CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

Angelia M. Silva

Project Number

J0427

Project Title

What Creeps You Out? Physical Features Affecting the Uncanny Valley in Animated Movies

Abstract

Objectives/Goals

My objective was to determine which physical feature of computer generated characters in animated movies has the greatest negative effect on responses to the Uncanny Valley. The Uncanny Valley theorized that when robots closely resemble, but are not quite human-like, we perceive them to be creepy. Computer generated eyes often appear dull and glassy which make the characters look zombie like, therefore I hypothesized that eyes are the physical feature that would have the greatest negative effect on reactions to the Uncanny Valley.

Methods/Materials

I created a PowerPoint survey containing 14 animated movie clips, and one live action movie clip as my control. A questionnaire was developed asking participants to rate each movie clip on a scale of one (very repulsive) to ten (very appealing). Participants selected the physical feature (skin texture, facial wrinkles, jerky movements, eyes, poorly synched voice to animation, or none of the above) that most affected their rating. This survey was administered to 82 subjects, 53 females and 29 males, ranging in age from 13 to 79 years. Responses that fell into the very repulsive to somewhat repulsive range (a score of 1 to 4 on the 10 point scale) were categorized by physical feature.

Results

Eyes had the greatest negative effect on responses falling into the Uncanny Valley, with a total of 62 responses. Skin texture was a close second with 57 responses, followed by facial wrinkles with 50 responses. Jerky movements and poorly synched voice to animation had the least effect with 30 and 24 responses, respectively.

Conclusions/Discussion

Although eyes had the greatest impact on reactions to the Uncanny Valley, the data only partially supports my hypothesis, because skin texture had an almost equally significant impact. My research could help movie studio animators focus their attention on the physical features that most affect audiences# responses as they work to keep their characters out of the Uncanny Valley. This could also be applied to animation in video games, computer software, and robotics.

Summary Statement

After surveying 82 subjects, my hypothesis was partially supported by the data with eyes scoring 62 responses, followed closely by skin texture with a total of 57 responses.

Help Received

Professor Celia Mercer, Chair, Animation Program at UCLA assisted with my research.