

ELDON SCHOOP

+1 818 660 6111
eschoop@berkeley.edu
eldon.io

RESEARCH INTERESTS

HCI, ML Interpretability and Explainability, Programming Tools, Augmented Reality, Digital Fabrication.

EDUCATION

University of California at Berkeley, Berkeley, CA	
Ph.D. in Computer Science (Advisor: Björn Hartmann)	2016-2022
M.S. Computer Science	2016-2018
B.S. in Electrical Engineering and Computer Science	2013-2016

RESEARCH EXPERIENCE

Apple Inc, Seattle, WA	
Research Scientist	Nov 2022 – Present
HCI and Machine Learning.	

University of California at Berkeley, Berkeley, CA	
Graduate Student Researcher <i>advised by Björn Hartmann</i>	Aug 2016 – Aug 2022

Google LLC, Mountain View, CA	
Student Researcher <i>advised by Yang Li</i>	Jun 2021 – Jan 2022
Developed a novel, Deep Learning based system that predicted the perceived tappability of mobile UI elements and explained predictions to UX designers using ML interpretability techniques. Research in HCI (data-driven design) and XAI (interpretability) domains. Published results at CHI 2022 and released new dataset as open source.	

Google LLC, Cambridge, MA	
Research Intern <i>advised by Michael Terry</i>	Aug 2020 – Dec 2020
Developed a novel ML explainability algorithm and visualization to identify influential visual concepts in image datasets and compare vision models based on these concepts, with the goal of reducing bias. Trained several CNN models with artificial perturbations for evaluating this algorithm. Research in HCI and ML domains (visualization, interpretability).	

University of California at Berkeley, Berkeley, CA	
Undergraduate Student Researcher <i>advised by Björn Hartmann</i>	Jan 2015 – May 2016

WORK EXPERIENCE

LookDeep Inc., Oakland, CA	
Machine Learning Intern	May 2019 – Aug 2019
Prototyped and productionized several ML pipelines using state-of-the-art neural networks for vision tasks in healthcare, including text detection and recognition, image classification, and object detection. Developed initial technical demo and data visualization dashboard. Contributed to open-source ML research.	

Jacobs Institute for Design Innovation, Berkeley, CA

Project Lead and Principal Engineer, MakerPass

Sep 2014 – May 2020

Developed a full stack access control system for the Jacobs Institute makerspaces and several other shops at UC Berkeley. Worked with multiple stakeholders across departments to assess needs. Mechanical, electronics, and firmware development of physical card readers. Database, API, and admin web interface for software.

InnoQuant Inc., Berkeley CA

Co-Founder and Chief Executive Officer

Nov 2016 – Oct 2018

Developed and took a research-backed innovation assessment to market. Partnered with consulting firms to deploy the assessment in workflows in several multinational cases. Led to transformational changes in organizations.

Yelp Inc., San Francisco, CA

Software Engineering Intern (Search UX)

May 2016 – Aug 2016

Project lead for internal data visualization tool to discover, evaluate, and improve user search experiences. Worked with PMs, managers, and engineers across teams to plan roadmaps and delegate responsibilities. Helped introduce informal standards for ReactJS, NPM, and Webpack for frontend web development.

Yelp Inc., San Francisco, CA

Software Engineering Intern (Core Web)

Aug 2015 – Dec 2015

Developed a tool to visualize web code profiling information, presenting line-by-line performance statistics to reduce technical debt.

Zino Systems International, Los Angeles, CA

Founder and Technical Consultant

Aug 2013 – Aug 2015

Architected and implemented IT solutions for consumers and businesses.

PUBLICATIONS

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|---|-------------|
| Eldon Schoop , Xin Zhou, Gang Li, Zhouong Chen, Björn Hartmann, Yang Li. <u>Predicting and Explaining Mobile UI Tappability with Vision Modeling and Saliency Analysis</u> . <i>CHI 2022</i> . | 2022 |
| Eldon Schoop , Ben Wedin, Andrei Kapishnikov, Tolga Bolukbasi, Michael Terry. <u>IMACS: Image Model Attribution Comparison Summaries</u> . <i>arXiv Preprint</i> . | 2022 |
| Forrest Huang, Eldon Schoop , David Ha, Jeffrey Nichols, John Canny. <u>Sketch-Based Creativity Support Tools Using Deep Learning</u> . <i>Book Chapter in Artificial Intelligence for Human Computer Interaction: A Modern Approach</i> . | 2021 |
| Eldon Schoop , Forrest Huang, Björn Hartmann. <u>UMLAUT: Debugging Deep Learning Programs using Program Structure and Model Behavior</u> . <i>CHI 2021</i> . | 2021 |
| Eldon Schoop , Forrest Huang, Björn Hartmann. <u>SCRAM: Simple Checks for Realtime Analysis of Model Training for Non-Expert ML Programmers</u> . <i>ICML 2020 Workshop on Human-in-the-Loop Learning</i> . (Non-archival) | 2020 |

