

# Leah Buechley

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- Education**
- Ph.D. and M.S., Computer Science**  
University of Colorado at Boulder, Boulder, CO
- B.A., Physics**  
Skidmore College, Saratoga Springs, NY  
Magna cum laude with honors in Physics
- Experience**
- 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*
- Honors and Awards**
- Edith Ackerman Award for Interaction Design and Children, 2017**  
co-recipient with Jeanne Bamberger
- MIT AT&T Career Development Professor, 2009-2013**
- National Science Foundation CAREER Award, 2011-2014**
- 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**  
A set of peel-and-stick stickers 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 electronics 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.
- 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 "untookit"**. 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.

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., Poupayev, 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

Contributor: Nathan Holbert, Matthew Berland, and Yasmin Kafai (Eds.), *Constructionism in Context*, MIT Press, Cambridge, MA, Upcoming in 2019

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>.

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

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 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), Montclair, 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, Mountainview, 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 Pepler, 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**, Wats On Festival, Carnegie Mellon University, Pittsburgh, PA, April 2012

Panel with Yasmin Kafai, Kylie Pepler, and Mike Eisenberg: **E-Textiles 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**, Motorola 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 21<sup>st</sup> 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 Telecommunications 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

## Research Funding

**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

### **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 Agrawal, 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**

**2015-2018**

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 Interactive 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 Committee ACM 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:  
Material Computing  
Reviewer: CHI, Ubicomp, UIST, TEI, IDC, Journal of Personal and Ubiquitous  
Computing



**Professional  
Affiliations**

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

**University  
Service**

**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