

Curriculum Vitae

Personal details

Date of birth June 25, 1987
Citizenship Austrian

Educational background

Jul 2013 – present PhD student at Hasso Plattner Institute, University of Potsdam
Topic: Machines from Metamaterials
Advisor: Dr. Patrick Baudisch, chair of Human-Computer Interaction

Oct 2010 - Nov 2012 University of Applied Sciences Upper Austria, Campus Hagenberg
MSc Program “Interactive Media” (human computer interaction, software design, computer vision, ...)
Thesis advisor: Prof. Dr. Michael Haller

May 2012 - Oct 2012 Term abroad at University of Waterloo, ON, Canada, Systems Design Department
Advisors: Dr. Mark Hancock, Dr. Stacey Scott

Oct 2006 - Jul 2009 University of Applied Sciences Upper Austria, Campus Hagenberg
BSc Program “Media Technology and Design” (software development, web applications, digital imaging, ...)

Publications

PEER-REVIEWED PAPERS

ACM CHI and UIST are premiere venues for HCI, ~ 22% acceptance rate

- [8] Metamaterial Textures.
Alexandra Ion, Robert Kovacs, Oliver Schneider, Pedro Lopes and Patrick Baudisch.
In *Proceedings of CHI '18. Montreal, Canada, April 21 – 26, 2018*.
- [7] Adding Force Feedback to Mixed Reality Experiences and Games using Electrical Muscle Stimulation.
Pedro Lopes, Sijing You, **Alexandra Ion**, and Patrick Baudisch.
In *Proceedings of CHI '18. Montreal, Canada, April 21 – 26, 2018*.
- [6] Digital Mechanical Metamaterials.
Alexandra Ion, Ludwig Wall, Robert Kovacs, and Patrick Baudisch.
In *Proceedings of CHI '17. Denver, CO, May 6 – 11, 2017*.
- [5] Metamaterial Mechanisms.
Alexandra Ion, Johannes Frohnhofen, Ludwig Wall, Robert Kovacs, Mirela Alistar, Jack Lindsay, Pedro Lopes, Hsiang-Ting Chen, and Patrick Baudisch.
In *Proceedings of UIST'16. Tokyo, Japan, October 16 – 19, 2016. pp. 529-539*.
BEST PAPER **HONORABLE MENTION** (top 2% of submissions).

- [4] Skin drag displays: dragging a physical factor across the user's skin produces a stronger tactile stimulus than vibrotactile.
Alexandra Ion, Edward Wang, and Patrick Baudisch.
In *Proceedings of CHI'15. Seoul, Korea, April 18 – 23, 2015*. Short paper.
- [3] Proprioceptive Interaction.
Pedro Lopes, **Alexandra Ion**, Willi Mueller, Daniel Hoffmann, Patrik Jonell, Patrick Baudisch.
In *Proceedings of CHI'15. Seoul, Korea, April 18 – 23, 2015*
- [2] Impacto: Simulating Physical Impact by Combining Tactile Stimulation with Electrical Muscle Stimulation.
Pedro Lopes, **Alexandra Ion**, Patrick Baudisch.
In *Proceedings of UIST'15. Charlotte, NC, November 8 – 11, 2015*.
- [1] Canyon: Providing location awareness of multiple moving objects in a detail view on large displays.
Alexandra Ion, Yu-Ling Chang, Michael Haller, Mark Hancock, Stacey Scott.
In *Proceedings of CHI'13. Paris, France, April 27 – May 2, 2013*. 3149-3158.
BEST PAPER **HONORABLE MENTION** (top 5% of submissions).

OTHER PUBLICATIONS

- [3] Using Your Own Muscles: Realistic physical experiences in VR.
Pedro Lopes, **Alexandra Ion**, Robert Kovacs.
XRDS, Fall 2015, Vol. 22.
- [2] Understanding mid-air hand gestures: A study of human preferences in usage of gesture types for HCI.
Roland Aigner, Daniel Wigdor, Hrvoje Benko, Michael Haller, David Lindlbauer, **Alexandra Ion**, Shengdong Zhao, and Jeffrey Tzu Kwan Valino Koh.
Technical Report MSR-TR-2012-111. 2012.
- [1] Hot Topics in Personal Fabrication Research. Tutorial.
Stefanie Mueller, **Alexandra Ion**, and Patrick Baudisch.
In *Proceedings of ACM ITS 2014*, 499-502.

DEMONSTRATIONS

- [4] Workshop on Metamaterial Mechanisms (~35 participants), hosted by Jouke Verlinden, TU Delft. December 4, 2017.
- [3] Metamaterial Mechanisms & Digital Mechanical Metamaterials. *ACM CHI 2017 Interactivity*.
- [2] Metamaterial Mechanisms. *ACM UIST 2016 Demonstration*.
- [1] Impacto: Simulating Physical Impact by Combining Tactile Stimulation with EMS. *ACM UIST 2015 Demonstration*.

THESES

Uncovering moving off-view objects on large interactive displays.

Alexandra Ion. Master's thesis, Interactive Media, University of Applied Sciences Upper Austria. 2012.

Klangfeldsynthese – Betrachtung der Klangfeldsynthese anhand des IOSONO Systems.

Alexandra Ion. Bachelor's thesis, Media Technology and Design, University of Applied Sciences Upper Austria. 2009.

Teaching

All students are co-advised with Patrick Baudisch.

