Leah Buechley

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@leahbuechley

Education

Ph.D., Computer Science, 2007
University of Colorado at Boulder, Boulder, CO

B.A., Physics, 1997
Skidmore College, Saratoga Springs, NY
Magna cum laude with honors in Physics

Experience

Associate Professor, University of New Mexico
Department of Computer Science
2019-present

Founder, Rural / Digital
Founded and run an independent design and engineering firm focusing on technology, design, and learning.
2014-present

Associate Professor, MIT Media Laboratory
2011-2014

Assistant Professor, MIT Media Laboratory
2009-2011

Postdoctoral Researcher, University of Colorado at Boulder
Department of Computer Science
2007-2008

Honors and Awards

Edith Ackerman Award for Interaction Design and Children, 2017
co-recipient with Jeanne Bamberger

National Science Foundation CAREER Award, 2011-2014

MIT AT&T Career Development Professor, 2009-2013

Best Paper Award, IEEE International Symposium on Wearable Computers (ISWC), 2006

University of Colorado Fellowship, 2001-2002

Ellen A. Samworth prize in Physics, Skidmore College, 1997

Inventions

Chibitronics Circuit Stickers, 2013
Inventors: Jie Qi and Andrew “Bunnie” Huang. A set of peel-and-stick modules for paper-based electronics. Mentored and advised my student Jie Qi through the design and development of a commercial kit based on our research.

LilyPad Arduino, 2007
A set of sew-able electronic pieces for wearable and textile-based computing. Based on my PhD research.

Books

Buechley, L., Peppler, K.A., Eisenberg, M., and Kafai, Y.B. eds. (2013) **Textile Messages: Dispatches From the World of E-Textiles and Education.** Peter Lang, New York, NY, USA 2013.

Buechley, L., Qiu, K., and de Boer, S. (2013) **Sew Electric.** HLT Press, Cambridge, MA, USA 2013.

Refereed Journal and Conference Publications

Qi, J., Buechley, L., Huang, A., Ng, P., Cross, S., and Paradiso, J. (2018) **Chibitronics in the Wild: Engaging New Communities in Creating Technology with Paper Electronics**. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI). ACM, ACM, New York, NY, USA, Paper 252, 11 pages.

Mellis, D., Buechley, L., Resnick, M., and Hartmann, B. (2016) **Engaging Amateurs in the Design, Fabrication, and Assembly of Electronic Devices**. In Proceedings of the 2016 ACM Conference on Designing Interactive Systems (DIS). ACM, New York, NY, USA, 1270-1281.

Mellis, D. and Buechley, L. (2014). **Do-It-Yourself Cellphones: An Investigation into the Possibilities and Limits of High-Tech DIY**. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, 1723-1732.

Qi, J. and Buechley, L. (2014). **Sketching in Circuits: Designing and building electronics on paper**. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, 1713-1722.

Jacobs, J., Resnick, M., and Buechley, L. (2014). **Dresscode: supporting youth in computational design and making**. In Proceedings of Constructionism 2014 Conference. Vienna, Austria.

Vardouli, T. and Buechley, L. (2014). **Open Source Architecture: an Exploration of Source Code and Access in Architectural Design.** Leonardo Journal of Art, Sciences, and Technology, 47:1, 51-55

Jacobs, J. and Buechley, L. (2013). **Codeable objects: computational design and digital fabrication for novice programmers**. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI). pp. 1589-1598.

Mellis, D., Follmer, S., Hartmann, B., Buechley, L., and Gross, M. (2013). **FAB at CHI: digital fabrication tools, design, and community**. In CHI '13 Extended Abstracts on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, pp. 3307-3310.

Qiu, K., Buechley, L., Baafi, E. and Dubow, W. (2013). **A curriculum for teaching computer science through computational textiles**. In Proceedings of the 12th International Conference on Interaction Design and Children (IDC). pp. 20-27.

Jacoby, S. and Buechley, L. (2013). **Drawing the electric: storytelling with conductive ink**. In Proceedings of the 12th International Conference on Interaction Design and Children (IDC). ACM, New York, NY, USA, pp. 265-268.

Mellis, D., Jacoby, S., Buechley, L., Perner-Wilson, H., and Qi, J. (2013). **Microcontrollers as material: crafting circuits with paper, conductive ink, electronic components, and an "untoolkit"**. In Proceedings of the 7th International Conference on Tangible, Embedded and Embodied Interaction (TEI). ACM, New York, NY, USA, pp. 83-90.

Buechley, L. and Perner-Wilson, H. (2012). **Crafting Technology: Reimagining the Processes, Materials, and Cultures of Electronics**. In ACM Transactions on Computer-Human Interaction (ToCHI), 19:3, pp. 1-21.

Zoran, A. and Buechley L., (2012). **Hybrid ReAssemblage: An Exploration of Craft, Digital Fabrication and Artifact Uniqueness**. Leonardo Journal of Art, Sciences, and Technology, 46:1.

Mellis, D. and Buechley, L. (2012). **Case studies in the personal fabrication of electronic products**. In Proceedings of the Designing Interactive Systems Conference (DIS). ACM, New York, NY, USA, pp. 268-277.

Qi, Jie and Buechley, L. (2012). **Animating paper using shape memory alloys**. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, pp. 749-752.

Rosner, D., Blanchette, J., Buechley, L., Dourish, P., and Mazmanian, M. (2012). **From materials to materiality: connecting practice and theory in HCI**. In CHI '12 Extended Abstracts on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, pp. 2787-2790.

Mellis, D. and Buechley, L. (2012). **Collaboration in Open-Source Hardware: Third-Party Variations on the Arduino Duemilanove**, In Proceedings of the ACM Conference on Computer Supported Collaborative Work (CSCW).

