Temporal Regularization for Frame-based Hand Pose Estimation

Bachelor’s Thesis / Master Project

Description:
Hand pose estimation is an important part of many HCI systems, and plays a key role in future AR and VR applications. Most of recent approaches use depth cameras (e.g. MS Kinect) to capture the users’ hand and apply the hand pose estimation algorithm on these depth images. However, most current algorithms ignore the temporal constraints between different depth frames, which yields non-smooth hand poses.
The starting point of this work is to use our state-of-the-art hand pose estimation method. This method currently operates on each depth frame independently. It should be extended with a method that incorporates the temporal constraints between the individual frames (e.g. Kalman Filter). Finally, the improved hand pose estimation should be integrated into an existing real-time pipeline. The start and end of the project can be chosen by arrangement.

Objective:
- Review literature about recent works
- Implement temporal filtering method
- Integrate model into real-time pipeline

Qualifications:
- Experience in Python
- Interest in Machine Learning
- Interest in Augmented Reality

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https://github.com/moberweger/deep-prior-pp