Soft Tissue Robotics

Simulation-Driven Concepts and Design for Control and Automation for Robotic Devices Interacting with Soft Tissues

IRTG 2198

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S-1/II: Model-based process planning for automated handling of deformable objects (Dr. Lechler, Prof. Allgöwer, Prof. Verl, Prof. P. Xu)

S-2/II: Feedback control for dynamic soft tissue systems by a surrogate of the value function (Prof. Haasdonk, Prof. Schmitt, Prof. Besier)

S-3/II: Development of Stochastic Model Predictive Control (MPC) formulations for soft tissue robotics (Prof. Allgöwer, Dr. Lechler, A/Prof. McDaid)

S-4/II: Sensor information inference in bio-inspired, hierarchical control structures of muscle-driven systems: integration, fusion, learning (Prof. Schmitt, Prof. Allgöwer, Prof. Haasdonk, Dr. Rosset)

S-5/II: Electro-mechanical actuator concepts for robotic applications (Prof. Parspour, A/Prof. McDaid)

S-6/II: Simulating cognitive resource demands in learning situations on a neural level with computational modelling (Jun.-Prof. Wirzberger, Prof. Billinghurst, Prof. MacDonald)

S-7/II: Tagged-Ultrasound for in vivo characterisation of Skeletal Muscle (Prof. Röhrle, Dr. Ateş, Dr. Handsfield)

S-8/II: Skeletal muscle passive and active force estimation in vivo using shear wave elastography (Dr. Ateş, Prof. Röhrle, Prof. Besier)

S-9/II: A Multi-Code Coupling Approach for Muscle Simulation, HPC Perspectives (Prof. Mehl, Prof. Röhrle, Dr. Handsfield, Prof. Besier)

S-10/II: Learning to simulate complex soft tissue models fast (Prof. Verl, Prof. Cheng, Prof. Röhrle)

S-11/II: Quantum sensor-enabled actuation (Prof. Wrachtrup, Dr. V. Vorobiev, Prof. Röhrle, Prof. Cheng)

S-12/II: An Interdisciplinary Approach to Advance Magnetomyography Techniques for Magnetic Field Recordings of Skeletal Muscles (Prof. Röhrle, Prof. Wrachtrup, Prof. Cheng)

Soft Tissue Robotics
IRTG 2022 Summer School
Demonstrator Project Workshop

University of Stuttgart
Germany

Stuttgart
August 24, 2022

International Research Training Group (IRTG)
– DFG Project –
Soft Tissue Robotics

IRTG 2022 SUMMER SCHOOL

Demonstrator Project Workshop

August 24, 2022

14:00	**Welcome greetings** Simona Galliani
14:15	**Demonstrator Project Presentation** PhD Students' Representatives
14:45	**Discussion**
15:00	**Coffee Break**
15:15	**Visit to the Neuromechanics Lab (NML)**
15:30	**Project - Live Demonstration** PhD Students' Representatives
16:00	**Discussion**
16:30	**Collaboration Outlook**
17:00	**Closing Greetings** Prof. Oliver Röhrle

PLACES:

- SimTech Seminar Room, PWR-0.009 Pfaffenwaldring 5a,
- The Neuromechanics Lab (NML), Room U.214, Institute for Parallel and Distributed Systems, Universtiätstrasse 38,

University of Stuttgart
70659 Stuttgart
Germany

Please note that after the "Coffee Break" there will be a change of venue from the SimTech Seminar Room (PWR 0.009), to the Neuromechanics Lab (NML). At the end of the "Project -Live Demonstration" the group will return to PWR 0.009.