

Adversarial Search Bot for Game Decision

This project revolves around building an AI bot to play a turn-based game in which you attempt to capture territory. The objective of the game is to either capture 50% of the territory, or “kill” the other player by stepping on them or their trail. Similarly to how a chess bot would be developed, I leveraged adversarial search techniques, particularly alpha-beta pruning and heuristic evaluation, to develop a competitive bot capable of consistent success against the given bots. Initially, I implemented rule-based bots to determine optimal behavior and strategies for a more “intelligent” bot. Subsequent iterations used adversarial search algorithms to allow the bot to search a tree of possible moves and decide on the best course of action based on heuristic evaluations of each state. Challenges included optimizing the bot’s movement to maintain a balance between capturing territory as well as keeping itself safe from hazards that existed on the board. Despite issues with heuristic accuracy and computational depth, the project demonstrates the application of AI techniques in the development of high-level bots and highlights areas for further improvement in heuristic design and adversarial logic for game strategy.