Isaac Watts

VA, USA Isaac.s.watts@gmail.com 804-721-2007 isaac-watts-605105251 IwattsX

Professional Summary

I hold a Bachelor of Science in Computer Science and Mathematics (dual major) from Virginia State University, graduating summa cum laude. With a strong interest in data science, I have gained experience in machine learning and robotics through academic research projects and past internships. These experiences have developed my ability to work with complex technical systems and derive insights from structured and unstructured data. Outside of academics, I enjoy activities that reinforce logical thinking and pattern recognition, such as chess, puzzles, solitaire, and strategic gaming, which complement my analytical mindset.

Technical Skills

Programming Languages: Python, C, C++, Java, C#, Kotlin, MATLAB, JavaScript, TypeScript, LaTeX

Databases: Relational databases (MySQL, PostgreSQL, and SQLite) and Nonrelational databases (MongoDB)

Data Processing & BI Tools: Tableau, Power BI, Excel, Pandas, NumPy, Matplotlib, PyTorch

Version Control & Containerization: Git, GitLab, Docker

Operating Systems: Windows 11 and Ubuntu 22.04 (Linux)

Experience

Freelance App Developer *Petersburg, VA*
PNIRD *January 2025 – present*

- Designed a cross-platform medical application in React Native with TypeScript and JavaScript, integrating Pandas (Python) for ETL to improve accessibility to healthcare data.
- Implemented advanced search functionality by leveraging OpenAI word embeddings, PostgreSQL, and cosine similarity, cutting the query response time from seconds to milliseconds.
- Planned CI/CD integration with GitHub Actions to automate builds, testing, and deployment for future App Store releases.

Robotics Student Researcher *Adelphi, MD*
Army Research Lab *May 2024 – August 2024*

- Trained an AI agent using Unity observations to re-establish radio communications through reinforcement learning by simulating radio waves with C# via Unity Machine Learning Agents Toolkit (ML-agents) and Python (PyTorch and SciPy).
- Utilized Git with GitLab for version control by developing on a dedicated branch, thus successfully merging fixes and improvements into the main AI agent codebase.
- Executed the AI agent within Docker containers to maintain consistent runtime environments and streamline reproducibility across different systems and environments.

Tutor *Petersburg, VA*
Virginia State University *September 2023 – May 2024*

- Tutored peers in SQL, R, Python, and data-focused subjects such as discrete math, calculus, and statistics.

Robotics Student Researcher *Adelphi, MD*
Army Research Lab *May 2023 – August 2023*

- Developed an image processing tool to convert an 8-bit image to a 16-bit format. Compressed that 16-bit image using an image transport layer that allowed the data to be passed through the network using C++ (ROSCPP).
- Automated writing Robot Visualization files for multi-robot experiments by using a Python (ROSPY) automation script, resulting in no longer needing to manually do everything in an RVIZ GUI or file, boosting

productivity.

- Leveraged Ubuntu (Linux) to build and maintain a robust ROS1 Noetic environment, enabling reproducible multi-robot experiments and reducing system setup time.

Education

Virginia State University *GPA: 3.9*
Bachelor's Degree in Computer Science

- **Coursework:** Intro to Data Science, Probability & Statistics for CS, and Digital Image Processing

Virginia State University *GPA: 3.9*
Bachelor's Degree in Mathematics

- **Coursework:** Linear Algebra and Discrete Math

John Tyler Community College *GPA: 4.0*
Associates in General Studies

Projects

Data Visualizations from CDC dataset *Tableau Dashboard*

- Cleaned data and filtered out null values directly within Tableau to ensure accurate visualization.
- Built a multi-page dashboard exploring trends in chronic diseases by state (mainly Virginia), gender, and demographics.
- Leveraged Tableau's storytelling tools to highlight key insights on health disparities and risk factors.
- Designed interactive elements (filters, highlighters, parameter controls) for user-driven exploration.

Inverse Problem Modeling and Machine Learning *github.com/IwattsX/med_bodies*

- Simulated voltage readings from a circular mesh with an embedded inclusion using MATLAB for a training dataset, enabling a seamless training process.
- Trained a neural network in Anaconda Python using PyTorch to localize the inclusion from voltage patterns, employing ELU activation functions, MSE loss, and the Adam optimizer to achieve optimized training performance.

Robotic Arm Simulation using Isaac Sim *github.com/stars/IwattsX/lists/robotsim*

- Graphed hand data in Matplotlib (Python) that was generated from an Oculus Quest alongside Unity's game engine.
- Created and modified URDF files of a robot hand to visualize joint state data and control the joints.

Certificates

- **Getting Started with Data by IBM Skillsbuild** July 2025
- **ETL in Python and SQL** June 2025
- **Anaconda Python for Data Science Professional Certificate** May 2025
- **Statistics Foundations 1 and 3** May 2025
- **Learning Excel: Data Analysis** May 2025
- **MATLAB Programming Techniques** March 2025
- **MATLAB Fundamentals** February 2025

Publications

A Transformer Approach for Camera-to-LIDAR Data Registration October 2024
Ju Wang, Yong Tang, Venkat R. Dasari, Billy Geerhart, Brian Rapp, Peng Wang, Wei-Bang Chen, ***Isaac Watts***,

10.1109/IRI62200.2024.00072