

Daniel Leithinger

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EDUCATION

- Ph.D. Media Arts and Sciences, 2015
MIT Media Lab (Massachusetts Institute of Technology) Cambridge, MA
ENEL Fellow 2010-2011, MIT Energy Fellow 2012-2013
Research Advisor: Prof. Hiroshi Ishii (Tangible Media Group)
- M.Sc. Media Arts and Sciences, 2010
MIT Media Lab (Massachusetts Institute of Technology) Cambridge, MA
Research Advisor: Prof. Hiroshi Ishii (Tangible Media Group)
- M.Sc. Digital Media, 2007
Upper Austria University of Applied Sciences (FH Oberösterreich) Hagenberg, Austria
Research Advisor: Prof. Michael Haller. Graduated with highest distinction.
- B.Sc. Media Technology and Design, 2005
Upper Austria University of Applied Sciences (FH Oberösterreich) Hagenberg, Austria

PROFESSIONAL EXPERIENCE

- University of Colorado at Boulder (01/2018 – present) Boulder, CO
Assistant Professor: ATLAS Institute & Department of Computer Science
- Lumii Inc, now Fathom Optics (09/2015 – 06/2017) Boston, MA
Chief Design Officer: Development of 3D design software and print technology
- MIT Media Lab, Tangible Media Group (11/2016 – 08/2017) Boston, MA
Research Affiliate
- MIT Media Lab, Tangible Media Group (09/2008 – 08/2015) Boston, MA
Graduate Research Assistant
- Disney Research (06/2010 - 09/2010) Pittsburgh PA
Research Intern: Development of novel human-computer interfaces.
- National University of Singapore (11/2007 - 08/2008) Singapore
Research Engineer: Design and development of future architectural workspaces.
- FH Oberösterreich Research & Development (08/2007 - 09/2007) Hagenberg, Austria
Student Intern: Design and development of large interactive meeting surfaces.
- HIT Laboratory NZ (02/2005 - 07/2005) Christchurch, NZ
Student Intern: Development of interactive museum exhibit.
- Ars Electronica Futurelab (07/2004 - 09/2004) Linz, Austria
Programmer: Development of interactive museum exhibit.
- MAVI International (06/2001 - 09/2002) Schlierbach, Austria
Web Developer: Design and development of websites and multimedia CDs.
- Holocaust Memorial Center (02/2000 - 03/2001) Detroit, MI
Austrian Memorial Service: Support museum staff in the museum library.

AWARDS AND HONORS

2022 DIS: Pictorial Honorable Mention Award (EmotiFactor)
2020 UIST: Best Paper Honorable Mention (RealitySketch)
2018 CHI: Golden Mouse Award (DropletIO)
2016 CHI: Best Paper Honorable Mention (Materiable)
2015 Mass Challenge Accelerator: Gold Award Startup (Lumii)
2015 A' Design Award (Transform)
2015 CHI: Golden Mouse Award (Transform)
2014 Fast Company Innovation by Design Award (inFORM)
2014 Red Dot Award: Design Concept (inFORM)
2014 Core 77 Design Awards: Interaction Student Winner (inFORM)
2014 IDEA Award: Bronze Winner (inFORM)
2014 Laval Virtual ReVolution Award: Winner (inFORM)
2013 CHI: Best Paper Honorable Mention (Sublimate)
2012 UIST: Best Paper Award (Jamming User Interfaces)
2011 UIST Student Innovation Contest: Winner People's Choice Award (Snail Interface)
2011 RTT Emerging Technology Contest: Winner (Recompose)
2010 Siggraph Research Challenge: Second Place (Relief)
2008 RTT Emerging Technology Contest: Winner (City Planning Space)
2007 Laval Virtual ReVolution Award: Winner (SDS)
2006 Europrix Top Talent Award: Nominee Content Tools & Interface Design (SDS)
2005 Austrian State Prize for Multimedia & e-Business: Jury Award (Coeno)
2005 Europrix Top Talent Award: Winner Content Tools & Interface Design (Coneo)
2005 Austrian State Prize for Multimedia & e-Business: Overall Winner (Gullivers World)
2005 World Summit Award 2005: Best of in e-Entertainment (Gullivers World)