Delle Monache, S., Rocchesso, D., Qi, J., Buechley, L., De Götzen, A. and Cestaro, D. (2012). **Paper mechanisms for sonic interaction**. In Proceedings of the Sixth International Conference on Tangible, Embedded and Embodied Interaction (TEI), Stephen N. Spencer (Ed.). ACM, New York, NY, USA, pp. 61-68.

Bradley Holschuh, Edward Obropta, Leah Buechley, and Dava Newman. 2012. **Materials and Textile Architecture Analyses for Mechanical Counter-Pressure Space Suits using Active Materials**. In AIAA SPACE 2012 Conference & Exposition. American Institute of Aeronautics and Astronautics.

Lovell, E. and Buechley, L. (2011). **LilyPond: an online community for sharing e-textile projects**. In Proceedings of the 8th ACM conference on Creativity and cognition (C&C '11). ACM, New York, NY, USA, pp. 365-366.

Mellis, D. and Buechley, L. (2011). **Scaffolding creativity with open-source hardware**. In Proceedings of the 8th ACM conference on Creativity and cognition (C&C). ACM, New York, NY, USA, pp. 373-374.

Freed, N., Qi, J., Setapen, A., Breazeal, C., Buechley, L., and Raffle, H. (2011). **Sticking together: handcrafting personalized communication interfaces**. In Proceedings of the 10th International Conference on Interaction Design and Children (IDC '11). ACM, New York, NY, USA, pp. 238-241.

Perner-Wilson, H., Buechley, L., and Satomi, M. (2011). **Handcrafting Textile Interfaces from a Kit-of-No-Parts**. In Proceedings of the fifth international conference on Tangible, embedded, and embodied interaction (TEI). ACM, New York, NY, USA, pp. 61-68.

Mellis, D., Gordon, D. and Buechley, L. (2011). **Fab FM: the Design, Making, and Modification of an Open- Source Electronic Product**. In Proceedings of the fifth international conference on Tangible, embedded, and embodied interaction (TEI). ACM, New York, NY, USA, pp. 81-84.

Buechley, L. and Hill, B. M. (2010). **LilyPad in the Wild: How Hardware's Long Tail is Supporting New Engineering and Design Communities**. In Proceedings of Designing Interactive Systems (DIS), Aarhus, Denmark, pp. 199-207.

Kaufmann, B. and Buechley, L., (2010). **Amarino: A Toolkit for the Rapid Prototyping of Mobile Ubiquitous Computing**. In Proceedings of Mobile HCI. Lisbon, Portugal, pp. 291-298.

Blikstein, P., Buechley, L., Horn, M. and Raffle, H. (2010). **A New Age in Tangible Computational Interfaces for Learning**. In Proceedings of the International Conference on the Learning Sciences (ICLS).

Lovell, E. and Buechley, L. (2010). **An e-sewing tutorial for DIY learning**. In Proceedings of the 9th International Conference on Interaction Design and Children. (Barcelona, Spain, June 09 – 12, 2010). IDC '10. ACM, New York, NY, pp. 230-233.

Buechley, L., (2010). **Questioning Invisibility**, IEEE Computer , vol.43, no.4, pp.84-86. (invited submission)

Qi, J. and Buechley, L. (2010). **Electronic popables: exploring paper-based computing through an interactive pop-up book**. In Proceedings of the fourth international conference on Tangible, embedded, and embodied interaction (TEI). ACM, New York, NY, USA, 121-128.

Perner-Wilson, H. and Buechley, L. (2010). **Making textile sensors from scratch**. In Proceedings of the fourth international conference on Tangible, embedded, and embodied interaction (TEI). ACM, New York, NY, USA, 349-352.

Rosner, D., Perner-Wilson, H., Qi, J., and Buechley, L. (2010). **Fine bookbinding meets electronics**. In Proceedings of the fifth international conference on Tangible, embedded, and embodied interaction (TEI). ACM, New York, NY, USA, 345-348.

Eisenberg, M., Buechley, L., and Elumeze, N. (2010) **Bits and Pieces: Potential Future Scenarios for Children's Mobile Technology**. International Journal of Mobile Human Computer Interaction, 2:2, pp. 37-52.

Buechley, L. and Coelho, M. (2010) **Special issue on material computing**. Personal and Ubiquitous Computing, 15:2, pp. 113-114.

Buechley, L., Mellis, D., Perner-Wilson, H., Lovell, E., and Kaufmann, B. (2010). **Living wall: programmable wallpaper for interactive spaces**. In Proceedings of the 18th ACM international conference on Multimedia (MM). ACM, New York, NY, USA, pp. 1401-1402.

Perner-Wilson, H. and Buechley, L. (2010). **Handcrafting textile mice**. In Proceedings of the 8th ACM Conference on Designing Interactive Systems (DIS). ACM, New York, NY, USA, 434-435.

Buechley, L. (2010). **LilyPad Arduino: rethinking the materials and cultures of educational technology**. In Proceedings of the 9th International Conference of the Learning Sciences - Volume 2 (ICLS), Kimberly Gomez, Leilah Lyons, and Joshua Radinsky (Eds.), Vol. 2. International Society of the Learning Sciences, 127-128.

Buechley, L. & Eisenberg, M., (2009). **Fabric PCBs, electronic sequins, and socket buttons: techniques for e-textile craft**. Personal Ubiquitous Computing, 13(2), pp.133-150.

Coelho, M., Poupyrev, I., Sadi, S., Vertegaal, R., Berzowska, J., Buechley, L., Maes, P., and Oxman, N. (2009). **Programming reality: from transitive materials to organic user interfaces**. In CHI '09 Extended Abstracts on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, 4759-4762.

Buechley, L., Rosner, D., Paulos, E., and Williams, A. (2009). **DIY for CHI: methods, communities, and values of reuse and customization**. In CHI '09 Extended Abstracts on Human Factors in Computing Systems (CHI). ACM, New York, NY, USA, 4823-4826.

