

## The Lion King's Game of Thrones Bot: A Risk-Averse Approach

This project encapsulates the development of a bot designed for the game The Lion King's Game of Thrones. An initial approach involved a strategy of moving in rectangular patterns to conquer territory, but resulted in little success as the bot left long temporary trails. An intermediate approach utilized alpha-beta pruning and a heuristic function that incorporated bot proximities to opponents and the length of its temporary trail, which led to increased success against RandomBot and AttackBot, but struggled against SafeBot as it was unable to conquer territory as efficiently.

Further improvements on the bot addressed the bug of getting stuck in permanent territory, which meant that multiple moves were wasted moving back and forth within permanent territory. The new strategy involved a history of previous moves, which the bot used to detect and avoid getting stuck in loops. Additionally, a check was created to ensure that the bot's next few moves would not result in immediate loss, and it would employ risk-averse tactics to return to permanent territory in this case. These improvements resulted in higher successes against RandomBot, AttackBot, and SafeBot.

The final submission included a more comprehensive heuristic that included all of the previous strategies but also added more considerations for potential value gains, resulting in a slightly more aggressive bot than before. The final bot consistently achieved a 100% win rate against RandomBot, 80% against SafeBot, 60% against AttackBot, and varying success rates against TA1Bot and TA2Bot depending on the room size. Future improvements could focus on optimizing territorial expansion strategies based on board size.