TAYLOR J. BROWN

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I'm passionate about creating meaningful technology, whether it's designing machine learning models to analyze planetary data or improving the performance of complex software systems. My background combines hands-on experience in high-performance computing, AI research, and software development. I've led technical projects, collaborated across teams, and found real satisfaction in turning ideas into working solutions. I'm always looking for opportunities to learn, solve tough problems, and contribute to innovative work that has impact.

EDUCATION

Associate in Applied Science, Major: Computer Programing & Development | Fayetteville Technical Community College | December 2022

- Graduated with HHR (Highest Honors)
- 4x Presidents List Award
- GPA: 4.0

Bachelor of Science, Major: Computer Science, Minor: Mathematics | Fayetteville State University | May 2025

- Current GPA: 4.0 | Summa Cum Laude
- 3x Chancellors List

CERTIFICATES & CLEARANCES

- SECRET Clearance | Expires in ~2 years.
- Hazmat Awareness | February 2017 to Present
- Hazmat Operations | February 2017 to Present
- Hazmat Technician | February 2018 to Present
- Information Technology Basics Certificate | July 2022
- C# Programming Certificate | December 2022
- Java Programming Certificate | December 2022
- Python Programming Certificate | December 2022
- Database Programming Certificate | December 2022
- Intro To iOS Development Using Swift Certificate | December 2022

EXPERIENCE

- **74D CBRN (Chemical, Biological, Radiological, Nuclear) Specialist | US Army | Exiting Rank: E4**
  October 2016 – January 2020

  During my time in the US Army for ~3.5 years, I've dealt with countless hands-on events both practical and theoretical pertaining to CBRN weapon usage and accidental hazardous material releases. I was also a team leader for PMT (preliminary monitoring team) where I had successfully trained 30+ soldiers on the step-by-step processes for PMT. During my contract I also taught 60+ service members on IET (initial entry team), sampling, constructing/close-out of effective decontamination lines all of which were congruent to the DOD's regulations and standards. Furthermore, I trained and informed fellow soldiers on the proper procedures and protocols for donning and doffing their PPE (For clarification I trained service members with the MOPP chemical protective uniform). I was also tasked with maintaining the DR-SKO (Dismounted Reconnaissance Sets, Kits, and Outfits) to keep proper accountability and function of the included equipment totaling over $1.8 million. In my duties during leadership transition periods, I assisted the IC (incident commander) with making decisions regarding procedures and the conduction of those procedures according to the applicable regulation guidelines (ATP 3-11.74). Prior to my departure from the military, I was assigned to the arms room as the NCOIC (Non-Commissioned Officer in Charge) where I was responsible for $8.1 million worth of weapons, ammunition, and other specialized gear (NVG's, Thermals, etc.). My main duties as the unit armorer were to maintain the quality of our firearms and gear as well as assigning and disseminating weapon systems and specialized gear to other service members within my unit.

- **ISL (Intelligent Systems Laboratory), Role: Researcher | Fayetteville State University | Fayetteville NC**
  September 2023 – July 2025

  At ISL, I have contributed to five research projects, serving as project lead on three. My work spans machine learning, computer vision, and high-performance computing with a focus on space science, remote sensing, and robotics. I have developed novel tools for dataset generation and led efforts in multi-view object detection and SAR-based surface analysis.

  IMPACT (Institute for Multi-agent Perception through Advanced Cyberphysical Technologies – NASA DEAP)
  Project Lead / Researcher

  As part of the IMPACT project, I led the development of a custom Tkinter-based dataset collection platform used to capture, label, and prepare training data for machine learning models. This tool significantly streamlined our image acquisition process and enabled consistent data annotation. I also trained multiclass image classifiers using convolutional neural networks (CNNs) to identify key features in planetary datasets. My work extended to hazard detection, including the application of machine learning models to wildfire identification and geological analysis using both Earth-based and planetary imagery.

  Object Matching Between Vantage Points (AOMRP/NASA M-STAR)
  Project Lead / Researcher

  In the AOMRP/NASA M-STAR project, I was responsible for enhancing an existing object-matching framework that interprets images captured from multiple vantage points and identifies object locations in 3D space. I optimized the project's software pipeline for both accuracy and performance, refactoring legacy components and improving algorithmic efficiency. This work supported real-time analysis and object correlation in multi-robot and multi-camera environments, enabling more accurate mapping and recognition across diverse viewpoints.

  Venus SAR Segmentation
  Project Lead / Researcher

  My work on the Venus SAR segmentation project focused on using deep learning models to analyze radar imagery from the surface of Venus. I trained binary semantic segmentation models using MaskFormer and Mask2Former to detect and label wrinkle ridges, a key geological feature. The models were designed to operate on Synthetic Aperture Radar (SAR) data, requiring specialized preprocessing and augmentation techniques to accommodate the unique properties

of radar imagery. I also participated in the evaluation of model outputs against hand-labeled datasets to validate detection accuracy and consistency with known geological data.

- **U.S. Department of Homeland Security | Summer Intern**
  Jun 2024 - Aug 2024

  During my internship with the DHS ORISE facility, I focused on improving the quality and completeness of water level monitoring data across the US East Coast, Gulf of Mexico, Puerto Rico, and the Virgin Islands. My objective was to address missing data in time series datasets, crucial for accurate environmental monitoring and coastal hazard management. I developed a comprehensive framework that combined pragmatic and advanced machine learning techniques to calculate distances between sensors, analyze correlations, and assess their relative intensity, which helped identify and fill data gaps, ensuring accuracy and reliability.

  I also visualized the results through maps and correlation matrices, providing insights into spatial relationships. This experience deepened my understanding of data imputation and machine learning models, particularly in environmental contexts, and honed my skills in data analysis tools. Additionally, a paper titled "Pragmatic and ML Approaches to Backfilling Missing Data within Time Series Datasets" that I co-authored has been published because of this internship. (DOI 10.1109/ICMLA61862.2024.00287)