- Eldon Schoop**, Forrest Huang, Björn Hartmann. SCRAM: Simple Checks for Realtime Analysis of Model Training for Non-Expert ML Programmers. *CHI 2020 Extended Abstracts*. **2020**
- Forrest Huang, **Eldon Schoop**, David Ha, John Canny. Scones: Towards Conversational Authoring of Sketches. *IUI 2020*. **2020**
- Eldon Schoop**, James Smith, Björn Hartmann. HindSight: Enhancing Spatial Awareness by Sonifying Detected Objects in Real-Time 360-Degree Video. *UC Berkeley EECS Technical Report (Masters Thesis)*. December 2018. **2018**
- Eldon Schoop**, Forrest Huang, Nathan Khuu, Björn Hartmann. MakerLens: What Sign-In, Reservation and Training Data Can (and Cannot) Tell You About Your Makerspace. *ISAM 2018*. **2018**
- Eldon Schoop**, James Smith, Björn Hartmann. HindSight: Enhancing Spatial Awareness by Sonifying Detected Objects in Real-Time 360-Degree Video. *CHI 2018*. **2018**
- Eldon Schoop**, Chris Myers, Björn Hartmann. MakerPass: A Multiplatform Access Control System for Academic Makerspaces. *ISAM 2017 Posters*. **2017**
- Michelle Nguyen and **Eldon Schoop**, Mitchell Karchemsky, Valkyrie Savage, Björn Hartmann, Sean Follmer. Drill Sergeant: Supporting Physical Construction Projects through an Ecosystem of Augmented Tools. *Berkeley EECS Technical Report*. **2016**
- Eldon Schoop** and Michelle Nguyen, Daniel Lim, Valkyrie Savage, Sean Follmer, Björn Hartmann. Drill Sergeant: Supporting Physical Construction Projects through an Ecosystem of Augmented Tools. *CHI 2016 Extended Abstracts*. **Best Paper, late-breaking work**. **2016**

TEACHING

- University of California at Berkeley, Berkeley, CA
Instructor, “Maker Design Studio” (Design thinking and Arduino Prototyping) **Summer 2022, 2021, 2020, 2019, 2018**
- University of California at Berkeley, Berkeley, CA
Guest Lecture, “Machine Learning for Startups”; Learn2Launch at Berkeley **Spring 2020**
- University of California at Berkeley, Berkeley, CA
Graduate Student Instructor, LS 25: Responsible Design from Bits to Buildings **Fall 2019**
- University of California at Berkeley, Berkeley, CA
Graduate Student Instructor, DES INV 190-2: Global Product Development **Spring 2019**
- University of California at Berkeley, Berkeley, CA
Instructor, DES INV 190E-1: Interactive Device Design **Summer 2018**
- University of California at Berkeley, Berkeley, CA
Graduate Student Instructor, CS160: User Interface Design **Spring 2018**
- University of California at Berkeley, Berkeley, CA
Instructor, T-PREP CS (1 Week, CS Bootcamp for Transfer Students) **Aug 2015**

AWARDS AND HONORS

Nominated for Apple Ph.D Fellowship (1 of 5), <i>UC Berkeley</i>	2019
Finalist for Snap Research Ph.D Fellowship, <i>Snap Inc</i>	2019
Nominated for Microsoft Ph.D Fellowship (1 of 3), <i>UC Berkeley EECS</i>	2018
Innovation by Design Award Finalist, <i>Fast Company Magazine</i>	2016
Best Late-Breaking Work Award, <i>ACM CHI Conference</i>	2016
Honorable Mention, <i>NSF Graduate Research Fellowship</i>	2016
Warren Y. Dere Design Award, <i>UC Berkeley</i>	2015
IEEE Eta Kappa Nu (HKN) Honor Society, <i>Mu Chapter, UC Berkeley</i>	2014
Leadership Award Scholar, <i>UC Berkeley</i>	2013

ADVISING

Imran Sekalala (Data Science BA; Economics BA)	Jun 2021 – May 2022
Purva Gupta, Peng Gu, Sikai Yin, Zetian Xiao, Zhuoyue Wang (All CS M.Eng)	Aug 2019 – May 2020
James Smith (EECS BS), now at UC Berkeley (CS PhD)	Jun 2017 – Aug 2018

PROFESSIONAL ACTIVITIES

Advising startups on technical and business strategy	
Technical Advisor, <i>OSAA Medical Device Innovation Collider</i>	Sep 2016 – Jan 2017
Reviewer, <i>CHI, UIST, CSCW, VIS, MobileHCI. Outstanding review recognition (CHI 2019).</i>	

SERVICE

President, <i>Berkeley CS Graduate Student Association</i>	Sep 2019 – May 2022
Super User, <i>CITRIS Invention Lab</i>	Jan 2015 – Aug 2019
EECS Department Relations, Industrial Relations, <i>Eta Kappa Nu, Mu Chapter</i>	Sep 2014 – May 2016
Finance Committee Member, <i>UC Berkeley Engineering Student Council</i>	Aug 2014 – Dec 2014
Co-Founder and President, <i>LA Pierce College Robotics Team</i>	Dec 2010 – June 2013

MEDIA COVERAGE

Mickelwait, Kirsten. Helping transfer students succeed in engineering. <i>Berkeley Engineering</i> . 2022 .
Woo, Kasey. CITRIS Invention Lab Superuser Spotlight: Eldon Schoop (PhD, CS). <i>CITRIS News</i> . 2020 .
Vu, Linda. Prepping students to become Berkeley engineers. <i>Berkeley Engineering</i> . 2019 .
Mukai, Mason. Nisum Doubles Down on Measurable Innovation in Partnership with InnoQuant. <i>Press Release</i> . 2018 .
Brownlee, John. New To The Wood Shop? These Smart Power Tools Coach You Through It. <i>Fast Company</i> . 2016 .
Mendoza, Maricar. Robotics tournament at Pierce College gets kids interested in technology. <i>LA Daily News</i> . 2013 .