

TIFFANY TSENG

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EDUCATION

- 2016 **Massachusetts Institute of Technology** | Cambridge, MA
PhD in Media Arts and Sciences
Advisor: Mitchel Resnick | Lifelong Kindergarten Group

- 2011 **Stanford University** | Stanford, CA
MS in Mechanical Engineering - Design Methodology
Advisor: Sheri Sheppard | Engineering Education Lab

- 2009 **Massachusetts Institute of Technology** | Cambridge, MA
BS in Mechanical Engineering
Advisor: Maria Yang | Ideation Lab

EMPLOYMENT

- JAN 2020 –
PRESENT **University of Tokyo** | Tokyo, Japan
Visiting Researcher
HCI research on interactivity of everyday things in the Kawahara Lab in the School of Engineering.

- AUG 2018 –
DEC 2019 **Glitch** | New York, NY
Design Engineer
Lead designer for the Glitch Community, a platform for anyone to build and share apps on the web. UX and UI design, front-end engineering, user research, and illustration. Designed and implemented features from concept to production.

- OCT 2016 –
JUN 2018 **Autodesk** | San Francisco, CA
Principal User Experience Designer
Led user experience for electronic design features in Tinkercad, Circuits.IO, EAGLE, and Fusion 360.

- SUMMER 2016 **Harvard Library Innovation Lab** | Cambridge, MA
Summer Fellow
Developing open tools for community building in library makerspaces.

- SUMMER 2016 **MIT Media Lab** | Cambridge, MA
Postdoctoral Researcher
Designing and supporting documentation tools for makers.

- SPRING & SUMMER
2011 **IDEO** | Palo Alto, CA
Mechanical Engineering Intern
Created prototypes, test fixtures, engineering drawings, and concepts for several client-facing projects ranging from consumer electronics, food and beverage, and toys.

- SUMMER 2010 **Luidia Inc.** | San Carlos, CA
Engineering Intern
Rapid prototyped several new concepts for interactive whiteboard products.

- SUMMER 2008 **Fisher-Price** | East Aurora, NY
Baby Gear Product Development Intern
Created prototypes and addressed manufacturing modifications for existing and developing Baby Gear products. Developed mathematical and dynamic model of new swing concept in Pro/E.

- JANUARY 2008 **5 Wits Productions** | Saugus, MA
Mechanical Engineering Extern
Designed concepts and prototypes for interactive spy-themed room escape.

- SUMMER 2007 **Insight Product Development** | Maynard, MA
Engineering Intern
Generated 3D models and assemblies, conducted flow rate experiments, and documented testing of new medical devices.

SELECTED PROJECTS

- 2018 – 2019 **Glitch** | <https://glitch.com/>
I led design for the Glitch community site, where developers, artists, and creatives have shared millions of remixable web apps. As a design engineer at a growing startup, I worked on features from concept to deployment, including writing design specs, building interactive prototypes, creating illustrations, conducting user research, and implementing features as a front-end web engineer.
- 2016 – 2018 **Tinkercad Circuits** | Autodesk | <http://tinkercad.com>
Lead UX designer for free software design tool for building interactive creations with electronics. Designed Circuit Assembly (feature that blends 3D design with electronics modules) and Code Blocks (visual programming environment for Arduino) Launched features to over 7 million registered users.
- 2015 – 2016 **Spin** | MIT Media Lab | <http://spin.media.mit.edu>
Invented photography turntable system for capturing animations of design projects over time. Designed turntable hardware (digitally fabricated elements, PCB) and companion mobile apps (Android and iOS) and web app (Ruby on Rails). Used by 35 different makerspaces around the world, who have created over 2,000 animations. Presented at DIS, IDC, and Sketching in Hardware; recognized with Maker Faire Editor's Choice award.
- 2013 – 2016 **Build in Progress** | MIT Media Lab | <http://buildinprogress.media.mit.edu>
Created an online community for sharing and visualizing the process of developing DIY projects. Currently supports over 2,000 makers around the world. Developed website (Ruby on Rails) and companion Android and iOS apps. Presented at Fablearn, IDETC, and Sketching in Hardware; book chapter in Makeology series.
- 2011 – 2012 **Replay** | MIT Media Lab
Developed a self-documenting construction kit for capturing how tangible constructions come together. Presented at IDC and Sketching in Hardware; included in authored book chapter *Modifying the Shape of an Arduino* in Building Open Source Hardware.
- 2011 – 2012 **Mechanix** | Stanford University | <http://slate-learning.com>
Conceptualized and designed, in collaboration with Coram Bryant, an interactive system for capturing children's Rube Goldberg creations. Presented at TEI, IDC, and CHI; received Innovation Award from Disney Research Learning Challenge at SIGGRAPH and Maker Faire Education Award. Successfully filed provisional patent for Transparent Magnetic Display for Image Tracking of Magnetic Objects; ran 146% funded Kickstarter campaign (\$3600).