Buechley, L., Hendrix, S. and Eisenberg, M. (2009). **Paints, paper, and programs: first steps toward the computational sketchbook**. In Proceedings of the 3rd International Conference on Tangible and Embedded Interaction (TEI). ACM, New York, NY, USA, 9-12.

Buechley, L., Eisenberg, M., Catchen, J. and Crockett, A. (2008). **The LilyPad Arduino: Using Computational Textiles to Investigate Engagement, Aesthetics, and Diversity in Computer Science Education**. In Proceedings of the SIGCHI conference on Human factors in computing systems (CHI), Florence, Italy, April 2008, pp. 423-432.

Eisenberg, M. and Buechley, L. (2008). **Pervasive Fabrication: Making Construction Ubiquitous in Education**. Journal of Software: 3(4), pp. 62-68 (Invited submission)

Buechley, L., and Eisenberg, M. (2008). **The LilyPad Arduino: Towards Wearable Engineering for Everyone**. Wearable Computing Column in IEEE Pervasive: 7(2), pp 12-15 (Invited submission).

Buechley, L. and Eisenberg, M. (2007). **Boda Blocks: A Collaborative Tool for Exploring Tangible Three-Dimensional Cellular Automata**. In Proceedings of Computer Supported Collaborative Learning (CSCL), Rutgers, NJ, USA, July 2007.

Buechley, L., Eisenberg, M. and Elumeze, N. (2007). **Towards a Curriculum for Electronic Textiles in the High School Classroom**. In Proceedings of the Conference on Innovation and Technology in Computer Science Education (ITiCSE), Dundee, Scotland, June 2007.

Buechley, L. (2006). **A Construction Kit for Electronic Textiles**. In Proceedings of the IEEE International Symposium on Wearable Computers (ISWC), Montreux, Switzerland, October, 2006. *Winner best paper award.*

Buechley, L., Elumeze, N., and Eisenberg, M. (2006). **Electronic/Computational Textiles and Children's Crafts**. In Proceedings of Interaction Design and Children (IDC), Tampere, Finland, June 2006.

Buechley, L., Elumeze, N., Dodson, C., and Eisenberg, M. (2005). **Quilt Snaps: A Fabric Based Computational Construction Kit**. In Proceedings of the IEEE International Workshop on Wireless and Mobile Technologies in Education (WMTE), Tokushima, Japan, November 2005.

Eisenberg, M., Buechley, L., and Elumeze, N. (2004). **Computation and Construction Kits: Toward the Next Generation of Tangible Building Media for Children**. In Proceedings of Cognition and Exploratory Learning in the Digital Age (CELDA), Lisbon, Portugal, December 2004.

Book Chapters and Other Publications

Foreward for: Nettrice Gaskins (2021), *Techno-Vernacular Creativity and Innovation: Culturally Relevant Making Inside and Outside the Classroom*. MIT Press, Cambridge, MA.

Contributor: Nathan Holbert, Matthew Berland, and Yasmin Kafai (Eds.) 2020, *Constructionism in Context*. MIT Press, Cambridge, MA.

Contributor: Blikstein, P. *Pre-College Computer Science Education: A Survey of the Field*. Mountain View, CA: Google LLC, 2018. Retrieved from https://goo.gl/gmS1Vm.

Foreword for: Peppler,K., Gresalfi, M., Salen Tekinbas, K., and Santo, R. 2014. *Soft Circuits: Crafting e-Fashion with DIY Electronics*. MIT Press, Cambridge, Massachusetts.

Contributor: Jenny Preece, Helen Sharp, and Yvonne Rogers, *Interaction Design: Beyond Human-Computer Interaction*. Wiley, Chichester, editions 1-3, 2011, 2015, 2018

Introduction for: Karen Wilkinson and Mike Petrich, *The Art of Tinkering*. Weldon Owen, San Francisco, USA, 2014

Featured designer: Bradley Quinn, *Textile Visionaries: Innovation and Sustainability in Textile Design*. Laurence King Publishing, 2013

Buechley, L. Material Computing: Integrating Technology into the Material World. In Price, S., Jewitt, C., and Brown, B. (eds). *The SAGE Handbook of Digital Technology Research,* Sage Publications Ltd., 2012.

Featured designer: *Textile Designers at the Cutting Edge 2.* Quinn, B. (ed.), Laurence King, 2012.

Featured designer: *Fashionable Technology: The Intersection of Design, Fashion, Science, and Technology*. Seymour, S. (ed.), Springer, 2008, 118-121.

Buechley, L. The Electric Tank Top. *CRAFT Magazine, October 2006*, 1, (2006), pp. 56-66.

Eisenberg, M., Eisenberg, A., Blauvelt, G., Hendrix S., Buechley, L., Elumeze, N. Mathematical Crafts for Children: Beyond Scissors and Glue. In *Proceedings of Art + Math = X*, Boulder, CO, 2005.

Talks and Workshops

Distinguished Lecture Series: **Hand and Machine**, Accenture Research Labs, via Zoom, November 2020

Design Conversations Series: **Hand and Machine**, Jacobs Institute for Design Innovation, University of California at Berkeley, via Zoom, October 2020

Invited Talk: **Computational Ceramics**, Department of Media Arts and Technology, University of California at Santa Barbara, Santa Barbara, CA March 2020.

Invited Workshop Participant: **Learn, Design, Compute with Bio**, Departments of Design and Education, University of Pennsylvania, Philadelphia, PA.

Keynote: **Beautiful, Meaningful Computation**, CUE-NEXT, NSF sponsored conference series on the future of computing education, Denver, CO, January 2020.

