Master Diploma Project:
Evaluating user sensitivity to secondary postures distortion.

Main Objective:
Assessing sensitivity thresholds to posture distortions for secondary body parts/joints that are not currently under the user focus of attention but are nevertheless in the field of view.

Project Idea:
The immersive power of Virtual Reality can be even greater is the user is embodied in an avatar. For this to be effective a sufficiently correct motion capture and avatar mapping techniques are necessary. Some prior studies have shown that the user can be highly sensitive in case of self-contact mismatches between the real and the virtual body. The tolerance is greater for hand movement in free space. In the present project we want to evaluate the tolerance for secondary body parts that are not under the user focus of attention while achieving a task. For example it could be the elbow location while achieving a reach task or a trajectory following with the hand.

Goal:
- Review the state of the art on embodiment and technology of motion capture
- Develop the software for flexibly introducing a desired distortion in the avatar posture
- Define a set of tasks that will be used to assess the sensitivity to secondary distortion
- Conduct user studies and make the statistical analysis of the results

Requirements:
- VR course background
- Unity (scripting in C#/DLL in C++)
- Statistics: setting a scientific experiment, ANOVA, software R
- 3D geometry and quaternions (Vectors, cross products, rotations)

Information, materials and resource:
Unity3D game engine: http://unity3d.com/learn
some papers will be provided

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