

Benjamin Hardin

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Research Interests: *Human-Computer Interaction, Explainable AI, User Interfaces, Autonomous Systems*

Skills: C/C++, Python, Java, Swift, SwiftUI, Javascript, MySQL, Dart, React, ARM/x86-64 Assembly, OpenGL, HTML5, CSS, Matlab, R, Agile/Scrum, Xcode, Git, Flutter, Unix

Education

University of Oxford, Oxford, UK

October 2022 – May 2026

Ph.D. in Computer Science

Advisors: Dr. Lars Kunze & Prof. Marina Jirotko

Thesis topic: Psychological Safety and Trustworthiness of Autonomous Vehicles, Explainable AI

Purdue University, West Lafayette, IN, USA

August 2018 – May 2022

B.S. in Computer Science Honors

GPA: 3.81/4.00

Mathematics Minor • Certificate in Entrepreneurship and Innovation • Honors College • Dean's List

Study Abroad Experiences:

Computer Science at ETH Zürich (Spring 2022 semester)

Honors College 4-week courses in Italy (May 2019)

Research Experience

Graduate Research Assistant, University of Oxford

October 2022 – Present

- Investigating the experiences of teleoperators of autonomous vehicles

Networks Research Project, Purdue University

January 2021 – October 2022

- DARPA Software Defined Networking (SDN) project under supervision of Distinguished Professor Douglas Comer to change the interpretation of MAC addresses to provide reliable VM migration.
- Designed tests utilizing Mininet and ONOS to simulate the architecture and test network performance, working 10 hrs/week under the supervision of Distinguished Professor Douglas Comer.
- Collaborated with a researcher from the Open Networking Foundation to bring industry advice to our work.

Professional Engineering Experience

Microsoft, Redmond, WA

June 2022 – September 2022

Software Engineer Intern – Azure App Service

- Developed Azure WebJobs for Windows Containers that allow developers to run advanced functions on their container sites.
- Architected WebJobs with cross-platform compatibility so they can be ported to Linux containers.

Microsoft, Redmond, WA

May 2021 – August 2021

Software Engineer Intern – Azure App Service

- Designed and implemented Remote Debugging on Azure Windows containers to allow customers to debug NT services and reduce developer costs.
- Future-proofed Remote Debugging to support Visual Studio 2017, 2019, and 2022.
- Architected Azure Site Extensions for Windows containers to deliver greater extensibility and metrics to developers about their containers.

General Motors, Warren, MI

June 2020 – August 2020

Vehicle Architecture Intern – Automated Driving

- Consolidated vehicle sensor alignment with Python, reducing the alignment process from 2-3 weeks to 3-5 days.

- Implemented multicore computation in sensor alignment, resulting in runtimes 2-3 times faster.
- Automated the OS updates for data collection vehicles to decrease the time to test new features.

General Electric Aviation, Grand Rapids, MI

June 2019 – August 2019

Software Engineer Intern – Model-Based Development Team

- Designed algorithms utilizing Python and MySQL to manage Enterprise Architect models.
- Coordinated with Aviage Systems to fulfill Comac C919 aircraft requirements and documentation.

Teaching & Mentoring

Software Group Design Mentor – Oxford Department of Computer Science

January 2023 – Present

C++ Programming Lab Demonstrator – Oxford Department of Engineering Science

January 2023

Undergraduate Teaching Assistant – Purdue CS252 Systems Programming.

August 2021 – December 2022

- Under Professor Gustavo Rodriguez-Rivera, I led 2 lab sessions each week to explain concepts, grade lab assignments, and write exam questions.

Merit-Based Awards

• **Capgemini Studentship**

October 2022 – May 2026

• **Lilly Endowment Scholarship**

August 2018 – May 2022

Full-tuition scholarship for undergraduate studies awarded to one student in my county for dedication to academics, leadership, community, and extracurriculars.

• **Purdue College of Science Zimmerly Scholarship**

May 2021

• **Salesforce Scholarship**

April 2021

• **Purdue CS Corporate Partners Scholarship (Twice Awarded)**

April 2019, April 2020

Publications

• **DCnet: Evaluation of a New Data Centre Architecture**

Benjamin Hardin, Douglas Comer, Adib Rastegarnia

Pre-Publication, 2023 Innovation in Clouds, Internet, and Networks (ICIN)

• **On the Unreliability of Network Simulation Results From Mininet and iPerf**

Benjamin Hardin, Douglas Comer, Adib Rastegarnia

Pre-Publication, 2023 International Conference on Computer, Control, and Robotics (ICCCR)

Projects

Outdoor Classroom – Historic Eleutherian College, Inc.

July 2021 – August 2021

- Sought out a Lilly Scholars Network Lead Forward Grant, searched for community needs by talking to high school teachers, proposed the project, and was awarded \$2500.
- Designed, built, and installed an outdoor classroom for 24 students to facilitate STEM training for minority student teachers.
- Over 155 man-hours in total.

Natural Language File Searcher – CS592 Human-AI Interaction tool study

August 2021 – December 2021

- Integrated Stanford SEMPRES semantic parsing to determine file metadata from a natural language query.
- Developed a mixed-initiative interface application utilizing mdfind (Spotlight search) to perform an indexed search once the user's query has been parsed.

SkillZone Minigame App – Published on the Apple App Store

July 2021 – August 2021

- Built components of a minigame app with over 135,000 users.
- Developed using Xcode, Swift, and SwiftUI with a Firebase backend

Biodegradable Soy Polymer Business Plan (Firestarter Training)

July 2019 – August 2019

- Developed a business plan for a custom soy polymer to create single-use biodegradable foodware that reduces plastic waste for Purdue Dining.
- Took Firestarter Startup Training at the Purdue Foundry to gain skills to design and market startup ideas.

Community Engagement

President – Purdue Honors College App Development Committee

August 2018 – October 2022

- Guided teams to develop and maintain a client-server app to over 900 students and faculty to encourage community involvement by incentivizing academic achievements, event attendance, and volunteer work.
- Grew development team from 4 members to 20 members and guided 34 app update releases.
- Developed Firebase API endpoint, creating a single request framework for iOS, Android, and web apps.
- Personally built and integrated in-app messaging and a laundry machine status based on user feedback.

President – Lilly Scholars Network Purdue

August 2018 – January 2022

- Led volunteering events in the community and statewide with Lilly Scholars from Indiana.
- Held monthly professional events to connect members and foster a scholar community at Purdue.

Marketing & Design Executive – Purdue Association of IT Professionals

September 2018 – May 2019

- Created over 30 designs for shirts, flyers, and graphics to promote club spirit and outreach.
- Mentored members to foster professional development.
- Worked 7+ hrs/week to plan events and create materials to benefit the club's impact and future.

Eagle Scout – Boy Scouts of America

June 2012 – June 2019

- 200 man-hour landscaping project for the North Madison Church of Christ in Madison, IN.
- Raised funds, drafted and revised plans, selected plants, and organized labor to accomplish the project.