

Curriculum Vitae

Dr.-Ing. Tobias Grosse-Puppendahl
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Contact Information

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E-Mail: tobias(at)grosse-puppendahl(dot)com
Date of Birth: 6th April 1986
Place of Birth: Münster (Westfalen)
Nationality: German
Languages: German: native
English: fluent in spoken and written
French: good
Dutch: basic

Work Experience

Since 08/2015 **Microsoft Research Cambridge**
Since 11/2016: Researcher in the group *Sensors and Devices*
08/2015 - 10/2016: Postdoctoral Researcher in the group *Sensors and Devices*

04/2012 - 07/2015 **Fraunhofer Institute for Computer Graphics Research IGD**
01/2015 - 07/2015: Head of group *Embedded Sensing and Perception*
04/2012 - 12/2014: Research assistant

- Technical project leader: Development of a smart floor for people localization and emergency recognition (e.g. falls by the elderly)
- Technical project leader: Development of an unobtrusive capacitive wireless health sensor
- Research projects on the development of embedded sensing systems, including activity and behavior recognition, gesture recognition, whole-body interaction
- Supervision of students in lectures, practical exercises and thesis

05/2004 - 12/2012 **Grosse-Puppendahl Informationstechnik**
Freelancer (student job): Software development

10/2008 - 09/2011 **Westmünsterhändler GbR - www.Holzschuhe.de**
Partner (student job): Distribution of traditional German wooden shoes

05/2005 - 05/2008 **GWAVA EMEA GmbH**
Software developer (student job)
06/2006 - 09/2006: Full-time employment at GWAVA, Montreal, Canada

Education

04/2012 - 05/2015 **Technische Universität Darmstadt**
Dr.-Ing.: Capacitive Sensing and Communication for Ubiquitous Interaction and Perception

03/2010 - 03/2012 **Technische Universität Darmstadt**
Master of Science in Information System Technology: Embedded systems, Human-Computer Interaction, Ubiquitous Computing

10/2006 - 03/2010 **Technische Universität Darmstadt**
Bachelor of Science in Information System Technology: Embedded systems, Human-Computer Interaction, Ubiquitous Computing

08/2005 - 05/2006 **Retirement Home 'Holthues Hoff'**
Community service: Physical and social care (initiated weekly cooking groups, bowling, organization of events)

06/1996 - 06/2005 **Alexander-Hegius-Gymnasium**
Abitur
08/2003 - 12/2003: Budehaven Community School, Bude, UK

