



Thesis Defense

Computer Science Master's Program

"Analyzing Player Difficulty Perception in Platformers Through Procedural Level Generation"

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Abstract:

Games utilizing Procedural Level Generation (PLG) are becoming increasingly popular in today's gaming sphere. In this genre of game, colloquially referred to as "Roguelikes", levels are generated randomly or pseudo-randomly with the aim of retaining player attention through variance in levels between playthroughs. However, when generating levels with variance in structure and design, player enjoyment is often a mixed bag. With low enjoyment, player retention for these games can dwindle. This study explores the efficacy of real-time difficulty adjustment in procedurally generated platformers, as a method for maintaining stable player enjoyment.

This thesis focuses on creating a short user experience, MIMEVA, that aims to generate levels that match a player's skill level as they progress. A procedural level generator and level loader, PLGen, was created to assist in efficiently generating and loading new levels in MIMEVA. In MIMEVA, levels were generated during each playthrough according to each player's performance, with adjustments to the difficulty being calculated based on their performance in each prior level. A user study was conducted where participants were asked to play through several platformer levels generated in MIMEVA before answering questions regarding their experience. Data collected during the playtest and in the questionnaire was used in order to gauge the effectiveness of difficulty adjustments, and how they affected player enjoyment.

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Time: 12:00 PM – 2:00 PM

Location: 14-232b

Committee: Dr. Grow, Dr. Canaan, Dr. Beard