TEACHING EXPERIENCE

CU Boulder: Assistant Professor

Computational Foundations (Spring 2022), Physical Telepresence (Fall 2021), Object (Spring 2021), Elastic Spaces (Fall 2020), Radical Design (Summer 2019), Fundamentals of Human Computer Interaction (Spring 2019, Fall 2020), Haptic Interfaces (Fall 2018), Physical Computing Interfaces (Spring 2018)

MIT Media Lab:

Hacking the Holodeck: Instructor (January 2017)
Tangible Interfaces: Teaching Assistant (Fall 2012, 2011)
New Paradigms for HCI: Teaching Assistant (Spring 2009)

ACADEMIC LEADERSHIP AND SERVICE

Program Committee:

ACM User Interface Software and Technology Symposium 2020, 2021, 2022
ACM CHI Conference on Human Factors in Computing Systems 2019, 2020, 2021, 2022, 2023
ACM Conference on Interactive Tabletops and Surfaces 2018
ACM Conference on Tangible, Embedded and Embodied Interaction (TEI) 2021
Student Volunteer Chair: ACM User Interface Software and Technology Symposium 2014, TEI 2010
Demo Chair: ACM International Conf on Interactive Tabletops and Surfaces, Cambridge, MA
Demo Chair: 14th ACM International Conference on Ubiquitous Computing, Pittsburgh

Reviewer for Conferences and Journals:

ACM CHI Conference on Human Factors in Computing Systems
ACM Symposium on User Interface Software and Technology
ACM International Joint Conference on Pervasive and Ubiquitous Computing
ACM International Conference on Tangible, Embedded and Embodied Interaction
ACM International Conference on Interactive Tabletops and Surfaces
ACM SIGCHI Conference on Designing Interactive Systems

PUBLICATIONS

Hedayati, Hooman, Ryo Suzuki, Wyatt Rees, Daniel Leithinger, and Daniel Szafrir. "Designing Expandable-Structure Robots for Human-Robot Interaction." *Frontiers in Robotics and AI* 9. 2022.

Zhou, Ran, Harpreet Sareen, Yufei Zhang, and Daniel Leithinger. "EmotiFactor: Exploring How Designers Approach Emotional Robotic Touch." In *Designing Interactive Systems Conference*, pp. 1330-1344. 2022. **(Honorable Mention Award)**

Ryo Suzuki, Eyal Ofek, Mike Sinclair, Daniel Leithinger, and Mar Gonzalez-Franco. 2021. HapticBots: Distributed Encountered-type Haptics for VR with Multiple Shape-changing Mobile Robots. In *The 34th Annual ACM Symposium on User Interface Software and Technology (UIST '21)*. Association for Computing Machinery, New York, NY, USA, 1269–1281

Purnendu, Sasha M Novack, Eric Acome, Christoph Keplinger, Mirela Alistar, Mark D Gross, Carson Bruns, and Daniel Leithinger. 2021. Electriflow: Soft Electrohydraulic Building Blocks for Prototyping Shape-changing Interfaces. In *Designing Interactive Systems Conference 2021 (DIS '21)*. Association for Computing Machinery, New York, NY, USA, 1280–1290

H. Hedayati, R. Suzuki, D. Leithinger and D. Szafrir, "PufferBot: Actuated Expandable Structures for Aerial Robots," 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020, pp. 1338-1343

Ryo Suzuki, Rubaiat Habib Kazi, Li-yi Wei, Stephen DiVerdi, Wilmot Li, and Daniel Leithinger. 2020. RealitySketch: Embedding Responsive Graphics and Visualizations in AR through Dynamic Sketching. In *Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology (UIST '20)*. Association for Computing Machinery, New York, NY, USA, 166–181. **(Best Paper Honorable Mention Award)**

Ryo Suzuki, Hooman Hedayati, James L Bohn, Clement Zheng, Daniel Szafrir, Ellen Yi-Luen Do, Mark D Gross, Daniel Leithinger. 2020. RoomShift: Room-scale Dynamic Haptics for VR with Furniture-moving Swarm Robots. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. ACM, New York, NY, USA.

