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. Since this depth images actually contain 3D measurements, different representations are possible that can have significant influence on the accuracy of the pose estimation. The starting point of this work is to use our state-of-the-art hand pose estimation method\(^1\). This method currently uses depth images, and should be extended to work with different image representations, e.g. color, depth, normals, etc. Further, the method requires training data, which in practise is limited. Therefore, different methods for data augmentation should be explored. The start and end of the project can be chosen by arrangement.

Objective:
- Review literature about different representations
- Evaluate different representations (color, depth, normals, etc.)
- Integrate representations into real-time pipeline
- Evaluate different data augmentation techniques for training

Qualifications:
- Experience in Python
- Knowledge of basic image processing
- Interest in Machine Learning
- Interest in GPU programming

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\(^1\)https://github.com/moberweger/deep-prior