AWARDS AND DISTINCTIONS

- 2011 – 2016 NSF Graduate Research Fellowship
2015 Maker Faire Bay Area Editor's Choice Award for Spin
2011 Maker Faire Bay Area Education Award for Mechanix
2010 Disney Research Learning Challenge Innovation Award (for Mechanix)
- 2009 – 2011 Stanford Graduate Engineering Fellowship
2008 Pi Tau Sigma Mechanical Engineering Honor Society

ADDITIONAL

- 2018 Recurse Center Alum | Created SVG apps during 6-week self-directed programmer's retreat
2017 IPC-Certified Interconnect Designer
2014 Maker Education Open Portfolio Project | National working group member
2011 Mechanix Kickstarter project 146% funded (\$3600) | Featured on Kickstarter homepage

PUBLICATIONS

Book chapters

- 2016 **Tseng, T.** (2016). Build in Progress: Building process-oriented documentation. In K. Peppler, E. Halverson, & Y. Kafai (Eds.), *Makeology: The maker movement and the future of learning (Volume 2)*. New York, NY: Routledge.
- 2014 **Tseng, T.** (2014). *Modifying the Shape of an Arduino*. In A. Gibb (Ed.) *Building open source hardware: DIY manufacturing for hackers and makers* (pp. 83-94). Upper Saddle River, NJ: Addison-Wesley.

Conference papers

- 2016 **Tseng, T.** and Resnick, M. (2016). Spin: Examining the Role of Engagement, Integration, and Modularity in Supporting Youth Creating Documentation. In *Proceedings of DIS*. Brisbane, Australia.
- 2015 **Tseng, T.** (2015). Making Make-throughs: Supporting young makers sharing design process. In *Proceedings of Fablearn*. Stanford, CA.
- Tseng, T.** (2015). Spin: A photography turntable system for creating animated documentation. In *Proceedings of IDC* (pp. 422-425). Medford, MA.
- Tseng, T.** and Tsai, G. (2015). Process products: Capturing design iteration with digital fabrication. In *Proceedings of TEI* (pp. 631-636). Stanford, CA.
- 2014 **Tseng, T.** and Resnick, M. (2014). Product versus process: Representing and appropriating DIY projects online. In *Proceedings of DIS* (pp. 425-428). Vancouver, Canada
- Tseng, T.**, Yang, M., and Ruthmann, A. (2014). Documentation in progress: Challenges with representing design process online. In *Proceedings of IDETC*. Buffalo, NY.
- 2013 **Tseng, T.** and Bryant, C. (2013). Design, reflect, explore: Encouraging children's reflections with Mechanix. In *Proceedings of CHI Extended Abstracts* (pp. 619-624). Paris, France.
- 2012 **Tseng, T.** and Resnick, M. (2012). Building examples: Media and learning affordances. In *Proceedings of IDC* (pp. 176-179). Bremen, Germany.
- Tseng, T.**, Hemsley, R., and Resnick, M. (2012). Replay: A self-documenting construction kit. In *Proceedings of IDC* (pp. 320-322). Bremen, Germany.
- Ducao, A., **Tseng, T.**, and von Kapri, A. (2012). Transparent: Brain computer interface and social architecture. *SIGGRAPH Posters* (p. 26). Los Angeles, CA.
- 2011 **Tseng, T.**, Bryant, C., and Blikstein, P. (2011). Collaboration through documentation: Automated capturing of tangible constructions to support engineering design. In *Proceedings of IDC* (pp. 118-126). Ann Arbor, Michigan.
- Tseng, T.**, Chen, H.L., and Sheppard, S. (2011). Early academic experiences of non-persisting engineering undergraduates. In *Proceedings of ASEE*. Vancouver, Canada.
- Tseng, T.** and Yang, M.C. (2011). The role of spatial-visual skills in a project-based engineering design course. In *Proceedings of ASEE*. Vancouver, Canada.
- Tseng, T.**, Bryant, C., and Blikstein, P. (2011). Mechanix: A tangible interactive wall for exploring engineering design. In *Proceedings of TEI* (pp. 265-266). Funchal, Portugal.