Ryo Suzuki, Ryosuke Nakayama, Dan Liu, Yasuaki Takechi, Mark D. Gross, and Daniel Leithinger. 2020. LiftTiles: Constructive Building Blocks for Prototyping Room-scale Shape-changing Interfaces. In *Proceedings of the 14th ACM International Conference on Tangible, Embedded and Embodied Interaction (TEI '20)*. ACM, New York, NY, USA.

Ryo Suzuki, Clement Zheng, Yasuaki Takechi, Tom Yeh, Ellen Yi-Luen Do, Mark D. Gross, and Daniel Leithinger. 2019. ShapeBots: Shape-changing Swarm Robots. In *Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST '19)*. ACM, New York, NY, USA, 493-505.

Ryo Suzuki, Ryosuke Nakayama, Dan Liu, Yasuaki Takechi, Mark D. Gross, and Daniel Leithinger. 2019. LiftTiles: Modular and Reconfigurable Room-scale Shape Displays through Retractable Inflatable Actuators. In *The Adjunct Publication of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST '19)*. ACM, New York, NY, USA, 30-32.

Peter Gyory, Clement Zheng, Daniel Leithinger, and Ellen Yi-Luen Do. 2019. HOT SWAP: Probing Embodied Game Interfaces With Reconfigurable Controllers. In *Companion Publication of the 2019 on Designing Interactive Systems Conference 2019 Companion (DIS '19 Companion)*. ACM, New York, NY, USA, 183-187.

Clement Zheng, Jeeun Kim, Daniel Leithinger, Mark D Gross, Ellen Yi-Luen Do. 2019. Mechamagnets: Designing and Fabricating Haptic and Functional Physical Inputs with Embedded Magnets. In *Proceedings of the thirteenth international conference on Tangible, Embedded, and Embodied Interaction (TEI '19)*. ACM, New York, NY, USA

Ryo Suzuki, Junichi Yamaoka, Daniel Leithinger, Tom Yeh, Mark D. Gross, Yoshihiro Kawahara, and Yasuaki Kakehi. 2018. Dynablock: Dynamic 3D Printing for Instant and Reconstructable Shape Formation. In *Proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology (UIST '18)*. ACM, New York, NY, USA, 99-111.

Ken Nakagaki, Udayan Umapathi, Daniel Leithinger, and Hiroshi Ishii. 2017. AnimaStage: Hands-on Animated Craft on Pin-based Shape Displays. In *Proceedings of the 2017 Conference on Designing Interactive Systems (DIS '17)*. ACM, New York, NY, USA, 1093-1097.

Ken Nakagaki, Luke Vink, Jared Counts, Daniel Windham, Daniel Leithinger, Sean Follmer, and Hiroshi Ishii. 2016. Materiable: Rendering Dynamic Material Properties in Response to Direct Physical Touch with Shape Changing Interfaces. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. ACM, New York, NY, USA, 2764-2772. **(Best Paper Honorable Mention Award)**

Daniel Leithinger, Sean Follmer, Alex Olwal and Hiroshi Ishii, "Shape Displays: Spatial Interaction with Dynamic Physical Form," in *IEEE Computer Graphics and Applications*, vol. 35, no. 5, pp. 5-11, Sept.-Oct. 2015.

Philipp Schoessler, Daniel Windham, Daniel Leithinger, Sean Follmer, and Hiroshi Ishii. 2015. Kinetic Blocks: Actuated Constructive Assembly for Interaction and Display. In *Proceedings of the 28th Annual ACM Symposium on User Interface Software & Technology (UIST '15)*. ACM, New York, NY, USA, 341-349.

Hiroshi Ishii, Daniel Leithinger, Sean Follmer, Amit Zoran, Philipp Schoessler, and Jared Counts. 2015. TRANSFORM: Embodiment of "Radical Atoms" at Milano Design Week. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '15)*.

Daniel Leithinger, Sean Follmer, Alex Olwal, and Hiroshi Ishii. 2014. Physical Telepresence: Shape Capture and Display for Embodied, Computer-mediated Remote Collaboration. In *Proceedings of the 27th annual ACM symposium on User interface software and technology (UIST '14)*. ACM, New York, NY, USA

Sean Follmer, Daniel Leithinger, Alex Olwal, Akimitsu Hogge, and Hiroshi Ishii. 2013. inFORM: dynamic physical affordances and constraints through shape and object actuation. In *Proceedings of the 26th annual ACM symposium on User interface software and technology (UIST '13)*. ACM, New York, NY, USA, 417-426.

