The Effects of Haptic Visualization on Human Performance, Behavior and Perception

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Summary

In this journal, 7 articles were selected out of a pool of 18 to review new possible data and applications for haptics.
"'Scenario-Based Observation Approach for Eliciting User Requirements for Haptic User Interfaces"' - This study reviewed current processes for requirements engineering, and proposed a methodology which focused heavily on context based on scenario, and tested the theory with visually impaired students.
"'VITAKI: A Vibrotactile Prototyping Toolkit for Virtual Reality and Video Games"' - A new toolkit was created which enables prototyping for new vibrotactile interaction techniques.
"'Haptics on a Touch Screen: Characterization of Perceptual Thresholds"' - This study tested user sensitivity to vibration on touch screens by varying the wavelengths and intensities of the vibration.
"'The Effect of Vision on Discrimination of Compliance Using a Tool"' - This group studied user perceptions of compliance based on varying combinations of vision and haptics, such as direct (vision + haptics), indirect (view via computer screen + haptics), or just with haptics on its own.
"'Use of Reference Frame and Movement Pattern in Haptically Enhanced 3D Virtual Environment"' - This study had visually impaired users describe a mental map of an environment they were tasked with walking through, and what factors assist in this endeavor.
"'The Impact of Combining Kinesthetic and Facial Expression Displays on Emotion Recognition by Users"' - This article determined how much importance haptics may have for recognizing facial expressions, but testing appeared to have inconclusive results.
"'Intermodal Audio-Haptic Metaphor: Improvement of Target Search in Abstract Environments"' - Audio and haptics were paired together to determine how well participants would be able search for a target in a complex environment.

References

[1] C. S. Nam, P. Richard, T. Yamaguchi, and S. Bahn, "Does touch matter?: The effects of haptic visualization on human performance, behavior and perception.," *International Journal of Human-Computer Interaction*, vol. 30, no. 11, pp. 839 – 841, 2014.