

**KATHERINE W. SONG**  
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## **EDUCATION:**

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**Ph.D. student, University of California - Berkeley**, Berkeley, CA, 2019-present

Department of Electrical Engineering and Computer Sciences (area of concentration: human-computer interaction)

**S.M., Massachusetts Institute of Technology**, Cambridge, MA, 2013

Department of Electrical Engineering and Computer Science (EECS).

Major: electronic materials and devices; Minor: biological and health sciences

Completed Ph.D. qualifying exams, coursework, and teaching requirements (2011-2014).

**B.S.E. with Highest Honors, Princeton University**, Princeton, NJ, 2011

Major: electrical engineering; Certificates (minors): materials science, applications in computing

## **ACADEMIC RESEARCH EXPERIENCE:**

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**Graduate Researcher**, Hybrid Ecologies Lab, UC Berkeley, June 2019-present

Adviser: Professor Eric Paulos

Area of research: Decomposable interactive systems

**Graduate Research Fellow**, MIT Media Lab & Charles Stark Draper Laboratory, May 2013-December 2014

Advisers: Professor Hugh Herr (MIT Media Lab), Dr. Bryan L. McLaughlin (Draper Laboratory)

Designed and fabricated an implantable peripheral nerve microchannel interface for bi-directional prosthesis control

**Graduate Research Fellow** (Master's research), MIT, August 2011-May 2013

Adviser: Professor Vladimir Bulovic, Department of Electrical Engineering and Computer Science

Invented an electrophoretic deposition technique to form thin layers of quantum dots (QDs) for light emitting devices

Fabricated and characterized record-efficiency near-infrared QD-LEDs using core-shell PbS-CdS quantum dots

**Undergraduate Researcher**, Princeton University, Princeton, NJ, Jan. 2009-May 2011

Advisers: Professors Sigurd Wagner and Naveen Verma, Department of Electrical Engineering

Fabricated a top-gate staggered thin-film transistor (TFT) structure using a new hybrid material as a gate dielectric

Characterized the mechanical flexibility of TFTs made with the new gate dielectric on a plastic substrate

Designed and fabricated a TFT circuit to interface between large-area sensing sheets and nanoscale integrated circuit chips for structural health monitoring

**Research Experience for Undergraduates Participant**, Carnegie Mellon University, Pittsburgh, PA, Summer 2008

Adviser: James W. Schneider, Professor, Department of Chemical Engineering

Used DNA-surfactant tagging and capillary electrophoresis to sort carbon nanotubes

## **PROFESSIONAL EXPERIENCE:**

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**Technology Innovation Summer Research Associate**, Accenture Labs Future Technologies Group, Summer 2022

Manager: Andreea Danielscu

Designed and fabricated a 100% backyard-degradable packaging system that wirelessly heats its contents

**Display Electrical Engineer (full-time)**, Apple Inc., February 2015-October 2017

Manager: Dr. Marc DeVincendis

Responsibilities:

- Direct Responsible Individual (DRI) for iPhone X display rigid flex PCB, from conception to mass production

- DRI for iPhone X and Watch 2 failure analysis during assembly, software bring-up, and testing at factory sites
- Prototyped and collaborated with vendors to develop new display and module packaging technologies

**Visiting Researcher**, Palo Alto Research Center, Palo Alto, CA, Summer 2010

Host: Dr. Robert A. Street, Senior Research Fellow

Characterized and modeled organic bulk heterojunction and silicon nanowire solar cells

## **TEACHING EXPERIENCE:**

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**Co-Instructor**, CS160: User Interface Design and Development, UC Berkeley, Summer 2023

Instructor of Record for upper-division CS class comprising 60 students and a course staff of 8

**Instructor**, Maker Launchpad Summer Program, UC Berkeley, Summer 2022

Developed and taught virtual/augmented reality workshop with Unity and Oculus Quest headsets