Daniel Leithinger, Sean Follmer, Alex Olwal, Samuel Luescher, Akimitsu Hogge, Jinha Lee, and Hiroshi Ishii. 2013. Sublimate: state-changing virtual and physical rendering to augment interaction with shape displays. In *Proceedings of the 2013 ACM annual conference on Human factors in computing systems (CHI '13)*. ACM, New York, NY, USA, 1441-1450. **(Best Paper Honorable Mention Award)**

Sean Follmer, Daniel Leithinger, Alex Olwal, Nadia Cheng, and Hiroshi Ishii. 2012. Jamming user interfaces: programmable particle stiffness and sensing for malleable and shape-changing devices. In *Proceedings of the 25th annual ACM symposium on User interface software and technology (UIST '12)*. ACM, New York, NY, USA, 519-528. **(Best Paper Award)**

Daniel Leithinger, David Lakatos, Anthony DeVincenzi, Matthew Blackshaw, and Hiroshi Ishii. 2011. Direct and Gestural Interaction with Relief: a 2.5D Shape Display. In *Proceedings of the 24th annual*

ACM symposium on User interface software and technology (UIST '11). ACM, New York, NY, USA, 541-548.

Daniel Leithinger and Hiroshi Ishii. 2010. Relief: a scalable actuated shape display. In *Proceedings of the fourth international conference on Tangible, embedded, and embodied interaction (TEI '10)*. ACM, New York, NY, USA, 221-222.

Jamie Zigelbaum, Alan Browning, Daniel Leithinger, Olivier Bau, and Hiroshi Ishii. 2010. g-stalt: a chirocentric, spatiotemporal, and telekinetic gestural interface. In *Proceedings of the fourth international conference on Tangible, embedded, and embodied interaction (TEI '10)*. ACM, New York, NY, USA, 261-264.

John Kestner, Daniel Leithinger, Jaekyung Jung, and Michelle Petersen. 2009. Proverbial wallet: tangible interface for financial awareness. In *Proceedings of the 3rd International Conference on Tangible and Embedded Interaction (TEI '09)*. ACM, New York, NY, USA, 55-56.

Daniel Leithinger, Michael Haller, "Improving Menu Interaction for Cluttered Tabletop Setups with User-Drawn Path Menus," in *Horizontal Interactive Human-Computer Systems, International Workshop on*, pp. 121-128, Second Annual IEEE International Workshop on Horizontal Interactive Human-Computer Systems (TABLETOP'07), 2007

Michael Haller, Peter Brandl, Daniel Leithinger, Jakob Leitner, Thomas Seifried, and Mark Billinghurst. 2006. Shared design space: sketching ideas using digital pens and a large augmented tabletop setup. In *Proceedings of the 16th international conference on Advances in Artificial Reality and Tele-Existence (ICAT'06)*, Zhigeng Pan, Adrian Cheok, Michael Haller, Rynson H. Lau, and Hideo Saito (Eds.). Springer-Verlag, Berlin, Heidelberg, 185-196.

Michael Haller, Mark Billinghurst, Daniel Leithinger, Jakob Leitner, and Thomas Seifried. 2005. Coeno: enhancing face-to-face collaboration. In *Proceedings of the 2005 international conference on Augmented tele-existence (ICAT '05)*. ACM, New York, NY, USA, 40-47.

PATENTS

Thomas Anthony Baran, Matthew Waggener Hirsch, Daniel Leithinger. 2016. Multi-View Displays and Associated Systems and Methods. US Patent Application 20170085867

Sean Follmer, Daniel Leithinger, Hiroshi Ishii, Alex Olwal. 2013. Methods and Apparatus for Jammable HCI Interfaces. US9298264

Daniel Leithinger, David Lakatos, Anthony DeVincenzi, Matthew Blackshaw, Hiroshi Ishii. 2012. Methods and apparatus for actuated 3D surface with gestural interactivity. US9298264

Philip Jackson, Ivan Poupyrev, Daniel Leithinger, Leonid Sigal. 2011. Elastomeric Input Device. US8823639