

Joseph Blom

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EDUCATION

Northwestern University

Evanston, IL

Master of Science, Robotics

Expected graduation: Sept 2025

University of Wisconsin-Madison

Madison, WI

Bachelor of Science, Computer Science

Sep 2016 – May 2019

TECHNICAL SKILLS

Robotics: ROS2, Demonstration Learning, PyTorch, Embedded Systems, Gazebo, Simulation, OpenCV

Software: Linux, Python, C++, Java Spring, Golang, Angular, Typescript, HTML, CSS, REST APIs, SQL, React

DevOps: Git, AWS, Docker, Jenkins, Infrastructure as Code, Failover architecture, End-to-End testing, Agile

WORK EXPERIENCE

Capital One - Partnerships

Chicago, IL

Senior Associate Software Engineer: Full-Stack

Mar 2022 – May 2024

- Architected serverless REST APIs using Java, AWS Lambda, DynamoDB, and Route53 failover architecture.
- Coordinated cross-functional meetings to drive the initiative to improve agent servicing UI with Angular.
- Engineered serverless system of record for recording account data using REST APIs, Docker, ECS, and DynamoDB.
- Mentored junior engineers on Agile and Git workflow best practices.

Associate Software Engineer: Backend Microservices

Aug 2019 – Mar 2022

- Rewrote comprehensive test suite for microservice communication application using Mockito and Cucumber
- Transitioned Java APIs through Jenkins pipeline migrations using Docker and microservice based architecture.
- Optimized commission calculation script using MySQL and Python to improve agent performance.
- Managed rewrite of collections website in Angular and Typescript to modernize customer experience.

PROJECTS

Collaboration Learning Robot (C++, ROS2, Demonstration Learning, Concurrency, Sensor Integration)

- Parallelized C++ live admittance control with demonstration learning based cost map to assist users with tasks.
- Integrated ROS2 to support Python based data analysis in secondary threads for live analytics.
- Implemented an ergodic control system to continuously plan through task space and provide task guidance.

Pool Playing Franka Emika Robot Arm (Python, ROS2, OpenCV, MoveIt, APIs)

- Led team to develop ROS2 MoveIt API wrapper for interfacing with Franka Emika Robot Arm.
- Directed design for robot task space using april tags, TF, and RVIZ.
- Created demonstration and control loop in Python and MoveIt.

Live Aerial Crowd Detection System (Python, Machine Learning, Mavlink, Ardupilot)

- Trained neural network based vision model to detect objects of interest from aerial photography.
- Placed detections in physical world with live updates using system that works with any vehicle.
- Computed coverage area for groups of detected objects with both real time and historic views.

SSO Identity Provider (Java, OIDC, REST API, Jenkins, AWS)

- Implemented OIDC industry standard for API communication with custom identity provider for partner use.
- Deployed SSO identity service with serverless infrastructure, caching, and enterprise service simulations.
- Built a custom, containerized Infinispan stack in Docker to cache partner requests behind layers of resiliency.

CERTIFICATIONS

Amazon Web Services

AWS Certified Solutions Architect - Associate

Jan 2021