SELECTED PRESENTATIONS, DEMOS, AND WORKSHOPS

- 2020 **Making Make-Throughts** | University of Applied Sciences Northwestern Switzerland (FHNW)
Invited talk for the DigitalMaking+++ Workshop as part of the Integrative Design Masters Studio
- Packages, but in 3D!** | !!Con West
Accepted talk about packaging diagrams for conference on the joy, excitement, and surprise of computing
https://youtu.be/KMr6_PURpqc?t=15994
- Hybrid Creators and the Future of Design Education** | Concordia University
Invited talk for the School of Education
- 2019 **Education Panelist** | Hackers Conference
Invited panelist on the future of education at the Hackers Conference in Santa Cruz
- Building Ethical Institutions** | Hackers Conference
Invited panelist for building ethical organizations at the Hackers Conference in Santa Cruz
- 2018 **Stencilify** | Recurse Center Localhost Talk Series
Invited talk for Recurse Center's Localhost public talks in NYC
- Storyboarding and Design Heuristics** | University of Toronto
Invited lectures at the University of Toronto Faculty of Information
- Design Generalist "In the Wild"** | University of California Berkeley
Invited talk for Design Field Notes lecture series at Berkeley Jacobs Institute for Design Innovation
- EAGLE UX from Component to Design** | SupplyFrame's Hardware Developers Didactic Galactic
Invited talk for SupplyFrame's Hardware Developers Didactic Galactic Meetup
<https://youtu.be/T51LWsOgSME>
- 2017 **Circuit Assemblies: Building Interactive 3D-Printed Things with Tinkercad** | Sketching in Hardware
Invited talk about Tinkercad Circuits design work
- Tinkercad Circuit Assmeblies** | Santa Clara County Office of Education
Talk about Tinkercad Circuits
- Tinkercad Circuit Assmeblies** | California Academy of Sciences
Invited workshop on Tinkercad Circuit Assemblies

Makerspaces: Combining Interests, Community, and Tools for Empowerment

University of Washington

Invited talk for Technology and Social Change Group (TASCHA)

2016 **Designing for Design Process** | University of California Berkeley

Invited guest lecture for User Interface Design (CS160)

Documentation as Stories of Design Process | Concord Consortium

Invited talk on design documentation tools

Making Make-throughs | littleBits

Invited talk on Build in Progress, Spin, and design documentation

Transparent Making | University of Colorado Boulder

Invited talk for ATLAS

Transparent Making | University of Minnesota

Invited talk for College of Design

2015 **Make-throughs** | Sketching in Hardware

Invited talk about documenting design process

Creating Useful Documentation | NYU ITP

Talk about design documentation for summer ITP camp

Spin and Build in Progress | Maker Faire Bay Area

Demo that was awarded Maker Faire Editor's Choice award

Capturing Design and Process in Youth Portfolios | Computer Clubhouse Conference

Led professional development workshop for educators

2014 **Thinking Like a Kid Panel** | Design Exchange Boston Conference

Invited panelist for panel on designing for children

Build in Progress | Digital Media and Learning Conference

Demo of Build in Progress

2013 **Building a Portfolio** | MIT Mechanical Engineering

Presentation on portfolio design for capstone product design course for mechanical engineers