Publications

Peer-reviewed Publications

- C.18 **Grosse-Puppendahl, T.**, Holz, C., Cohn, G., Wimmer, R., Bechtold, O., Hodges, S., Reynolds, M., Smith, J.: Finding Common Ground: A Survey of Capacitive Sensing in Human-Computer Interaction. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM (2017, acc. for publication) → Acceptance Rate: 25%
- C.17 **Grosse-Puppendahl, T.**, Hodges, S., Chen, N., Helmes, J., Taylor, S., Scott, J., Fromm, J., Sweeney, D.: Exploring the Design Space for Energy-Harvesting Situated Displays. In: 29th ACM Symposium on User Interface Software and Technology (UIST). ACM (2016) → Acceptance Rate: 20%
- C.16 **Grosse-Puppendahl, T.**, Dellangnol, X., Hatzfeld, C., Fu, B., Kupnik, M., Kuijper, A., Hastall, M., Scott, J., Gruteser, M.: Platypus - Indoor Localization and Identification through Sensing Electric Potential Changes in Human Bodies. In: 14th ACM International Conference on Mobile Systems, Applications and Services (MobiSys). ACM (2016) → Acceptance Rate: 15%
- C.15 Kirchbuchner, F., **Grosse-Puppendahl, T.**, Hastall, M., Distler, M., Kuijper, A.: Ambient Intelligence from Senior Citizens' Perspectives: Understanding Privacy Concerns, Technology Acceptance, and Expectations. In: Ambient Intelligence. Lecture Notes in Computer Science. Springer (2015)
- C.14 **Grosse-Puppendahl, T.**, Bechtold, O., Strassel, L., Jakob, D., Braun, A., Kuijper, A.: Enhancing Traffic Safety with Wearable Low-Resolution Displays. In: iWOAR 2015 – 2nd international Workshop on Sensor-based Activity Recognition and Interaction. ACM (2015)
- C.13 Fu, B., Karolus, J., **Grosse-Puppendahl, T.**, Herrmann, J., Kuijper, A.: Opportunities for Activity Recognition using Ultrasound Doppler Sensing on Unmodified Mobile Phones. In: iWOAR 2015 – 2nd international Workshop on Sensor-based Activity Recognition and Interaction. ACM (2015) → Best Paper Award
- C.12 Gottschämmer, S., **Grosse-Puppendahl, T.**, Kuijper, A.: User Location Modeling based on Heterogeneous Data Sources. In: Distributed, Ambient, and Pervasive Interactions 2015. Lecture Notes in Computer Science. Springer (2015)
- C.11 Fu, B., **Grosse-Puppendahl, T.**, Kuijper, A.: A Gesture Recognition Method for Proximity-Sensing Surfaces in Smart Environments. In: Distributed, Ambient, and Pervasive Interactions 2015. Lecture Notes in Computer Science. Springer (2015)
- C.10 Rus, S., **Grosse-Puppendahl, T.**, Kuijper, A.: Recognition of Bed Postures using Mutual Capacitance Sensing. In: Ambient Intelligence. Lecture Notes in Computer Science. Springer (2014) → Best Paper Award
- C.9 **Grosse-Puppendahl, T.**, Herber, S., Wimmer, R., Englert, F., Beck, S., Wichert, R., Kuijper, A.: Capacitive Near-Field Communication for Ubiquitous Interaction and Perception. In: 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing – UbiComp. ACM (2014) → Best Paper Nominee, Acceptance Rate: 20%
- C.8 **Grosse-Puppendahl, T.**, Beck, S., Wilbers, D., Zeiss, S., von Wilmsdorff, J., Kuijper, A.: Ambient Gesture-Recognizing Surfaces with Visual Feedback. In: Distributed, Ambient, and Pervasive Interactions 2014. Lecture Notes in Computer Science. Springer (2014)
- C.7 Zeiss, S., Marinc, A., Braun, A., **Grosse-Puppendahl, T.**, Beck, S.: A Gesture-based Door Control using Capacitive Sensors. In: Distributed, Ambient, and Pervasive Interactions 2014. Lecture Notes in Computer Science. Springer (2014)
- C.6 **Grosse-Puppendahl, T.**, Benchea, S., Kamieth, F., Braun, A., Schuster, C.: Unobtrusive Recognition of Working Situations. In: Distributed, Ambient, and Pervasive Interactions 2013. Lecture Notes in Computer Science. Springer (2013)
- C.5 **Grosse-Puppendahl, T.**, Braun, A., Kamieth, F., Kuijper, A.: Swiss-cheese Extended: An Object Recognition Method for Ubiquitous Interfaces based on Capacitive Proximity Sensing. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM (2013) → Acceptance Rate: 20%
- C.4 **Grosse-Puppendahl, T.**, Berghoefer, Y., Braun, A., Wimmer, R., Kuijper, A.: OpenCapSense: A Rapid Prototyping Toolkit for Pervasive Interaction using Capacitive Sensing. In: IEEE International Conference on Pervasive Computing and Communications. IEEE (2013) → Acceptance Rate: 15%
- C.3 **Grosse-Puppendahl, T.**, Berlin, E., Borazio, M.: Enhancing Accelerometer-based Activity Recognition with Capacitive Proximity Sensing. In: Ambient Intelligence. Lecture Notes in Computer Science, pp. 17-32. Springer (2012)
- C.2 **Grosse-Puppendahl, T.**, Braun, A.: Honeyfish - A High Resolution Gesture Recognition System based on Capacitive Proximity Sensing. In: EmbeddedWorld Conference. Weka Fachmedien (2012)

- C.1 **Grosse-Puppendahl, T., Marinc, A., Braun, A.:**
Classification of User Postures with Capacitive Proximity Sensors in AAL-Environments.
In: Ambient Intelligence. Lecture Notes in Computer Science, vol. 7040, pp. 314-323. Springer (2011)

Workshop Papers & Demonstrations

- W.1 **Grosse-Puppendahl, T., Weiss, J., Weiss, P., Herber, S., Lienert, H.:**
Smart Objects in Accessible Warehouses for the Visually Impaired.
In: 3rd Workshop on Smart Objects, ACM 2014 International Conference on Intelligent User Interfaces. TU Prints (2014)
- DM.2 Liang, R., Chan, L., Tseng, H., Kuo, H., Huang, D., Yang, D., Chen, B., **Grosse-Puppendahl, T.**, et al.:
Demo Hour. In: ACM interactions magazine. 21 (5), 6-9. ACM (2014)
- DM.1 **Grosse-Puppendahl, T., Beck, S., Wilbers, D.:**
Rainbowfish: Visual Feedback on Gesture-Recognizing Surfaces.
In: CHI '14 Extended Abstracts on Human Factors in Computing Systems. ACM (2014)

