CURRICULUM VITAE

Thomas Kosch

Human-Centered Ubiquitous Media
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Research Interests

I studied Software Engineering at the University of Stuttgart in Germany with focus on signal processing algorithm design, analysis of physiological sensory data, and implementation of context-aware computing systems. I am currently a PhD student at the Ludwig-Maximilian University of Munich under the supervision of Albrecht Schmidt. My research primarily encompasses the analysis and interpretation of physiological sensory data to explore its usage in adaptive computer environments with focus on electroencephalography and eye tracking. This is complemented by investigating how such methods can be leveraged in real-time to provide adaptive assistance in at home and workplace settings.

Education

October 2017 - present — *PhD student at the Ludwig-Maximilians-Universität München (LMU Munich)*

January 2016 - October 2017 — *PhD student at the University of Stuttgart, hciLab Stuttgart*

December 2015 — *Master of Science (M.Sc.) in Computer Science at the University of Stuttgart*
Master's thesis title: Real-time Brain Mapping for Treating Substance Abuse using Neurofeedback

September 2015 - November 2015 — *Visiting researcher at the University of Miami Life Science and Technology Park, Florida, USA*

April 2014 — *Bachelor of Science (B.Sc.) in Computer Science at the University of Stuttgart*
Bachelor's thesis title: Development of an Audio Toolkit for Multiple Input Sources

Employment

October 2013 - December 2015 — *Student research assistant at the University of Stuttgart*

My work as student research assistant encompassed the research of memory augmentation techniques, development of interactive assistive systems providing support during manual haptic assembly (www.motioneap.de), and the feasibility of using physiological data as an additional component for context-aware computing systems. At the University of Stuttgart, I developed a projection-based assistive system, which provides support by displaying in-situ instructions for workers and students in their learning stage to enhance the overall learning experience and alleviate

cognitive workload. I have focused on the usage of electroencephalography (EEG), eye tracking, and electromyography (EMG) to provide adaptive instructions based on physiological parameters.

January 2016 - Present — *PhD student at the University of Stuttgart / Ludwig-Maximilian University of Munich*

Based on the research conducted during my time as student assistant, I continued to work on understanding mental processes when user interact with computer interfaces. This comprises the evaluation of physiological sensing as tool to assess mental workload. This is complemented by evaluating the complexity and operation of user interfaces on an objective level. I focused on how such workload-aware systems can support users to optimize the overall user experience. This includes research in the area of adaptive user interfaces and how user interfaces can be changed during runtime to avoid frustration and boredom to the user.

Projects

August 2016 - Present — *KoBeLU: Kontextbewusste Lernumgebung (KoBeLU: Context-Aware Learning Environment)*
www.kobelu.de

August 2014 - December 2016 — *motionEAP: System zur Effizienzsteigerung und Assistenz bei Produktionsprozessen in Unternehmen auf Basis von Bewegungserkennung und Projektion (motionEAP: System for efficiency enhancement and assistance in production processes in companies based on motion recognition and projection)*
www.motioneap.de

October 2013 - April 2014 — *RECALL: Re-thinking and re-defining memory augmentation*
www.recall-fet.eu

Program Committees

IoT'17	Workshop Organizer "Handling the Internet of Things: Human-Computer Interaction Perspectives on IoT (HCIIoT)" *International Conference on the Internet of Things (IoT)*
PETRA'17	Workshop Organizer "Designing Assistive Environments for Manufacturing (DAEM)" *International Conference on Pervasive Technologies Related to Assistive Environments (PETRA)*

Reviewing Activities

CHI'18	Conference on Human Factors in Computing Systems
TEI'18	Tangible Embedded, and Emobodied Interactions
UbiComp'17	International Joint Conference on Pervasive and Ubiquitous Computing
VRST'17	Symposium on Virtual Reality Software and Technology
MobileHCI'17	International Conference on Human-Computer Interaction with Mobile Devices and Services
ACMM'17	ACM Annual Conference on Multimedia
CHI'17	Conference on Human Factors in Computing Systems
IoT'16	International Conference on Internet of Things
Mindtrek'16	Academic Mindtrek Conference

Teaching

2017 — *Introduction to Human-Computer Interaction* with Prof. Dr. Albrecht Schmidt and Dr. Tonja Machulla

Publications

Conference Papers

T. Kosch, Y. Abdelrahman, M. Funk, and A. Schmidt, “One Size Does Not Fit All – Challenges of Providing Interactive Worker Assistance in Industrial Settings,” *Proceedings of the 2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing, 2017.*

T. Kosch, P. Knierim, P. Wozniak, and A. Schmidt, “Chances and Challenges of using Assistive Systems in Education,” *Mensch und Computer 2017–Proceedings, 2017.*

