**Doctoral researcher for "Personalization of musculoskeletal models, movement analyses and simulations"**

The Biomechanical Motion Analysis and Creation (BioMAC) group in the Chair of Autonomous Systems and Mechatronics (ASM) at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) invites applications for a doctoral position on personalization of musculoskeletal models, movement analyses and movement simulations.

**Background:**

This research is part of the Collaborative Research Centre (CRC) 1483 Empatho-Kinaesthetic Sensor Technology (EmpkinS, www.empkins.de), funded by the German Research Foundation (DFG, Deutsche Forschungsgemeinschaft). In EmpkinS, we investigate novel sensor and data transmission technology, as well as functional models of the human body and algorithms that enable an unobtrusive, contactless acquisition of movement parameters and through these data, insight into the body's physiological and behavioral state. With around 20 exciting subprojects, 24 principal investigators, and over 30 doctoral researchers working within the CRC, EmpkinS provides a globally visible, highly interdisciplinary, and exciting research environment.

We are looking for a doctoral researcher (Dr.-Ing.) to work on the subproject "C01 – Personalization of musculoskeletal models, movement analyses and simulations". In C01, we research accessible personalization of musculoskeletal models, movement analyses, and movement simulations. The aim of this research is to understand why individuals move differently and how their movement is influenced by their body composition and its internal state. The doctoral researcher will develop and validate methods to personalize musculoskeletal models from unobtrusive measurements. Furthermore, they will investigate the effect of psychological stress on movement and develop a method to predict movement changes due to such stress. The project will be conducted in close collaboration with clinical and technological experts.

**Work Environment**

The BioMAC group is part of the ASM chair at FAU, one of the largest universities in Germany. FAU has faculties in humanities, law, science, medicine, and engineering. FAU's mission statement "Moving Knowledge" reflects the close collaboration between these faculties. The BioMAC research group is part of the engineering faculty and aims to understand human movement by combining machine learning with physics-based modeling and use this knowledge to improve gait, e.g. by designing better exoskeletons and prosthesis. Detailed information on ongoing projects is available on our website, via our publications and upon request.

The doctoral studies are embedded in the CRC's own graduate school including a structured, interdisciplinary program with other researchers from engineering, humanities, and medicine.

**Requirements:**

Candidates for this position should have a master's or comparable degree in Biomedical Engineering or a related discipline (e.g., Computer Science, Electrical Engineering, Mechanical Engineering). Knowledge of one or several of the areas of optimal control, machine learning, or

biomechanics is desired. The ideal candidate shows strong enthusiasm towards research, independence, and has excellent teamworking abilities.

**Program details and contact for application/questions:**

The position's start date is September $1^{st}$ or later. Funding is available for at least 3 years; an extension is possible. Prospective applicants should apply to the email address listed below with a cover letter, academic CV and a list of courses and grades of their most recent degree. Applications will be processed from **May 12$^{th}$**, but accepted until the position is filled.

Contact:   Prof. A. Koelewijn (anne.koelewijn (a t) fau.de)

Website:   https://www.asm.tf.fau.de/en/startseite/research/biomac/