Stories and Recipes: Sharing Design Process | Sketching in Hardware

Invited talk on DIY design documentation

Fun With LEGO | Maker Camp

Presentation for Maker Camp Video Series

<https://www.youtube.com/watch?v=wq57RbjpVfw>

2012 **Mechanix** | Maker Faire

Demo in Youth Zone that was awarded Maker Faire Editor's Choice

2010 **Mechanix** | SIGGRAPH

Demo for Disney Research Learning Challenge that was awarded Innovation Award in international competition

SERVICE

Conference reviewer

ACM Conference on Human Factors in Computing Systems (2018, 2016, 2015)

ACM Interaction Design and Children (2017, 2016)

ACM Designing Interactive Systems (2017)

ACM User Interface Software and Technology (2017)

ASME International Design Engineering Technical Conference (2014)

Fablearn (2016, 2015)

Open Hardware Summit (2012)

Journal reviewer

Journal of Engineering Education (2015, 2011, 2010)

SELECTED PRESS

2019 **Maker Update: Framed** | Maker Update

Featuring Makecode Pixelart Maker Glitch App

<https://www.digikey.com/en/maker/videos/maker-update/donald-bell-maker-update-framed>

2018 **Designing Tools & Interfaces For Making** | Bantam Tools The Edge Podcast

Interview about UX for EAGLE, prototyping with SVGs

<https://www.bantamtools.com/blogs/theedge/tiffany-tseng-designing-tools-interfaces-for-making>

- 2017 **Tinkercad Adds Embedded Circuits, Lego Exports, and More** | Makezine
<https://makezine.com/2017/05/20/tinkercad-adds-embedded-circuits-lego-exports/>
Tinkercad Does Arduino | Hackaday
<https://hackaday.com/2017/07/11/tinkercad-does-arduino/>
- 2016 **Putting a New Spin On Product Photography** | PSFK
<http://www.psfk.com/2016/02/putting-a-new-spin-on-photography.html>
- 2015 **Spin Turntable Prototyping** | Exploratorium Tinkering Studio
<http://tinkering.exploratorium.edu/2015/10/02/spin-bot-prototyping>
Spin DIY Photography Turntable System | Hackaday
<http://hackaday.com/2015/05/24/spin-diy-photography-turntable-system>
This Turntable Lets You Create Animated GIFs of Your DIY Projects | Atmel Bits & Pieces
<https://atmelcorporate.wordpress.com/2015/05/26/this-turntable-lets-you-create-animated-gifs-of-your-diy-projects/>
Reconsidering Failure in Maker-Centered Learning | Agency by Design
<http://www.agencybydesign.org/reconsidering-failure-in-maker-centered-learning>
- 2014 **Build in Progress Shares DIY Projects Before They're Finished** | Lifehacker
<http://lifehacker.com/build-in-progress-shares-diy-projects-before-theyre-fin-1623380893>
Invention Help (featuring Build in Progress) | Popular Technology
<http://www.ernlive.com/show/poptech-radio/59/episodes/invention-help-segment-6-56>
- 2010 **Hooking Children on Engineering** | Stanford School of Education
<https://ed.stanford.edu/news/hooking-children-engineering>

