

Fail-Safe Cloud Tournament Engine with Error Detection and Error Recovery



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Chapter 1

Introduction

The Cloud Tournament Engine (CTE) used in 3rd year at Stellenbosch University is designed to manage many Othello [1] tournaments, involving many players, concurrently. A user is able to view public tournaments, players, referees, schedulers, etc. and view relevant statistics for ongoing and completed tournaments. The admin, usually the lecturer, is able to add tournaments, schedulers and rankers.

A scheduler is used to schedule matches between two players in a round-robin fashion, where every player plays against every other player. After every player has played against every other player, the overall win-loss ratio can be calculated that can be used to distinguish between good, average and bad players. The win-loss ratio and the Elo rating [2] can be used in conjunction.

A ranker is used to distinguish between the good and bad players by comparing the Elo of the two players, where every player starts on the same amount of Elo. For every win that a player has, they gain a certain amount of Elo and for every loss that a player has, they lost a certain amount of Elo. The amount gained or lost decreases for every match that the player plays, meaning that eventually the Elo rating will be a true reflection of the skill level of the player.

A referee is used to monitor the moves that the two players make in a match and check if any player makes an invalid move or times out. One player sends a move to the referee, which then checks if the move is valid and only sends the move to the other player if the move made is valid. If the move made is invalid, or the player times out, the match will be forfeit and the last player to send a valid move becomes the winner.

The current CTE was used in 2019, but it was found to have some major limitations. The web interface that is used is not user-friendly, there is minimal to no error reporting or error recovery, the code base is unmaintainable and it relies on older technology. In many scenerios, a player failure results in a failed tournament when running the CTE.

Chapter 2

System Overview

Chapter 3

Design and Implementation

Chapter 4

Testing

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Future Work

Chapter 6

Conclusion

Bibliography

- [1] Masters Traditional Games. *Rules and Instructions for Reversi and Othello*. 2019. URL: <https://www.mastersofgames.com/rules/reversi-othello-rules.htm>.
- [2] Adam Newell. *What is Elo? An explanation of competitive gaming's hidden rating system*. Jan. 2018. URL: <https://dotesports.com/general/news/elo-ratings-explained-20565>.