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, Deep Learning, PyTorch, Embedded Systems, Motion Planning, Gazebo, RVIZ, Control Systems

Software: Linux, Python, C++, OpenCV, 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

WORK EXPERIENCE

Capital One - Partnerships   Chicago, IL
Senior Associate Software Engineer: Full Stack   *Mar 2022 – May 2024*
- Designed SSO identity provider using terraform based deployments for AWS Lambda APIs and Route53 routes.
- Coordinated development to allow partners to waive fees through Capital One's agent servicing UI with Vue.
- Engineered serverless system of record for recording account data using Docker, ECS, and DynamoDB.
- Mentored junior engineers on Git workflow best practices.

Associate Software Engineer: Backend Microservices   *Aug 2019 – Mar 2022*
- 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

Reinforcement Based Ergodic Motion Planner (C++, ROS2, Machine Learning) (In progress)
- Integrating C++ live admittance control into reinforcement learning based cost map.
- Developed ROS2 Integration to support Python based data analysis.
- Implemented an ergodic control system to continuously plan through task space.

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.
- 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.

Rewards Tracker Web Component (Angular, HTML5, CSS, Typescript)
- Organized project to create Angular component to display rewards in web clients for North American users.
- Fetched HTML layouts from external teams so different styles could be generated dynamically.

CERTIFICATIONS

Amazon Web Services
AWS Certified Solutions Architect - Associate   *Jan 2021*