**Graduate Student Instructor**, DES INV 211: Designing Emerging Technologies, UC Berkeley, Fall 2021

Sole GSI for Masters of Design course comprising 4 projects centered around emerging technologies

Developed teaching material for new augmented reality module

**Instructor**, Online SAT Essay Course, Fall 2018

Remotely taught a class of 30 students in Singapore how to write the SAT Essay and read/write argument

**Teaching Assistant**, MAS.600: Human 2.0, MIT Media Lab, Spring 2014

1 of 2 TAs for graduate-level project-based course on technologies for human augmentation

**Laboratory Assistant**, ELE208: Fundamentals of Semiconductor Devices, Princeton University, Spring 2011

Assisted with lab experimental setup and measurements for student with disabilities

**Teaching Assistant**, ELE302: Systems Design and Analysis, Princeton University, Spring 2011

Assisted students with EE capstone project – a mini autonomous car capable of lane following and obstacle avoidance

**Writing Center Fellow**, Princeton University Writing Program, Fall 2008-Spring 2011

1 of ~50 selected undergraduate and graduate student fellows

Held 1:1 conferences with students to help with writing pieces and oral presentations varying in topic and discipline

**Peer Tutor**, Princeton University Office of the Dean of College, Fall 2009-Spring 2011

Offered tutoring for 9 technical classes in engineering, math, physics, and computer science

## **FELLOWSHIPS & AWARDS:**

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**Jacobs Institute Innovation Catalysts Grant**, Spring 2020, Fall 2020, Spring 2021, Spring 2022 (total \$3500)

**Berkeley Graduate Division BEARGradS Award**, 2019

Awarded to 1 new admit in the EECS department every year. 1 year stipend, tuition, and fees

**Berkeley Graduate Division Berkeley Fellowship for Graduate Study**, 2019

Up to 2 years of stipend, tuition, and fees

**National Defense Science and Engineering Graduate Fellowship**, 2019-2022

3 years of stipend, tuition, fees, and travel

**National Science Foundation Graduate Research Fellowship**, 2011-2014

3 years of stipend, tuition, fees, and travel

**Massachusetts Institute of Technology Henry Ford II Fellowship, 2011-2012**

1 year of stipend, tuition, and fees

**Hertz Foundation Fellowship Finalist** (1 of 50), January 2011

**Princeton EE Department Charles Ira Young Tablet and Medal, May 2011**

“A memorial tablet to Charles Ira Young, class of 1883, has been placed in the Engineering Bldg. by friends of Mr. Young. The medal will be awarded each year to the student who excels in research in Electrical Engineering.”

**Princeton EE Department Peter Mark Prize, May 2011**

“Awarded annually to a senior in Electrical Engineering, having an outstanding record in the area of electronic materials & devices.”

**Princeton Program in Materials Science and Engineering Outstanding Materials Student Award, May 2011**

“PRISM’s highest undergraduate honor, the ‘Outstanding Materials Student Award’ recognizes the combined excellence in academics, research, and dedication to materials science.”

**Princeton School of Engineering and Applied Sciences Tau Beta Pi Prize, May 2011**

“This award is given to a senior class member, or members, who have significantly contributed a major part of his or her time in service to the SEAS.”

**Barry M. Goldwater Scholarship, April 2010**

**Princeton University Shapiro Prize for Academic Excellence, September 2008**

**Princeton Physics Department Manfred Pyka Memorial Physics Prize, June 2008**

#### **SERVICE (ACADEMIC):**

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**Guest Editor, *Transactions on Computer-Human Interaction (TOCHI)* special issue on “Unmaking and HCI: Techniques, Technologies, Materials, and Philosophies Beyond Making”**

**Reviewer:** ISCW19, CHI21, DIS21, CHI22 (3 outstanding reviews), CSCW22 (outstanding review), CHI23 (2 outstanding reviews), DIS23, UIST23

