

# Raphael Arar

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Portfolio  
<http://rarar.com>

## Profile

Award-winning designer, researcher and artist with a passion for collaboratively bending, twisting and pushing the capabilities of technology through user-centered design and creative experimentation

## Experience

Senior Design Manager; Khan Academy; Mountain View, CA – 2019–Present

Serving as manager and principal designer of the learning platform team focusing on the future of student experiences both in and out of classrooms; leading prototyping practices and design processes that include both immediate product needs as well as future-facing discursive design

Principal Designer; Khan Academy; Mountain View, CA – 2018–2019

Leading the end-to-end design effort of Khan Academy's first product, an enterprise platform for districts to augment K–12 teachers in their efforts to approach highly personalized pedagogical practices in the classroom; spearheading the formalization of design processes and speculative design practices

Adjunct Faculty; San Jose State University; San Jose, CA – 2016–Present

Lecturer and MFA/BFA thesis advisor for SJSU's Digital Media Art program; teaching courses and workshops in critical theory, speculative design and art & technology

Designer & Researcher; IBM Research; San Jose, CA – 2016–2018

Pioneering design-driven processes and leading UI/UX, data visualization and tangible user interface design for R&D projects covering emerging technologies; research interests aligned to artificial intelligence-driven design (including ethics), speculative design and arts-based research

Adjunct Faculty; University of Southern California; Los Angeles, CA – 2014–2016

Lecturer in USC's Media Art + Practice Division and taught first-of-a-kind, self-authored course on bridging user experience fundamentals with critical theory

User Experience Design Lead; IBM; Cupertino, CA – 2014–2016

Created an accelerated design thinking methodology to scale the design and production of over 100 enterprise iOS/watchOS applications as part of the Apple+IBM partnership; facilitated design workshops with Fortune 100 clients; led and oversaw the UI/UX effort of teams globally

Lead Creative Designer; Kadenze; Santa Clarita, CA – 2013–2014

Crafted the identity and design language, managed a team of designers and instilled design processes for an arts-based EdTech startup

Designer (Freelance); Google, Inc. (Agency Team); Venice, CA – 2012–2013

Designed and implemented an internal data-driven web app to manage creative assets

Design Technologist (Freelance); Smithsonian Institute; Boston, MA – 2012–2013

Designed and built the web-based exhibits *Stories From Main Street* and *Stories of World Heritage*

Senior Creative Technologist; Hill Holliday; Boston, MA – 2011–2012

Led creative development of immersive ad campaigns for Dunkin' Donuts, Liberty Mutual and more

Interaction Designer; IBM iX; Cambridge, MA – 2009–2011

Founding member of Accelerated Visioning group—the first rapid prototyping service design group in the consulting division of IBM; led interaction design for award-winning B2B and B2C engagements

Interactive Designer & Developer; Modernista!; Boston, MA – 2009

Collaboratively devised bleeding-edge digital ad campaigns involving motion graphics and gaming

Interactive Designer & Developer; Paid Inc; Boston, MA – 2007–2008

Spearheaded data-driven web experiences for artists including Aerosmith, Run-DMC and others

## Education

California Institute of the Arts; Valencia, California – MFA in Integrated Media, 2014

Boston University; Boston, Massachusetts – BA in Music, BA in Economics, 2009

## Recognition

2018

TED Talk of the Day (April 2, 2018)

TED.com

	<p>Elected Member, Board of Directors</p> <p>Leonardo/ISAST (International Society for the Arts, Sciences and Technology), MIT Press</p>
2017	<p>Forbes 30 Under 30 Awardee, Enterprise Technology</p> <p>IBM Academy of Technology, A-Level Accomplishment</p> <p>IBM Travel Manager</p>
2016	<p>C3 (Creative Community Committee), Elected Member, Santa Cruz Museum of Art &amp; History</p> <p>IBM First Patent Filing Award</p> <p>Cognitive UX</p>
2015	<p>C3 (Creative Community Committee), Elected Member, Santa Cruz Museum of Art &amp; History</p>
2013	<p>MITX Visionary Award</p> <p>OPENPediatrics</p> <p>Webby Award</p> <p>Liberty Mutual Responsibility Project</p> <p>National Science Foundation Grant Researcher (California Institute of the Arts)</p> <p>Physical Computing</p>
2012	<p>National Science Foundation Grant Researcher (California Institute of the Arts)</p> <p>Computer Science</p> <p>Communication Arts Webpick of the Day</p> <p>John F. Kennedy Presidential Library &amp; Museum</p> <p>Dope Awards, 1st Place Web Winner</p> <p>John F. Kennedy Presidential Library &amp; Museum</p>
2010	<p>IBM Service Excellence Award</p>