Other Contributions

- A.3 Rus, S., **Grosse-Puppendahl, T.**, Kuijper, A.:
Evaluating the Recognition of Bed Postures using Mutual Capacitance Sensing (invited article).
In: Journal of Ambient Intelligence and Smart Environments, vol. 9, no. 1, pp. 113-127. IOS Press (2017)
- A.2 Sweeney, D., Chen, N., Hodges, S., **Grosse-Puppendahl, T.:**
Displays as a Material: A Route to Making Displays More Pervasive (invited article).
In: IEEE Pervasive Computing, special issue on pervasive displays. IEEE (2016).
- A.1 **Grosse-Puppendahl, T., Braun, A., Dellangnol, X.:**
Prototyping Capacitive Sensing Applications with OpenCapSense (invited article).
In: GetMobile: Mobile Comp. and Comm., special issue on prototyping platforms. ACM (2016)
- NO.1 Banhatti, R. D., Brylok, A., Doser, M., Dreiner, T., **Grosse-Puppendahl, T.**, Hoppe, A., Joska, R., Laurila-Dürsch, J., Lauterbach, C., Ludwig, T., Reiß, C., Schaper, A., Schirp, C., Schliepkorte, H., Tiedtke, S.:
Technikunterstütztes Leben - Ambient Assisted Living (AAL) - Prozessunterstützung zur technischen Realisierung von Assistenzsystemen (umgebungsunterstützender Technik) in Gebäude und Wohnumfeld (in German).
In: VDE Verlag (2014)

Theses

- D.1 **Grosse-Puppendahl, T.:** Capacitive Sensing and Communication for Ubiquitous Interaction and Perception
Ph.D. thesis, Technische Universität Darmstadt, Germany (05/2015)
→ Fraunhofer Information and Communication Technology Group Dissertation Award
- DT.2 **Grosse-Puppendahl, T.:** Multi-hand Interaction using Custom Capacitive Proximity Sensors
Master's thesis, Technische Universität Darmstadt, Germany (04/2012)
→ Fraunhofer IGD Best Thesis Award
- DT.1 **Grosse-Puppendahl, T.:** Sensor-based Activity Visualization for Monitoring Daily Schedules
Bachelor's thesis, Technische Universität Darmstadt, Germany (04/2010)

Invited Talks

- IT.9 Sensor CDT, University of Cambridge, Cambridge, UK
Invited talk: Things You Didn't Know About Capacitive Sensing
Hosted by Caroline Yan-Man-Shing (02/2017)
- IT.8 2nd ACM Workshop on wearable systems and applications (WearSys), Singapore, Singapore
Invited talk: Capacitive Sensing and Communication Opportunities for Mobile Systems
Hosted by Tam Vu and Ashwin Ashok (06/2016)
- IT.7 Sensors and Devices Group, Microsoft Research, Cambridge, UK
Invited talk: Supporting Proxemic Interactions with Multi-Scale Electric-Field Sensing
Hosted by Steve Hodges (03/2015)
- IT.6 Human-Computer Interaction Group, TELECOM ParisTech, Paris, France
Invited talk: Capacitive Sensing and Communication for Ubiquitous Interaction and Perception
Hosted by Gilles Bailly (02/2015)
- IT.5 Sensor Technology Research Center, University of Sussex, Brighton, UK
Invited talk: Capacitive Sensing and Communication for Ubiquitous Interaction and Perception
Hosted by Daniel Roggen and Robert Prance (11/2014)
- IT.4 WinLab, Rutgers University, Newark, USA
Invited talk: Capacitive User Interfaces in Smart Environments
Hosted by Marco Gruteser (09/2014)
- IT.3 Technische Universität Dortmund, Dortmund, Germany
Faculty of Rehabilitation Sciences, Language and Communication
Invited Lecture: Technische Assistenzsysteme für ältere Menschen und Menschen mit Behinderungen (in German)
Hosted by Matthias R. Hastall (05/2014)

- IT.2 Fraunhofer IDM@NTU, Nanyang Technical University, Singapore
Invited Talk: Ubiquitous Interaction and Perception using Capacitive Sensing
Hosted by Wolfgang Müller-Wittig (01/2014)
- IT.1 Technische Universität Dortmund, Dortmund, Germany
Faculty of Rehabilitation Sciences, Language and Communication
Invited Talk: Communication technologies for Persons suffering from Neurodegenerative Diseases - Current Developments in Ambient-Assisted-Living Research
Hosted by Matthias R. Hastall (11/2012)

