A Workshop on Gait

When 18. and 19. of November 2019

Where Hanse–Wissenschaftskolleg, Delmenhorst, Germany (www.h-w-k.de)

What A two-day interdisciplinary workshop on the topic of gait. Overview lectures from various disciplines (e.g. computer science, neurology, sports sciences, geriatrics) will be given and followed by a poster session on the first day. Joint meals at the HWK will provide plenty of opportunity for further discussion and socializing. The second day consists of parallel, small group hands-on sessions and offers the opportunity to learn from experts. In addition, different hardware systems for EEG and motion acquisition will be demonstrated. A detailed program can be found overleaf.

Organization Neuropsychology Lab Oldenburg (Stefan Debener, Nadine Jacobsen, Joanna Scanlon) and HWK Delmenhorst (Dorothe Poggel and Thurid Werner).

Application Please apply by email to Ms Thurid Werner: **twerner@h-w-k.de** and indicate whether you want to present a poster. Participation fees are EUR 50.- for academics and EUR 500.- for companies. Fees include lunch and dinner.

Day 2: Hands-on sessions

Hands-on sessions will be distributed over the second day and will partially take place in parallel. However, it is still possible to participate in several hands-on sessions. The necessary hardware will be provided, but participants can also use their own computer.

Measuring with GaitRite - The gold standard for gait analysis
(Dr. Sebastian Fudickar and Sandra Hellmers, Oldenburg)
In this hands-on session, we will introduce you to conducting measurements, post-processing and analysis with the GaitRite, representing the gold standard for gait analysis.

Qualisys Gait Analysis – application in clinical and research context (Dr. Nils Eckardt, Oldenburg)
Marker based motion analysis is still the gold standard in clinical gait analysis. In this hands-on-session we get to know a typical workflow, from the exact placement of the markers and the subsequent data acquisition and analysis, to individual marker-arrangements and the integration of external equipment.

The APDM Mobility Lab Analysis System (Dr. Lars Schwickert, Stuttgart)
The field of inertial-sensor based motion analysis is quickly evolving. This session will present diverse applications of the APDM multi sensor system outside the lab. All participants will be actively involved into assessments of gait and balance as well as a showcase and discussion of clinical interpretation.

Acquiring EEG data during walking (Neuropsychology Lab, Oldenburg)
This hands-on session will use different EEG and/or motion sensors to acquire EEG during gait and/or gait initiation. Data will be made available to participants for further processing.

Analyzing gait EEG signals (Dr. Martin Seeber, Geneva)
This hands-on session will focus on the analysis of EEG recorded during gait. We will discuss and apply artifact identification and reduction, how to synchronize and link behavioral gait information to EEG recordings and the basics of functional brain imaging during gait based on time-frequency analyses.

Program

Time	Day 1: Lectures	Day 2: Hands-on sessions
9:00	Welcome & organisation	Hands-on sessions
9:15 - 10:00	**Gait disorders in Parkinson's disease** Prof. Dr. Karsten Witt Chair of Neurology, University of Oldenburg, Germany	
10:00 - 10:45	**Effects of auditory information on gait rehabilitation and Parkinson's therapy** Prof. Dr. Alfred Effenberg Dept. of Sports Science, Leibniz University Hannover, Germany	
10:45	**Coffee**	
11:00 - 11:45	**Application of a perturbation-treadmill in assessment and training in geriatric patients** Prof. Dr. Tania Zieschang Chair of Geriatrics, University of Oldenburg, Germany	Hands-on sessions
11:45 - 12:30	**Non-traditional gait analysis with applications in geriatrics** Dr. Nils Eckardt Institute of Sport Science, University of Oldenburg, Germany	
12:30	**Lunch**	
14:00 - 14:45	**Ecological Validity of the N170 – a mobile EEG study** Prof. Peter König, Institute of Cognitive Sciences, University of Osnabrück, Germany	Hands-on sessions
14:45 - 15:30	**Electrocortical dynamics of gait** Prof. Dan Ferris, Dept of Biomedical Engineering, University of Florida, US	
15:30	**Coffee**	
16:00 - 16:45	**Functional brain imaging during gait** Dr. Martin Seeber Basic Neuroscience, University of Geneva, Switzerland	Presentation of results from the hands-on sessions
16:45 - 17:45	**Combination of IMUs and ambient sensors for gait analysis** Prof. Dr. Andreas Hein Dept. of Computing Science, University of Oldenburg, Germany	Closing remarks
17:30	Posters, wine & cheese	
19:00	**Joint dinner**	