

MOLLY NICHOLAS

molecule.github.io ◇ molecule@berkeley.edu ◇ github.com/molecule
instructables.com/member/molecule13/

EDUCATION

University of California, Berkeley

Fall 2016 - Present

Ph.D. in Computer Science

GPA: **3.823**

University of California, Berkeley

Fall 2011 - Spring 2014

B.A. in Computer Science & Cognitive Science

GPA: **3.591**

Clown Conservatory, Circus Center, San Francisco, CA

Fall 2007 - Spring 2009

Professional Clown Certificate

Knox College, Galesburg, IL

August 2005 - June 2007

GPA: **3.69**

Gymnazium Ludka Pika, Pilsen, Czech Republic

August 2003 - May 2004

PUBLICATIONS

AlterWear: Battery-Free Wearable Displays for Opportunistic Interactions Christine Dierk, **Molly Nicholas**, Eric Paulos. *ACM Conference on Human Factors in Computing Systems (CHI18)*

HäirIÖ: Human Hair as Interactive Material. Christine Dierk, Sarah Sterman, **Molly Nicholas**, Eric Paulos. *Proceedings of the Eleventh International Conference on Tangible, Embedded, and Embodied Interaction (TEI18)*

Illumination Aesthetics: Light as a Creative Material within Computational Design. Cesar Torres, Jasper O'Leary, **Molly Nicholas**, Eric Paulos. *ACM Conference on Human Factors in Computing Systems (CHI)*

EXPERIENCE

Qualcomm - Research & Development

June 2014 - Present

Engineer

San Diego, CA

- Invented, designed and developed a wearable device to facilitate engaging interactive experiences, and enable further hardware exploration called the **Qbadge**.
 - Worked with and managed the Diversity team, Dragonboard team, proto team, a small team of hardware and software developers, and promising interns to complete 130 Qbadges, from original prototype to completed product.
 - Drove requirements and worked tirelessly to hit every milestone on time.
 - Wrote an **Android app** to communicate with the Qbadges via **Bluetooth**, and drove the development of an Android app that collects BLE advertisements, and a web application that displays interaction events.
 - Worked with the Diversity and Campus teams to put on 3 events showcasing the Qbadges and the Dragonboard 410c, including the major event at the Grace Hopper Celebration.
- Developed the new **robot** control system for FIRST Tech Challenge, created two Android apps.
 - Created drivers for Motor and Servo Controllers, and over 15 different sensors.
 - Designed a popular Autoconfigure feature which scans for correct hardware, then creates the appropriate XML file.
 - Implemented and contributed to design of UI.

- Designed and constructed a streamlined system that reduced build time from 20 minutes to 4 minutes.
- Gained familiarity with kernel-level development, making changes to the Linux kernel to enable new hardware.

FabLab

October 2015 - Present

Geek in Residence

San Diego, CA

- Designed, developed, and taught classes.
 - Super Duper Simple Intro to Arduino
 - Introduction to Wearable Circuits
- Maintained open lab hours, upgraded and maintained systems and tools, developed community.

Invention Lab, UC Berkeley

April 2014 - June 2014

Inventioneer

Bay Area, CA

- Maintained open lab hours, upgraded and maintained systems and tools, supported community.

Qualcomm - Research & Development

May 2013 - August 2013

Software Engineering Intern

San Diego, CA

- Part of a team developing robotics applications for biologically-inspired neural networks.
- Added a custom scene using **Python** and C++ to a "virtual world" to train the neural network.
- Figured out how to implement collision detection in the Bullet physics engine through Gamekit.
- 3d modeling with **Blender**.

Bay Area Children's Theater

August 2011 - December 2011

Puppeteer

Bay Area, CA

- Bunraku-style puppetry: three people on one puppet.
- Bay Area Children's Theater: Told the story of 'Emil of Lönneberga'

Lucia Jacobs' CogEvoDevo Lab, UC Berkeley

August 2010 - January 2012

Research Assistant and Lab Manager

Bay Area, CA

- Designed and built an inexpensive, washable, easily movable, lockable experimental apparatus that reduced inter-trial set-up time by 90%. This highly modular system is now the template for the Jacobs Lab.
- Quickly became the expert on how to use the new data-gathering system (Ethovision). Trained all other personnel, developed experimental protocols, gathered data, analyzed data, and presented our work to the KodLab
- Organized, equipped, and maintained lab equipment. Coordinated and trained lab personnel.

Matt Walker's Neuroimaging Lab, UC Berkeley

August 2010 - December 2010

Research Assistant

Bay Area, CA

- Mastered the set-up and use of EEG, hdEEG, and sleep-monitoring equipment while helping subjects in experiments. Certified for fMRI safety.

Action Figures Convention Staffing

August 2009 - January 2010

Event Staff

Bay Area, CA

- Monitored room and greeted conference attendees. Mastered a new database and work-flow system for each show.

