

Stanford



Sean Follmer

Assistant Professor of Mechanical Engineering and, by courtesy, of Computer Science

Bio

BIO

Sean Follmer is an Assistant Professor of Mechanical Engineering and Computer Science (by courtesy) at Stanford University. His Research in Human Computer Interaction, Haptics, and Human Robot Interaction explores the design of novel tactile physical interfaces and novel robotic devices. Dr. Follmer directs the Stanford Shape Lab and is a faculty member of the Stanford HCI Group. He is a core faculty member of the Design Impact masters program focusing on innovation and human centered design at Stanford.

The Shape lab explores how we can interact with digital information in a more physical and tangible way. Towards our goal of more human centered computing, we believe that interaction must be grounded in the physical world and leverage our innate abilities for spatial cognition and dexterous manipulation with our hands. We develop advanced technologies in robotics, mechatronics, and sensing to create interactive, dynamic physical 3D displays and haptic interfaces that allow 3D information to be touched as well as seen. We are specifically interested in using these novel interfaces to support richer remote collaboration, computer aided design, education, and interfaces for people with visual impairments. In pursuit of these goals, we use a design process grounded in iterative prototyping and human centered design and look to create new understanding about human perception and interaction through controlled studies.

Our research in Human Computer Interaction and Human Robot Interaction currently directed in five areas:

Dynamic physical shape displays

Wearable Haptics for grasping in VR

Ubiquitous Robotic Interfaces

Mobile Haptics

Soft actuation and Sensing

Dr. Follmer received a PhD and a Masters from the MIT Media Lab in 2015 and 2011 (respectively) for his work in human-computer interaction, and a BS in Engineering with a focus on Product Design from Stanford University. His talk featured on TED.com was named one of the best science and tech TED talks of 2015 and has been viewed more than 1.4 million times. He has received numerous awards for his research and design work such as Best Paper Awards and nominations from premier conferences in human-computer interaction (ACM UIST and CHI conferences), Fast Company Innovation By Design Award, Red Dot Design Award, and a Laval Virtual Award. His work has been shown at the Smithsonian Cooper Hewitt Design Museum, Ars Electronica Center, and the Milan Design Week. Dr. Follmer also leads workshops and executive education around design thinking and innovation.

ACADEMIC APPOINTMENTS

- Assistant Professor, Mechanical Engineering

- Member, Bio-X

HONORS AND AWARDS

- Best Paper Award, ACM UIST 2012 (2012)
- Best Paper Award, ACM UIST 2013 (2013)
- Best Demo Award, ACM UIST 2016 (2016)
- Best Paper Award (x2), ACM UIST 2016 (2016)
- Best Paper Award, ACM UIST 2017 (2017)

PROGRAM AFFILIATIONS

- Symbolic Systems Program

PROFESSIONAL EDUCATION

- Postdoctoral Associate, MIT Media Lab (2015)
- PhD, MIT Media Lab (2015)
- S.M., MIT Media Lab (2011)

LINKS

- Shape Lab Site: <http://shape.stanford.edu>
- Talk on TED.com: https://www.ted.com/talks/sean_follmer_shape_shifting_tech_will_change_work_as_we_know_it

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Human Computer Interaction, Haptics, Robotics, Human Centered Design

Teaching

COURSES

2018-19

- Design Impact Master's Project I: ME 316A (Aut)
- Introduction to the Design of Smart Products: ME 216M (Spr)
- Product Design Methods: ME 115B (Win)

2017-18

- Advanced Product Design: Implementation 1: ME 216B (Win)
- Introduction to the Design of Smart Products: ME 216M (Spr)
- Product Design Methods: ME 115B (Win)

2016-17

- Advanced Product Design: Implementation 1: ME 216B (Win)
- Introduction to the Design of Smart Products: ME 216M (Spr)
- Product Design Methods: ME 115B (Win)

2015-16

- Advanced Product Design: Implementation 1: ME 216B (Win)

- Introduction to the Design of Smart Products: ME 116M (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Laura Blumenschein, Darrel Deo, Amy Kyungwon Han, Melisa Orta Martinez, Will Roderick, Srinath Sibi, Jacob Suchoski, Kesler Tanner, Nathan Usevitch, Julie Walker

Postdoctoral Faculty Sponsor

Dan Drew

Doctoral Dissertation Advisor (AC)

Elyse Chase, Inrak Choi, Eric Gonzalez, Zack Hammond, Lawrence Kim, Alexa Siu, Kai Zhang

Orals Evaluator

Laura Matloff, Kesler Tanner

Doctoral Dissertation Co-Advisor (AC)

Parastoo Abtahi, Adam Caccavale, James Harrison, Shenli Yuan

Master's Program Advisor

Eleni Alexandraki, Elyse Chase, Julea Chin, Caroline Condon, Preston Culbertson, Sohini Guin, Vivienne Hay, Usman Khaliq, Maggie Koo, Chloe Thai

Postdoctoral Research Mentor

Dan Drew

Doctoral (Program)

Jingyi Li, Evan Strasnick, Kesler Tanner, Kai Zhang

Publications

PUBLICATIONS

- **Shape Displays: Spatial Interaction with Dynamic Physical Form** *IEEE COMPUTER GRAPHICS AND APPLICATIONS*
Leithinger, D., Follmer, S., Olwal, A., Ishii, H.
2015; 35 (5): 5-11
- **Jamming User Interfaces: Programmable Particle Stiffness and Sensing for Malleable and Shape-Changing Devices** *UIST'12: PROCEEDINGS OF THE 25TH ANNUAL ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY*
Follmer, S., Leithinger, D., Olwal, A., Cheng, N., Ishii, H.
2012: 519-528
- **d.note: Revising User Interfaces Through Change Tracking, Annotations, and Alternatives** *28th Annual CHI Conference on Human Factors in Computing Systems*
Hartmann, B., Follmer, S., Ricciardi, A., Cardenas, T., Klemmer, S. R.
ASSOC COMPUTING MACHINERY.2010: 493-502
- **Family Story Play: Reading with Young Children (and Elmo) Over a Distance** *CHI2010: PROCEEDINGS OF THE 28TH ANNUAL CHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS, VOLS 1-4*
Raffle, H., Ballagas, R., Revelle, G., Horii, H., Follmer, S., Go, J., Reardon, E., Mori, K., Kaye, J. ', Spasojevic, M.
2010: 1583-1592