2009      Webby Award Nominee  
Modernista!

Patents      Providing force input to an application  
US20180239481A1

Stabilizing consumer energy demand (pending)  
US20180323643A1

Context aware user interface (pending)  
US20180113586A1

## Books

2019      Conversational UX Design: A Practitioner's Guide  
Robert J. Moore, Raphael Arar. ACM Press. 2019.

2018      Studies in Conversational UX Design  
Robert J. Moore, Margaret H. Szymanski, Raphael Arar and Guang-Jie Ren. Springer International Publishing. 2018.

## Publications

2019      Co-designing AI Futures: Integrating AI Ethics, Social Computing, and Design  
Daria Loi, Christine T Wolf, Jeanette L Blomberg, Raphael Arar, Margot Brereton. 2019.  
Co-designing AI Futures: Integrating AI Ethics, Social Computing, and Design. In Proceedings of the 2019 on Designing Interactive Systems Conference 2019. ACM, New York, NY, USA.  
DOI: <https://doi.org/10.1145/3301019.3320000>

2018      PD Manifesto for AI Futures  
Daria Loi, Thomas Lodato, Christine T. Wolf, Raphael Arar, Jeanette Blomberg. 2018.  
PD Manifesto for AI Futures. In Proceedings of the 15th Participatory Design Conference (PDC). ACM, New York, NY, USA. DOI: <https://doi.org/10.1145/3210604.3210614>

Nostalgia: a human-machine transliteration

Raphael Arar. 2018. Nostalgia: a human-machine transliteration. In Proceedings of the 2018 IEEE VisArts Conference. IEEE, New York, NY, USA.

Applying User-Centered Design to Business Modeling: CBM.next as a Case Study

Raphael Arar, Guang-Jie Ren, Shun Jiang, Valeria Becker, Lei Huang, Eric Young Liu. 2018.

Applying User-Centered Design to Business Modeling: CBM.next as a Case Study. In Proceedings of the 2018 IEEE 20th Conference on Business Informatics (CBI). IEEE, New York, NY, USA. DOI: <https://doi.org/10.1109/CBI.2018.10065>

Using Energy Storage to Modify the Shape of Internally Generated Demand to Fit a Prescribed Shape for Externally Presented Demand

Ray Strong, Shubhi Asthana, Eric Butler, Kevin Roche, Raphael Arar, Cheryl Kieliszewski, Pawan Chowdhary, Sandeep Gopisetty. 2018. Using Energy Storage to Modify the Shape of Internally Generated Demand to Fit a Prescribed Shape for Externally Presented Demand. In Proceedings of the 2018 IEEE International Conference on Services Computing (SCC). IEEE, New York, NY, USA. DOI: <https://doi.org/10.1109/SCC.2018.00046>

2017

Wayfinding

Raphael Arar. 2017. Wayfinding. In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17). ACM, New York, NY, USA 1378-1381. DOI: <https://doi.org/10.1145/3027063.3052543>

Early Future Technology: Using Artificial Intelligence to Manage Design-Driven Intellectual Property

Raphael Arar, Ray Strong. 2017. Early Future Technology: Using Artificial Intelligence to Manage Design-Driven Intellectual Property. In Proceedings of the Portland International Conference on Management of Engineering and Technology (PICMET). IEEE, New York, NY, USA. DOI: <https://doi.org/10.23919/PICMET.2017.8125332>

Artificial Intelligence: Ethics, Innovation and Integration with Enterprise Practices

Raphael Arar, Jeanette Blomberg. 2017. Artificial Intelligence: Ethics, Innovation and Integration with Enterprise Practices. IBM Internal White Paper. San Jose, CA.

#### Conversational UX Design

Robert J. Moore, Raphael Arar, Guang-Jie Ren, and Margaret H. Szymanski. 2017.

Conversational UX Design. In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17). ACM, New York, NY, USA, 492-497.

DOI: <https://doi.org/10.1145/3027063.3027077>

2016

#### Emerging User Experience Design for Industry Solutions

Raphael Arar. 2016. Emerging User Experience Design for Industry Solutions. IBM Internal White Paper. San Jose, CA.