Invited Talk: **Material Technology**, Meow Wolf Engineering, Santa Fe, NM 2019

Creative Thought Forum Lecture: **Connecting Science, Technology, and Culture in Education**, School for Advanced Research, Santa Fe, NM, October 2018

Distinguished Lecture Series: **Beautiful, Meaningful Computation: Identity and Engagement in the Context of CS4All**, ATLAS, University of Colorado at Boulder, Boulder, CO, August 2018

Keynote: **Art, Craft, and Computation**, FabLearn Europe Conference, Trondheim, Norway, June 2018

Invited Talk with Jeanne Bamberger, for the Edith Ackerman Award Project, **Action and Representation**, Interaction Design and Children Conference (IDC), Trondheim, Norway, June 2018

Invited Talk: **Learning vs? Education**, School of Education, University of California at Berkeley, Berkeley, CA, March 2018

Invited Participant: **How Students Learn Computer Science**, Research Workshop at Google, Mountain View, CA, March 2018

Invited Talk and Panelist: **Hand and Machine: Exploring Digital Craftsmanship**, Talking Craft Symposium, School of Literature, Media, Technology, and Communication, Georgia Tech, Atlanta, GA, February 2018

Keynote: **Expressive Computing**, InWIC Conference, Indianapolis, Indiana, October 2017

Invited Talk: **STEM is Everywhere**, School of Informatics, Indiana University, Bloomington, IN, October 2017

Panel Moderator: **E-textiles in Education**, Digital Media and Learning Conference, Irvine, CA, October 2017

Invited Panelist: **Creative Expression**, Tech and the West Conference, Santa Fe Opera, Santa Fe, NM, July 2017

Learning Innovation Speaker's Series: **Equity, Engagement, and Technology in Education**, Drexel University, Philadelphia, PA, May 2017

Invited Workshop: **Playing with Fire**, STEM Collaborative Center, University of New Mexico, Albuquerque, NM, April 2017

Invited Talk: **Beautiful Technology**, Steward School, Richmond, VA, April 2017

Keynote: **STEM is Everywhere**, Society for Information Technology and Teacher Education (SITE) Conference, Austin, TX, March 2017

Keynote: **Inclusive Maker Education**, FabLearn Conference, Stanford, CA, October 2016

Invited Talk: **Making Material Interactions**, PASEO Art and Technology Festival, Taos, NM, September 2016

Keynote: **STEM is Everywhere**, Emerging Learning and Design Conference (ELD), Montclaire, NJ, June 2016

Design@Large Speaker Series: **Program and Be Programmed or Computational Thinking != Critical Thinking***,* University of California San Diego, San Diego, CA, May 2016

Invited Participant: Ed Foo Conference, Google, Montainview, CA, February 2016

Keynote: **Making and Social Justice**, Constructing Modern Knowledge Conference, Manchester, NH, June 2015

Keynote: **Making and Social Justice***,* UTeach Conference, Austin, TX, May 2015

Invited Talk: **Making Material Interactions**, University of Minnesota, Minneapolis, MN, March 2015

Invited Talk: **High-Low Tech**, University of Massachusetts Lowell, Lowell, MA, November 2014

Panel Moderator: **The Maker Movement Revolution in Education, Design, and Business**, FIT Faculty Summit, New York, NY, October 2014

Invited Talk: **Thinking about Making**, Eyeo Conference, Minneapolis, MN, June 2014

Invited Talk: **Thinking about Making**, Chattanooga Mini Maker Faire, Chattanooga, TN, October 2014

Invited Talk: **High-Low Tech**, Skidmore College, Saratoga Springs, NY, November 2013

Invited Talk: **Science, Art, and Creativity**, Friends of the President of Skidmore College Celebration, New York, NY, November 2013

Keynote: **Thinking about Making**, Stanford FabLearn Conference, Stanford, CA, October 2013

Invited Workshop: **Crafting Electricity: Interactive Drawings, Paintings, and Sculptures**, Shakerag Craft Workshops, June 2013

Invited Talk: **Art, Craft, and Technology**, Santa Fe Children's Museum, Santa Fe, NM, March 2013

Invited Panelist: Conference on World Affairs, Boulder, CO, April, 2013

Invited Talk: **Art, Craft, and Technology**, ATLAS Program, University of Colorado at Boulder, Boulder, CO, April, 2013

with Jennifer Jacobs, Invited Workshop: **Computational Textiles**, HIVE Fashion Learning Network NYC, New York, NY, November 2012

with Jennifer Jacobs, Invited Workshop: **Computational Textiles**, HIVE Fashion Learning Network Chicago, Chicago, IL, November 2012

Invited Talk: **Art, Craft, and Technology**, Children's Museum of Pittsburgh, Pittsburgh, PA, August 2012

Invited Workshop: **Art, Craft, and Technology**, Children's Museum of Pittsburgh, Pittsburgh, PA, August 2012

Invited Workshop and Residency: Tinkering Studio, Exploratorium Museum, San Francisco, CA, August 2012

Workshop: **Drawing the Electric**, World Maker Faire, New York City, September, 2012

Invited Talk: **Open Source Hardware and Empowerment**, Open Hardware Summit, New York, NY, September 2012

Invited Talk: **Art, Craft, and Technology**, Blikwisseling Festival, Arnhem, The Netherlands, October 2012

Invited Workshop: **Art, Craft, and Technology**, Blikwisseling Festival, Arnhem, The Netherlands, October 2012

Keynote: **Interdisciplinary Research and Education**, University of Rhode Island Academic Summit, Kingston, Rhode Island, January 2012

Juried Talk: **Art, Craft, and Technology Education**, NSF Cyberlearning Research Summit, Washington, DC, January 2012

Invited Talk: **DIY, Technology, Fashion, and Gender**, Microsoft Social Computing Summit, January 2012

Invited Talk and Artist in Residence Visit: **Art, Craft and Electronics**, Texas A&M University, College Station, Texas, January 2012.

