Isaac Watts

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Professional Summary

Graduating summa cum laude with a Bachelor of Science in Computer Science and Mathematics from Virginia State University, I bring a strong foundation in software engineering principles, algorithms, and systems design. My academic and internship experiences have equipped me with hands-on skills in developing, testing, and deploying software applications, as well as collaborating in agile team-based engineering environments. I have also contributed to research in machine learning and robotics, further showcasing my ability to write clean, efficient code. Outside of academics, I pursue logic-based activities such as chess, puzzles, and strategy games which reinforce my ability to think critically, solve problems efficiently, and continuously improve my technical acumen.

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 and deployed a medical application using TypeScript, JavaScript, React Native, Python, and NPM, improving accessibility and usability for healthcare data.
- Implemented advanced search functionality by leveraging OpenAI word embeddings, PostgreSQL, and cosine similarity, cutting 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 the library PyTorch.
- 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

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.

Steam Scouts *github.com/IwattsX/Digi-Dynamics*

- Created a MySQL-backed Django web app to collect and explore Steam game metadata from Steam's web API.
- Parsed and stored structured data (e.g., game type, price, DLC) using Python and MySQL.
- Used SQL queries to enable filtering and querying by game type, release date, and content type.

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

- Created a ROS2 node using rclpy (Python) that publishes Joint State data using Omniverse's Isaac Sim and Isaac Lab, resulting in a ROS2 node that consistently publishes the correct Joint State data of the robot in the simulation.
- Graphed hand data in Matplotlib that was generated from an Oculus Quest alongside Unity's game engine.
- Created and modified URDF files of a robot hand to visualize and control the joints.

Certificates

- **ETL in Python and SQL** June 2025
- **Anaconda Python for Data Science Professional Certificate** May 2025
- **Learning Python (2021)** May 2025
- **MATLAB Programming Techniques** March 2025
- **MATLAB Fundamentals** February 2025
- **Intermediate Android Development Course for Virginia State University** December 2024

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