2014

#### (+/-) Pendulum: Location in the Information Age

Raphael Arar. 2014. (+/-) Pendulum: Location in the Information Age . In Proceedings of the of the 20th International Symposium on Electronic Art (ISEA 2014). Dubai, UAE.

#### Participatory Data-driven Art Objects: Vessels for Kinetic Information

Raphael Arar. 2014. Participatory Data-driven Art Objects: Vessels for Kinetic Information. In Proceedings of the Conference on Computation, Communication, Aesthetics and X (xCoAx 2014). Porto, Portugal.

#### Anatomical Analogies: the Evolution of Harmony and Noise in relation to the Self and Society

Raphael Arar. 2014. Anatomical Analogies: the Evolution of Harmony and Noise in relation to the Self and Society. California Institute of the Arts Master of Fine Arts Thesis. Valencia, California.

2013

#### A History of Sequencers: Interfaces for Organizing Pattern-Based Music

Raphael Arar, Ajay Kapur. 2013. A History of Sequencers: Interfaces for Organizing Pattern-Based Music. In Proceedings of the the Stockholm Music Acoustics Conference and Sound and Music Computing Conference (SMAC/SMC-13). Stockholm, Sweden.

#### Invited Talks

2019

#### An aesthetic approach to untangling systems

Invited talk at Rochester Institute of Technology (RIT). Rochester, NY. February 25, 2020.

2019

#### Designing for the classroom & beyond

Invited talk for SF Design Week. San Francisco, CA. June 27, 2019.

5 things designers can learn from teachers

Invited talk for Layers: a Conference about Design & Technology. San Jose, CA. June 5, 2019.

An aesthetic lens to machine intelligence

Keynote speaker for the Oscar Pomilio Forum. Pescara, Italy. March 7, 2019.

2018

Interactions

Keynote speaker for a Marketing Town Hall to IBM's Chief Marketing Officer. San Francisco, CA. August 13, 2018.

The sight reminds me of our stupid fights. I miss them so much! Nostalgia and other things AI can't replace

Leonardo/ISAST Panel Discussion for CODAME ART+TECH Festival at The Midway. San Francisco, CA. June 6, 2018.

2017

Why Artificial Intelligence Research Needs Art

Invited talk for TED@IBM at SF Jazz Center. San Francisco, CA. December 6, 2017.

Exploring the Human-Machine Feedback Loop Through Art

Invited talk for Leonardo Art Science Evening Rendezvous (LASER) at San Jose State University. San Jose, CA. November 9, 2017.

The Evolution of the Moving Image: Exploring the Role of Film Schools in the Age of Extended Reality and Immersive Media

Panel discussion with Eric Darnell (Pixar) and Karen Dufilho (Google) moderated by Leighton Pierce (CalArts Film School Dean) at Draper University. San Mateo, CA. November 5, 2017.

How Art Shapes User Experience

Invited talk at the Computer History Museum. Mountain View, CA. October 6, 2017.

WORKSHOP#2: What Now? The world Post-Automation...

Panel discussion with Jim Spohrer (IBM), Ron Poznansky (IBM) and Phil Balagtas (McKinsey) as part of the Speculative Futures/PRIMER Conference Series hosted at IBM Studios. San Francisco, CA. July 6, 2017.

#### The Intersection of Aesthetic Practices and Bleeding-edge Design

Invited talk at IBM Watson West as part of the 50th Anniversary of the Turing Award. San Francisco, CA. June 22, 2017.

#### Conversational User Experience Design

Workshop lead at ACM CHI 2017 at the Colorado Convention Center. Denver, CO. May 6, 2017.

#### Art/Science and the Art of Illusion

Invited artist talk at the El Camino College Planetarium. Torrance, CA. April 29, 2017.

#### Conversational UI Best Practices

Invited talk as part of the LAUNCH Festival at the Palace of Fine Arts. San Francisco, CA. April 6, 2017.

#### Applying Science to Conversational UX Design

Invited talk with Robert J. Moore for SXSW 2017 at JW Marriott Ballroom. Austin, TX. March 13, 2017.

#### Cultivating Cognitive Experiences

Invited talk as part of Nerd Nite Silicon Valley at The Tech Museum. San Jose, CA. February 2, 2017.

2016

#### Design for the Aging Population: UX Considerations

Invited talk for the IBM Academy of Technology Outthink Virtual Conference. May 12, 2016.

#### Trends and Impressions from SXSW

Invited talk for IBM Research Staff at Almaden Research Center. San Jose, CA. May 26, 2016.