with Mitch Resnick, Karen Wilkenson, Mike Petrich, and Dale Dougherty, Invited Panel: **Making, Tinkering and Remixing Learning**, Digital Media and Learning (DML) Conference, San Francisco, CA, March 2012

with Kylie Peppler, Mike Eisenberg, Sherry Hsi, and Yasmin Kafai, Panel: **Tinkering with Tangibles: Electronic Textiles in Classrooms, Colleges, and Clubs**, Digital Media and Learning (DML) Conference, San Francisco, CA, March 2012

Visiting Artist: Massachusetts College of Art (Mass Art), Boston, MA, March 2012

Invited Talk: **Expressive Electronics**, Watts On Festival, Carnegie Mellon University, Pittsburgh, PA, April 2012

Panel with Yasmin Kafai, Kylie Peppler, and Mike Eisenberg: **E-Texiles and Education**, AERA Conference, Vancouver, BC, April 2012

Invited Panel with David Mellis: **OH/DC: Open Source Hardware Comes to DC**, Open Source Hardware Policy Implication Meeting, Washington, DC, April 2012

Invited Talk: **DIY Feminist Engineering**, Museum of Contemporary Art, Denver, CO, May 2012

Invited Talk: **Art, Craft, and Technology**, Constructing Modern Knowledge Conference, Cambridge, MA, July 2012

Invited Participant: **NSF Workshop on developing a Network for Science, Engineering, Arts and Design (NSEAD)**, University of North Carolina Center for Design Innovation, Winston-Salem, NC, September 2011

Invited Talk: **Improvement? and Sideways Invention: Alternative Technology Narratives**, Sketching in Hardware Conference, Philadelphia, PA, July 2011

Invited Participant: **Google Faculty Summit**, New York, NY, July 2011

Invited Workshop, with Fo Wilson: **Interactive Objects**, Haystack Mountain School of Crafts, Deer Isle, ME, June 2011

Invited Talk: **Artisanal Technology**, Haystack Mountain School of Crafts, Deer Isle, ME, June 2011

Keynote: **Artisanal Technology**, Collaborative Technology and Systems Conference (CTS), Philadelphia, PA, May 2011

Invited Panel: **Tinkering: How might 'Making Stuff' Influence Girls' Interest in STEM and Computing?**, National Center for Women and Information Technology (NCWIT) Summit, New York, NY, May, 2011

Invited Talk: **Arts, Crafts, and Technology**, Northwestern University, School of Education, Chicago, IL, April, 2011

Invited Workshop: **Textile Sensors**, Motorolla Research Lab, Chicago, IL, April 2011

Invited Talk: **Artisanal Technology**, University of the Arts, Philadelphia, PA, April 2011

Invited Talk: **New Technologies = New Communities**, Textile Messages Symposium, University of Pennsylvania, School of Education, Philadelphia, PA, April 2011

Invited Panel: **Drawing with Code**, deCordova Museum, Cambridge, MA, March 2011

Invited Talk: **Technology, Materials and Culture**, Massachusetts Institute of Technology (MIT), School of Architecture, Design and Computation Group, Cambridge, MA, March, 2011

Invited Workshop: **Introduction to LilyPad Arduino**, University of Michigan, School of Art and Design, Ann Arbor, MI, March 2011

Invited Talk: **Slow technology: technology that's good, fair, and maybe even clean**, University of Michigan, School of Information and School of Art and Design, Ann Arbor, MI, March 2011
Invited Talk: **LilyPad Arduino in the Wild**, Harvard-MIT-Yale Cyberscholars Meeting. Massachusetts Institute of Technology (MIT), Cambridge, MA, February 2011

Invited Participant: **Computing Education for the 21st Century Community Meeting**, Hosted by the National Science Foundation (NSF), New Orleans, LA, January 2011

Invited Workshop: **Hybrides 2.0.** l'Ecole Nationale Supérieure des Arts Décoratifs (ENSAD), Paris, France, January 2011

Invited Talk: **High-Low Tech: Technology + Craft + Culture**, New York University (NYU), Interactive Tellecommunications Program (ITP), November 2010

Invited Talk: **Textiles Sensors**, Massachusetts Institute of Technology, Industrial Liaison Research Conference, November 2010

Invited Panel: **Interactive Multimedia Computing for Creativity and Expression**, ACM Multimedia Conference, Florence, Italy, October 2010

Invited Talk: **High-Low Tech**, Boston University, Department of Computer Science, Boston, MA, September 2010

Invited Talk: **Blending Craft and Technology at High-Low Tech**, World Maker Faire. New York Hall of Science, New York, NY, September 2010

Invited Participant: **Innovation, Education & the Maker Movement Workshop**, Hosted by the New York Hall of Science and the White House Office of Science and Technology Policy, New York, NY, September 2010

Invited Talk: **High-Low Tech**. The Future of Technology Conference, University of Michigan College of Architecture, Ann Arbor, MI, September 2010

Invited Talk: **Open Source Hardware in the Academy**, Open Source Hardware Summit, New York, NY, September 2010

Invited Talk: **Materials + Design + Computation**, International Symposium of Electronic Arts (ISEA), Dortmund, Germany, August 2010

Invited Panel: **Young Constructionists**, Constructionism Conference, Paris, France, August 2010.

