Thesis Journal

AI-based Playtesting of Contemporary Boardgames

The paper analyzes the boardgame, Ticket to Ride using multiple different Ais to test balance of the game. They would each find the most desirable cities for each playstyle and using that knowledge could see what cities were best overall for all playstyles. This information could be used to balance the game. The paper also states that this information could be taken a step further and be used to generate maps itself that use strategies the developers want the players to use. This can cut out undesirable strategies from defeating the game.

The AI was also used to find issues with the rules. Another purpose behind the paper is to show how useful AI could be for playtesting boardgames to find flaws. As the rules in a boardgame grows, the game gets more complicated, and it becomes more and more important to have playtesters to balance the game. Hours spent finding problems could be reduced if an AI is allowed to jump into the playtesting.

<http://game.engineering.nyu.edu/wp-content/uploads/2017/06/ticket-ride-fdg2017-camera-ready.pdf>

The Truth About Digital Board Games

StoneMaier Games put out an article about their experience with Digital Boardgames. In it he first describes a full digital version to mean one where the game knows the rules, so it doesn’t mean versions like Tabletop Simulator which are physics based and assume the player knows the rules. They explain that digital versions actually increase the sales of the tabletop version most likely because it allows people to try the game out. They specifically mention that digital versions aren’t looked as a money making option for them. They want to be profitable, but they won’t make a lot of money. StoneMaeier then explains the process of picking a company to work with to make the games. They explain that boardgame developers then have to answer a bunch of questions once they’ve picked someone to make the game like how hands-on do they want to be in the process and what platforms will the game be on. Another big one is what versions of AI, local, and online multiplayer will they want. They said single player versus AI is most important followed by online multiplayer.

<https://stonemaiergames.com/the-truth-about-digital-board-games/>

An MCTS Agent For Ticket To Ride

This thesis written by Carina Huchler focuses on using Monte-Carlo Tree Search for Ticket To Ride. Carina explains the difficulties of writing an AI for Ticket to Ride since the game has a lot of unknown information. You don’t know what cards your opponents have and you don’t know what cards you will draw. She explains different search algorithms and the MCTS (Monte-Carlo Tree Search) is a best-first search algorithm. You build a tree and then choose the most promising one. MCTS has seen success in Catan and Bridge. The paper explains the rules of Ticket To ride, MCTS, and then how MCTS could be used for Ticket to Ride. She then explains how different types of MCTS agents compared against different players like Single Observer and Cheating Player. In conclusion MCTS is successful in Ticket to Ride with Flat Monte-Carlo working best. The thesis only focused on two players, so further research would be necessary to test if MCTS would work with more.

<https://project.dke.maastrichtuniversity.nl/games/files/msc/Huchler_thesis.pdf>