#### Intro to Arduino: Output

Workshop lead at Idea Fab Labs. Santa Cruz, CA. May 26, 2016.

2015

#### DIY Projection Mapping

Invited artist talk at the El Camino College Planetarium. Torrance, CA. October 10, 2015.



Designing for Remote Collaboration

Invited talk at the School of Cinematic Arts at the University of Southern California. Los Angeles, CA. April 14, 2015.

Using Keynote to Prototype Interactions

Workshop lead as part of the Apple+IBM Partnership. Cupertino, CA. April 3, 2015.

Video Projection Mapping: Aesthetic Considerations

Workshop lead at the California Institute of the Arts. Valencia, CA. April 3, 2015.

2014

(+/-) Pendulum

Invited artist talk at Zayed University as part of ISEA. Dubai, UAE. November 8, 2014.

PhoneGap 101: Utilizing Web Technologies for Mobile Applications

Workshop lead at Machine Project Gallery. Los Angeles, CA. June 10 & 12, 2014.

Web Fundamentals for Mobile Design

Workshop lead at Machine Project Gallery. Los Angeles, CA. June 3 & 5, 2014.

Design Thinking for Interactive Literary Art & Digital Storytelling

Invited lecture at Art Center College of Design. Pasadena, CA. May 15, 2014.

Artist Portfolio Best Practices

Invited lecture at the California Institute of the Arts. Valencia, CA. May 3, 2014.

Intro to Arduino

Workshop lead at Machine Project Gallery. Los Angeles, CA. February 9, 2014.

Historical & Contemporary Precedents for Media Arts & Design

MFA Thesis Defense at the California Institute of the Arts. Valencia, CA. January 31, 2014.

2013

Advanced Processing: Programming Generative Art

Workshop lead at Machine Project Gallery. Los Angeles, CA. December 10 & 11, 2013.

Intro to Processing: Programming Fundamentals

Workshop lead at Machine Project Gallery. Los Angeles, CA. December 3 & 4, 2013.

Musical Soldering

Workshop lead at 1450 Ocean Gallery. Santa Monica, CA. October 12, 2013.

Light-sensitive Oscillators: Learn to Make Sound Circuits

Workshop lead at Machine Project Gallery. Santa Monica, CA. June 16, 2013.

2012

Amalgamation & Displacement: Art that Spans Time & Media

Invited artist talk at the University of Nevada, Reno as part of Prospectives International Festival of Digital Art. Reno, NV. October 8, 2012.

2011

Interaction Design for Digital Experiences

Invited talk at the IBM Center for Social Software. Cambridge, MA. September 3, 2011.

#### Selected Press

2019

SF Design Week: Designing for classrooms and beyond

Clever

<https://blog.clever.com/2019/10/sf-design-week-designing-for-classrooms-and-beyond/>

2018

At IBM, Researchers Are Working To Make Robots Engaging Conversationalists

Inc. Magazine

<https://www.inc.com/greg-satell/at-ibm-researchers-are-working-to-make-robots-engaging-conversationalists.html?cid=sf01001>

Conversational UX design: What it is and who's paving the way

TechTarget

<https://searchcio.techtarget.com/feature/Conversational-UX-design-What-it-is-and-whos-paving-the-way>

How to make AI agents better conversationalists: Context is key

TechTarget

<https://searchcio.techtarget.com/feature/How-to-make-AI-agents-better-conversationalists-Context-is-key>

2017

Tackling the 'ask me anything' challenge of a conversational interface

TechTarget

<https://searchcio.techtarget.com/feature/Tackling-the-ask-me-anything-challenge-of-a-conversational-interface>

30 Under 30

Forbes Magazine

<https://www.forbes.com/sites/kathleenchaykowski/2017/01/03/30-under-30-2017-the-young-innovators-transforming-enterprise-tech/#322b4769335b>

This IBM researcher integrates science, math and art in his work

Silicon Valley Business Journal

<https://www.bizjournals.com/sanjose/news/2017/02/09/this-ibm-researcher-integrates-science-math-and.html>

Why Today's Designers Are Different

Inc. Magazine

<https://www.inc.com/yazin-akkawi/how-technology-has-given-design-a-new-meaning.html>

Why not? Pushing and prodding the possible, at TED@IBM

TED Institute

<https://blog.ted.com/why-not-pushing-and-prodding-the-possible-at-tedibm/>

10 ways that IT pros and developers can keep their tech skills up to date

TechRepublic

<https://www.techrepublic.com/article/10-ways-that-it-pros-and-developers-can-keep-their-tech-skills-up-to-date/>