Invited Participant: User Innovation Conference, Massachusetts Institute of Technology (MIT), Cambridge, MA, August 2010

Talk: with Buechley, L. and Buechley, N.: **New Twists**, Furniture Society Conference, Massachusetts Institute of Technology (MIT), Cambridge, MA, June 2010

Invited Workshop: **Material Computing**, Open University, Brighton, UK, May 2010

Invited Participant: FOO Camp East, Microsoft Research, Cambridge, MA, April 2010

Invited Talk: **High-Low Tech**, DigiGirlz Conference, Microsoft Research, Cambridge, MA, April 2010

Invited Talk: **Technology, Craft, and Culture**, Massachusetts College of Art and Design, Dynamic Media Institute, Boston, MA, March 2010

Invited Participant: **Core Arduino Developers Summit**, New York, NY, March 2010

Invited Workshop: **Computational Textiles as New Media Texts: Digital Media Learning in Youth and DIY Communities**. Digital Media and Learning Conference, San Diego, CA, February 2010

Invited Workshop: **Hybrides**, l'Ecole Nationale Supérieure des Arts Décoratifs (ENSAD), Paris, France, January 2010

Invited Talk: **Technology, Craft, and Culture**, Emerson College, Boston, MA, December 2009

Invited Talk: **Technology, Craft, and Culture,** Department of Science and Technology Studies, Rensselaer Polytechnic Institute (RPI). Troy, NY, November 2009

Invited Workshop: **LilyPad Arduino**, School of Education and School of Fine Art, Indiana University, Bloomington, IN, October 2009

Invited Talk: **High-Low Tech: Rethinking Cultural and Material Contexts for Technology**, School of Education and School of Fine Art, Indiana University, Bloomington, IN, October 2009

Invited Talk: **Pervasive Computing, Computers, and Education**, Pervasive Education Workshop at the Ubiquitous Computing Conference, Orlando, FL, September 2009

Invited Workshop: **High-Low Tech**, South End Technology Center, Boston, MA, July 2009

Invited Talk: **High-Low Tech**. Creative Computing Teacher Workshop, MIT Media Lab, Cambridge, MA, July 2009

Invited Talk: **Rethinking Cultural and Material Contexts for Computation**, Computer Science Teacher's Association Conference (CSTA), Washington, DC, June 2009

Invited Talk: **Electronic Textiles**, Auckland University of Technology, Auckland, New Zealand, June 2009

Invited Talk: **High-Low Tech**. Maker Faire, San Mateo, CA, May 2009

Invited Panel: **Open Source Hardware**. Maker Faire, San Mateo, CA, May 2009

Invited Talk: **Rethinking Cultural and Material Contexts for Computation**, MIT School of Architecture, Cambridge, MA, May 2009

Invited Talk: **Electronic Textiles**, New England Quilt Museum, Lowell, MA, May 2009

Invited Participant: FOO Camp East, Microsoft Research, Cambridge, MA, March 2009

Invited Talk: **High-Low Tech: Democratizing Engineering and Design**, University of Massachusetts, Lowell, Lowell, MA, March 2009

Invited Talk: **Democratizing Engineering and Design**, Emerging Technology Conference (ETech), San Jose, CA, March 2009

Invited Workshop: **Introduction to LilyPad Arduino**, Rhode Island School of Design, Providence, RI, March 2009

Invited Talk: **High-Low Tech,** Tufts University, Center for Engineering Education and Outreach, February 2009

Invited Participant: **Broadening Participation in Computing Community Meeting**. Hosted by the National Science Foundation (NSF) and the University of North Carolina Charlotte, Charlotte, NC February 2009

Artist Residency: Exploratorium Museum, San Francisco, CA, December 2008

Invited Talk: **New Craft: A Marriage of High and Low Tech**. University of California, Berkeley, School of Information, November 2008

Invited Talk: **Rethinking Cultural and Material Context for Computation**, University of Colorado at Boulder, Computer Science Department colloquium, Boulder, CO, October 2008

Invited Talk: **Computational Textiles and the Democratization of Ubiquitous Computing**, Metropolitan State College of Denver, Denver, CO, October 2008

Invited Panel: **Living the Liberal Arts**, Skidmore College, Physics Department, Saratoga Springs, NY, September 2008

Invited Workshop: **LilyPad Arduino**, School of Technical Sciences, Klagenfurt University, Klagenfurt, Austria, September 2008

Invited Talk: **Six Memos for Interaction Design**. Sketching in Hardware Conference, Providence, RI, July 2008

Invited Talk: **Computational Textiles and the Do-It-Yourself Movement**, Smart Fabrics Conference. Charleston, South Carolina, May, 2008

Invited Talk: **The Democratization of Ubiquitous Computing**. Stanford University HCI colloquium series, Stanford, CA, April 2008

Invited Workshop: **Electronic Textiles**, Wonder Women Symposium, University of Minnesota, Fine Art Department, Minneapolis, MN, USA, March 2008

Invited Talk: **Computational Textiles as Hand-crafted Personal Computers**, Arts Media and Engineering, Arizona State University, Tempe, AZ, USA February 2008

Invited Talk: **Electronic Textiles and the Democratization of Ubiquitous Computing**, IBM Research, Cambridge, MA, October, 2007

Tutorial: **Building Soft Computers**, IEEE International Symposium on Wearable Computers (ISWC), Boston, MA, USA, October 2007

Demonstration: **LilyPad Arduino**, IEEE International Symposium on Wearable Computers (ISWC), Boston, MA, USA, October 2007

Invited Workshop: **E-Textiles for the Ars Electronica campus2.0 exhibit**. HyperWerk for Postindustrial Design, Academy for Art and Design, University of Applied Sciences of Northwestern Switzerland, Basel, Switzerland, February 2007

Invited Workshop: **Make Your Own Electronic Fashion**, Design Camp and Engaging Computing Group, University of Massachusetts at Lowell. Lowell, MA, USA, December, 2006

Demonstration: **A Construction Kit for Electronic Textiles**, IEEE International Symposium on Wearable Computers (ISWC), Montreux, Switzerland, October 2006

Invited Talk: **A Construction Kit for Electronic Textiles**, Center for Digital Media in Education, University of Bremen, Bremen, Germany, October 2006

Invited Talk: **Electronic/Computational Textiles and Children's Crafts**, Center for Digital Media in Education, University of Bremen, Bremen, Germany, June 2006

Invited Talk: **Electronic/Computational Textiles and Children's Crafts**, INRIA Futurs, Universite Paris-Sud, Paris, France, June 2006

