Priyankari Perali

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EDUCATION

Texas A&M University, College Station, Texas
Master of Science, Computer Science May 2025
Thesis: *Unprompted Touch by a Victim with a Search and Rescue Robot*
Advised by: Robin Murphy, Ph.D

The Ohio State University, Columbus, Ohio
Bachelor of Science, Computer Science and Engineering (Artificial Intelligence) May 2022
Humanitarian Engineering Scholar

PUBLICATIONS

1. **Priyankari Perali***, Thomas Manzini*, Raisa Karnik, and Robin Murphy. *A Benchmark Dataset for Spatially Aligned Road Damage Assessment in Small Uncrewed Aerial Systems Disaster Imagery*. Proceedings of the AAAI Conference on Artificial Intelligence. 2026. (**AAAI**) (*equal contribution)
2. Thomas Manzini, **Priyankari Perali**, and Robin Murphy. *Deploying Rapid Damage Assessments from sUAS Imagery for Disaster Response*. In the Thirty-Eighth Annual Conference on Innovative Applications of Artificial Intelligence. 2026. (**IAAI**)
3. **Priyankari Perali** and Robin Murphy. *Unprompted Touch with Touch Surface Characteristics: A Survey*. 2025. ACM Transactions on Human-Robot Interaction 15 (1), 1-30 (**THRI**)
4. Atif Mohammed Ashraf, **Priyankari Perali**, Hyun-Gee Jei, Joseph W Hendricks, Thomas Manzini, Vanessa Nasr, S. Camille Peres, Farzan Sasangohar, Maryam Zahabi, and Robin Murphy. *Investigating a Real-Time Adaptive System*. 2025 (*Under Review*)
5. **Priyankari Perali***, Thomas Manzini*, Robin Murphy, and David Merrick. *Challenges and Research Directions from the Operational Use of a Machine Learning Damage Assessment System via Small Uncrewed Aerial Systems at Hurricanes Debby and Helene*. In 2025 International Conference on Robot & Human Interactive Communication. 2025 (**RO-MAN**) (*equal contribution)
6. **Priyankari Perali***, Thomas Manzini*, Raisa Karnik, Mihir Godbole, Hasnat Abdullah, and Robin Murphy. *Non-Uniform Spatial Alignment Errors in sUAS Imagery From Wide-Area Disaster*s. In 2025 International Conference on Robot & Human Interactive Communication. 2025 (**RO-MAN**) (*equal contribution)
7. Thomas Manzini, **Priyankari Perali**, Jayesh Tripathi, and Robin Murphy. *Now you see it, Now you don't: Damage Label Agreement in Drone & Satellite Post-Disaster Imagery*. In Proceedings of the 2025 ACM Conference on Fairness, Accountability, and Transparency (pp. 1998-2008) (**FAccT**)
8. Thomas Manzini**, Priyankari Perali**, Raisa Karnik, and Robin Murphy. Crasar-u-droids: A large scale benchmark dataset for building alignment and damage assessment in georectified suas imagery, 2024. (*Under Review*)
9. Thomas Manzini, **Priyankari Perali**, and Robin R Murphy. *Three challenges in utilizing machine learning to predict human behavior from observational data*. In Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction, pages 737–739, 2024 (**HRI Late Breaking Report**)
10. **Priyankari Perali***, Lance G Fletcher*, Andrew Beathard, and Jason M O'Kane. *A visibility-based escort problem*. In 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), pages 4804–4811. IEEE, 2023. (*equal contribution)

RESEARCH EXPERIENCE

U.S. DEVCOM Army Research Laboratory, Aberdeen Proving Ground, MD September 2025 – Present
Machine Learning Research Engineer with Parsons Corporation

- Developing adaptive training frameworks and neuro-symbolic representations for improved signal modulation classification models
- Implementing uncertainty-aware adaptive learning frameworks for signal noise ratio and modulation classification models
- Developed and maintained a distributed training code base on HPC

U.S. DEVCOM Army Research Laboratory, Aberdeen Proving Ground, MD June 2025 – August 2025
Research Intern for the Resource Constraint Adaptive Computing (RCAC) Group

- Developed data fusion models for perception and language models on-device for UGVs in constrained and complex environments
- Optimized VLMs and LLMs with quantization techniques (e.g., AWQ), enabling inference on-device deployments within field deployments
- Achieved 50% reduction in GPU memory usage, expanding deployment options to lower-cost devices
- Evaluated performance trade-offs using ROS Bag data from field testing; visualized results with RVIZ

Texas A&M University, College Station, TX January 2023 – June 2025
Graduate Research Assistant for the Humanitarian Robotics and Artificial Intelligence Laboratory (HRAIL)