Music, Integrated Media Alumnus Raphael Arar Makes Forbes' '30 Under 30' List

24700: News from California Institute of the Arts

<http://blog.calarts.edu/2017/01/05/music-and-integrated-media-alumnus-raphael-arar-makes-forbes-30-under-30-list/>

Five Alums, BU Academy Graduate on Forbes "30 Under 30" Lists

BU Today

<https://www.bu.edu/today/2017/alums-forbes-30-under-30/>

Top 30 Under 30 in Cloud  
Computer Business Review  
<https://www.cbronline.com/news/cloud/top-30-under-30-in-cloud/>

2016 Thinking Design in the Lab  
IBM.com  
<https://www.ibm.com/blogs/research/2016/08/design-thinking-ibm-research/>

The Imaginary 20th Century  
Entropy  
<https://entropymag.org/the-imaginary-20th-century/>

2014 Machine Project Takes Over the Gamble House  
KCET  
<https://www.kcet.org/shows/artbound/machine-project-takes-over-the-gamble-house>

AxS Festival: Sights, Sounds, and Science Collide in Pasadena  
KCET  
<https://www.kcet.org/shows/artbound/axs-festival-sights-sounds-and-science-collide-in-pasadena>

Jewish art culture: Movin' on up to the East side  
Jewish Journal  
<http://jewishjournal.com/culture/arts/129325/>

2013 Forty Artists Aboard a Mobile Art Lab Want to Collaborate With You  
GOOD  
<https://www.good.is/articles/forty-artists-aboard-a-mobile-art-lab-want-to-collaborate-with-you>

Catch the Bus  
Rise Art  
<https://www.riseart.com/article/2013-06-03-catch-the-bus>

Digital art exhibit pioneering new movement  
[ninemsn.com](http://ninemsn.com)

Aluminum Heartbeat

CNET

<https://www.cnet.com/uk/pictures/future-tech-expo-sci-fi-saxes-3d-printed-human-hearts-pictures/7/>

2012

Preview: Cyberarts

DigBoston

<http://collisioncollective.org/show/collision-18>

GAME PLAY Artist Interview: Raphael Arar ("Synth-a-Sketch")

B(RICK)LOG

<http://bricktheater.blogspot.com/2012/07/game-play-artist-interview-raphael-arar.html>

WHIRL: Build It Up to Boogie Down

DigBoston

## Exhibitions

2020

Emerge Festival - Arizona State University, Mesa Arts Center (*forthcoming*)

Food Carbon Footprint Index. Group exhibition. Mesa, AZ.

Sheppard Fine Arts Gallery - University of Nevada, Reno (*forthcoming*)

Motor Studies. Solo exhibition. Reno, NV.

2019

Dreaming in silicon, a design fiction workshop - Backyard San Jose/WeWork

Participant-driven design fiction workshop on the future of Silicon Valley. San Jose, CA.

Crash Override 04 – The Lucky Horseshoe/Resident Advisor

Sound art performance with custom electronics. San Francisco, CA.

Human Design: Shaping ideas - Aurum/Ideas Factory

Fail Engine. Group exhibition. Pescara, Italy.

- 2018 A Life/Art/Science/Tech (LAST) Festival presented by Stanford University - SLAC National Accelerator Laboratory  
Nostalgia. Group exhibition. Menlo Park, California.
- 2017 International Symposium on Electronic Art - Centro Cultural Universitario Rogelio Salmons  
Wayfinding. Group exhibition. Manizales, Colombia.
- CHI 2017 - Colorado Convention Center  
Wayfinding. Group exhibition. Denver, CO.  
Art of Science/Science of Art - El Camino College Planetarium  
Art of Science/Science of Art. Solo exhibition. Collaboration with Chris Weisbart. Torrance, CA.
- 2016 30 years of research - Almaden Research Center (IBM Research)  
Wayfinding. Group exhibition. San Jose, CA.
- Changemakers - Santa Cruz Museum of Art & History  
Wayfinding. Group exhibition. Santa Cruz, CA.
- Old ways won't open new doors - Doc's Lab  
Wayfinding. Group exhibition. San Francisco, CA.
- Crashing into walls we've built - The Night Light  
Wayfinding. Group exhibition. Oakland, CA.
- Sleep is not for those who dream - Lock & Key  
Wayfinding. Group exhibition. Los Angeles, CA.
- 2015 The Imaginary 20th Century - ZKM Centre for Art & Media  
Sound art for an archival art platform. Group exhibition. Karlsruhe, Germany.
- Forbidden Planet Night - El Camino College Planetarium  
Forbidden Pixel. Solo exhibition. Collaboration with Chris Weisbart. Torrance, CA.
- 2014 The Entrance - Machine Inspired Art Gallery  
Echo echo bot. Solo exhibition. Los Angeles, CA.

