Master's thesis or HiWi (20h/week):

Games Engineering for rehabilitation therapy with a hand exoskeleton

Our hands have impressive functionality and give us the ability to complete even the most difficult tasks. But they might no longer function as they used to at some point. Or their control. We can provide help with your help.

As part of a DFG project and in cooperation with the Bogenhausen Hospital, we – an interdisciplinary research group at TUM – are developing a rehabilitation robot for hands. The project's overall goal is to support rehabilitation of „complex regional pain syndrome" (CRPS) patients. The rehabilitation robot should be interfaced with therapy games. The necessary hand exoskeleton is currently being designed by our research group.

But the therapy game? It should be an activity that can be controlled by a Leap motion (www.leapmotion.com) and later by the hand exoskeleton. Patients should have fun and be motivated by this gamification. In addition, the game should be appropriate for the age group and visualize the progress of the therapy. Therapists as well as patients should be able to assess the therapeutic success.

Which are my tasks?

- Literature review on CRPS and questionnaire theory.
- On-site research at the Bogenhausen Hospital, via a patient questionnaire, on the type of rehabilitation game for hands to be implemented.
- Game development in Unity 3D (www.unity3d.com), which allows for the game to first be played using a Leap motion (www.leapmotion.com) and later with the hand exoskeleton.
- Interface for therapists and patients depicting scores and detailed information on the patient's rehabilitation progress.

What do I have to bring?

- Structured and methodical way of working.
- Creativity and ability to abstract.
- Unity 3D knowledge.

Who do I need to contact?

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