Annual CS Postgrad Workshop - Presentation

Title: Measuring Response to Rotation Gain in Virtual Reality

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Brief Abstract:

Redirected walking allows users in virtual reality to experience immersive navigation while the physical space available for them to walk around in is limited. Gains decouple the movement of the user in the physical space from their movements in the virtual world. This causes the user to double back on themselves in the physical space while continuing to explore the virtual world. Rotation gains change how much the user is turning in the physical tracking space compared to how much they are turning in the virtual world.

We ran an experiment with 38 participants that looked at their response to rotation gain levels between 1 (turning the same amount virtually and physically) and 1.98 (turning twice as much virtually as physically) under various conditions. We found that the environment, the gain level and the amount they were requested to turn all had an impact on how well participants turned, while direction (clockwise or counter-clockwise) did not. Participants were more strongly impacted by the gain in a virtual environment with lots of visual reference points than one with a single reference point. The participants response to gain varied. A taxonomy was created to describe the four main response styles to the presented rotation gain.