TUM | Robotics and Embedded Systems

Human Brain Project

Bachelor Thesis - Master Thesis - Semester Project

Developmental Body Modeling in Soft Robotics

BACKGROUND

Neurorobotics is an interdisciplinary field of research at the intersection of robotics and neuroscience with the main goal of connecting brain models to robots. Recently new tools such as the Neurorobotics Platform [1] have enabled the conduction of neurorobotics experiments completely in simulation without the need for physical robots. This not only enables accelerated and distributed experiments but also allows the use of highly realistic models of biological bodies with properties that are not available on physical robots. Two features of specific interest of neurorobotics are body growth and a soft skin. To this end, we have already developed a series of human body models that capture different developmental stages.

YOUR TASK

You will continue refine the existing model set, model physical properties such as soft skin with a simulation framework (e.g. [2]) and interface the simulation with a neural network to conduct selected experiments on developmental embodiment.

REQUIRED SKILLS

- Good knowledge of C/C++
- Basic experience in 3D modeling and robot simulation is of advantage

FURTHER READING

[1]   http://www.neurorobotics.net
[2]   https://www.sofa-framework.org

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