IEEE Biomedical and Health Informatics (BHI) and the Body Sensor Networks (BSN) Conferences <u>EŇB</u>			
B B B B B B B B B B	1 0 1 0		
Workshop/1	Futorial title: 5th Intl. Symposium on Automated Sensor Based Mobility Analysis for Disease Prevention and Treatment		
Organizers	Brian Caulfield, University College Dublin Björn Eskofier, Friedrich-Alexander University Erlangen-Nürnberg (FAU) Barry R. Greene, Kinesis Health Technologies Jochen Klucken, University Hospital Erlangen		
Short description	Mobility defines the quality of life in health and disease. Sensor based information on gait and mobility is increasingly introduced into healthy living and disease monitoring. It supports primary prevention, diagnostic work-up and therapeutic decisions in a variety of disorders. In an ageing society, impairment of motor function is of increasing medical and economical relevance. In particular neurological, musculoskeletal and cardiovascular disorders reduce the ability to move independently and limit the autonomy of patients. Even though the disease causing mechanisms are specific for each disorder, mobility in general is limited. This makes mobility an important surrogate marker for disease severity and progress, but more importantly for therapeutic decisions and quality of life.		
Contents	Currently, modern body sensor network based motion detection systems are developed that (I) assess motor function in primary prevention and throughout the course of numerous movement disorder diseases, (II) provide objective measurement for therapeutic efficacy in clinical studies, and (III) support therapeutic decisions. The symposium will focus on the current knowledge and applications of body sensor network based motion detection systems in the clinic. It will bring together technical experts and physicians specialized in movement disorders to discuss the recent advances in the field of automated mobility analysis.		
CVs of the organizers	 Brian Caulfield is a Professor of Physiotherapy in University College Dublin, where he also serves as a Director of the Insight Centre for Data Analytics. His research in Insight is focused on leveraging data from wearable sensors to better understand and enhance human performance in different health and sports applications. Bjoern Eskofier is professor for 'Digital Support Systems in Sports and Health' within the Heisenberg-program of the German Research Foundation (DFG). He heads the Machine Learning and Data Analytics Lab of the FAU. Currently, this lab has 25 co-workers, working in the fields of machine learning and signal analysis for wearable computing systems with a focus on sports and health care. Barry R. Greene is CTO and co-founder of Kinesis Health Technologies. He is responsible for technical direction, research and development and regulatory affairs. He has significant expertise in healthcare technology, in particular the application of biomedical signal processing, machine learning and statistics. Jochen Klucken is a neurologist and movement disorder specialist at the University Hospital Erlangen, Germany. As a clinician healthcare development and regulatory affairs. 		
♦IEEE	years and is currently translating them into digital health application.		





5th Intl. Symposium on Automated Sensor Based Mobility Analysis for Disease Prevention and Treatment

At the 15th Annual International Body Sensor Networks Conference 2018 Date: March 4, 1330-1700 (afternoon session) Venue: Room E, Treasure Island Hotel, Las Vegas, NV, USA **Organizers:** B Caulfield, PhD; B Eskofier, PhD; B Greene, PhD; J Klucken, MD (contact: bjoern.eskofier@fau.de)

Abstract:

Mobility defines the quality of life in health and disease. Sensor based information on gait and mobility is increasingly introduced into healthy living and disease monitoring. It supports primary prevention, diagnostic work-up and therapeutic decisions in a variety of disorders. In an ageing society, impairment of motor function is of increasing medical and economical relevance. In particular neurological, musculoskeletal and cardiovascular disorders reduce the ability to move independently and limit the autonomy of patients. Even though the disease-causing mechanisms are specific for each disorder, mobility in general is limited. This fact makes mobility an important surrogate marker for disease severity and progress, but more importantly for therapeutic decisions and quality of life.

Currently, modern body sensor network based motion detection systems are developed that (I) assess motor function in primary prevention and throughout the course of numerous movement disorder diseases, (II) provide objective measurement for therapeutic efficacy in clinical studies, and (III) support therapeutic decisions.