**PhD Admissions Student Reviewer, UC Berkeley EECS Department, 2022**

**PhD HCI Admit Visit Day Coordinator, UC Berkeley, 2020 & 2021**

**Organizer, Berkeley HCI Undergraduate Reading Group, 2020-2022**

Lead weekly meetings for Berkeley undergraduates interested in HCI

**Chair, 2013 MIT Microsystems Technology Laboratories Annual Research Conference (MARC2013)**

Led the planning and execution of a ~300-attendee, student-run annual conference

Spearheaded the introduction of new types of technical presentations and interactive fun/educational opportunities

#### **SERVICE (COMMUNITY):**

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**Volunteer, Berkeley Humane Society, Nov. 2019 - Mar. 2020**

Supported shelter operations through facility upkeep and animal caretaking

**Technical Mentor, FIRST Robotics Competition Team #7419, Sep. 2018 - Sep. 2019**

Guided the robot design and program management for the 1st FRC team for Quarry Lane HS (Dublin, CA)

**Volunteer, Nepal Volunteers Council, Kathmandu, Nov 2016**

Set up a computer lab for a school in Kathmandu, Nepal by repairing donated units and salvaging parts

## **PEER-REVIEWED PUBLICATIONS & CONFERENCE PROCEEDINGS:**

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1. **Katherine W. Song**, Szu Ting Tung, Alexis Kim, and Eric Paulos, [under review]
2. **Katherine W. Song** and Eric Paulos, "Vim: Customizable, Decomposable Electrical Energy Storage," *CHI '23*.
3. **Katherine W. Song\***, Christine Dierk\*, Szu Ting Tung, and Eric Paulos, "Lotio: Lotion-Mediated Interaction with an Electronic Skin-Worn Display," *CHI '23*.
4. **Katherine W. Song**, Aditi Maheshwari, Eric M. Gallo, Andreea Danielescu, and Eric Paulos, "Towards Decomposable Interactive Systems: Design of a Backyard-Degradable Wireless Heating Interface," *CHI '22*. **Best Paper Honorable Mention** (top 5%)
5. **Katherine W. Song** and Eric Paulos, "Unmaking: Enabling and Celebrating the Creative Material of Failure, Destruction, Decay, and Deformation," *CHI '21*.
6. Benjamin Maimon, Anthony N. Zorzos, **Katherine Song**, Rhyse Bendell, Ron Riso, and Hugh Herr, "Assessment of nerve regeneration through a novel microchannel array," *International Journal of Physical Medicine & Rehabilitation*, 4(2) (2016).
7. Geoffrey J. Supran, **Katherine W. Song**, Gyuweon Hwang, Raoul Correa, Jennifer Scherer, Yasuhiro Shirasaki, Mouni Bawendi, and Vladimir Bulovic, "High-performance shortwave-infrared light-emitting devices using core-shell (PbS-CdS) colloidal quantum dots," *Advanced Materials* 27(8) (2015).
8. Geoffrey J. Supran, Yasuhiro Shirasaki, **Katherine W. Song**, Jean-Michel Caruge, Peter T. Kazlas, Seth Coe-Sullivan, Trisha L. Andrew, Mouni G. Bawendi, and Vladimir Bulović, "QLEDs for displays and solid-state lighting," *MRS Bulletin* 38(9) (2013).
9. **Katherine W. Song**, Ronny Costi, and Vladimir Bulović, "Electrophoretic deposition of CdSe/ZnS quantum dots for light emitting devices," *Advanced Materials* 25(10) (2013).
10. Yingzhe Hu, Warren Rieutort-Louis, Josh Sanz-Robinson, **Katherine Song**, James Sturm, Sigurd Wagner, and Naveen Verma, "High-resolution sensing sheet for structural-health monitoring via scalable interfacing of flexible electronics with high-performance ICs," *VLSI Symp. Circuits* (2012).
11. Yin Liang, **Katherine Song**, Leo Shaw, Michael Zhu, Alex Tait, Nicole Businelli, Jane Yang, Ryan Soussan, Haonan Zhou, and Thomas Mbise, "The homemaker's hydrogen generator: A report for IAHE student hydrogen design competition 2010," *International Journal of Hydrogen Energy* 36(13880) (2011).
12. Robert A. Street, **Katherine W. Song**, John Northrup, and Sarah Cowan, "Photoconductivity measurements of the electronic structure of organic solar cells," *Physical Review B* 83(165207) (2011).
13. Robert A. Street, **Katherine W. Song**, and Sarah Cowan, "Influence of diode series resistance on the photocurrent analysis of organic semiconductors," *Organic Electronics* 12(244) (2011).
14. Lin Han, **Katherine Song**, Sigurd Wagner, and Prashant Mandlik, "New insulator for thin-film transistor backplanes and for flexible passivation layers," *Electrochemical Society Transactions* "Thin Film Transistors 10 (TFT 10)," 33(125) (2010).
15. Sigurd Wagner, Lin Han, Bahman Hekmatshoar, **Katherine Song**, Prashant Mandlik, Kunigunde H. Cherenack, and James C. Sturm, "Amorphous silicon TFT technology for rollable OLED displays," *Society for Information Display Digest* 10(917) (2010).
16. Lin Han, **Katherine Song**, Prashant Mandlik, and Sigurd Wagner, "a-Si:H TFTs with a new hybrid dielectric highly stable under mechanical and electrical stress," *Society for Information Display Digest* 10(238) (2010).
17. Lin Han, **Katherine Song**, Prashant Mandlik, and Sigurd Wagner, "Ultra-high flexibility of amorphous silicon transistors made with a resilient insulator," *Applied Physics Letters* 96(042111) (2010).
18. **Katherine W. Song**, Lin Han, Sigurd Wagner, and Prashant Mandlik, "Effects of mechanical strain on the electrical performance of amorphous silicon thin-film transistors with a new gate dielectric," *Proceedings of the Materials Research Society Volume 1196*, C02-02 (2010).

