

# Karina LaRubbio

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Doctoral Student

Sociotechnical Systems and Wellbeing Research Lab (SWRL)

Center for Technological Responsibility, Reimagination, and Redesign ([CNTR](#))

Department of Computer Science

Brown University

## Education

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### Ph.D. in Computer Science

Brown University

Advisor: Dr. Diana Freed

September 2024 -

### B.S. in Computer Science

University of Florida

Honors: Summa Cum Laude, University Honors Program

May 2024

## Experience

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**Graduate Student Researcher**, Computer Science, Brown University

September 2024 -

**Research Assistant**, Computer Science, University of Florida

January 2021 -

- Senior Honors Thesis

May 2024

*Demographic Bias in Eye Movement Biometrics in VR for Users with Visual Impairments* (Committee: Dr. Eakta Jain, Dr. Steven Weisberg, and Dr. Benjamin Lok): Analyzed differences in eye movement biometric identification rates between users with and without visual impairments to elucidate privacy inequities.

- *Experience of Users with Visual Impairments in Virtual Reality* (Advisor: Dr. Eakta Jain): Interviewed participants with strabismus and amblyopia on their perceptions of gaze-based interaction in VR. Collaborated on qualitative data analysis to propose inclusive design guidelines from user perspectives.
- *Mitigating Harassment in Virtual Reality* (Advisor: Dr. Eakta Jain): Conceptualized and led an investigation on the impact of personal space boundaries on task performance and feelings of safety in VR. Designed and implemented experiment environments in Unity, then conducted data analysis using R.
- *Gaze-Based Authentication for Workers in Virtual Reality* (Advisor: Dr. Eakta Jain): Interpreted feedback from nuclear engineers to implement a VR training simulation in Unity.

Streamlined a radial basis function network in Matlab to use gaze for authentication in varied task environments, achieving up to 82% accuracy.

**Research Assistant**, Psychology, University of Florida January 2023 -  
December 2023

- *Spatial Navigation in Virtual Reality* (Advisor: Dr. Steven Weisberg): Adapted virtual environments in Unity to study the psychology of spatial navigation. Guided participants through cognitive exercises using PsychoPy and virtual reality with HTC Vive headsets.

**Science Undergraduate Laboratory Intern (SULI)**, Manufacturing Demonstration Facility, Oak Ridge National Laboratory Summer 2023

- *Manufacturing Data Visualization*: Visualized machine data using Unity for HoloLens to improve operator awareness of manufacturing processes. Leveraged gaze tracking to allow extracting insights on operator behavior and visual information usage.

**Digital Technology Intern**, General Electric Power Spring 2022

- *Software Architecture Project*: Enhanced application deployment frequency by applying CI/CD through Jenkins and Agile software principles. Piloted an MVP dashboard using JavaScript and PowerShell queries to detect software vulnerabilities.

## Teaching

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**Teaching Assistant**, Computer Science, University of Florida August 2022 -  
May 2024

- *Operating Systems* (Instructor: Dr. Alexandre Gomes de Siqueira): Instructed 50 students weekly on concepts including memory management and scheduling.
- *Programming Fundamentals I* (Instructor: Lisha Zhou): Instructed 30 students weekly on object-oriented programming concepts.

**Teaching Assistant**, College of the Arts, University of Florida August 2021 -  
December 2021

- *Research and Creativity* (Instructor: Dr. Anne Donnelly): Mentored 30 first-year students in research skills including literature reviews and oral presentations. Moderated interdisciplinary faculty research panels.

## Leadership

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**Member**, [Dream Team Engineering](#), University of Florida September 2021 -  
May 2024

- *Executive Director of Membership*: Expanded to reach >200

undergraduates interested in creating biomedical technologies for UF Health hospitals and the surrounding community.

- *Diabetes VR Team Captain*: Created a VR game with pediatric endocrinologists at UF Health to enhance education for diabetes patients. Guided a team of 5 peers through learning Unity with C# for Meta headsets and coordinated biweekly sprint cycles.

**Study Abroad Peer Advisor**, [International Center](#), University of Florida

January 2023 -  
May 2024

- Aided prospective study abroad students in locating resources such as program information and financial aid.

## Awards

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Cottmeyer Family Scholarship, University of Florida	2023
University Scholars Program, University of Florida	2023
IEEE VR Bridge to VR Scholarship, IEEE	2021, 2022
University Honors Program, University of Florida	2020-2024
University Research Scholars Program, University of Florida	2020-2024
Presidential Scholarship Recipient, University of Florida	2020
Elks Foundation Most Valuable Scholar Semifinalist	2020

## Publications

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**K. LaRubbio** and E. Jain. “Demographic Bias in Eye Movement Biometrics in VR for Users with Visual Impairments,” in *University of Florida Undergraduate Honors Theses Collection*, University of Florida, 2024, <https://ufdc.ufl.edu/AA00098509/00001/pdf>.

**K. LaRubbio**, E. Wilson, S. Koppal, S. Jörg and E. Jain, “Give me some room please! Personal space bubbles for safety and performance,” in *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, IEEE, 2023, pp. 897-898, <https://doi.org/10.1109/vrw58643.2023.00291>.

**K. LaRubbio**, J. Wright, B. David-John, A. Enqvist and E. Jain, “Who do you look like? - Gaze-based authentication for workers in VR,” in *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, IEEE, 2022, pp. 744-745, <https://doi.org/10.1109/vrw55335.2022.00223>.

## Presentations

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**K. LaRubbio** and E. Jain, “Gaze Based Authentication in Virtual Reality for Users with Visual Impairments,” University of Florida Undergraduate Research Symposium,

Gainesville, FL, April 2024. (poster).

**K. LaRubbio**, E. Wilson, S. Koppal, S. Jörg, and E. Jain, “Give me some room please! Personal space bubbles for safety and performance,” University of Florida Undergraduate Research Symposium, Gainesville, FL, April 2023 (poster).

**K. LaRubbio**, E. Wilson, S. Koppal, S. Jörg, and E. Jain, “Give me some room please! Personal space bubbles for safety and performance,” IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Blacksburg, VA, March 2023 (poster).

**K. LaRubbio**, J. Wright, B. David-John, A. Enqvist, and E. Jain, “Who do you look like? Gaze-based authentication for workers in VR,” University of Florida Undergraduate Research Symposium, Gainesville, FL, April 2022 (poster).

**K. LaRubbio**, J. Wright, B. David-John, A. Enqvist, and E. Jain, “Who do you look like? Gaze-based authentication for workers in VR,” IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), remote, March 2022 (poster).

**K. LaRubbio**, M. LoGalbo, B. David-John, A. Enqvist, and E. Jain, “Investigating Virtual Reality’s Capability in the Future of Nuclear Reactor Training” University of Florida Undergraduate Research Symposium, Gainesville, FL, April 2021 (poster).