Paean Luby

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Education

Ph.D., Informatics
Indiana University Bloomington, IN, 2025-Present (anticipated May 2030)
B.S., Computer Science, Psychology (Neuroscience Concentration); GPA: 3.95
B.A., Latin American, Latino, and Iberian Studies; GPA: 4.00
University of Richmond, VA, 2021-2025
Hispanic Studies (Study Abroad)
University of Alcalá, ES, Spring 2024
Honors: Departmental Honors in Computer Science, Richmond Scholar (full tuition, room and board), Phi Beta Kappa inductee

Technical Skills

Programming languages: C#, C++, Java (Concurrent Programming), MIPS Assembly, Python
Software packages: Unity3D, Robot Operating System, Oracle SQL Developer
Laboratory skills: Qualitative and quantitative data analysis and collection, fluorescent imaging, immunohistochemistry, machine learning

Research

Departmental Honors Project in Computer Science **Aug 2024 – May 2025**
Human Computer Interaction Lab, University of Richmond, VA
PI: Dr. Mmachi Obiorah

- Independently designed and executed a study comparing spatial interfaces of the Tower of London Task (i.e. virtual reality, physical, and online versions) with over 30 participants.
- Programmed a virtual reality version of the Tower of London task in Unity3D.

Visiting Researcher **May 2023 - Present**
Addison Care Lab, New Mexico State University, NM
PI: Dr. Michael C. Hout

- Programmed and deployed a virtual reality game in Unity3D on over 50 participants as a proof of concept for training search-and-rescue workers.
- Wrote SQL scripts in Oracle SQL Developer for processing output files and visualized pilot data.

Undergraduate Research Assistant **Jan 2022 - Present**
Behavioral Neuroscience Lab, University of Richmond, VA
PI: Dr. Kelly Lambert

- Mounted, coverslipped, imaged, and quantified blood vessels using light thresholding and machine-learning-based software.
- Designed and implemented pre-clinical study comparing behavioral and neurological effects of exposure to virtual and physical enriched environments.

Undergraduate Research Assistant **Aug 2022 - May 2025**
Visual Cognition Lab, University of Richmond, VA
PI: Dr. Arryn Robbins

- Helped run 52 participants on the eye tracker and expanded original analyses of guidance and verification with linear mixed models examining category variability, accuracy during training, and frequency of exposure as predictors of search performance.

REU Research Scholar **June - Aug 2023**
NIMBUS Lab, University of Nebraska-Lincoln, NE
PI: Dr. Justin Bradley, Dr. Dung Hoang Tran

- Trained and tested three object detection algorithms with varying levels of computational efficiency (YOLOv5n, YOLOv5s, and YOLOv5m).
- Deployed weights on TurtleBot in custom computer simulation of household environment and evaluated each algorithm's performance in following a human actor.

Publications and Presentations

For "in preparation" articles, all data has been collected, and articles are in the process of being revised.

Kent, M.H., Crockett, B., Narayanan, A., Dilandro, I.G., **Luby, P.**, Wagner, A.G., Mauco, A., Handford, G., Hunter, R., Richter, T., Richardson, J., Harding, O., Hartvigsen, S.C., Jacob, J.C., & Lambert, K.G. (2025). Comparative neurobiology of vigilance and stress adaptation systems in wild and laboratory rodents (*Rattus norvegicus*). *Frontiers in Ethology*.

Hartvigsen, S., Hooper, M., Harding, O., Barringer, E., Dilandro, I., Narayanan, A., Crockett, B., Shatalov, Y., Tome, B., **Luby, P.**, Wixted, B., Kent, M., & Lambert, K.G. (2025). A rodent model of enhanced anticipation of positive events: Sex-specific enhancements in cognitive bias and emotional resilience. *Frontiers in Behavioral Neuroscience* (manuscript in final review).

Luby, P., Tome, I., Ferrell, M., Hartvigsen, S, Kent, M., & Lambert, K. G. (2025). Rewiring reality: How virtual and physical spaces reshape *R. Norvegicus* neuroplasticity (manuscript in preparation).

Mathis, A., **Luby, P.**, Robbins, A., White, B., Hout, M. (2025) Measuring Visibility and Effects during Wilderness Search in Virtual Reality (manuscript in preparation).

