Reconnaissance Blind Chess Assignment

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Results of the Round Robin Tournament

Random Sensing vs Baseline Agents

Opponent	Colour	Winning Colour	RandomSensing Outcome
RandomAgent	White	Black	WIN
RandomAgent	Black	Black	LOSE
TroutBot	White	White	LOSE
TroutBot	Black	White	WIN

Improvements to the Agent:

Opening Strategy

➔ By opening with strong, central moves, the ImprovedAgent ensures that it directs its sensors to the most informative squares, reducing the uncertainty far quicker than RandomSensing.

➔ It gives the ImprovedAgent a much more Tactical Edge because other players may make suboptimal opening moves.

Probabilistic Reasoning

➔ Since you cannot see the full board, the ImprovedAgent maintains a set of possible board states and assigns each with a confidence value based on what the ImprovedAgent senses during the game and the opponent's actions.

➔ This allows the ImprovedAgent to weigh all possible options and make a move based on all the possibilities, as compared to RandomSensing.

Choose Sense

➔ The ImprovedAgent uses a heatmap of the likely positions of the Opponent's King and uses Entropy calculations to choose the most informative square and maximize the information learnt per turn.
➔ Compared to RandomSensing, this allows the ImprovedAgent to have less wasted moves because of better decision making.

Results of the Round Robin Tournament

Improved Agent vs Baseline Agents

Opponent	Colour	Winning Colour	ImprovedAgent Outcome
TroutBot	Black	White	WIN
TroutBot	White	Black	WIN
RandomBot	Black	White	WIN
RandomBot	White	White	LOSE

Random Sensing vs Improved Agent

RandomSensing	ImprovedAgent	Winning Colour	ImprovedAgent Outcome
White	Black	Black	WIN
White	Black	Black	WIN
White	Black	White	LOSE
Black	White	White	WIN
Black	White	White	WIN

Black	White	Black	LOSE

Conclusion:

The techniques used allow the ImprovedAgent to react in a more informative and competitive manner as compared to RandomSensing. This is shown above in the results from the tournaments.

These improvements are not the only ones that could have been made, as other improvements could have improved the ImprovedAgent further and from that we could have analysed the performance of the bots in greater detail. The improvements that were made did allow for the ImprovedAgent to beat the opponent agent quite well.