Benjamin Hardin

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Interests: *Human-Computer Interaction, Explainable AI, Physiological Sensing & LLMs*

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

Education

University of Oxford, Oxford, UK — *October 2022 – May 2026*
Ph.D. in Computer Science — *Advisors: Prof. Lars Kunze & Prof. Marina Jirotka*
Thesis Topic: Psychological Safety and Trustworthiness of Autonomous Vehicles
Affiliated with: Oxford Robotics Institute, Responsible Technology Institute

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)
Focus: Human-Computer Interaction (HCI), Mobile Health, 3D Computer Vision
– Honors College 4-week courses in Italy (May 2019)

Research Experience

Graduate Research Assistant, University of Oxford — *October 2022 – Present*
- Defining psychological safety of autonomous vehicles and developing new interfaces to improve this safety
- 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

Apple, San Diego, CA — *January 2025 – July 2025*
Research and Development Intern – Wireless Technologies and Ecosystems

Microsoft, Redmond, WA — *June 2022 – September 2022*
Software Engineer Intern – Azure App Service
- Developed Azure WebJobs for Windows Containers that enable developers to run extra functions on their container sites. Built with C#.

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. Built with C#.
- 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

Computer Vision Teaching Assistant – Oxford Dept. of Computer Science *Fall 2025*

Machine Learning Teaching Assistant – Oxford Dept. of Computer Science *Fall 2025*

Law and Computer Science Teaching Assistant – Oxford Dept. of Computer Science *Fall 2024*

Requirements Engineering Teaching Assistant – Oxford Dept. of Computer Science *Fall 2023*

Software Group Design Mentor – Oxford Dept. of Computer Science *Spring 2023*

C++ Programming Lab Demonstrator – Oxford Dept. of Engineering Science *Spring 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*
  Full-tuition scholarship for PhD studies
- **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

- **The Oxford RobotCycle Project: A Multimodal Urban Cycling Dataset for Assessing the Safety of Vulnerable Road Users**
  Efimia Panagiotaki, Divya Thuremella, Jumana Baghabrah, Samuel Sze, Lanke Frank Tarimo Fu, ***Benjamin Hardin****, Tyler Reinmund, Tobit Flatscher, Daniel Marques, Chris Prahacs, Lars Kunze, Daniele De Martini*
  IROS 2025, IEEE Transactions on Field Robotics
  PDF
- **(Pre-print) A Framework for the Assessment of Psychological Safety in Autonomous Vehicles**
  Yandika Sirgabsou, ***Benjamin Hardin****, François Leblanc, Efi Raili, David Jackson, Pericle Salvini, Lars Kunze, Marina Jirotka*
  PDF

- **(Pre-print) AV-PsySafe: A risk model and analysis method for the psychological safety of human and autonomous vehicles interaction**
  *Yandika Sirgabsou, **Benjamin Hardin**, François Leblanc, Efi Raili, Pericle Salvini, David Jackson, Marina Jirotka, Lars Kunze*
  PDF
- **Human Involvement in Autonomous Decision-Making Systems. Lessons learned from three case studies in aviation, social care and road vehicles**
  *Pericle Salvini, Tyler Reinmund, **Benjamin Hardin**, Keri Grieman, Carolyn Ten Holter, Aaron Johnson, Lars Kunze, Alan Winfield, and Marina Jirotka*
  Frontiers in Political Science
  PDF
- **A Cross-Sectional Examination of Evictions in Lafayette, Indiana in August 2020 during a Gap in Federal and State Eviction Moreatoria**
  Mary Lang, Justin MacNeill, Ethan Edwards, Ethan Glaser, Benjamin Hardin, Jared Huber, Elizabeth Spyratos, Jason Ware
  Local Development & Society Journal
  PDF
- **DCnet: Evaluation of a New Data Center Architecture**
  Benjamin Hardin, Douglas Comer, Adib Rastegarnia
  2023 Innovation in Clouds, Internet, and Networks (ICIN)
  PDF
- **On the Unreliability of Network Simulation Results From Mininet and iPerf**
  Benjamin Hardin, Douglas Comer, Adib Rastegarnia
  2023 International Conference on Computer, Control, and Robotics (ICCCR)
  PDF

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 teaches, 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.

Augmented Reality Tutorials – ETH Zürich *Spring 2022*
- Built a Microsoft HoloLens app in Unity to allow a user to record AR tutorials that can be shared with other HoloLens users.
- Records the users hands for interactive playback and features a LiDAR object scan to add user-defined objects to the tutorial.

Natural Language File Searcher – CS592 Human-AI Interaction tool study *August 2021 – December 2021*
- Integrated Stanford SEMPRE 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 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 – June 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.