Evdokimov, A., Enikeeva, A., **Luby, P.**, & Robbins, A. (2024). How scientists use webcams to track human gaze. *Frontiers for Young Minds*. 12:1259404. doi: 10.3389/frym.2024.1259404

Luby, P., Tome, I., Ferrell, M., Hartvigsen, S, Kent, M., & Lambert, K. (2025). Rewiring reality: How virtual and physical spaces reshape *R. Norvegicus* neuroplasticity. *Poster presented at the International Behavioral Neuroscience Society Annual Meeting in Tromsø, NO (June 2025)*

Luby, P., Mathis, A., White, B., Penn, R., Robbins, A., & Hout, M. C. (2024). Using virtual reality to simulate wilderness search and rescue 'clue-finding' tasks. *Poster presented at the 32nd OPAM in New York City, NY (November 2024)*

Luby, P., Richardson, J., Gomez-Sanchez, E., Gomez-Sanchez, C., Harding, O., Kent, M., Hartvigsen, S., & Lambert, K. (2024). The potential impact of environmental complexity on cerebrovasculature in wild and laboratory *R. norvegicus*. *Poster presented at the 15th International Congress for Neuroethology in Berlin, DE (July 2024)*

Luby, P., Bradley, J., & Tran, D. H. (2023). Comparing object detection algorithms for computationally constrained human-following robots. *Poster presented at the Nebraska Summer Research Program Symposium in Lincoln, NE (Aug 2023)*

Luby, P., Shatalov, Y., Richardson, J., Gomez-Sanchez, E., Gomez-Sanchez C., Harding, O., Kent, M., Hartvigsen, S., & Lambert, K. (2023). Beyond the neurons: Cerebrovascular comparisons in wild-trapped and laboratory rats (*Rattus norvegicus*). *Poster presented at the International Behavioral Neuroscience Society Annual Meeting in Niagara Falls, ON (June 2023)*

Luby, P., & Robbins, A. (2023). Category variability provides challenges to learning and search performance. *Poster presented at the 23rd Annual Meeting of the Vision Sciences Society in St. Pete's, FL (May 2023)*

Luby, P., & Robbins, A. (2023). Category variability provides challenges to learning and search performance. *Poster presented at the North Carolina Conference on Cognition in Winston Salem, NC (Feb 2023)*

Professional Development

President and Founder **Jan 2022 – May 2025**

Girls Who Code, University of Richmond, VA

- Oversee delegation and administration of funding, media, and curriculum plans for semesterly networking, volunteer, competitive coding, and community-building events.
- Guide weekly meetings to build community among members and organize events.

Videography Consultant **Sept 2021 – May 2025**

Technology Learning Center, University of Richmond, VA

- Provide software and equipment consulting for production of posters, audio, video, graphics, virtual reality, and 3D objects.

Drill Instructor **Aug 2022 - April 2023**

Latin American, Latino, & Iberian Studies Dept., University of Richmond, VA

- Prepared and led biweekly oral exercises and examinations for intensive intermediate and beginner Spanish.

Awards and Honors

Award for Outstanding Research in Computer Science **April 2025**

University of Richmond, VA

- Awarded annually to the student excelling in computer science focused undergraduate research or scholarship, as determined by the department faculty.

Award for Outstanding Research in Psychology **April 2025**

University of Richmond, VA

- Awarded annually to the student demonstrating exceptional research aptitude in psychology or neuroscience., as determined by the department faculty.

Dickinson Award **March 2024**

University of Richmond, VA

- Selected for $1,500 grant given annually to a rising senior or seniors for a research proposal deemed meritorious by a panel of faculty in Psychology.

Summer Research Program 2nd Place **Aug 2023**

University of Nebraska-Lincoln, NE

- Voted 2nd place of 124 undergraduates' projects at the 2023 Nebraska Summer Research Symposium, according to peer and expert scores.

National Eye Institute Early Career Scientist Travel Grant **May 2023**

Vision Sciences Society Meeting, FL

- Received a $500 grant to attend the 2023 Vision Sciences Society meeting.

B. Lewis Barnett III Award for Outstanding Service **April 2023**

University of Richmond, VA

- Chosen by the computer science faculty for embodying Dr. Lewis Barnett's dedication to the Department and University, a recognition based on my leading role in the University's Girls Who Code chapter and its campus and community engagement.