Roya W. Parsa

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Education

Dartmouth College, Hanover, NH **Expected Fall 2027**
Master of Science, Computer Science
- Relevant Coursework: Machine Learning, Human Computer Interaction

Adelphi University, Garden City, NY **May 2025**
Bachelor of Science, Major Computer Science and Minor in Statistics **GPA 4.0/4.0**
- Relevant Coursework: Machine Learning, Artificial Intelligence, Computational Biology, Software Engineering

Research Interests

As a researcher, I am passionate about the application of advanced machine learning and computational science to address critical challenges in medical diagnosis and therapeutic precision. My current research areas of focus are:
- Developing and deploying deep learning models for real-time medical image analysis to enhance diagnostic precision
- Designing and validating robust computational models to improve the safety and reliability of radiation therapy
- Creating full-stack applications to automate complex clinical and research workflows

Publications

Comparative Robustness of SECT vs DECT Models in Proton Therapy Planning Under Systematic Errors

Roya Parsa**,** Dong Han in Preparation for the *American Association of Physicists in Medicine Annual Meeting (AAPM)*

SPR-Net: A Deep Learning Powered Workflow for Automated CT Analysis and Noise Reduction

Roya Parsa**,** Sixia Chen, Dong Han in Preparation for The Particle Therapy Co-operative Group Annual Conference (PTCOG)

Research Experience

Dartmouth College, Hanover, NH **Nov 2025 – Present**
Graduate Research Assistant (Hassanpour Lab)
- Spearheading a pioneering initiative to apply real-time residual learning models to ultrasound imaging, developing automated systems for the early and accurate detection of cervical cancer
- Designing deep learning architectures compatible of processing medical imaging data in real-time

New York Proton Center, New York, NY **Mar 2024 – Present**
Student Researcher, Computational Science
- Under the guidance of Dr. Dong Han, engineering computational models in Python to benchmark the robustness of dual-energy and single-energy CT models, rigorously testing performance against systematic errors, image artifacts, and low-energy differentiation scenarios
- Developed and implemented novel noise reduction algorithms to optimize proton therapy planning, resulting in enhanced model resilience under real-world conditions

Adelphi University / New York Proton Center, New York, NY **Apr 2024 – May 2025**
Undergraduate Thesis: SPR-NET - A Streamlined DECT Analysis Tool
- Alongside Dr. Dong Han and Dr. Sixia Chen, architectured a full-stack desktop application using Electron and FastAPI, creating an automated pipeline for DICOM processing that significantly improved the precision of material property estimation
- Designed and deployed a modified U-Net using Pytorch, achieving a 60% improvement in Stopping Power Ratio estimation for high-density materials compared to traditional methods
- Secured $4000 in research grant funding from the Honors College Summer Research Fellowship and selected to present findings on DECT denoising techniques at the Northeast Regional Honors Council

Work Experience

North Atlantic Industries, Bohemia, NY **Jun 2023 – Dec 2024**
Software Engineer Intern
- Developed a customer-facing documentation platform using React and Flask with searchable guides, register mappings, and a GPT powered chatbot, reducing support tickets by 50% and improving user self-service
- Automated nightly CI/CD pipelines for VxWorks 6.9 and 7 using Jenkins on a dedicated Linux Server, accelerating build times and supporting a company-wide cloud migration initiative
- Built a Python parser to extract function metadata from proprietary source code and auto-populate internal SQL databases, improving internal tooling and reducing manual documentation overhead

Pure Match, Remote **Dec 2022 – Apr 2023**
Mobile Frontend Engineer Intern

- Redesigned the Flutter messaging interface to enable message reactions, group chats, and match sharing, enhancing user engagement and social interaction within the app
- Developed a dynamic match discovery page in Flutter with swipe, skip, and shuffle functionality, increasing user retention and match interactions by 60%

Teaching Experience

Numerical Calculus (MTH 584), Adelphi University **Jan 2025 – May 2025**
Teaching Assistant, Instructor: Professor Anil Venkatesh

Algorithms and Complexities (CSC 344), Adelphi University **Aug 2024 – Dec 2024**
Teaching Assistant, Instructor: Professor Sixia Chen

Statistics and Data Analytics (MTH 225), Adelphi University **Jan 2024 – May 2024**
Teaching Assistant, Instructor: Professor Nara Yoon

Introduction to Programming (CSC 171), Adelphi University **Jan 2023 – May 2023**
Teaching Assistant, Instructor: Professor Michael Fernez

Coding Instructor, Coding Minds Academy **Jun 2022 – Oct 2022**
Python, Java, Flutter Instructor

Awards

Dartmouth Merit Scholarship ($52,255.50 / Year), *Guarini School of Graduate and Advanced Studies*
Mary Louise Buchanan Award, *Adelphi University Computer Science Department*
Dean's Circle, *Adelphi University College of Arts and Sciences*
Honors College Summer Research Fellowship ($4000), *Adelphi University Honors College*
Thomas Motamed Scholarship ($3000 / Year), *Adelphi University Honors College*
Richard Garner Scholarship ($3000 / Year), *Adelphi University Honors College*
Merit Scholarship ($13,000 / Year), *Adelphi University*

Leadership

Vice President
Graduate Equestrian Club - Dartmouth College
Vice President
Girls Who Code - Adelphi University
Vice President/Founder
Women in STEM - Adelphi University
PR Chair
National Society of Leadership and Success - Adelphi University
Web Developer
Honors Symposium - Adelphi University
Mentor
Honors College - Adelphi University

Skills

Languages: Python, R, JavaScript, HTML/CSS, SQL, Java, C, C++, Dart
Technologies/Frameworks: Numpy, Pandas, TensorFlow, PyTorch, SciKit-Learn, Electron, Flask, FastAPI, .NET, Flutter, React, NodeJS, ExpressJS, Bootstrap, SpringBoot, JavaFX, Firebase, AWS, Jenkins, Git, Docker