

Joseph Blom

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EDUCATION

Northwestern University	Evanston, IL
<i>Master of Science, Robotics</i>	<i>Expected graduation: Sept 2025</i>
University of Wisconsin-Madison	Madison, WI
<i>Bachelor of Science, Computer Science</i>	<i>Sep 2016 – May 2019</i>

TECHNICAL SKILLS

Robotics: ROS2, Deep Learning, PyTorch, Embedded Systems, Motion Planning, Gazebo, RVIZ, Control Systems

Software: Python, C++, OpenCV, Java Spring, Go, Linux, Angular, Typescript, REST APIs, SQL, Concurrency

DevOps: Git, AWS, Docker, Jenkins, Failover architectures, Unit testing, End-to-End testing, Resiliency Testing

WORK EXPERIENCE

Capital One - Partnerships	Chicago, IL
<i>Senior Associate Software Engineer: Full Stack</i>	<i>Mar 2022 – May 2024</i>
<ul style="list-style-type: none">Designed and implemented serverless REST APIs in Java used to interact with partnerships databases.Led development to allow partners to waive fees through Capital One's agent servicing UI with Vue.Developed serverless system of record for recording account data using Docker, ECS, and DynamoDB.	
<i>Associate Software Engineer: Backend Microservices</i>	<i>Aug 2019 – Mar 2022</i>
<ul style="list-style-type: none">Transitioned credit card APIs through Jenkins pipeline migrations and collaborated on resiliency exercises.Optimized commission calculation script using MySQL and Python to improve team performance.Managed rewrite of collections website in Angular and Typescript to modernize customer experience.	

PROJECTS

Negative Reinforcement Based Ergodic Motion Planner (C++, ROS2, Machine Learning) (In progress)

- Integrating live admittance control into reinforcement learning based cost map.
- Constructing an ergodic control system to continuously plan through task space.
- Refining code with goal of publishing an open source ROS2 ergodic control package.

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

- 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.
- Wrote 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.
- Combined pose of vehicle with orientation of camera to place detections in physical world with live updates.
- Computed coverage area for groups of detected objects with both real time and historic views.

Rewards Tracker Web Component (Angular, HTML5, CSS, Typescript)

- Organized project to create Angular component to display rewards in web clients for North American users.
- Fetches HTML layouts from external teams so different styles could be generated dynamically.

CERTIFICATIONS

Amazon Web Services	
<i>AWS Certified Solutions Architect - Associate</i>	<i>Jan 2021</i>