

# Dr.-Ing. David Lindlbauer – CV

Advanced Interactive Technologies Lab  
ETH Zurich, Switzerland  
Universitätsstraße 6, 8092 Zurich  
www.davidlindlbauer.com  
info@davidlindlbauer.com

## Personal details

Birthday March 6<sup>th</sup> 1986  
Nationality Austria

## Academic positions

### **Postdoctoral researcher at ETH Zurich, Department of Computer Science**

Advanced Interactive Technologies (AIT) Lab  
Zurich, Switzerland, 09/2018 – current  
AIT Lab is headed by Prof. Otmar Hilliges  
Funded through personal ETH Zurich Postdoctoral Fellowship (\$229K for 2 years)

## Education

### **Doktor der Ingenieurwissenschaften (Dr.-Ing.) at Technische Universität Berlin**

Computer Graphics Group  
Berlin, Germany, 11/2014 – 09/2018  
Advisor: Prof. Marc Alexa  
PhD thesis: *Bridging the Virtual World and the Physical World with Optically Dynamic Interfaces*  
Thesis committee: Prof. Marc Alexa, Prof. Ravin Balakrishnan, Prof. Jörg Müller, Prof. Olaf Hellwich  
Graduated with distinction (summa cum laude)  
(\* Doctoral degree is comparable to PhD in Anglo-American educational system)

PhD candidate | Teaching and Research Assistant at Technische Universität Berlin  
Mobile and Physical Interaction Group  
Berlin, Germany, 01/2014 – 11/2014  
Advisor: Prof. Jörg Müller (now Bayreuth University, Germany)

PhD candidate | Teaching and Research Assistant at University of Applied Sciences Upper Austria  
Media Interaction Lab  
Hagenberg, Austria, 11/2012 – 12/2013  
Advisor: Prof. Michael Haller

### **Master of Science at University of Applied Sciences Upper Austria, Campus Hagenberg**

Program: Interactive Media  
Hagenberg, Austria, 10/2010 – 08/2012,  
Master's thesis: *Perceptual Grouping of Digital Sketches*. Advised by Prof. Michael Haller  
Graduated with high distinction.  
Term abroad at University of Waterloo  
Waterloo, Ontario, Canada, 05/2012 – 10/2012  
Advisors: Prof. Mark Hancock, Prof. Stacey Scott

### **Bachelor of Science at University of Applied Sciences Upper Austria, Campus Hagenberg**

Program: Media Technology and Design  
Hagenberg, Austria, 10/2006 – 08/2009,  
Bachelor's thesis: *The OpenSocial API*. Advised by FH-Prof. DI Rimbart Rudisch-Sommer  
Graduated with distinction

## Research internships

### **Microsoft Research**

Perception and Interaction Group. Mentored by Andy Wilson.  
Redmond, WA, USA, 06/2017 – 09/2017

# Publications

## Conference papers (fully refereed)

Top-tier venues in Human-Computer Interaction are ACM CHI and ACM UIST (acceptance rate 20-25%)