International Symposium on Electronic Art - Zayed University  
(+/-) Pendulum. Group exhibition. Dubai, UAE.

The Machine Project Field Guide to the Gamble House - The Gamble House Museum  
Projected shadows. Group exhibition. Collaboration with Chris Weisbart. Pasadena, CA.

Gemini Heart - Center for Integrated Media  
Gemini Heart. Solo exhibition. California Institute of the Arts. Valencia, CA.

cutLog - The Clemente  
Horizon. Group exhibition. New York, NY.

Improvised Sound Ping Pong Tournament - Machine Project  
Curation and live sound art performance. Group exhibition. Los Angeles, CA.

Pre-Glo - Centre for the Living Arts  
Untitled Video Collage. Group exhibition. Mobile, AL.

2013

Chance Meeting in a Storefront - Machine Project  
Ping pong sound installation. Solo exhibition. Los Angeles, CA.

Perform Chinatown - KesselsKramer Gallery  
SYNTH-A-SKETCH. Solo exhibition. Los Angeles, CA.

Dimanche Rouge - Espoo Museum of Modern Art  
BITPHONE. Group exhibition. Espoo, Finland.

Dublab 14th Anniversary Celebration - Maker City LA  
Experimental Raver Table Tennis. Group exhibition. Los Angeles, CA.

NOW13 - Dark Horse Experiment  
Parasitke. Group exhibition. Melbourne, Australia.

Engineered Art - CalTech Community Art Gallery  
Metal Hearts. Group exhibition. Pasadena, CA.

	<p>Ambiguities &amp; Illusions - Spaces Gallery Attic. Group exhibition. Hardwick, MA.</p>
2012	<p>COLLISION18:present - Cyberarts Gallery Pathways. Group exhibition. Boston, MA.</p> <p>SIMULTAN Festival - Facultatea De Arte / Mansarda Finding Comfort in Claustrophobia. Group exhibition. Timisoara, Romania.</p> <p>Ignition 5.0 - The Fuse Factory SYNTH-A-SKETCH. Group exhibition. Columbus, OH.</p> <p>SQUARE - Teatro San Giorgio Pathways. Group exhibition. Udine, Italy.</p> <p>iDEAS_12 - New World School of the Arts Attic. Group exhibition. Miami, FL.</p> <p>Athens Video Art Festival - Ayias Irinis Square Finding Comfort in Claustrophobia. Group exhibition. Athens, Greece.</p> <p>Together Festival - MACHINE SYNTH-A-SKETCH. Group exhibition. Boston, MA.</p> <p>BEAM Festival - Beldam Gallery SYNTH-A-SKETCH. Group exhibition. London, United Kingdom.</p>
2011	<p>GamePlay - The Brick Theater SYNTH-A-SKETCH. Solo exhibition. Brooklyn, NY.</p>
Skills	<p>Design</p> <p>User Experience Design, Interface Design (including mobile, web and software applications), Tangible Interaction Design (including physical computing), Information Design (including data visualization), Discursive/Speculative/Critical Design, Graphic Design, Rapid Prototyping,</p>



Information Architecture, Creative Direction, Art Direction, Digital Strategy, Branding, Usability Testing

#### Programming

Javascript (Node.js, React) , Python, Java, C++, C, HTML5, CSS3, MongoDB/CouchDB/Cloudant, Unix

#### Fabrication

Industrial Design, 3D Printing, Laser cutting, CNC Machining, Metalworking, Carpentry

#### Environments & Tools

Sketch, Adobe Creative Suite, Fusion 360, Atom/Sublime Text, Eclipse, Xcode, Rhinoceros, Final Cut Pro, Omnigraffle

#### Volunteer Work

Leonardo / The International Society for the Arts, Sciences and Technology  
Member of the Governing Board

#### Yoga for All Movement

Identity Design, Website Design, Print Design

#### Boston Lyric Opera

Website Design, Print Design

#### Cambridge Symphony Orchestra

Website Design, Identity Design