

Curriculum Vitae

Tobias Grosse-Puppendahl
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Contact Information

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 08/2017 **Dr. Ing. h.c. F. Porsche AG**
Development Engineer (Innovation Management - Electric/Electronic Engineering Division)

08/2015 - 07/2017 **Microsoft AI & Research, Cambridge**
11/2016 - 07/2017: Researcher (*Sensors & Devices Group*)
08/2015 - 10/2016: Postdoctoral Researcher (*Sensors & Devices Group*)

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

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

Patents

P.1 WO/2017/062214: Persistent Display Device with Power Harvesting (2017)
P.2 WO/2017/172848: Generation of a Modified UI Element Tree (2017)
P.3 WO/2017/151407 : Updating Displays based on Attention Tracking Data (2017)
P.4 - P.12 8 patent applications within 18 months period prior to publishing

Publications

Peer-reviewed Publications

- C.19 **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)
→ Acceptance Rate: 25%
- C.18 Fu, B., Kirchbuchner, F., von Wilmsdorff, J., **Grosse-Puppendahl, T.**, Braun, A., Kuijper, A.: Indoor Localization Based on Passive Electric Field Sensing. In: European Conference on Ambient Intelligence. Springer (2017)
→ Best Paper Award
- 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.2 **Grosse-Puppendahl, T.:**
What If... Humans Had a Sense for Electroreception?.
In: CHI 17 Workshop on Amplification and Augmentation of Human Perception. (2017)
- 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)

Journal & 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.10 School of Communication and Culture - Information Science, Aarhus University, Aarhus, DK
Invited talk: An Introduction to Capacitive Sensing in Human-Computer Interaction
Hosted by Roman Raedle (06/2017)
- 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 Dellagnol (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 Berghoefter (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 2018 (sponsorship co-chair), 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 2017 / 2016
- Reviewer (journals) ACM IMWUT, IEEE Pervasive Computing, Journal of Ambient Intelligence and Smart Environments (JAISE)

Awards & Honours

- 10/2015 - 10/2017 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.

November 19, 2017