- [C.16] *Understanding Metamaterial Mechanisms.*  
A. Ion, **D. Lindlbauer**, P. Herholz, M. Alexa, P. Baudisch  
CHI 2019, Glasgow, Scotland
- [C.15] *I Can See What You Think: The Mental Image Revealed by Gaze Tracking.*  
X. Wang, A. Ley, S. Koch, **D. Lindlbauer**, J. Hays, K. Holmqvist, M. Alexa  
CHI 2019, Glasgow, Scotland
- [C.14] *TacTiles: Dual-mode Low-power Electromagnetic Actuators for Rendering Continuous Contact and Spatial Haptic Patterns in VR*  
V. Vechev, J. Zarate, **D. Lindlbauer**, R. Hinchet, H. Shea, O. Hilliges  
IEEE VR 2019, Osaka, Japan
- [C.13] *Remixed Reality: Manipulating Space and Time in Augmented Reality*  
**D. Lindlbauer**, A. Wilson  
CHI 2018, Montreal, QC, Canada
- [C.12] *HeatSpace: Automatic Placement of Displays by Empirical Analysis of User Behavior*  
A. Fender, **D. Lindlbauer**, P. Herholz, M. Alexa, J. Müller  
UIST 2017, Quebec, QC, Canada
- [C.11] *Changing the Appearance of Real-World Objects by Modifying Their Surroundings*  
**D. Lindlbauer**, J. Müller, M. Alexa  
CHI 2017, Denver, CO, USA.
- [C.10] *Changing the Appearance of Physical Interfaces Through Controlled Transparency*  
**D. Lindlbauer**, J. Müller, M. Alexa  
UIST 2016, Tokyo, Japan.
- [C.9] *Combining Shape-Changing Interfaces and Spatial Augmented Reality Enables Extended Object Appearance*  
**D. Lindlbauer**, J.E. Grønbaek, M. Birk, K. Halskov, M. Alexa, J. Müller  
CHI 2016, San Jose, CA, USA.
- [C.8] *Influence of Display Transparency on Background Awareness and Task Performance*  
**D. Lindlbauer**, K. Liliija, R. Walter, J. Müller  
CHI 2016, San Jose, CA, USA.  
**Best Paper Honorable Mention Award**
- [C.7] *GelTouch: Localized Tactile Feedback Through Thin, Programmable Gel*  
V. Miruchna, R. Walter, **D. Lindlbauer**, M. Lehmann, R. von Klitzing, J. Müller  
UIST 2015, Charlotte, North Carolina, USA.  
**Best Paper Honorable Mention Award**
- [C.6] *Creature Teacher: A Performance-Based Animation System for Creating Cyclic Movements*  
A. Fender, J. Müller, **D. Lindlbauer**  
SUI 2015, Los Angeles, California, USA.
- [C.5] *Analyzing Visual Attention During Whole Body Interaction with Public Displays*  
R. Walter, A. Bulling, **D. Lindlbauer**, M. Schuessler, J. Müller  
UBICOMP 2015, Osaka, Japan. Short paper.
- [C.4] *Tracs: Transparency Control for See-through Displays*  
**D. Lindlbauer**, T. Aoki, R. Walter, A. Höchtl, Y. UEMA, M. Haller, M. Inami, J. Müller.  
UIST 2014, Honolulu, Hawaii, USA.
- [C.3] *A Chair as Ubiquitous Input Device: Exploring Semaphoric Chair Gestures for Focused and Peripheral Interaction*  
K. Probst, **D. Lindlbauer**, M. Haller, B. Schwartz, A. Schrempf.  
CHI 2014, Toronto, Canada.
- [C.2] *Perceptual Grouping: Selection Assistance for Digital Sketching*  
**D. Lindlbauer**, M. Haller, M. Hancock, S. D. Scott, W. Stuerzlinger.  
ITS 2013, St. Andrews, Scotland.

- [C.1] *Exploring the Use of Distributed Multiple Monitors Within an Activity-Promoting Sit-and-Stand Office Workspace*  
K. Probst, **D. Lindlbauer**, F. Perteneder, M. Haller, B. Schwartz, A. Schrempf.  
Interact 2013, Cape Town, South Africa.

## Journal articles

- [J.1] *Measuring Visual Saliency of 3D Printed Objects*.  
X. Wang, **D. Lindlbauer**, C. Lessig, M. Maertens, M. Alexa  
IEEE Computer Graphics and Applications 36/4. Special Issue on Quality Assessment and Perception in Computer Graphics, 2016.

## Book chapters

- [B.2] *Accuracy of Monocular Gaze Tracking on 3D Geometry*.  
X. Wang, **D. Lindlbauer**, C. Lessig, M. Alexa  
In *Eye Tracking and Visualization*. Foundations, Techniques, and Applications. ETVIS 2015  
Springer International Publishing 2017. M. Burch, L. Chuang, B. Fisher, A. Schmidt and D. Weiskopf (Eds.), ISBN 978-3-319-47023-8
- [B.1] *Beyond Prototyping*.  
J. Ängeslevä, I. Nicenboim, J. Wunderling, **D. Lindlbauer**  
In *Rethink! Prototyping*. Springer International Publishing 2016.  
C. Gengnagel, E. Nagy, R. Stark (Eds.), ISBN 978-3-319-24439-6

## Other publications

- [EA.3] *Optically Dynamic Interfaces*.  
**D. Lindlbauer**  
UIST 2017 Adjunct (Doctoral Symposium). Quebec City, QC, Canada.
- [EA.2] *A Collaborative See-through Display Supporting On-demand Privacy*.  
**D. Lindlbauer**, T. Aoki, A. Höchtl, Y. UEMA, M. Haller, M. Inami, J. Müller  
Siggraph 2014 Emerging Technologies, Vancouver, BC, Canada.
- [EA.1] *Rotating, Tilting, Bouncing: Using an Interactive Chair to Promote Activity in Office Environments*.  
K. Probst, **D. Lindlbauer**, P. Greindl, M. Trapp, M. Haller, B. Schwartz, A. Schrempf  
CHI 2013 Extended Abstracts, Paris, France.
- [W.2] *Accuracy of Monocular Gaze Tracking on 3D Geometry*.  
X. Wang, **D. Lindlbauer**, C. Lessig, M. Alexa  
Workshop on Eye Tracking and Visualization (ETVIS) co-located with IEEE VIS 2015.
- [W.1] *Exploring the Potential of Peripheral Interaction through Smart Furniture*.  
K. Probst, **D. Lindlbauer**, M. Haller, B. Schwartz, A. Schrempf  
Workshop on Peripheral Interaction at CHI 2014, Toronto, Canada.
- [TR.1] *Understanding Mid-Air Hand Gestures: A Study of Human Preferences in Usage of Gesture Types for HCI*. R. Aigner, D. Wigdor, H. Benko, M. Haller, **D. Lindlbauer**, A. Ion, S. Zhao, and J.T.K.V. Koh  
Microsoft Tech Report MSR-TR-2012-11, Redmond, WA, USA.

