

Curriculum Vitae

Educational background

Mar 2019 – present	Postdoctoral researcher at ETH Zürich Advisor: Prof. Dr. Olga Sorkine-Hornung, Interactive Geometry Lab
Jul 2013 – present	PhD student at Hasso Plattner Institute, University of Potsdam Topic: Metamaterial Devices Advisor: Prof. Dr. Patrick Baudisch, Human-Computer Interaction
Oct 2010 - Nov 2012 <i>MSc</i>	University of Applied Sciences Upper Austria, School of Informatics, Communications and Media, Hagenberg Program “Interactive Media” (human computer interaction, software design, computer vision, ...) Thesis advisor: Prof. Dr. Michael Haller
May 2012 - Oct 2012	Research stay at University of Waterloo, ON, Canada. Advisors: Dr. Mark Hancock, Dr. Stacey Scott
Oct 2006 - Jul 2009 <i>BSc</i>	University of Applied Sciences Upper Austria, School of Informatics, Communications and Media, Hagenberg Program “Media Technology and Design” (software development, computer graphics, digital imaging, ...)

Publications

PEER-REVIEWED PAPERS

ACM CHI and UIST are premiere venues for HCI, ~ 23% acceptance rate

- [10] Understanding Metamaterial Mechanisms.
Alexandra Ion, David Lindlbauer, Philipp Herholz, Marc Alexa, and Patrick Baudisch.
In *Proceedings of CHI '19. Glasgow, UK, May 4 – 9, 2019*.
- [9] TrussFormer: 3D Printing Large Kinetic Structures.
Robert Kovacs, **Alexandra Ion**, Pedro Lopes, Tim Oesterreich, Johannes Filter, Philipp Otto, Tobias Arndt, Nico Ring, Melvin Witte, Anton Synytsia, and Patrick Baudisch. In *Proceedings of UIST'18. Berlin, Germany, October 14 – 17, 2018*.
- [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 tactor 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

- [4] Metamaterial Devices.
Alexandra Ion and Patrick Baudisch.
In ACM SIGGRAPH 2018 Studio.
- [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

...of physical prototypes and software during hands-on sessions

- [6] Metamaterial Devices. *ACM SIGGRAPH 2018 Studio Installation. August 2018*.
- [5] Metamaterial Devices. *ACM CHI 2018 Interactivity. May 2018*.
- [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. May 2017*.
- [2] Metamaterial Mechanisms. *ACM UIST 2016 Demonstration. October 2016*.
- [1] Impacto: Simulating Physical Impact by Combining Tactile Stimulation with EMS. *ACM UIST 2015 Demonstration. November 2015*.

AWARDS & HONORS

- [4] Scholarship for academic exchange (2018 DAAD FIT program, ~9 000 EUR)
- [3] Best paper honorable mention award. ACM UIST 2016.
- [2] Best paper honorable mention award. ACM CHI 2013.
- [1] Nomination for national best master's thesis award. 2012.

Service & volunteering

Program committee:	ACM CHI 2020 ACM CHI 2019
Organizing committee:	ACM UIST 2019 – sustainability co-chair ACM UIST 2018 – local arrangements co-chair ACM UIST 2017 – student volunteer co-chair ACM UIST 2016 – documentation chair
Session chair:	at ACM CHI 2019, session “Designing with Materials” at ACM CHI 2018, session “Craft, Fabrication, Making” at ACM CHI 2017, session “Haptics on Skin”
Reviewing: (conferences)	ACM CHI 2019 – 2014 ACM UIST 2018 – 2016 ACM SIGGRAPH Asia 2018 ACM TEI 2019, 2017 ACM DIS 201, 2016 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

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)

Invited talks

ETH Zurich, PhD Seminar. October 26, 2018.
University of Sussex, hosted by Diego Martínez & Sriram Subramanian. May 21, 2018.
Université de Montréal, hosted by Bernhard Thomaszewski. April 27, 2018.
IST Austria, hosted by Bernd Bickel. March 2, 2018.
ETH Zürich, hosted by Olga Sorkine-Hornung. December 14, 2017.
SAP Walldorf, hosted by Andreas Polze & Bernd Welz. December 11, 2017.
TU Delft, hosted by Jouke Verlinden. December 4, 2017.
Aarhus University, hosted by Roman Rädle. October 5, 2017.
Technomania, hosted by The Danish Society of Engineers IDA. October 4, 2017
Driving 3D, hosted by The Danish Society of Engineers, IDA. September 29, 2017.
TEDx Poznan. April 8, 2017.
Singularity University Copenhagen, hosted by Märtha Rehnberg. December 14, 2016.
TU Berlin, hosted by Marc Alexa. 2016.
TU Berlin, hosted by Marc Alexa. 2015.

Exhibitions

BMBF (german federal ministry for education and research) InnoTruck (travelling exhibition). Metamaterial Mechanisms. 2017 – 2020.
Espacio Fundación Telefónica Chile, Santiago, “3D, printing the world”. Metamaterial Mechanisms. March 2019 – July 2019.
Espacio Fundación Telefónica Argentina, Buenos Aires, “3D, printing the world”. Metamaterial Mechanisms. July 2018 – October 2018.
Espacio Fundación Telefónica Peru, Lima, “3D, printing the world”. Metamaterial Mechanisms. December 2017 – April 2018.
Espacio Fundación Telefónica Spain, Madrid, “3D, printing the world”. Metamaterial Mechanisms. June – September 2017.
CeBit 2017. Futurium booth (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/