## **WORKSHOPS ORGANIZED:**

1. Samar Sabie, **Katherine W. Song**, Tapan Parikh, Steven J. Jackson, Eric Paulos, Kristina Lindström, Åsa Ståhl, Dina Sabie, Kristina Andersen, and Ron Wakkary, “Unmaking@CHI: Concretizing the Material and Epistemological Practices of Unmaking in HCI,” *CHI '22*.

## **INVITED TALKS:**

1. “Decomposable Interactive Systems: Sustainable Making and Unmaking for the Everyday Designer,” UC San Diego Interactive Computing Seminar, February 2023.

## **POSTERS & CONFERENCE PRESENTATIONS (lightly reviewed):**

1. **Katherine W. Song\***, Janaki Vivrekar\*, Lynn Yeom\*, Eric Paulos, and Niloufar Salehi, “Crank That Feed: A Physical Intervention for Active Twitter Users,” *CHI '21 Extended Abstracts*.
2. **Katherine W. Song**, Ronald R. Riso, and Hugh M. Herr, “Microfabricated, regeneration-based peripheral nerve interface for recording and stimulation,” *Neural Interfaces Conference*, Dallas TX. 23 June 2014.
3. **Katherine W. Song**, Ronny Costi, and Vladimir Bulović, “Electrophoretic deposition of CdSe/ZnS quantum dots for light emitting devices,” *MRS Fall Meeting*, Boston MA. 28 Nov 2012.
4. Robert Street, **Katherine Song**, and Alexa Krakaris, “Localized state spectroscopy in organic solar cells,” *MRS Fall Meeting*, Boston MA. 28 Nov 2011.
5. Sourobh Raychaudhuri, Rene A. Lujan, **Katherine W. Song**, Chris Paulson, and Robert A. Street, “Large area a-Si/Si nanowire hybrid solar cells,” *Nanotech Conference and Expo*, Boston MA. 13-16 June 2011.
6. **Katherine W. Song**, Lin Han, Prashant Mandlik, and Sigurd Wagner, “Top-gate thin-film transistors with a new gate dielectric,” *Symposium A, MRS Spring Meeting*, San Francisco CA. 29 April 2011.
7. Sigurd Wagner, Lin Han, **Katherine W. Song**, Bhadri Visweswaran, Prashant Mandlik, Yifei Huang, Bahman Hekmatshoar, and James C. Sturm, “Geometries of amorphous silicon thin-film transistors with a hybrid gate dielectric,” *Symposium A, MRS Spring Meeting*, San Francisco CA. 29 April 2011.
8. Robert Street, **Katherine Song**, and John Northrup, “Density of electronic states model for organic solar cells,” *Symposium B, MRS Spring Meeting*, San Francisco CA. 28 April 2011.
9. Sourobh Raychaudhuri, Rene Lujan, **Katherine Song**, Chris Paulson, and Robert A. Street, “Disordered nanowire based photovoltaics,” *Symposium B, MRS Spring Meeting*, San Francisco CA. 26 April 2011.
