The Chair of Human Movement Science and the Lab of Dynamic Human-Robot-Interaction for Automation Systems at the Technische Universität München (TUM) jointly offer a

PhD scholarship (DAAD, German Academic Exchange Service) in Sports Science, Human Movement Science and Robotic Engineering

as soon as possible for up to 36 months (subject to interim progress review after 1 year; extension by an additional 12 months is possible in special circumstances). This PhD position is part of the interdisciplinary research project about 'Robotic light touch support during locomotion in balance impaired humans (ROLITOS)' at the TUM International Graduate School of Science and Engineering (IGSSE).

The PhD scholarship is aimed to investigate how daily-life motion parameters indicative of an individuals ' prospective fall risk, such as variability of body sway or spatiotemporal gait stability, can be utilised for setting the right "challenge" in a robotic balance exercise programme.

Core tasks:

- Acquisition and extraction of balance parameters from daily-life physical activity recordings
- Determination of prospective fall risk during standing and walking
- Translation of this information into a robotic control signal for controlled balance perturbations adapted to participants general level of balance performance
- Evaluation a robotic setup as an adaptive balance trainer
- Dissemination of scientific results in the form of conference presentations (oral or poster) and publications in high-impact scientific journals

Requirements:

- University degree on the level of a Master (e.g. of Science, of Engineering) of an accredited institution in Mechanical Engineering, Electrical Engineering, Human Movement Science, Sport Science, Psychology, Behavioural Neuroscience or a related area (essential)
- Very good English in speech and writing (TOEFL IBT better than 95) (essential)
- Very good communication skills (essential)
- Socially adaptive and tolerant, able to work in an open minded, international project team (essential)
- Very good mathematical background and programming skills (desirable)
- Willingness to study German initially and to improve German language skills continuously throughout the entire period of the PhD work (essential)

Extent of the PhD scholarship

- Monthly bursary with additional reimbursement of expenses for study materials (e.g. literature)
- Travel subsidy
- Combined health, accidents and personal liability insurance
- Potential contributions to any housing expenses by the DAAD
- Membership in the TUM International Graduate School of Science and Engineering (IGSSE)

Further information
The Chair of Human movement science held by Prof. Joachim Hermsdörfer is devoted to the understanding of human motor control and associated neural mechanisms. Major research topics encompass motor learning and motor development over the lifespan, sensorimotor skills and activities of daily living, sports, and disturbances of the central nervous systems and neurorehabilitation. The research methods employed comprise the acquisition and analysis of kinematics and forces as well as neuroimaging with functional magnetic resonance tomography and transcranial magnetic stimulation.

The Lab of Dynamic Human-Robot-Interaction for Automation Systems held by Prof. Dongheui Lee conducts research on human-robot interaction, machine learning for humanoid robots and computer vision. Physical human-robot collaboration, symbolic communication, imitation learning and mimesis, human-robot skill transfer and daily life human motion capture define key research questions pursued by the application of advanced and novel methods from nonlinear control, optimal control and artificial intelligence.

The Technische Universität München (TUM) is ranked as the highest performing university in Germany and is listed among the Top 100 universities in the world. The TUM is an equal opportunity employer that promotes the advance of women in science according to her Gender&Diversity policies (applications by female candidates are strongly invited).

In case you are interested
Send your complete application by 17th May 2015 (extension is possible) to Dr. Leif Johannsen, Human Movement Science, Department of Sport and Health Sciences, Technische Universität München, Campus D, Georg-Brauchle-Ring 62, 80992 München, Germany OR via email to Leif.Johannsen@tum.de. The required documents of your application are: letter of motivation (mention your preferred date to begin PhD work), academic CV (including list of any publications), 2 personal academic letters of reference, degree certificates and study reports, transcripts of records, police certificate/criminal records check, TOEFL IBT (better than 95 or an equivalent proof of English language skills).

Next steps:

1. Be aware of the application deadline
2. Contact Dr. Leif Johannsen and send copy of CV, certificates, recommendation letters and other required documents
3. Preselection of candidates by the Chairs of Human Movement Science and Dynamic Human-Robot-Interaction
4. Nomination of up to 4 candidates for the PhD scholarship to the DAAD (competitive process; you will be informed of the outcome of the preselection)
5. Formal application by electronic submission of documents to the DAAD
6. Selection and final decision by the DAAD committees
7. If selected, apply for visa and begin language classes if required
8. Relocate to Munich and begin PhD work

Contact

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