

# David A. Murphy

## Software Engineer

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### Professional Summary

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Enthusiastic Computer Science graduate with strong proficiency in **Python, Java, and C++**. Skilled in **problem-solving, logical thinking, and collaborative teamwork**. Driven by a passion for innovation and continuous learning, I thrive in dynamic environments, **valuing challenges and feedback as opportunities for growth**. Eager to contribute my skills to valuable projects and make a lasting impact in the tech industry.

### Education

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**Pennsylvania State University**

Received May 2025

B.S. in Computer Science

GPA: 3.51

### Technical Skills

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**Languages:** Python, C++, Rust, Git, Java, JavaScript, C#, Lua, MATLAB, Swift, SQL, HTML, CSS, Go, Kotlin

**Frameworks & Libraries:** Apriltags, React, FastAPI, ROS2, Redis, MongoDB

**Developer Tools & Environments:** Neovim, GitHub, Linux, Visual Studio, VS Code, PyCharm, SQL Server Management Studio

### Experience

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**Integration Services Engineer Intern**, IT Solutions Consulting, Inc. – Fort

May 2022 – Feb 2023

Washington, PA

- Built and configured **DataVaults (DVs)** to support **secure, high-performance** data storage solutions for diverse client needs.
- Authored clear and actionable **Standard Operating Procedures (SOPs)** for tasks such as **firewall software upgrades, switch configurations, and DV assembly**, enhancing consistency and compliance.
- Configured and optimized **network switches (Layer 2/3)** to ensure **efficient data flow and minimal downtime** across client environments.
- Utilized **ConnectWise** and **Kaseya** for **endpoint management, remote monitoring, and service ticketing**, streamlining operations and **improving incident response times**.

**Contracted Software Engineer**, Chestnut Hill College – Philadelphia, PA

Jan 2022 – Dec 2023

- Collaborated on **process automation initiatives** to improve data accuracy and quality assurance, directly contributing to stronger **data integrity** across systems.
- Performed regular **data audits** and implemented **data-cleaning scripts** to identify and resolve **duplicates, anomalies, and inconsistencies**, enhancing system reliability.
- Leverages **Microsoft Excel**, along with **scripting tools (Python, VBA, PowerShell)**, to **extract, transform, and load (ETL)** large datasets with a focus on **efficiency and scalability**.

### Projects

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**TurtleBot Swarm Intelligence (Sponsored by Lockheed Martin)**

github.com/dmrph

Contributed to a real-time swarm system using TurtleBots and Raspberry Pi for military-style search and rescue operations:

- Integrated sensors including **LiDAR, Vex Ultrasonic**, and **YOLOv8 Nano** (via **ONNX**) for real-time object detection, obstacle avoidance, and target recognition.
- Leveraged **AI agents** to interpret sensor input and autonomously adapt behaviors for dynamic and unstructured

environments.

- Implemented **Particle Swarm Optimization (PSO)** for decentralized swarm coordination and multi-target search efficiency.
- Designed and deployed a modular control system in **Python** using **ROS 2 Jazzy**, enabling inter-robot communication via a publish-subscribe model.
- Used **AprilTags** to enable relative positioning, robot identification, and alignment to a global reference frame for swarm coherence.
- Engineered reliable messaging and distributed logging using **Redis** (real-time broadcast coordination) and **MongoDB** (centralized mission state tracking).
- Validated system behavior through extensive simulation in **Gazebo** and unit-tested **ROS 2** agents with mocked hardware inputs to ensure robustness.

### DecibelDetect – Urban Noise Mapping App

github/dmrph

Designed a web platform that visualizes urban noise pollution using user-submitted decibel data:

- Built an interactive noise heatmap with **real-time data visualization**.
- Developed the frontend in **React**, allowing users to submit noise readings with location and timestamps.
- Integrated **Google Maps API** to geolocate noise hotspots across cities.
- Built and deployed a **FastAPI** backend for secure data ingestion, validation, and API endpoint handling.
- Prioritized **mobile-friendly** and accessible **UI/UX** to accommodate users of all experience levels.

### T5Summarize

github/dmrph

Fine-tuned and deployed a T5 model for summarizing news and long-form text:

- Fine-tuned **T5** on the **CNN/DailyMail dataset** for high-quality abstractive summarization.
- Built a **Streamlit** demo allowing users to input text and receive AI-generated summaries.
- Leveraged **Hugging Face Transformers**, **PyTorch**, and **Python** for model training and inference.
- Showcased model effectiveness across diverse input types, demonstrating real-world **NLP** capabilities.

## Honors

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Dean's List

The National Society of Leadership & Success