10. **Katherine W. Song**, Lin Han, and Sigurd Wagner, “Performance of amorphous silicon thin-film transistors under very high tensile strain,” *Symposium A, MRS Spring Meeting*, San Francisco CA. 07 April 2010.
11. Lin Han, **Katherine Song**, and Sigurd Wagner, “A novel hybrid material for flexible OLED displays.” *9<sup>th</sup> Annual Flexible Electronics and Displays Conference*, Phoenix AZ, Feb 2010.
12. Lin Han, **Katherine Song**, Sigurd Wagner, “A new material for the encapsulation of plastic foil substrates,” *Symposium C, MRS Fall Meeting*, Boston MA, 30 Nov 2009.
13. **Katherine W. Song**, Lin Han, Sigurd Wagner, “Effects of mechanical strain on the electrical performance of amorphous silicon thin-film transistors with a new gate dielectric,” *Symposium C, MRS Fall Meeting*, Boston MA, 30 Nov 2009.

## **PATENTS:**

1. Aditi Maheshwari, **Katherine W. Song**, and Eric M. Gallo, “Biodegradable packaging with integrated heating system,” US Patent App 17/505,705 (2023).
2. Shengkui Gao, Hung Sheng Lin, Hyunsoo Kim, Hyunwoo Nho, **Katherine W. Song**, Mohammad Hajirostam, Myung-je Cho, Rui Zhang, Sang Y. Youn, Wei H. Yao, and Yafei Bi, “Adaptive pixel uniformity compensation for display panels,” US Patent 10,529,053 B2 (2020).

3. Geoffrey J.S. Supran, **Katherine W. Song**, Gyuweon Hwang, Raoul Emile Correa, Yasuhiro Shirasaki, Mouni G Bawendi, and Vladimir Bulović, “Near-infrared light emitting device using semiconductor nanocrystals,” US Patent 9,935,240 (2018).
4. Hugh M. Herr, Ronald R. Riso, **Katherine W. Song**, Richard J. Casler Jr., and Matthew J. Carty, “Peripheral neural interface via nerve regeneration to distal tissues,” US Patent 9,474,634 B2 (2016).
5. Vladimir Bulović, **Katherine W. Song**, and Ronny Costi, “Deposition of semiconductor nanocrystals for light emitting devices,” US Patent 9,472,723 (2016).

#### **UNDERGRADUATES MENTORED:**

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Alexis Kim, fall 2022-spring 2023.

Cindy Tung, summer 2022-spring 2023. Incoming PhD student @ Cornell U.

Ankita Morari, summer 2021.

Cici Wei, 2020-2021.

Michelle Gantos, 2020-2021.

#### **OTHER:**

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**Foreign Languages:** Mandarin Chinese (basic) and Spanish (intermediate)

**Trail Running:** avid runner of ultra-long distances. PRs: 4:11 50k, 8:30 50mi, 10:45 100k

**Technical Mountaineering:** AIARE I, climbing self-rescue, glacier travel, crevasse rescue, Wilderness First Aid