PhD position at Heidelberg University (Germany): Balance and ageing

The research group Computational Biomechanics at the University of Heidelberg (Germany) offers a 3-year PhD position to study balance in older persons brought to the edge of their fall recovery abilities and develop an individualized and adaptive training program. This PhD in the area of ageing, balance analysis and fall training is scheduled to start in the summer of 2022.

Job Description:
Falls pose a major threat to the well-being of the steadily growing population of older adults in our modern-day society. In principle, falls can be prevented by offering specialized fall training that targets the specific balance deficits of an older person. This PhD position aims to collect balance data in older persons using treadmill-applied perturbations that simulate varying fall scenarios. This data will advance our understanding of how specific balance deficits are to certain movements and fall directions. It will also allow us to identify personal factors and balance deficits to target in a small, individualized perturbation-based fall training study.

This project will be performed within the Institute of Computer Engineering (ZITI) in the Research Group of Computational Biomechanics (www.ziti.uni-heidelberg.de/compbiom) as well as the Research Group of Optimization, Robotics and Biomechanics (https://typo.iwr.uni-heidelberg.de/groups/orb/home). There will be a close collaboration with the geriatrics department of Bethanien hospital. You will also be encouraged to take part in an international internship with our existing collaboration network.

As part of this project, you will:
- Undertake biomechanics experiments with younger and older adults on a perturbation treadmill to evaluate balance analyses in a fully instrumented motion capture lab;
- Collaborate within a multidisciplinary network of engineers, psychologists, sports scientists, and gerontologists:
  - Agaplesion Bethanien Hospital (www.bethanien-heidelberg.de/start)
  - The Gerontology Institute of Heidelberg University (www.gero.uni-heidelberg.de/)
  - Network Ageing Research Heidelberg (www.nar.uni-heidelberg.de)
  - Institute of Sport and Sport Sciences (www.issw.uni-heidelberg.de)
  - The Medical Technology Research Group (www.lorenzomasia.com)
- Publish and present papers at international conferences that expand our understanding of the nature of dynamic balance, phenotypes of dynamic balance deficits, perturbation-based balance assessment and training.

Desired Qualifications:
- A MSc in Biomechanics, Human Movement Sciences, Sport Sciences or equivalent
- In addition, please highlight if you have any of the following:
  - Experience with experimental research involving human participants
  - Experience with motion capture, EMG, IMU, force plates or similar systems and data analysis
  - Courses in Human Motion analysis, Medical Physiology, Signal Processing, Statistics
  - Experience with programming in Python, Matlab and/or Visual3D
  - Experience with obtaining medical ethical approval and/ or training in Good Clinical Practice
  - Good team working abilities, ability to naturally interact with participants, and organizational skills

Remuneration is based on TV-L (based on TV-L, 65% E13). The PhD position is for a duration of three years. The work will take place at Heidelberg University's Neuenheimer Feld campus and Agaplesion Bethanien Hospital in Heidelberg, Germany.

Please send your application to orbsec@ziti.uni-heidelberg.de with the subject "PhD position EPP" before January 20, 2022. You are invited to send an application cover letter (including possible starting date), CV and expose about your Master thesis (max 1 page). In your CV please also give details of two referees we could contact.