

## Research Interests

Advancing human-AI collaboration through the development of interactive, socially adaptive robots. Focusing on robot learning via multimodal systems, reinforcement learning, and human feedback.

## Education

2021–2025 **Washington State University, Honors College**, Pullman, Washington USA  
GPA 3.96 B.S. in Computer Science, Minor in Mathematics  
Thesis: Retrieval-Augmented Generation (RAG) using Knowledge Graphs and Vector Search

## Honors & Awards

- 2023 **CS Research Mentorship Program Scholar, Google Research**  
Accepted to a three-month program that matches students with Google mentors and peers to support their pursuit of computer science research pathways.
- 2023 **Generation Google Scholarship**  
Awarded based on the strength of each candidate's commitment to diversity, equity, and inclusion, demonstrated leadership, and academic performance.
- 2023 **National Institute of Health Fellowship - MARC**  
NIH-funded opportunity for undergraduate students from underrepresented backgrounds to embark on a two-year scientific research program, leadership development, and graduate-school preparation.
- 2021 **National Institute of Health Fellowship - ESTEEMED MIRA**  
NIH-funded unique opportunity for undergraduate students from underrepresented groups planning to major in biomedical science and engineering fields.

## Conference Publications

- C2 **Test-Driven Code Generation using LLMs via Bayesian Optimization**  
S. Tomar, A. Deshwal, **E. Villalovoz**, M. Fazzini, H. Cai, J. R. Doppa  
(in submission) ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA), 2025
- C1 **Social Triangles and Aggressive Lines: Multi-Robot Formations Impact Navigation and Approach**  
A. Bacula, **E. Villalovoz**, D. Flynn, A. Mehta, H. Knight  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023

## Professional Experiences

- 2023–Present **Washington State University**, Pullman, Washington USA  
Undergraduate Research Assistant, Advised by Janardhan Rao Doppa, Haipeng Cai  
Analyzed security vulnerabilities in LLM-generated code and applied Bayesian optimization to enhance prompt accuracy for secure and functionally correct code generation.
- Summer 2024 **Carnegie Mellon University**, Pittsburgh, Pennsylvania USA  
Robotics Institute Summer Scholars, Advised by Henny Admoni  
Developed hierarchical reward learning systems leveraging Bayesian inference and human feedback to align autonomous systems with human preferences and improve adaptability in dynamic settings.
- Summer 2023 **Google**, Sunnyvale, California USA  
STEP Intern, Advised by Arun Tej Chennadi, Paul Valdez  
Optimized internal database processes with C++ and SQL, reducing runtime by 66% and enhancing data visualization through real-time dashboards and dynamic graphs.
- Summer 2022 **Oregon State University**, Corvallis, Oregon USA  
Robots in the Real World, Advised by Heather Knight  
Developed geometric features for multi-robot expressive motion, integrating performing arts techniques to enhance robot character and intelligence.

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## Teaching

- Spring 2025 **CPT\_S 315: Introduction to Data Mining**  
Undergraduate Teaching Assistant, Washington State University
- Fall 2024 **CPT\_S 350: Design and Analysis of Algorithms**  
Undergraduate Teaching Assistant, Washington State University
- Fall 2023 **CPT\_S 355: Programming Language Design**  
Undergraduate Teaching Assistant, Washington State University
- Fall 2022 **CPT\_S 121: Program Design and Development C/C++**  
Undergraduate Teaching Assistant, Washington State University

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## Outreach

- 2022–Present **WSU VCEA**, Voiland College Ambassador  
Represented and connected Voiland College with industry, alumni, and prospective students, sharing unique experiences and perspectives to promote the college’s mission and transformative impact.
- Summer 2024 **CMU RISS RoboLaunch**, Website Coordinator  
An initiative to explore the world of robotics through a series of talks and interactive workshops. Responsible for updating the website to ensure accessibility and provide up-to-date information.
- 2021–2023 **WSU Responsibility Opportunity Advocacy Respect (ROAR)**, Peer Ally  
Collaborated with ROAR students by providing support in attending classes, facilitating social integration, participating in university events, and fostering inclusive experiences.

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## Technical Skills

### Programming Languages

C/C++, Python, HTML/CSS, Haskell, MATLAB, L<sup>A</sup>T<sub>E</sub>X, C#, SQL, R

### Developer Tools

VS Code, VS Community, Xcode, CLion, PyCharm, RStudio, Google Colab

### Technologies/Frameworks

Robot Operating System, PyTorch, Scikit-learn, TensorFlow, CUDA