Lunatique Fantastique

June 2008 - September 2008

Puppeteer

Bay Area, CA

- Bunraku-style puppetry: three people on one puppet.
- Lunatique Fantastique: 3d live animation using found-object puppets telling the story of Avian Flu from the birds' point of view.

- www.lunfan.com/shows/2008_chicken.html

Bay Area Children's Theater

August 2007 - May 2008

Performer (role: Alice)

Bay Area, CA

- A circus adaptation of Lewis Carroll's classic story.
- Toured throughout the Bay Area and Northern California.

Bay Area Children's Theater

August 2007 - May 2008

Costume Department

Bay Area, CA

- Designed and constructed over 50 costume pieces for the touring production of *Alice in Wonderland*

Bay Area Children's Theater

August 2007 - May 2008

Road Manager

Bay Area, CA

- Organized and managed transportation needs for the entire 9-person cast, props, and costumes during the 3-month tour.

San Francisco Circus Center

November 2007 - May 2009

Building Manager

Bay Area, CA

- Email and phone correspondence, student-teacher liaison, various clerical duties as needed. Learned how to operate a fax machine.

Aerial Dance Chicago

June 2007 - August 2007

Costume designer, Assistant stage manager, intern

Chicago, IL

- Designed and constructed costumes for the summer dance production, coordinated and ran lights backstage for the show, and performed general office duties.

Knox College

March 2007 - May 2007

Production Manager, Company Manager, Choreographer

Galesburg, IL

- Coordinated over 80 performers for over 4 dance productions, acted as liaison between David Dorfman Dance and community performers. Choreographed dances with fellow students, and directed rehearsals.

Allegro Music Distribution

July 2006 - August 2006

Data Entry

Portland, OR

- Entered the information for over 2,000 CDs into an Excel spreadsheet. Accurately typed song lyrics in French, German, Italian, Czech, and Russian at 96 wpm.

Knox College

September 2006 - May 2007

Costume Shop Teaching Assistant

Galesburg, IL

- Designed and constructed costumes for theatre and dance productions.

British Embassy

December 2004 - May 2005

Entry-Clearance Assistant

Dhaka, Bangladesh

- Processed, assessed, researched, and organized visa applications received at the British High Commission.

ABC School

October 2004 - May 2005

Volunteer

Dhaka, Bangladesh

- Worked with children ages 1-17 at the ABC School, a school for homeless street children in the slums of Dhaka, Bangladesh.

Drama Teacher, American International School

October 2004 - December 2004

English Tutor, Pilsen, Czech Republic

September 2003 - May 2004

Cashier, Good Times Burger

June 2003 - August 2003

PROJECTS

Personal projects

instructables.com/member/molecule13/

Various

Various locations

- Lightning Cloud: A glanceable weather indicator (Instructables).

Company projects

github.com/molecule

Various

Various locations

- Qbadge: a wearable device designed to facilitate engaging interactive experiences (github).
- Qbadge GHC app: Android app to communicate with BLE peripheral. Pending legal approval will be released as open source.
- FIRST Tech Challenge: new robot control system github.com/ftctechnh/ftc_app.

Group projects

hackster.io/molecule

Critical Making

University of California, Berkeley

- Sketchboard: Longboard that draws on its underside with an XY-plotter moving based on your travels. Built with Arduino, a **laser cutter**, and more.
- adVenture: Site-specific installation capturing the wind from an air vent to move a paint spinner.
- 24 Hour Food + Fitness: Prototype for a concept product that provides an activity (fitness, meditation, math problems, etc) during the time that food is being prepared.

EVENTS

Qualcomm QWCC Conference

Jan 2016

- Sewable Circuits Workshop: workshop lead.

Latina Giving Circle

Jan 2016

- Circuit Stickers Workshop: workshop lead.
- Tech Talk: speaker.

Qualcomm DECA Conference

Jan 2016

- Sewable Circuits Workshop: workshop lead.
- Mentor.

Grace Hopper

Oct 2015

- Qualcomm HardWEAR Shindig (Qbadge event): event lead, speaker.
- Student Opportunity Lab: You++ [Resume Critique]: speaker.

EmpowHERment Conference, Qualcomm

Aug 2015

- Hackathon mentor, speaker

Society of Women in Engineering Event, FabLab

Oct 2015

- Hackathon mentor

TOOLS AND SKILLS

Languages

Java, Python, Arduino, bash, Czech

Tools

Git, Adobe Premiere Pro, Laser-cutter, Android Studio, Vim, Adobe Illustrator

Skills

Rapid prototyping, fabrication, creative problem-solving, project management

AWARDS AND FELLOWSHIPS

BCNM 2017 Research Award

Summer research proposal

EECS Excellence Award

Awarded based on outstanding academic record

ARCS Fellowship

Presented to Berkeleys top admitted doctoral students

Best Paper Award

“Illumination aesthetics,” CHI 2018

Qualstar (various)

Developing and driving Qbadge event

Language Achievement

Czech language achievement