Research projects (semester course, approx. 1 day/week)	Michael Janke, Pascal Crenzin. 2017. Metamaterial textures editor. Benjamin Feldmann, Martin Schlegel. 2016. 3D editor converting metamaterials to a linkage view and back. Johannes Frohnhofen, Johannes Filter, John Geiger. 2016. 3D voxel editor for metamaterial mechanisms. Noel Danz. 2015. Caching cells for faster export of metamaterials. Friedrich Horschig, Noel Danz. 2015. Photoshop as an editor for metamaterials. Sijing You, Friedrich Horschig, Martin Fritsche, Max Schneider. 2014. Impacto. Co-mentored w/ Pedro Lopes.
Master's thesis (6 months full time)	Ludwig Wilhelm Wall. 2016. Design and Synthesis of Digital Mechanical Metamaterials.
Lectures	3D printed mechanics. 60-minute lecture as part of the "Future Interactive Technologies" master's class. Inspecting and analyzing data using SPSS. 150-minute lecture as part of "Future Interactive Technologies".
TAing	Winter terms 2014/15, 2015/16 - "Designing interactive systems" (HCI1) Winter term 2010/11 - "Applied software techniques" (C++ programming) Summer term 2011 - "Online Multimedia" (Flex development) Winter term 2011/12 - "Digital Imaging" Summer term 2012 - "Computer Graphics" (OpenGL)

Volunteering

Program committee:	ACM CHI 2019
Organizing committee:	ACM UIST 2018 – local arrangements co-chair ACM UIST 2017 – student volunteer co-chair ACM UIST 2016 – documentation chair
Reviewing: (conferences)	ACM CHI 2018 – 2014 ACM UIST 2017, 2016 ACM DIS 2017, 2016 ACM TEI 2018, 2017 ACM Augmented Human 2016, 2015 IEEE World Haptics 2015, 2017 IEEE Haptics Symposium 2018 ACM ICMI 2017, ACM SUI 2016
(journals)	Elsevier Computers & Graphics 2018 Nature Scientific Reports 2018 Interacting with Computers 2014
Student volunteer:	ACM CHI 2016, ACM UIST 2015, ACM ITS 2014

Invited talks

IST Austria, hosted by Bernd Bickel. Interactive Metamaterials. March 2, 2018.
ETH Zürich, hosted by Olga Sorkine-Hornung. Interactive Metamaterials. December 14, 2017.
SAP Walldorf, hosted by Andreas Polze & Bernd Welz. Interactively embedding computation into metamaterials. December 11, 2017.
TU Delft, hosted by Jouke Verlinden. Interactive Metamaterials. December 4, 2017.
Technomania, hosted by The Danish Society of Engineers IDA. Metamaterial mechanisms, digital, preview of textures. October 4, 2017
Driving 3D, hosted by The Danish Society of Engineers, IDA. Metamaterial mechanisms, digital, preview of textures. September 29, 2017.
Singularity University Copenhagen, hosted by Märtha Rehnberg. Metamaterial Mechanisms. December 14, 2016.
TU Berlin, hosted by Marc Alexa. Metamaterial Mechanisms. 2016.
TU Berlin, hosted by Marc Alexa. Skin drag displays. 2015.

Exhibitions

BMBW (german federal ministry for education and research) InnoTruck (travelling exhibition). Metamaterial Mechanisms. 2017 – 2020.
Espacio Fundación Telefónica Lima, “3D, printing the world”. Metamaterial Mechanisms. December 2017 – April 2018.
Espacio Fundación Telefónica Madrid, “3D, printing the world”. Metamaterial Mechanisms. June – September 2017.
CeBit 2017. Futurium stand (Berlin-based museum for ideas of the future). Metamaterial Mechanisms. March 20 – 24, 2017.
Ars Electronica Festival. Ad infinitum. 7-11 September 2017.
Science Gallery Dublin, “Humans need not apply”. Ad infinitum. February – May 2017.
Natural History Museum Bern. Ad infinitum. September 9, 2016.

Selected press

IEEE Spectrum. Mechanical Metamaterials and Other 3D Printing Tech from CHI 2017. May 2017.
3ders.org. Researchers use 3D printing to make 'digital mechanical metamaterials' that function like machines. February 2017.
think3D. 'Digital Mechanical Metamaterials' made by the Researchers. February 2017.
digital trends. This 3D printed door latch can be unlocked with a PIN code, yet doesn't require electricity. February 2017.
fast company. These Metamaterials Act Like Machines. September 2016.
gizmodo. This Simple 3D-Printed Door Handle Works Without Any Moving Parts. September 2016.
creative applications. Metamaterial Mechanisms – 3D Grids with Mechanical Properties. September 2016.
Make:. “Metamaterials” Allow You to 3D Print Simple Machines. September 2016.
dezeen. Metamaterials Make it Possible to Create Mechanisms from a Single Piece of Plastic. September 2016.
digital trends. 3D-printed Metamaterial 'Machines' are Greater than the Sum of their Parts. September 2016.

Professional experience

- Mar 2013 - Jul 2013 Software Developer & Usability Engineer (Full time employee, Professional/Experienced)
Bernecker+Rainer Industrie Elektronik Ges.m.b.H., <http://www.br-automation.com/>
- Sep 2010 - Feb 2012 Software Developer (Part time employee, Professional/Experienced)
Interactive Pioneers GmbH, <http://interactive-pioneers.com/> (former Powerflasher GmbH)
- Oct 2009 - Aug 2010 Software Developer (Full time employee, Entry Level)
Interactive Pioneers GmbH, <http://interactive-pioneers.com/> (former Powerflasher GmbH)
Developer for WPF, Silverlight, Java Backend, Actionscript 3.0, Flex
- Mar 2009 - Aug 2009 WPF/Silverlight Developer (Student/Intern)
Interactive Pioneers GmbH, <http://interactive-pioneers.com/> (former Powerflasher GmbH)
- Aug 2008 - Sep 2008 Screen/Web Designer, Web Developer (Student/Intern)
Lomographic Society International, <http://www.lomography.com/>