Collaborative Hand-Object Interaction

Bachelor's Thesis / Master Project

Description:
Hand pose estimation is an important part of many HCI systems, and plays a key role for future AR and VR applications. An interesting aspect of such applications is the interaction with virtual objects by using one’s own hands. This interaction approach is an important aspect of increasing the immersion of AR and VR systems. Recently\(^1\) physically correct and unconstrained hand-object interaction became computationally tractable, by using simple physics-based simulation of the real hand together with the virtual object. Due to its efficiency, this approach should be extended to a multi-user, collaborative interaction system, where several users (2+) can interact with common objects within a shared virtual environment. Each user is equipped with his/her own VR/AR device, possibly located physically distant from each other, but all users share and interact with the same virtual environment in a physically correct way.

The start and end of the project can be chosen by arrangement.

Objective:
- Implement server/client interface
- Implement networked physics simulation
- Implement simple show case application

Qualifications:
- Experience in C#\(^1\)
- Knowledge of basic computer graphics
- Experience/interest in Unity/PhysX engine

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