

BEATRICE A. CASEY

1234 N. Eddy Street, Apt. 410, South Bend, Indiana, 46617 • Tel: (609) 712-4088 • Email: beatrice.casey@gmail.com
<https://www.linkedin.com/in/beatrice-casey-undphd/>

EDUCATION

University of Notre Dame , College of Engineering PhD Program	Notre Dame, IN
PhD in Computer Science and Engineering	Expected 2027
Advisor: Dr. Joanna Cecilia da Silva Santos	
University of Notre Dame , College of Engineering	Notre Dame, IN
Masters of Science in Computer Science and Engineering, GPA: 3.67	August 2022-December 2025
Bucknell University , College of Arts and Sciences	Lewisburg, PA
Bachelor of Science in Computer Science with a Minor in Physics	August 2018 – May 2022
Honors: <i>Arthur J. Schmitt Presidential Leadership Fellow</i>	Awarded August 2022
<i>Presidential Fellow</i>	August 2018 – May 2022
<i>Alpha Lambda Delta</i>	February 2019 – May 2022

SKILLS AND INTERESTS

Programming Languages: Python, Java, C

ML & Security: PyTorch, serialization, adversarial ML, static analysis, threat modeling

Quantum: Qiskit, D-Wave Ocean SDK, hybrid quantum-classical systems

Research: Empirical methods, grant writing and management, technical writing

Project Management: stakeholder communication, team leadership, meeting deadlines

Languages and Sports: French, Tennis, Golf

RESEARCH EXPERIENCE

Core PhD Research Areas: Machine Learning supply chain security • Quantum applications to software security problems • serialization vulnerabilities

Work under grants from the Center for Quantum Technologies

Notre Dame, IN

Graduate Research Assistant

May 2026 – present

Q-DART: A Quantum-Based Framework for Real-Time Data Tampering Detection

- **Conceived and won** a competitive research grant (1 of 7 selected out of 37 total proposals) to detect data tampering in real time using hybrid quantum-classical ML (Projected Quantum Kernels and SVM). Continuation of prior year's work. (PI: Dr. Joanna C.S. Santos).
- Leading technical and experimental work.

Graduate Research Assistant

May 2025 – May 2026

TITAN: QuanTum Adversarial AtTack Detection

- **Conceived and won** a competitive research grant (1 of 9 selected out of 38 total proposals) to detect adversarial examples in NLP models using hybrid quantum-classical ML (Projected Quantum Kernels and SVM) (PI: Dr. Joanna C.S. Santos).
- Leading technical and experimental work.

Graduate Research Assistant

May 2024 – May 2025

QUE3N: Quantum-Enabled Software Exploit Synthesis to Detect Object Injection Vulnerabilities

- Led project on using Quantum Computing to detect object injection vulnerabilities in Java code.
- Used QUBO and quantum annealing to solve code constraints that classical computers struggle to solve.
- Developed proposal, presented project progress updates to industry advisors. Mentoring two undergraduate research assistants.
- One of only seven projects that were awarded a grant by the Center.

Work under grant from the Department of Homeland Security

Notre Dame, IN

Graduate Research Assistant

May 2023 – November 2023

- Expanding the National Vulnerability Database (NVD) with information on exploits of vulnerabilities.
- Leading the team on using machine learning to identify certain metadata in an exploit report from different sources, such as ExploitDB and GitHub, that would allow for replication of an exploit.
- Mentoring four undergraduate students throughout the project.

- Writing weekly and monthly reports on the status of the project, acting as a liaison between different teams, both within Notre Dame and with external institutions that were involved in the project.

Project Management

August 2022 – present

- Mentored **14 undergraduate students across 8 research projects**; led weekly syncs and kept projects on track towards publication goals.

Bucknell University

Lewisburg, PA

Researcher, The Social and the Human in Computing and Cognition Lab

August 2018 – May 2022

- Built a robot (Jetson TX2, ZED StereoLabs camera, iRobot Create 2) and wrote a program to teach the robot to learn in a virtual world.
- Used camera and Jetson to create a mesh of the robot's surroundings to build a virtual world in Minecraft, where it was taught to interact with the world around it.

Developer, Neurobiology Lab

May – August 2019

- Redesigned existing and wrote new code for a neurobiology lab for the PiSpy, a device designed to monitor organisms over intervals specified by the user and be affordable to all researchers.

University of Pennsylvania

Philadelphia, PA

Researcher

June – August 2017

- Worked on Stereo Vision and wrote code to calculate distributions of pixel intensities across images that underwent a census transform. Researched patterns of the distributions and how it can affect calculating an accurate Hamming distance.

PERSONAL PROJECTS

Co-Founder & iOS Engineer | Mon Amie: AI Style Journal & Social Platform

Launch in Fall 2026

- App is designed to help users understand their closet, what they own and whether they use it, and helps friends and followers shop outfit items in a familiar social interface.
- Built full iOS app in SwiftUI and Supabase with Anthropic Vision API integration.

