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강연제목: 가상현실에서 일어나는 멀미의 정량 평가

(Quantitative Evaluation of Cybersickness caused by Virtual Reality)

Abstract:

Thought, scent, emotion, feeling, etc are difficult measurands to evaluate them quantitatively to date. Researchers studied them once from 2006 to 2010 at BIPM (International Committee for Weights and Measures) meeting which is a meeting for the world metrologists. It was called as "Measuring the Impossible" project and left many homeworks to us including brain function too. It is still difficult and challenging area to many researchers. As a side effect, VR (virtual reality) users could experience cybersickness. The severity of cybersickness may vary depend on human factors including age, experience, gender, experience, adoptivness, and susceptibility to VR. Researcher should consider hardware and software parameters including display type, field of view, motion to photon latency, rendering modes, complexity, yaw, roll, and pitch speed of a content. Zoom in and out speed may also give additional effect to the cybersickness. In this study, we evaluated the brain areas, brain wave changes, and subjects response using electroencephalography (256 channels) and questionnaire. Delta, theta and alpha waves were showing reliable results and consistent changes for the cybersickness ($p < 0.05$). Frontal and central areas showed consistent response to cybersickness. Recovery time based on EEG took up to 17 minutes to get back to the baseline condition after cybersickness. Further studies using more population and various contents are needed for the clear evidence of cybersickness in VR.

Brief Biosketch

Principal Research Scientist, KRISS

Director, Institute of Safety, KRISS

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Publication: 53 research papers, 3 books, 10 patents