

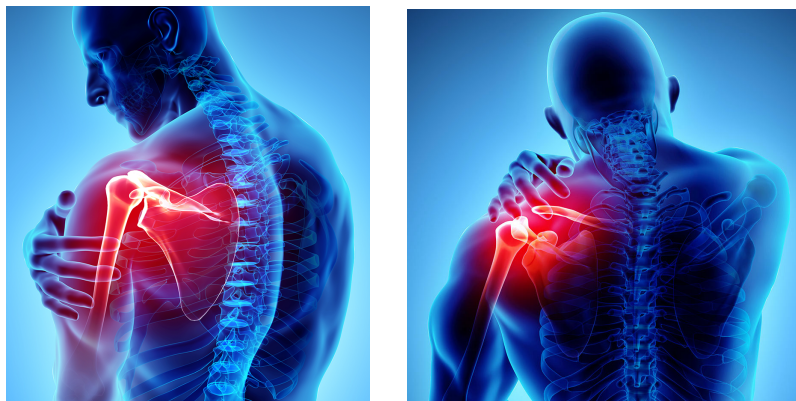
The Joint Biomechanics Training Centre and the School of Mech., Medical & Process Engineering at Queensland University of Technology (QUT) together with the Institute of Applied Dynamics of Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), are offering at the earliest possible time a

## Research Project / Master Thesis

with the topic

### Musculoskeletal modeling of the shoulder

Human musculoskeletal simulations are able to illustrate and to predict how the human body moves and give insight into internal body loads, reaction forces, muscle forces etc. They became important in different fields such as designing ergonomic work environments, optimising motion in sports and rehabilitation or in the personalisation of prosthetics, as well as in animation movies or games. One widely used tool for the simulation of musculoskeletal models is OpenSim which offers many features. The focus of this project is on the wrapping of muscles around the skeleton and a comparison of OpenSim models to a wrapping model based on a geodesic formulation of the muscle paths.



The project is jointly supervised by Peter Pivonka from QUT and Sigrid Leyendecker from FAU and involves a stay at QUT in Brisbane, Australia for several months.

#### The project involves

- musculoskeletal modeling based on multibody dynamics and geodesic muscle paths
- musculoskeletal modeling in OpenSim

#### Qualifications

- studies in the field of Mechanical Engineering, Computational Engineering, Medical Technology, Mathematics or similar
- programming experience in Matlab/Python or similar
- good written and verbal communication skills in English
- courses in dynamics, multibody dynamics, biomechanics (optional)

If interested, please E-mail to:

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