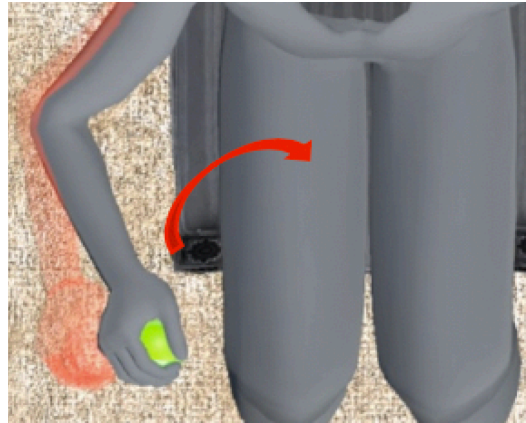


VR Project: Dynamic Distortion in Virtual Reality



Main Objective:

Develop a Virtual Reality game with a new interaction technique using movement distortion.

Background:

Despite the great potential of recent VR devices, the current state of immersive full-body interaction is still far from plug-and-play. In particular, the performance of motor tasks in virtual environments is generally not possible with the same ease as in the real world. Most, if not all, of our perception-action modalities (visual, proprioceptive, haptic, etc) suffer from reduced abilities in VR, which can, in turn, reduce the impact of the proposed experience or training. For this reason, we propose a distortion function adapted to the performance of predefined trajectories that help subjects to perform a complex movement while making them believe that they are, in fact, the authors of that movement.

Project Idea:

The laboratory seeks to develop a game in virtual reality which uses the dynamic distortion to implement a novel interaction. Unity is used to develop the game. The goal is to exploit the unique features from these adapted distortions to elaborate new kinds of interactions. At least three different interactions based on these distortion need to be elaborated and to be implemented with one of the headset types (Vive or Oculus). These interactions are meant to be used as a demo for a future publication about the distortion technique.

The theme of the game is open but has to be validated by T. Porssut and R. Boulic.

Goal:

- Implement a game in VR.
- Use dynamic distortion in a novel interaction.
- A demo must be produced.

Requirements:

- Unity (scripting in C#/DLL in C++)
- 3D geometry and quaternions (Vectors, cross products, rotations)

Information, materials and resource:

Unity3D game engine: <http://unity3d.com/learn>

Dynamic distortion: the scripts with the implementation will be supplied.

Contact:

Thibault.PORSSUT@epfl.ch, INJ139

Ronan.BOULIC@epfl.ch, INJ 141