – DL – Midrange Shaman Nils Bohnhof, Jon-Mailes Graeffe





Rank 3 – 59.76%

ThreeTypeDynLooker – DL Jade Shaman Maximilian Schotte, Marcel Krebs Rank 3 – 59.76%

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# "User Created Deck Playing" - Conclusion

- Winning agents use top-performing meta-decks
  - JadeDruid, JadeShaman, Odd Paladin, MechaHunter
  - Winning strategies include: MCTS, EA optimized fitness



The deck-playing tracks competition's meta got stale. Searching for a new task to spice up the game-play.

Please contact me in case you want to share some ideas about how to shape the future of this competition or you want to get involved

# Thank you for all your submissions! We are looking forward to continue this competition in the next year!

Bots of the previous years (and soon 2020) are available online.





https://www.hearthstoneai.github.io