

Development and Testing of an Adaptive Game Algorithm for a Positive Distraction System

Engineering Technology

FUNDER:

Ontario Centres of Excellence

INDUSTRY PARTNER:
Shaftesbury Tech Inc.

TIMELINE:

March - June 2018

RESEARCH TEAM:

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KEY STATS:

Prototypes developed: 1

Developing large scale data analysis in hospital environment to detect/predict patients' patterns

Industry partner may become first large mass adaptive gaming in market; start-up games: 4

Adaptive learning approach: 1

Context: Advanced media and AR/VR products improve healthcare experience, patient engagement, and therapy. Based on information gathered from users during game play, an adaptive algorithm changes the interactive elements; a positive distraction media system adjusts for maximum positive outcome, including reduced stress and decreased heart rate.

Industry Challenge: The industry partner has a basic model of positive distraction created by the Mohawk faculty lead that can be made more sophisticated (i.e., a neural network-based learning approach) to improve their adaptive algorithm and the ability to ingest biometric data to improve the participant's state.

Solution: Mohawk created and tested a prototype VR gaming system that determined a player's level of excitement through their movements and adjusted the game's settings to keep the user engaged. Tests showed a 30% reduction in stress in a set-up environment after 8 minutes of play; heart rate also decreased significantly.

Impact of the project: The industry partner can lead the adaptive system market; significant federal funding has been secured for further development and testing with full clinical trials. Four positive distraction game titles equipped with Mohawk's upgrades will go to top tier U.S hospitals through an interactive patient engagement technology firm to help reduce stress and facilitate healing during hospital stays, particularly before and following surgery.

Mohawk's role: Dr. Mihai Albu is instrumental in the development of the adaptive algorithm (formerly "supergame engine"). First, Mohawk's team would like to help Shaftesbury take the system to mass market so gamers everywhere can experience more tailored VR play. Second, an adaptive learning system will be developed to allow interactive learning in STEM.