R. Kettner, P. Bader, T. Kosch, S. Schneegass, and A. Schmidt, “Towards Pressure-based Feedback for Non-stressful Tactile Notifications,” in *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services, New York, NY, USA, 2017.*

S. Büttner, H. Mucha, M. Funk, T. Kosch, M. Aehnelt, S. Robert, and C. Röcker, “The Design Space of Augmented and Virtual Reality Applications for Assistive Environments in Manufacturing: A Visual Approach,” in *Proceedings of the 10th ACM International Conference on Pervasive Technologies Related to Assistive Environments, New York, NY, USA, 2017.*

M. Funk, A. Bächler, L. Bächler, T. Kosch, T. Heidenreich, and A. Schmidt, “Working with Augmented Reality? A Long-term Analysis of In-situ Instructions at the Assembly Workplace,” in *Proceedings of the 10th ACM International Conference on Pervasive Technologies Related to Assistive Environments, New York, NY, USA, 2017.*

P. Knierim, T. Kosch, V. Schwind, M. Funk, F. Kiss, S. Schneegass, and N. Henze, “Tactile Drones – Providing Immersive Tactile Feedback in Virtual Reality Through Quadcopters,” in *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems, New York, NY, USA, 2017.*

M. Funk, T. Kosch, R. Kettner, O. Korn, and A. Schmidt, “MotionEAP: An Overview of 4 Years of Combining Industrial Assembly with Augmented Reality for Industry 4.0,” in *Proceedings of the 16th International Conference on Knowledge Technologies and Data-driven Business, New York, NY, USA, 2016.*

P. Knierim, M. Funk, T. Kosch, A. Fedosov, Müller Tamara, B. Schopf, M. Weise, and A. Schmidt, “Ubibeam++: Augmenting Interactive Projection with Head-mounted Displays,” in *Proceedings of the 9th Nordic Conference on Human-Computer Interaction: Game-changing Design, 2016.*

H. Le, P. Bader, T. Kosch, and N. Henze, “Investigating Screen Shifting Techniques to Improve One-handed Smartphone Usage,” in *Proceedings of the 9th Nordic Conference on Human-Computer Interaction: Game-Changing Design, 2016.*

T. Kosch, R. Kettner, M. Funk, and A. Schmidt, “Comparing Tactile, Auditory, and Visual Assembly Error-feedback for Workers with Cognitive Impairments,” in *Proceedings of the 18th International ACM Sigaccess Conference on Computers & Accessibility, 2016.*

M. Funk, T. Kosch, and A. Schmidt, “Interactive Worker Assistance: Comparing the Effects of In-situ Projection, Head-mounted Displays, Tablet, and Paper Instructions,” *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing, pp. 934-939, 2016.*

T. Kosch, R. Kettner, M. Funk, and A. Schmidt, “MotionEAP – Ein System zur Effizienzsteigerung und Assistenz bei Produktionsprozessen in Unternehmen auf Basis von Bewegungserkennung und Projektion,” in *Useware ’16, 2016.*

M. Funk, T. Kosch, K. Wolf, P. Knierim, S. Mayer, and A. Schmidt, “Automatic Projection Positioning Based on Surface Suitability,” in *Proceedings of the 5th ACM International Symposium on Pervasive Displays, New York, NY, USA, 2016, pp. 75-79.*

T. Kosch, R. Boldt, M. Hoppe, P. Knierim, and M. Funk, “Exploring the Optimal Point of View in Third Person Out-of-body Experiences,” in *Proceedings of the 9th ACM International Conference on Pervasive Technologies Related to Assistive Environments, New York, NY, USA, 2016.*

T. Kosch, M. Hassib, and A. Schmidt, “The Brain Matters: a 3D Real-time Visualization to Examine Brain Source Activation Leveraging Neurofeedback,” in *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems, New York, NY, USA, 2016, pp. 1570-1576.*

M. Funk, T. Kosch, S. W. Greenwald, and A. Schmidt, “A Benchmark for Interactive Augmented Reality Instructions for Assembly Tasks,” in *Proceedings of the 14th International Conference on Mobile and Ubiquitous Multimedia, New York, NY, USA, 2015, pp. 253-257.*

R. Boldt, M. Hoppe, T. Kosch, M. Funk, P. Knierim, B. Pfleging, and N. Henze, “Towards an Optimal Viewpoint in Third-Person Out-of-body Experiences,” *Mensch und Computer 2015–Proceedings, 2015.*

Theses

T. Kosch, “Real-time Brain Mapping for Treating Substance Abuse using Neurofeedback.” *2015.*

T. Kosch, “Development of an Audio Input Toolkit for Multiple Sources.” *2013.*