## Demonstrations & exhibits

- [D.7] *ad infinitum: a parasite that lives off human energy*. Ars Electronica 2017.
- [D.6] *Changing the Appearance of Real-World Objects by Modifying Their Surroundings*, CHI 2017.
- [D.5] *Changing the Appearance of Physical Interfaces Through Controlled Transparency*, CeBit 2017.
- [D.4] *ad infinitum: a parasite that lives off human energy*. Science Gallery Dublin 2017.
- [D.3] *Changing the Appearance of Physical Interfaces Through Controlled Transparency*, UIST 2016.
- [D.2] *Tracs: Transparency Control for See-through Displays*, UIST 2014.
- [D.1] *A Collaborative See-through Display Supporting On-demand Privacy*, SIGGRAPH 2014.

## Theses

*Bridging the Virtual World and the Physical World with Optically Dynamic Interfaces*  
2018, PhD thesis, Technische Universität Berlin

*Perceptual Grouping of Digital Sketches.*

2012, Master's thesis, University of Applied Sciences Upper Austria, Hagenberg.

*The OpenSocial API.*

2009, Bachelor's thesis, University of Applied Sciences Upper Austria, Hagenberg

## Grants

ETH Zurich Postdoctoral Fellowships (2018, Principal investigator) CHF 229,600 / \$229,068  
*A Computational Framework for Increasing the Usability of Augmented Reality and Virtual Reality*

Shapeways Educational Grant (2015, Contributor) \$1,000  
*Exploring Visual Saliency of 3D Objects*

Performance scholarship (2011, Awardee) €725 / \$850  
*One of twelve awardees for scholarship by FH Hagenberg (Leistungsstipendium)*

## Awards & recognitions

Best Paper Honorable Mention Award CHI 2016

*Influence of Display Transparency on Background Awareness and Task Performance.*

Best Paper Honorable Mention Award UIST 2015

*GelTouch: Localized Tactile Feedback Through Thin, Programmable Gel.*

Special recognitions for reviewing:

UIST 2014, 2 x CHI 2016, UIST 2016, CHI 2017, UIST 2017, CHI 2018, 3 x CHI 2019

## Invited Talks

2018/05/22 Interact Lab – University of Sussex. Hosted by Diego Martinez.

2018/03/02 IST Austria. Hosted by Bernd Bickel.

2018/02/21 DGP – University of Toronto. Hosted by Seongkook Heo.

2017/12/15 ETH Zurich. Hosted by Otmar Hilliges.

2017/12/14 Disney Research Zurich. Hosted by Anselm Grundhöfer.

2017/12/12 INRIA Bordeaux. Hosted by Martin Hachet.

2017/10/05 Aarhus University.

## Professional activity

### Program committee

Program committee member for CHI 2020

Program committee member for CHI 2019

Program committee member for UIST 2018

Program committee member for ISS 2017

### Organizing committee

SIGCHI Operations committee (since 02/2016)

Student innovation contest co-chair for UIST 2019

Student innovation contest co-chair for UIST 2018

Student volunteers co-chair for UIST 2016

Video capture chair for CHI 2016, 2017, 2018, 2019, 2020

Poster chair for PerDis 2016

Video capture chair for UIST 2015

## **Reviewing**

2019 CHI, UIST, IEEE VR, TOCHI, SIGGRAPH, Computer Graphics Forum

2018 CHI, UIST, ISS, TEI, IEEE VR, TOCHI

2017 CHI, UIST, ICMI, IMWUT (UbiComp), MobileHCI, DIS, DESFORM

2016 CHI, UIST, ISS, ICMI, SUI, AH, IJHCI

2015 CHI, ICMI, ITS, SUI, PerDis, PERCOMP Journal

2014 CHI, UIST, ICMI, NordiCHI, SUI

## **Student volunteering**

ITS 2014, UIST 2014, CHI 2015

# Teaching

## **Teaching assistant**

Includes organization of courses, teaching and presentation of exercises, and correction of homework and exams