Supervision & Teaching

Lectures, Practical Courses, Seminars

- 04/2012 - 04/2015 Practical Course: Developing a Computer Graphics System, Technische Universität Darmstadt (every semester)
- 04/2012 - 04/2015 Seminar: Multimodal Interaction, Technische Universität Darmstadt (every semester)
- 10/2014 - 04/2015 Co-lecturer: Ambient Intelligence, Technische Universität Darmstadt
- 10/2013 - 04/2014 Co-lecturer and student exercise supervision: Ambient Intelligence, Technische Universität Darmstadt
- 10/2012 - 04/2013 Co-lecturer: Ambient Intelligence, Technische Universität Darmstadt

Master's theses

- 04/2015 - 10/2015 Jakob Karolus (Technische Universität Darmstadt, Computer Science):
Activity Recognition based on Ultrasound Sensing using Unmodified Mobile Phones
- 03/2015 - 09/2015 Xavier Dellangnol (Technische Universität Darmstadt, Electrical Engineering):
Indoor Localization of Humans based on Electric Potential Sensing
→ EMKlub award for the best Master's thesis
- 11/2014 - 04/2015 Julian von Wilmsdorff (Technische Universität Darmstadt, Information System Technology):
Electric Potential Sensing in Ubiquitous Computing
- 09/2014 - 03/2015 Alexander Pavlov (Technische Universität Darmstadt, Electrical Engineering):
Ubiquitous Activity Recognition using Wireless Capacitive Sensing Nodes
- 04/2014 - 10/2014 Florian Kirchbuchner (Technische Universität Darmstadt, Computer Science):
User Tracking and Behavior Analysis based on a Capacitive Indoor Localization System
- 03/2013 - 10/2013 Silvia Rus (Technische Universität Darmstadt, Electrical Engineering):
Recognition of Lying Postures using Capacitive Proximity Sensing
→ Fraunhofer IGD Best Thesis Award
- 07/2012 - 01/2013 Yannick Berghoefer (Technische Universität Darmstadt, Information System Technology):
Human-Machine-Interfaces in Automotive Environments using Capacitive Proximity Sensors

Bachelor's theses

- 09/2014 - 03/2015 Lukas Strassel (Technische Universität Darmstadt, Computer Science):
Sensing Interactions on Body-worn Low-resolution LED-Displays
- 09/2014 - 03/2015 Oskar Bechtold (Technische Universität Darmstadt, Computer Science):
An App-driven Interaction Concept for Body-worn Low-resolution LED-Displays
- 01/2014 - 06/2014 Patrick Gottschämmer (Technische Universität Darmstadt, Computer Science):
User Location Modelling based on Heterogeneous Data Sources
- 08/2013 - 11/2013 Sebastian Herber (Technische Universität Darmstadt, Information System Technology):
Tangible Interaction using Capacitive Near-Field Communication
- 05/2013 - 07/2013 Sebastian Beck (Technische Universität Darmstadt, Information System Technology):
A Gesture Recognition Device with Visual Feedback using Capacitive Proximity Sensing
→ Fraunhofer IGD Best Thesis Award
- 08/2012 - 11/2012 Steeven Zeiss (Technische Universität Darmstadt, Electrical Engineering):
Development of a Contactless Closing Mechanism for Automatic Doors

Professional Services

- Organizing committee IUI 2017 (student volunteer co-chair), 5th Workshop on Smart Objects in conjunction with IUI 2017 (co-organizer), Workshop on Smart Connected and Wearable Things in conjunction with IUI 2016 (co-organizer), 4th Workshop on Smart Objects in conjunction with IUI 2015 (co-organizer)
- Program committee Ambient Intelligence 2017, iWOAR 2017 / 2016 / 2015

Reviewer (conferences) Augmented Human 2015, CHI 2017 / 2016 / 2015 / 2013, IUI 2015, UbiComp 2016 / 2015, UIST 2016

Reviewer (journals) IEEE Pervasive Computing, Journal of Ambient Intelligence and Smart Environments (JAISE)

Awards & Honours

Since 10/2015 Morien Morgan Fellow at Downing College, University of Cambridge

09/2016 Fraunhofer Information and Communication Technology Group Dissertation Award

01/2014 Participant of Global Young Scientists Summit (GYSS), Singapore

Best Paper Awards and Nominations from ACM UbiComp, ACM iWOAR, and Ambient Intelligence

Best Thesis Awards for my students awarded by Fraunhofer IGD and TU Darmstadt EMKlub

References

References can be provided upon request.

February 13, 2017