The symposium will focus on the current knowledge and applications of body sensor network based motion detection systems in the clinic. It will bring together technical experts and physicians specialized in movement disorders to discuss the recent advances in the field of automated mobility analysis. The half-day symposium will provide a forum for academia, clinicians, industry, health insurance, and governing bodies to exchange ideas and to promote collaboration.

This symposium was held for the first time in 2013 during Body Sensor Networks Conference in Boston, USA. The following editions took place in Zuerich, Switzerland, Boston, and San Francisco.

Speaker list:

Brian **Caulfield**, PhD, Insight Centre, University College Dublin, Ireland Valeria **De Luca**, PhD, Novartis Institutes for Biomedical Research, Basel, Switzerland Bjoern **Eskofier**, PhD, Machine Learning & Data Analytics Lab, FAU Erlangen-Nürnberg, Germany Juan **Haladjian**, PhD, Chair for Applied Software Engineering, TU Munich, Germany Jochen **Klucken**, MD, Dept. of Molecular Neurology, Universitätsklinikum Erlangen, Germany David **Kotz**, PhD, Department of Computer Science, Dartmouth College, USA Sunghoon Ivan **Lee**, PhD, Information & Computer Sciences, University of Massachusetts, Amherst, USA Benny **Lo**, PhD, The Hamlyn Centre, Imperial College London, UK Federico **Parisi**, PhD, Wireless Ad-hoc Sensor Networks Laboratory, Università di Parma, Italy Jerker **Westin**, PhD, Dalarna University, Sweden Wenyao **Xu**, PhD, Embedded Sensing and Computing Lab, University at Buffalo, USA

Symposium program:

16:40 17:00	Jerker Westin , PhD; Ilias Thomas , PhD Dalarna University, Sweden Joint Dis	Sensors for individualizing Parkinson treatment scussion	
16:20	Sunghoon Ivan Lee , PhD College of Information and Computer Sciences University of Massachusetts, Amherst, USA	The Use of Wearable Sensors and Systems in Rehabilitation Medicine	
16:00	Valeria De Luca , PhD Translational Medicine, Novartis Institutes for Biomedical Research, Basel, Switzerland	Digital technologies and novel endpoints to address clinical and medical needs	
15:40	Benny Lo , PhD The Hamlyn Centre Imperial College London, UK	Pervasive Sensing and Wearable Technologies for Health	
15:20	David Kotz , PhD Department of Computer Science Dartmouth College, USA	Computational jewelry for mobile health	
15:00	Coffee Break		
14:40	Juan Haladjian , PhD; Bernd Brügge , PhD Chair for Applied Software Engineering, Technical University Munich, Germany	Wearable technology to support and assess rehabilitation after knee and hip surgeries	
14:20	Federico Parisi, PhD; Paolo Bonato, PhD Department of Physical Medicine and Rehabilitation, Harvard Medical School, Spaulding Rehabilitation Hospital; Wyss Institute for Biologically Inspired Engineering, Harvard University	mHealth Technology for the Clinical Management of Chronic Conditions	
14:00	Wenyao Xu , PhD; Jeanne Langan , PhD Embedded Sensing and Computing Lab University at Buffalo, the State University of New York (SUNY), USA	A Scalable and Adaptive Paradigm for Software-Defined Rehabilitation	
13:40	Jochen Klucken , MD Dept. of Molecular Neurology, University Hospital Erlangen, Germany	A doctor's view: from sensor-based solutions to digital health applications	
13:30	Introduction and Overview of the Symposium Bjoern Eskofier , PhD, Machine Learning and Data Analytics Lab, Erlangen, Germany Brian Caulfield , PhD, Insight Centre, University College Dublin Barry Greene , PhD, Kinesis Health Technology Jochen Klucken , MD, Dept. of Molecular Neurology, Erlangen, Germany		