

# Jeremy Acheampong

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## Education

### University of Michigan - Ann Arbor

Ann Arbor, MI

Master of Science in Robotics

August 2024 - December 2025

**Relevant Coursework:** Math for Robotics, Programming for Robotics, 3D Robot Perception, Robotic Systems Laboratory, Artificial Intelligence Foundations, Advanced Computer Vision, Self Driving Cars

### Capital University

Bexley, OH

Bachelor of Arts in Mathematics

August 2020 - May 2024

**Relevant Coursework:** Intro to Computer Science, Algorithms and Data Structures, Intermediate Statistics, Introduction to Data Science, Linear Algebra, Calculus I-III, Differential Equations and Dynamical Systems

## Work Experience

### Software Development Engineer Intern

May 2025 - July 2025

Amazon AWS

Arlington, VA

- Built a scalable policy validation system using Apache Spark on AWS EMR to process authorization policies across multiple customer accounts, ensuring data integrity during system upgrades.
- Designed a distributed pipeline with DynamoDB, S3, and Step Functions to validate policies against evolving schema versions, enabling early detection of compatibility issues.
- Collaborated with product managers and senior engineers to deliver validation infrastructure that supports upcoming customer-facing features, improving system reliability.

### AI/ML Research Intern

May 2024 - August 2024

Air Force Research Laboratory

Dayton, OH

- Developed an algorithm for augmenting real, small-scale, and synthetic datasets for CNN training.
- Evaluated models trained on various data combinations to study generalization and classifier performance.
- Built a model assessment tool for evaluating and optimizing a classifier's accuracy.

### Research and Development Intern

July 2023 - August 2023

U.S. Army DEVCOM C5ISR Center

Fort Belvoir, VA

- Trained a YOLOv5 model on 1,000+ annotated LWIR images from FLIR Boson and DVE Wide sensors to detect anti-tank mines and personnel.
- Deployed model inference using PyTorch on Spot's onboard Jetson Orin, enabling near real-time detection with 85% precision and 66% recall.

## Selected Projects

### A Vision–Language Approach for Zero-Shot Door Handle Detection and Manipulation – [Report]

- Integrated Grounding DINO for zero-shot door-handle detection and ViLT for visual question answering to interpret door state and handle location.
- Used Boston Dynamics Spot SDK to execute autonomous manipulation, achieving 62.6% detection accuracy within 1 meter without task-specific training.
- Implemented fallback strategies to generalize across multiple door types and partially open door states.

## Technical Skills

**Languages:** Python, C++, R, Kotlin

**Technologies:** PyTorch, OpenCV

**Tools:** Git, Jupyter, NumPy, Singularity

**Concepts:** Computer Vision, Deep Learning, Robotics