- Curated CRASAR-U-DROIDS, the largest dataset of drone orthomosaic disaster imagery for building damage and road damage assessments, and spatial alignment
- Extended dataset with satellite and crewed aerial imagery for multimodal model training; released open source via Hugging Face
- Evaluated distribution differences across image sources to improve transparency and fairness in ML models
- Developed 3+ PyTorch Benchmark models (CNNs, Transformers, etc.), achieving 150% relative improvement over baseline models
- Reduced model inference times to 5 minutes, aiding emergency decision-making
- Deployed developed damage assessment models for disaster response operations for 2 disasters with PEMA and the Florida State Emergency Response Team
- Defined ML objectives with a 6-person multidisciplinary team for predicting human error in high-risk environments
- Built data pipelines and ML models predicting human behavior in procedural tasks, improving predictions by 2x over baseline models
- Led human subject studies to evaluate 4 robot designs via a within-subject study consisting of 34 participants
- Conducted qualitative and quantitative analysis from video-coded and questionnaire responses to determine statistical significance and participant affective impressions
- Organized STEM outreach, introducing 310 + students to machine learning and computer vision for disaster response

WORK EXPERIENCE

Cardinal Health, Columbus, OH May 2021 – August 2021
Information Technology Intern for the Digital Solutions Team

- Centralized Cardinal Health's external and internal data sources with Google Cloud Platform (GCP), minimizing data retrieval time
- Built AtScale-based data visualizations and integrated data pipelines, supporting machine learning-driven supply chain optimization
- Developed SQL-based ETL pipelines within Google Cloud Platform (GCP), accelerating data availability for business intelligence dashboards

Huntington National Bank, Columbus, OH June 2020 – August 2020
Programmer Intern

- Resolved 10+ software vulnerabilities using Veracode, strengthening internal loan application security
- Migrated internal SharePoint site, increasing resource accessibility for 8+ employees
- Redesigned internal Huntington employee resources, easing navigation for 100+ employees

Northwoods, Dublin, OH January 2018 – May 2018
Student Intern

- Implemented and contributed testing code to test Northwoods' web and mobile services of social services

SKILLS

- **Programming & Scripting:** Python, R, C++, Java, C, SQl, HTML, JavaScript
- **Frameworks & Tools:** PyTorch, TensorFlow, CUDA, Google Cloud Platform (GCP), AtScale, RVIZ, ROS, ROS.2.0, Git

TALKS, PRESENTATIONS & PRESS

CLARKE: IA que transforma el rescate tras huracanes con drones y mapas inteligentes — October 2025
Telemundo Houston [News Interview]

Texas A&M Researchers use AI and drones to speed up disaster response — July 2025
KBTX News [News Interview]

Optimizing Vision Language Models for Situation Awareness within Resource-Constrained Environments — July 2025
U.S. DEVCOM Army Research Laboratory Symposium [Presentation]

Computer Vision/Machine Learning and Human-Robot Interaction for Disaster Response — June 2025
U.S. DEVCOM Army Research Laboratory, Aberdeen Proving Ground [Talk]

Using AI to Assess Hurricane Damage — November 2024
Weather Geeks Podcast [Podcast Interview]

CRASAR: A Large Scale Benchmark Dataset for Building Alignment and Damage Assessment in Georectified sUAS Imagery — September 2024
Military Operations Research Society (MORS) [Talk]

CRASAR: A Large Scale Benchmark Dataset for Building Alignment and Damage Assessment in Georectified sUAS Imagery — August 2024
MIT Lincoln Laboratory [Talk]

Unprompted Touch Interaction between a Victim and Search and Rescue Robot in a Disaster — April 2024
Texas Regional Robotics Symposium (TEROS) [Presentation]

Three Challenges in Utilizing Machine Learning to Predict Human Behavior from Observational Data — March 2024
Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction [Presentation]

SERVICE, LEADERSHIP & TEACHING

Disaster Action Team Volunteer — February 2026 - Present
American Red Cross

Master's Data Science Capstone Mentor — January 2025 – May 2025
Carnegie Mellon University

Website Co-Chair, Society of Women Engineers — August 2021 – May 2022
The Ohio State University

Peer Mentor, Humanitarian Engineering Scholars Program — August 2021 – May 2022
The Ohio State University

Teaching Assistant for Intro to C++ Programming — January 2020 – January 2022
The Ohio State University

Professional Development Co-Chair, Humanitarian Engineering Scholars Program — August 2019 – May 2020
The Ohio State University

REVIEWS

AAAI AI+HADR Symposium 2026
ACM/IEEE International Conference on Human-Robot Interaction 2026
AAAI Social Impact Track 2026
IEEE/RSJ International Conference on Intelligent Robots and Systems 2024
ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Reports 2024

AWARDS

Texas A&M University CSE Department Scholarship — August 2022

First Place, First-Year Engineering Design Showcase Track Competition — May 2019