TEACHING

- MARCH 2017 **Instructor, *Designing and Fabricating Printed Circuit Boards*** | Autodesk
Two-day class for Artists in Residence program at Autodesk, covering circuit board design in EAGLE, fabrication with OtherMachine desktop mill, and assembly processes (hand soldering + reflow oven).
- SPRING 2016 **Lab Supervisor, *Toy Product Design 2.00B*** | MIT Mechanical Engineering
Mentored undergraduate students prototyping interactive toys under the theme “Intrigue.”
- JANUARY 2015 **Instructor, *Iterative Interaction Design 2.S97*** | MIT Mechanical Engineering
Designed and taught month-long interaction design course for MIT undergraduates covering digital fabrication, Arduino prototyping, and design iteration. Led team of five undergraduate mentors and teaching assistants. 3.9/4.0 instructor rating.
- JANUARY 2014 **Co-Instructor, *Human + Computer*** | MIT, RISD, Brown
Taught and advised undergraduate and graduate students from MIT, RISD, and Brown on interaction design projects inspired by transhumanism. Culminated in gallery show at RISD’s student art gallery.
- FALL 2013 **Lab Instructor, *Introduction to Design 2.00*** | MIT Mechanical Engineering
Lab instructor for undergraduate mechanical engineering human-centered design course.
- SPRING 2013 **Team Mentor, *Toy Product Design 2.00B*** | MIT Mechanical Engineering
Mentored 5 undergraduate students prototyping interactive toys under the theme “In the Dark.”
- FALL 2012 **Teaching Assistant, *How to Make Almost Anything*** | MIT Media Lab
Lab assistant for graduate digital fabrication course. Taught vinyl cutting circuit design.
- FALL 2012 **Lab Instructor, *Introduction to Design 2.00*** | MIT Mechanical Engineering
Lab instructor for undergraduate mechanical engineering human-centered design course.
- AUGUST 2012 **Lab Technician, Haystack Mountain School of Craft**
Assisted with managing Fab Lab and helping practicing artists and designers creating projects in the shop.
- SPRING 2012 **Lab Instructor, *Toy Product Design 2.00B*** | MIT Mechanical Engineering
Mentored 5 undergraduate students prototyping interactive toys under the theme “Imagination.”
- FALL 2011 **Team Mentor, *Product Engineering Processes 2.009*** | MIT Mechanical Engineering
Mentored team of 18 senior mechanical engineering students in capstone course.
- WINTER 2011 **Lab Teaching Assistant, *Beyond Bits and Atoms*** | Stanford
Teaching assistant for graduate course on developing educational technologies.
- SUMMER 2009 **Residential Tutor, *Women’s Technology Program*** | MIT
Taught circuit design and mentored high school senior girls over the course of two months as part of summer engineering enrichment program.
- SPRING 2009 **Team Mentor, *Toy Product Design 2.00B*** | MIT Mechanical Engineering
Mentored 5 undergraduate students prototyping interactive toys under the theme “The Arts.”

MENTORSHIP

As a graduate student at the MIT Media Lab, I had the pleasure of supervising **21 undergraduate and graduate research assistants** from MIT, Harvard, Wellesley, and RISD across departments such as Mechanical Engineering, Computer Science and Electrical Engineering, Education, and Industrial Design, including the following:

Peter Godart, MIT 2015 (now PhD student at MIT, formerly NASA Jet Propulsion Lab)
Ishwarya Ananthabhotla, MIT 2015 (now PhD student at MIT Media Lab)
Ryan Mather, RISD 2015 (now Google ATAP, formerly LittleBits)
Rahul Singh, Harvard 2015 (now MIT Teaching and Learning Lab)
Stephanie Su, MIT 2013 (now Google)
Stephen Rodan, MIT 2016 (now NASA Jet Propulsion Lab)
Alyssa Waln, MIT 2016 (now Google)
Teresa Tai, Wellesley 2016 (now Google)
Amber Meighan, MIT 2017 (now Facebook)

In the fall and winter of 2019, I was also a weekly volunteer at the **Brooklyn Public Library Teen Tech Center**, where I mentored teens on web programming, LEGO robotics, and digital design.

DESIGN SKILLS

PROGRAMMING	Javascript, Node, React, Ruby, Objective-C, Java, HTML, CSS, Processing, LaTeX, MATLAB, Stata
MACHINE SHOP	Laser cutting, 3D printing, CNC routing, vinyl cutting, waterjet, milling, lathing, injection molding, vacuum forming, metalworking, and woodworking
DESIGN SOFTWARE	Mechanical CAD: SolidWorks, Fusion 360 Electrical CAD: EAGLE, Arduino, Fritzting Visual Design: Sketch, Invision, Framer, Adobe Creative Suite (Illustrator, InDesign, Photoshop, Premier)
OTHER TECHNOLOGIES	Mobile development (iOS & Android), Xcode, VSCode, Ruby on Rails, PostgreSQL, Heroku, Git

PERSONAL

Reviewer of 1500+ snacks via [Tasty Snacking](#) (2013–Present)
WMBR DJ for [Eater's Digest radio show](#) (2011–2016)
Design Editor for 400-page MIT Technique Yearbook (2009)