Invited Workshop: with Mike and Ann Eisenberg: **Technology and the Future of Children's Crafts**, Cooper-Hewitt Summer Design Institute, New York, NY, USA, July 2005

Selected Exhibitions (Invited)

Earth Optimism, Biocultura Gallery, Santa Fe, NM, April 2017

PASEO Art and Technology Festival, Taos, NM, September 2016

Hybrid Craft Exhibition, SIGGRAPH Conference, Los Angeles, CA, 2015

Invited curator: *Coding the Body,* Apex Art Gallery, New York, NY, 2014

Fashion and Education Workshop and Exhibition, The White House, Washington, DC, 2014

with Hannah Perner-Wilson, *The Power of Making*, Victoria and Albert Museum, London, UK, 2010

Colorito: An Interactive Renaissance of Color, ACM Multimedia Interactive Art Exhbition, Palazzo Medici-Riccardi, Florence, Italy, 2010

Craftwerk 2.0, Jönköpings läns museum, Jönköpings, Sweden, 2010

Living Wall, Fuller Craft Museum, Brockton, MA, 2010

MIT Media Lab, Ars Electronica, Linz, Austria, 2009

Science and Art, Museum of Discovery, Little Rock, AK, 2009

Reconfigure: 2nd Skin Fashion Show, Exploratorium Museum, San Francisco, CA, April 2008

Unraveled Fashion Show, SIGGRAPH Conference, Los Angeles, CA, 2007

Research Funding

FW-HTF-RM: Expanding Rural Ceramics Craft and Computational Fabrication: A Synergy (PI), National Science Foundation $1,406,764 ($818,567 UNM), 2020, #2026218

CHS: Small: Developing Novel Surface Computing Technologies and Learning Experiences to Engage Underrepresented Youth in STEM (PI), National Science Foundation, $499,451, 2020, #2006524

Cognizant Composites (Co-PI), Air Force Research Laboratory, 2020, $130,000

CAREER: Material Computing for Everyone: Democratizing Creative Computing Using Unexpected Materials and Cultures (PI), National Science Foundation $499,997, 2011, #IIS-1053235

BPC: A Cultural Shift in Computer Science: Introducing Computation through E-Textiles (PI), National Science Foundation, $581,558, 2010, #BPC-0940520

Beyond the Screen: Examining the Participatory Challenges of Computational Crafts for DIY Youth Communities (Co-PI), MacArthur Foundation, $50,000, 2010

Paintable Computing, Crayola Company, $5000 gift, 2010

CreativeIT: Computational Textiles as Materials for Creativity (Co-PI), National Science Foundation, $800,000, 2009, #IIS-0855886

Women and Minorities Chair, Massachusetts Institute of Technology, $15,000/year, 2009-2014

AT&T Career Development Chair, Massachusetts Institute of Technology, $20,000/year, 2009-2012

Courses Developed

Computational Fabrication
This course explores the intersection of computation, design, fabrication and craft. https://handandmachine.cs.unm.edu/index.php/2020/11/05/computational-fabrication/

Computer Programming Fundamentals
This course provides incoming computer science majors with their first introduction to computer science and programming
https://handandmachine.cs.unm.edu/classes/CS152_Fall2020/index.html

Social and Ethical Issues in Computer Science
This class provides an overview of the social and ethical issues surrounding computer science. https://socialethical.cs.unm.edu/

Learning Computing
This course explores how and why people learn about computation–in particular, how and why novices learn how to program. We will investigate what computing is, why it's important, and how computing education should be organized to ensure that everyone can develop computational literacy.
https://www.cs.unm.edu/~learningcomputing/index.html

Crafting Material Interfaces
This course investigates how new (and ancient) materials are changing our understanding and experience of technology. We explore how the rich and varied material landscape around us can be integrated into interaction design.
http://courses.media.mit.edu/2011fall/mass62/

New Textiles
This project-based course explores the future of textiles, focusing particularly on blending rich crafting traditions with new technologies. Topics include textile-based electronics, textile fabrication, algorithmic design, and composites.
https://newtextiles.media.mit.edu/

Design for Empowerment
Technology is increasingly shaped and developed by users who design, build, and hack their own devices, and the goal of this class is to understand, contribute to, and support these creative communities.
https://dfe.media.mit.edu/

Doctoral Dissertation Committees

Reader

Computational Design Tools and Techniques for Paper Mechatronics
Hyunjoo Oh, PhD
University of Colorado at Boulder, ATLAS, 2018

Softbuilt: Computational Textiles and Augmenting Space Through Emotion
Felecia Davis, PhD, Massachusetts Institute of Technology, Department of Architecture, 2017

Paper Electronics: Crafting Circuits for Learning and Expression
Jie Qi, PhD, Massachusetts Institute of Technology, Media Lab, 2016

Do-It-Yourself Devices: Personal Fabrication of Custom Electronic Products
David Mellis, Massachusetts Institute of Technology, Media Lab, 2015

Hybrid reAssemblage - Combining Traditional Practice with Contemporary Design
Amit Zoran, PhD, Massachusetts Institute of Technology, Media Lab, 2013

Sartorial Robotics: Social soft-architecture robots
Adam Whiton, PhD, Massachusetts Institute of Technology, Media Lab, 2013

Original Machines: Developing Tools and Methods for Object-Oriented Mechatronics
Peter Schmitt, PhD, Massachusetts Institute of Technology, Media Lab, 2011

Exertion Instruments
Noah Vawter, PhD, Massachusetts Institute of Technology, Media Lab, 2011

Exploring Children's Usage of Tangible Computational Construction Platforms: Hands-on Learning through Functionality, Crafts and Stories
Lau, Wing Yiu, PhD, Hong Kong Polytechnic University, Department of Computer Science, 2011

