Gift Exchange on the Holodeck – A Real Effort Experiment in Virtual Reality

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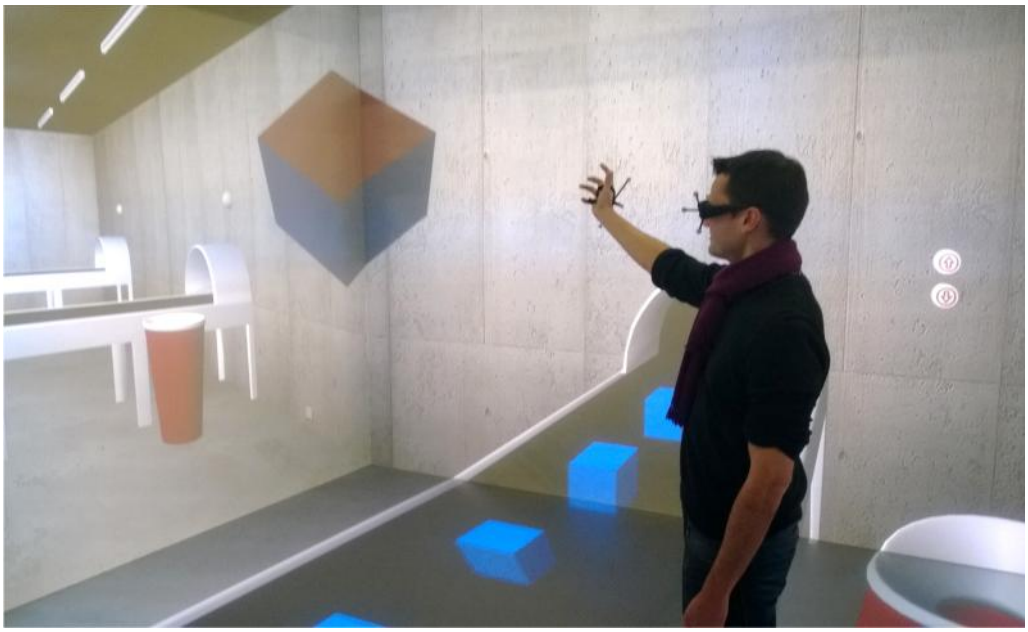
Working paper coming soon…

Abstract (as submitted to Economic Science Association International Meeting 2014)

(1) We introduce a novel method for conducting real effort experiments in a highly immersive virtual environment. Unlike in virtual worlds, in our setup, real subjects – not their avatars – act inside a 3D projection room called CAVE (Cruz-Neira et al. 1993), similar to a "holodeck" known from the sci-fi series Star Trek. In our setup, subjects perceive the situation in the CAVE as if they were inside a production hall. Being in this virtual room, subjects physically work at a virtual conveyor belt sorting out virtual cubes with defects at different sides. A tracking system allows determining exactly the position of a subject and her movements in space. To check for defects, subjects can grasp the virtual cubes with their bare hands and rotate them. Cubes with a defect must be placed in a virtual trash bin. (2) In four treatments with different monetary incentives, we experimentally inquire (i) the "gift-exchange" hypothesis of Akerlof (1982) and (ii) the monotonicity effect of the piece rate compensation on performance. We measure effort multidimensionally by taking the number of not rejected cubes with defects, the number of grasps and the duration of grasps into account. (3) We explain how experiments in CAVE may improve external validity by increasing control of the task and the experimental environment. We suggest several future avenues for research in highly immersive virtual environments and discuss how this research may add value to experimental economics.



Andreas Staffeldt grasping a virtual cube in the "aixCAVE", the CAVE of the RWTH Aachen University.