

Video Game Satisfaction with Adaptive Game AI



Abstract

In this study we aimed to find a relationship between participant's personality and their game type preferences. We used Union College students to test this relationship by having students take personality tests and then play two different types of adaptive game AI, one that adapts based on skill and one that adapts based on events in the game. Early results from about fifteen participants suggest that more skilled players prefer the difficulty adaptive variant over unskilled players and that personality had a less significant effect, but extroverted people tended to prefer the difficulty adaptive variant as well whereas introverted people preferred the event adaptive variant.

Methods

We had three separate phases to our experiment. In the first phase each of the participants was given a standard Big Five Factor Personality Test. In the second phase we had the participants play three different versions of the game Mrs. Pacman.

- The first version is an unedited control version that familiarizes the player with the game. The participants played this for a short period of time
- The second version is one written by us that adapts to the skill of the player by continuously becoming more difficult as the participant plays, but becomes easier when the player is eaten, thus the difficulty of the ghost AI is determined by how long the player can survive.
- The third version is also one written by us that adapts to events that happen in the game. This version adapts to the way the player plays and the ghosts display emotions based upon these behaviors.

Participants were randomly assigned to which adaptive variant that they would play first and were asked to play the adaptive variants for roughly three times as much time as the control variant. In the third and final phase the participants took a satisfaction survey where they noted their skill, enjoyment and likelihood to play each of the game types again.

Results

The early results from the study showed that there were three main interesting relationships that the data from our fifteen participants has currently indicated thus far.

- It was shown that participants who ate more ghosts on average ($M=7.3$) had a higher preference for the event based adaptive variant ($M=5.6$) than the difficulty based adaptive variant ($M=4.2$)
- Extroversion was a strong personality type and extroverts enjoyed the difficulty version ($M=5.7$) more than the event version ($M=4.6$)
- The strongest relationship was that the more skilled the player was the more they enjoyed the difficulty adaptive variant ($M=6.2$) over the event based variant ($M=5.3$)

Of the fifteen participants, there was a strong correlation between the player's reported skill at a game type and their enjoyment and replayability of that game type ($r(13)=.42, p<.01$)

Discussion

The results from the study are still preliminary, but they show some interesting relationships between game preference and player type. The results suggest that the most important factor in determining game satisfaction is the game's inherent challenge. More skilled players were looking for something that challenged them and they found it in the difficulty adaptive variant. Less skilled players were already challenged and they enjoyed having a more storied and life like feel to the game because they weren't as concerned with performing well. We will be doing more work with the data to find if this relationship can be described further by personality type.