Computer as chalk : cultivating and sustaining communities of youth as designers of tangible user interfaces
Amon Millner, PhD, Massachusetts Institute of Technology, Media Lab, 2010

Master's Thesis Committees

Supervisor

Algorithmic Craft: the Synthesis of Computational Design, Digital Fabrication, and Hand Craft
Jennifer Jacobs, Massachusetts Institute of Technology, Media Lab, 2013

Drawing the Electric
Sam Jacoby, Massachusetts Institute of Technology, Media Lab, 2013

Developing a Computational Textiles Curriculum to Increase Diversity in Computer Science
Kanjun Qiu, ME, Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, 2013

The Fine Art of Electronics: Building Paper Electronics for Creative Expression
Jie Qi, MS, Massachusetts Institute of Technology, Media Lab, 2012

Case Studies in the Digital Fabrication of Open-Source Consumer Electronic Products
David Mellis, MS, Massachusetts Institute of Technology, Media Lab, 2011

A Kit of No Parts
Hannah Perner-Wilson, MS, Massachusetts Institute of Technology, Media Lab, 2011

A Soft Circuit Curriculum to Promote Technological Self-Efficacy
Emily Lovell, MS, Massachusetts Institute of Technology, Media Lab, 2011

Reader

Culture-CAD: Designing a Tool for Facilitating Cultural Design
Harshit Argrawal, MS, Massachusetts Institute of Technology, Media Lab, 2016

WristQue: A Personal Sensor Wristband for Smart Infrastructure and Control
Brian Mayton, MS, Massachusetts Institute of Technology, Media Lab, 2012

Designing for Diversity: Broadening Participation in Online Creative Computing Communities
Ricarose Roque, MS, Massachusetts Institute of Technology, Media Lab, 2012

Vision on Tap: An Online Computer Vision Toolkit
Kevin Chiu, MS, Massachusetts Institute of Technology, Media Lab, 2011

Remixing Physical Objects through Tangible Tools
Sean Follmer, Massachusetts Institute of Technology, Media Lab, 2011

Increasing the bandwidth of social navigation during the prototyping process
Koyrakh, Inna, Massachusetts Institute of Technology, Media Lab, 2011

End-user modification and correction of home activity recognition
Burns, Edward E., MS, Massachusetts Institute of Technology, Media Lab, 2010

Nervebox : a control system for machines that make music
Cavatorta, Andrew Albert, MS, Massachusetts Institute of Technology, Media Lab, 2010

A gestural media framework : tools for expressive gesture recognition and mapping in rehearsal and performance
Jessop, Elena Naomi, MS, Massachusetts Institute of Technology, Media Lab, 2010

Social networks for lonely objects
Kestner, John Anthony, MS, Massachusetts Institute of Technology, Media Lab, 2010

Jungle Red : A Conversation with the Brothers Mueller
Mueller, Kirk and Mueller, Nate, MFA, Rhode Island School of Design, Digital+Media Department, 2010

Conference Program Committee Service and Reviewing

2015-2020
National Science Foundation Review Panels
MIT Press book reviewer
Reviewer: CHI, TEI, DIS, IDC, ISWC, Ubicomp, Journal of Design Studies, Leonardo

2014
Program Committee, International Conference on Interaction Design and Children (IDC)
National Science Foundation Review Panels
Reviewer: CHI, IDC, TEI, DIS, ISWC

2013
National Science Foundation Review Panels
Program Committee, International Conference on Interaction Design and Children
Program Committee, Open Hardware Summit
Reviewer: CHI, Ubicomp, UIST, TEI, IDC, ISWC, ToCHI

2012
National Science Foundation Review Panels
Program Committee, International Conference on Interaction Design and Children
Program Committee, Designing Ineractive Systems (DIS)
Program Committee, Open Hardware Summit
Reviewer: CHI, DIS, Ubicomp, UIST, TEI, IDC, CSCW, Pervasive, ToCHI

2011
National Science Foundation Review Panels
Best Paper Award Committee, ACM International Conference on Ubiquitous Computing (Ubicomp)
Program Committee, ACM International Conference on Ubiquitous Computing (Ubicomp)
Program Committee, International Symposium on Wearable Computers (ISWC)
Program Committee, International Conference on Interaction Design and Children
Program Committee, Open Hardware Summit
Reviewer: CHI, Ubicomp, UIST, TEI, IDC, Pervasive

2010
Program CommitteeACM SIGCHI Conference on Human Factors in Computing Systems (CHI)
Student Design Challenge Chair, SIGCHI conference on Tangible, Embedded, Embodied Interaction (TEI)
Program Committee, International Conference on Interaction Design and Children
Reviewer: CHI, Ubicomp, UIST, TEI, IDC

2009
Program Committee, International Symposium on Wearable Computers (ISWC)
Program Committee, International Conference on Interaction Design and Children
Edited special issue of Journal of Personal and Ubiquitous Computing, topic: Materail Computing
Reviewer: CHI, Ubicomp, UIST, TEI, IDC, Journal of Personal and Ubiquitous Computing

Professional Affiliations

Association of Computing Machinery (ACM)
Open Source Hardware Association (OSHWA)
Processing Foundation

University Service

UNM

Co-developed departmental BPC Plan, 2020
Chair of the Graduate Admissions Committee, 2019-present
UNM Santa Fe Initiatives Committee, 2019-present
Faculty Search Committee, 2019-2020

MIT

Media Lab Diversity Committee, 2012-2014
Media Lab Faculty Search Committee, 2012-2013
Chair, Media Lab Diversity Committee, 2011-2012
Organized prospective student open house, Media Lab, 2011
Media Arts and Sciences PhD Committee, 2010-2011
Founded and organized prospective student open house, Media Lab, 2010
Media Lab Diversity Committee, 2009-2011
Media Lab Faculty Search Committee, 2009-2010