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F O R S C H U N G S P R A X I S
for
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Hand motion retargeting for dexterous manipulation imitation in v-rep

Problem description:

Grasping object with a dexterous hand is a complex task. One way to achieve autonomous dexterous manipulation is through learning by demonstration [1] [3]. To achieve learning by demonstration, a framework is required to capture human hand pose [2] and map human hand pose to robotic hand pose. In this Forschungspraxis, the student will implement such a framework in a simulation environment, where the tasks include:

Work schedule:

- Research and create a robotic hand model in v-rep simulation environment.
- Implement the mapping from robotic hand pose to human hand pose [1].
- Integration and test of all components

Bibliography:

[1] Dafni Antotsiou, Guillermo Garcia-Hernando, and Tae-Kyun Kim. Task-oriented hand motion retargeting for dexterous manipulation imitation. *arXiv preprint arXiv:1810.01845*, 2018.
[2] Shile Li and Dongheui Lee. Point-to-pose voting based hand pose estimation using residual permutation equivariant layer. *arXiv preprint arXiv:1812.02050*, 2018.
[3] Shuang Li, Xiaojian Ma, Hongzhuo Liang, Michael Görner, Philipp Ruppel, Bing Fang, Fuchun Sun, and Jianwei Zhang. Vision-based teleoperation of shadow dexterous hand using end-to-end deep neural network. *arXiv preprint arXiv:1809.06268*, 2018.

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