

Compact 3 DOF Driving Simulator using Immersive Virtual Reality for ecological decision making

We constructed a driving simulator using a 3-DOF motion platform (DOFReality H3) and a head-mounted virtual reality headset (Oculus CV1). Our intention was to keep it affordable, keep its spatial footprint low, while maintaining robust functionality. By providing synchronized visual and vestibular stimuli, we were able to reduce simulator-sickness-induced nausea while, at the same time, enhancing the realism of the driving simulator and thus enhancing immersion in the environment. The driving simulator facilitates the study of deliberate decisions in a rich environment that is nevertheless completely under our control, especially with simultaneous recording of EEG using a mobile EEG system. For example, we will predict decisions while driving from EEG (and potentially driving history) as a form of deliberate decision-making.