Developer | ShelfPrep: AI-Powered Medical Exam Study Tool

Launch Winter 2027

- Designed and built a React web app for medical board exam preparation using the Anthropic API for adaptive question generation and explanations.
- Scoped and prototyped independently; identified as a viable product with clear user demand from medical residents.

INTERNSHIP EXPERIENCE

Facebook

Assigned to Menlo Park, CA (remote due to COVID)

Software Engineering Intern

May – August 2021

- Twelve-week internship. Worked on the Messenger Well-Being Experience Android team. Developed features to protect Messenger and Instagram users from abuse vectors, such as spam, illicit content, harassment and misinformation.

Intern - Facebook University for Engineers

June – August 2020

- Eight-week internship, with the first four weeks dedicated to an Android mobile development boot-camp, and the last four weeks dedicated to developing an app designed and built from scratch.

App development

- After the internship, finalized an Android app that was approved and published on Google Play.

January 2021

LEADERSHIP & SERVICE

Bucknell University

Lewisburg, PA

- ACM-W, *President* May 2021 – May 2022
- Alpha Phi Omega, *President* May 2021 – May 2022
- Computer Science Department, *Teaching Assistant* August – December 2019
- The Mentor Collective, *Mentor* August 2021 – May 2022
- Junior Fellow for Residential College, *Academic Mentor for first year students* August 2019 – May 2020

PUBLICATIONS AND REVIEWS

Published:

- **Beatrice Casey**, Kaia Damian, Andrew Cotaj, & Joanna C. S. Santos. (2026). “Towards Quantum-Based Detection of Adversarial Attacks in Natural Language Processing Systems.” IEEE International Conference on Quantum Computing & Engineering (QCE), September 2026.
- Mohammed Latif Siddiq, **Beatrice Casey**, & Joanna C. S. Santos. (2026). “Testing the Untrusted: An Empirical Study of Custom Model Codes in Model-Sharing Platforms.” IEEE/ACM International Conference on Software Engineering, April 2026.
- **Beatrice Casey**, Joanna C.S. Santos, & Andrew Hennesse. (2025). “Quantum-Based SMT Solving for String Theory.” Proceedings of the 34th International Symposium on High-Performance Parallel and Distributed Computing, July 2025. [QASAR Workshop] <https://dl.acm.org/doi/abs/10.1145/3731545.3744151>
- **Beatrice Casey**, Joanna C. S. Santos, & George Perry. (2025). “A Survey of Source Code Representations for Machine Learning-Based Cybersecurity Tasks.” ACM Computing Surveys, March 2025. <https://dl.acm.org/doi/full/10.1145/3721977>
- Mohammed Latif Siddiq, **Beatrice Casey**, & Joanna C. S. Santos. (2024). “FRANC: A Lightweight Framework for High-Quality Code Generation.” IEEE International Conference on Source Code Analysis & Manipulation, August 2024. <https://ieeexplore.ieee.org/abstract/document/10795381>
- Morris, B. I., Kittredge, M. J., **Casey, B.**, Meng, O., Chagas, A. M., Lamparter, M., Thul, T., & Pask, G. M. (2022). PiSpy: An affordable, accessible, and flexible imaging platform for the automated observation of organismal biology and behavior. *PloS one*, 17(10), e0276652. <https://doi.org/10.1371/journal.pone.0276652>

Preprints and Under Review:

- **Beatrice Casey**, Vinicius Carvalho Lopes, Mohammed Latif Siddiq, & Joanna C. S. Santos. (2026). “Test Transplantation for Custom Model-Loading Code in Open-Source Model Hubs.” (Under review at IEEE/ACM International Conference on Software Engineering)
- Mohammed Latif Siddiq, Tanzim Hossain Romel, Natalie Sekerak, **Beatrice Casey**, & Joanna C. S. Santos. (2026). “An Empirical Study on Remote Code Execution in Machine Learning Model Hosting Ecosystems.” <https://arxiv.org/abs/2601.14163> (Under review at IEEE/ACM International Conference on Software Engineering)
- Mohammed Latif Siddiq, Xinye Zhao, Vinicius Carvalho Lopes, **Beatrice Casey**, & Joanna C. S. Santos. (2026). “Security in the Age of AI Teammates: An Empirical Study of Agentic Pull Requests on GitHub.” <https://arxiv.org/abs/2601.00477> (Under review at Information and Software Technology)
- **Beatrice Casey** & Joanna C. S. Santos. (2025). “A Large-Scale Exploit Instrumentation Study of AI/ML Supply Chain Attacks in Hugging Face Models.” <https://arxiv.org/abs/2410.04490> (Under review at Transactions of Software Engineering)
- **Beatrice Casey**, Kaia Damian, Andrew Cotaj, & Joanna C. S. Santos. (2025). “An Empirical Study of Safetensors’ Usage Trends and Developers’ Perceptions.” <https://arxiv.org/abs/2501.02170> (Under review at Journal of Systems and Software)

Peer Reviews:

- *Manuscript Review*. Li, H. “Large Language Models and Secure Code Generation.” Wiley-IEEE Press, June 2026.
- *Proposal Review*. Li, H. “Large Language Models and Secure Code Generation.” Wiley-IEEE Press, June 2025.