Summer term 2019, Seminar on Computation Interaction, ETH Zurich

Winter term 2018, Human-computer interaction, ETH Zurich

Summer term 2018, Computer Graphics 2, TU Berlin

Winter term 2016 / 2017, Computer Graphics 1, TU Berlin

Winter term 2013, Computer Graphics 2, University of Applied Sciences Hagenberg

## **Project supervision CG project & seminar, TU Berlin**

Winter and summer term 2016 / 2017 / 2018  
semester course, approximately 1 day / week

Rebecca Fribourg (Airbrush, 2016)

Friedrich Meckel, Jeremias Eichelbaum (Camouflage, 2016)

Mirko Greese (AR illusions, 2017)

Maurice Quennet (Control theory + robotic arm, 2018)

Tim Grutzeck (Smartphone-based 3D input device, 2018)

Mike Funk (VR voxel editor, 2018)

Fabian Puch (Mobile AR illusions, 2018)

## **Student teaching assistant**

Correction of homework and exams

Winter term 2011, Digital Imaging, University of Applied Sciences Hagenberg

Summer term 2011, Hypermedia programming, University of Applied Sciences Hagenberg

Summer term 2010, Computer Graphics (OpenGL), University of Applied Sciences Hagenberg

## **Co-supervised Bachelor's and Master's theses**

Stefan Weber, 2019. Feasibility of the Index of Pupillary Activity.

Tobias Bernard, 2017, *Design and Evaluation of Spatial Interfaces in Virtual Reality*.

Leonardo Hahn, 2017, *Hiding Objects by Creating Camouflage Surroundings*.

Patrick Engelhard, 2016. *3D Modeling using Sparse Sensor Data*.

Klemen Lilija, 2015. *Interaction with Transparent Displays*.

Viktor Miruchna, 2015. *Exploring the Potential Usage of Hydrogels for Tactile Feedback Systems*.  
Andreas Fender, 2014. *Design and Implementation of a Performance Based Animation System for Prototyping Non-Humanoid Character Movements*.  
Eva-Maria Grossauer, 2013. *Supporting Seamless Integration of Handwritten Casual Notes in Digital Tools Through Semantic Classification*.

## Selected press

Shiropen (Japan). *ETH Zurich and EPFL announce lightweight and low-power haptic device "TacTiles" that reproduces a sense of touch by pressing a pin against 15 points of one hand*. 2019  
Shiropen (Japan). *The Mental Image Revealed by Gaze Tracking*. 2019  
MSPowerUser. *Microsoft aims to Remix Reality with new VR technology*. 2018  
Virtual Reality Summit. *Microsoft Research Demoing New Remixed Reality Technology*. 2018  
VRRoom. *Remixed Reality Manipulates Space & Time In AR*. 2018  
Shiropen (Japan). *Remixed Reality*. 2018  
Fast Co.Design. *It's Alarmingly Easy For Machines To Control Us*. 2017.  
Fast Co.Design. *An Invisibility Cloak for Distracting Gadgets*. 2016.  
Vice Motherboard. *Origami-Like' Objects Can Instantly Change Their Transparency*. 2016.  
Futurism. *Controlled Transparency Is The Chameleon of Technology*. 2016.  
MIT Technology Review. *Make Your Own Buttons with a Gel Touch Screen*. 2015.  
Wired Germany. *Berliner Forscher haben einen Weg gefunden, Touchscreens temporäre Tasten zu verpassen*. 2015.  
El País. *Teclas en relieve que aparecen y desaparecen de la pantalla del móvil*. 2015.  
Engadget. *Gel-filled touchscreen creates real buttons on demand*. 2015.  
Gizmodo. *7 Experimental Interfaces That Show the Future of UI Design*. 2014.

## Professional experience

iOS developer [part time]  
Interactive Pioneers (former Powerflasher)  
Aachen, Germany, 09/2010 – 02/2012

Software / iOS developer [full time]  
Interactive Pioneers (formerly Powerflasher)  
Aachen, Germany, 10/2009 – 09/2010

Software developer [internship]  
Interactive Pioneers (formerly Powerflasher)  
Aachen, Germany, 03/2009 – 09/2009  
Developer for WPF and Silverlight. Involved in concept & technical planning.

Web developer [internship]  
Lomographic Society Vienna  
Vienna, Austria, 08/2008 – 09/2008

Screen designer [internship]  
Monte Video & Point advertising agency  
Linz, Austria, 08/2001 – 09/2001