

Mitchell Karchemsky

Los Angeles, California ▪ mkarch@berkeley.edu ▪ www.mkar.ch ▪ 818-564-7478

Summary

Mitchell Karchemsky is a designer, engineer, and researcher with experience bringing products from concept to production. **Mitchell approaches product design holistically from user research to hardware design and software development.** By combining Digital Modelling and Fabrication techniques along with Programming and Software Development, Mitchell has published 4 papers developing novel devices and user experiences. He has experience both as a collaborator as well as leading cross-technical development teams ranging from personalized interactive experiences to full-stack product architectures.

Technical Skills

- User Experience and Research
- Javascript / HTML / CSS
- Software Engineering
- Product Design
- Custom Electronics (EagleCad)
- 3D CAD and Manufacturing (Solidworks)
- Rapid Prototyping
- Microcontroller Development
- Rapid Prototyping

Relevant Experience

- August 2015 - October 2018 | **University of California, Berkeley Institute of Design** - Research Staff
 - **Develop software and hardware prototypes in a multitude of Human-Computer Interaction topics with a primary focus on Embedded System debugging and development**
 - Produce sophisticated web-based interfaces (D3, Vue, React) that interact with a variety of back-end architectures (Flask, MongoDB, REST APIs) to interface with embedded systems through a variety of communications protocols (USB, Ethernet, I²C, etc.)
 - Organize and conduct user studies through online surveys and in-person interviews
 - Author and edit papers and reports intended for conference and public viewing (see [Publications](#))
 - Produce video summaries of papers for conference publication and reference
- August 2015 - October 2018 | **University of California, CITRIS:Invention Lab** - Systems and Product Design Consultant
 - **Design consultant for graduate researchers, startup founders, and postdoctorate scholars to create prototype embedded systems devices, applications, and services.**
 - Advise on software system architecture and guide through development process for startups and graduate researchers
 - Host talks on proper Human-Centered Design techniques (Wireframes, Invision, UX, etc.), prototyping, and iteration.
 - Teach design thinking principles as well as technical development skills such as CLI, OOP, and Version Control
- August 2015 - September 2016 | **Dalmatian: Helios** - Founder/CTO
 - **Co-founded hardware startup to improve safety and efficacy of first responders through embedded hardware and software**
 - Developed full-stack embedded system platform including front-end user interface and experience, embedded sensor telemetry data acquisition, and back-end data processing
 - Awarded \$20,000 in grand prize award from Solidworks and Venture.co
- June 2015 - July 2016 | **The Aerospace Corporation** - Software Engineering Intern
 - **Developed an interactive touch-based data visualization that displays all 1650+ US Rocket Launches from the start of the Space Age to today**
 - Displayed publicly for interaction with employees, public visitors, and government officials
 - Full stack application consisting of Python backend, SQL database, and D3.js Web-based Interface

Education

- August 2017 | **University of California, Berkeley**
B.A. in **Cognitive Science** - *Focus in Computational Modeling*
Minor in **Computer Science**

Other Professional Experience

- May 2017 - January 2018 | **UC Berkeley: Jacobs Institute for Design Innovation** - Teaching Assistant
- Led lectures, advise students, and proctor final critiques
 - **Taught both an introductory and upper division course focusing on skills required to design, prototype, and fabricate physical devices, as well as technological innovation and socially engaged art**
 - **Courses:** Design Innovation 22: Prototyping and Fabrication; New Media 190/290: Critical Practices
- May - August 2013 | **NASA Ames Research Center** - Systems Engineering Intern: *Lunar Micro Rover*
- Prototyped designs for better effective travelling across the lunar microdust environment
 - Reduced turn around time for testing designs from 2 months to 24 hours.

Publications

- August 2015 - October 2018 | *Full papers available on website*
- **Heimdall: A Remotely Controlled Inspection Workbench for Debugging Microcontroller Projects** M.Karchemsky, J.D.Zamfirescu, K.J Wu, F.Guimbretiere, B.Hartmann *In proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. ACM, New York, NY, USA*
 - **Wifröst: Bridging the Information Gap for Debugging of Networked Embedded Systems** W.McGrath, J.Warner, M.Karchemsky, A.Head, D.Drew, B.Hartmann *In proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology (UIST '18). ACM, New York, NY, USA*
 - **Bifröst: Visualizing and Checking Behavior of Embedded Systems Across Hardware and Software** W.McGrath, D.Drew, J.Warner, M.Kazemitabaar, M.Karchemsky, D.Mellis, B.Hartmann *In proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST '17). ACM, New York, NY, USA*
 - **Drill Sergeant: Supporting Physical Construction Projects through an Ecosystem of Augmented Tools** M.Nguyen, E.Schoop, M.Karchemsky, V.Savage, B.Hartmann, S.Follmer *Technical Report No. UCB/EECS-2016-90*

Community Experience

- August 2013 - August 2017 | **FIRST Robotics: Team 4 ELEMENT** - Systems Engineering Mentor
- Organize 50+ high school students through a 6 week build season to build a competitive 120lb robot.
 - Teach physical prototyping, electronics, mechanical design, and programming
 - Direct assembly and coach students during state and county competitions
- January - November 2015 | **Berkeley Art Museum and Pacific Film Archive** - Engineer and Designer: *Within2*
- Collaborated with artist *Tarek Atoui* to develop novel sound-based experiences
 - Prototyped and iterated designs involving large sound arrays, gestural-based input, and frequency interference
 - Final instruments were utilized in performance concerts touring the United States as well as internationally