

Axel Wickman

Applied Machine Learning Robotics



Summary

AI scientist and robotics engineer with 4+ years of experience developing and deploying end-to-end AI systems on physical robots. Specialized in reinforcement learning, vision-language models, perception systems, and high-performance distributed computing. Proven track record building production-grade robotic manipulation systems, autonomous navigation, and large-scale ML infrastructure. Strong systems engineering expertise with PyTorch, ROS2, and modern MLOps workflows.

Core competencies

AI & ML Reinforcement Learning (PPO, DQN, NAF), Vision-Language Models (ViT, UNet, NERF, Guassian Splatting), language embeddings, Supervised & Self-Supervised Learning, PyTorch, Burn	Robotics Manipulation (ABB IRB, FlexPicker), Navigation, Perception, Simulation (own, Gazebo, Unity), Path Planning, ROS2, Industrial Robotics
Software Engineering Python, C++, Rust, Distributed Systems, Multi-threading, High-performance Computing, Docker, Linux	Leadership & collaboration Technical Consulting, Team Management, Mentorship, Agile practices, end-to-end development

Experience

Dyno Robotics

Robotics Software Developer

Remote :: Aug 2022 → Jun 2025

Consultancy role and Dyno's first full time hire. Implemented both experimental prototypes projects, and in-production solutions.

- Developed and deployed to live [golf-ball picking range covering robots](#). Designed auto-update system, and made general contributions to the ROS2 and behavior tree stack.
- Developed a [robotic saffron manipulation system](#) using ABB IRB and FlexPicker robots. Worked with ROS2, Rust motion planning controller, and RobotStudio, integrating UNets, Gaussian Splatting, and custom path planning. Implemented an automated sorting solution within an industrial production pipeline.
- Managed team of project for machine learning landmine detection using drone-mounted hyperspectral cameras. Explored supervised, unsupervised, and self-supervised methods for both automatic detection and sensor fusion for human pilot.
- Designed and implemented a full-scale ATS job-candidate matching system emphasizing privacy, fairness, explainability, and scalability. Developed ETL pipelines to process large volumes of historical and incoming recruitment data, and trained a PyTorch neural network to evaluate every potential job-candidate pairing, an almost brute-force approach that gave the recruiting firm a measurable advantage over competitors.

Omegapoint

Software engineering consultant

Stockholm, Sweden :: Aug 2021 → Jun 2022

- Participated the Academy Professional trainee program. Mainly full-stack development with a focus on Cyber Security. Built various administrative systems using Typescript and the Azure Cloud. Domain Driven Design principles, and Agile development. Designed, built and deployed the CyanoAlert app, a cross-platform tool for checking Cyanobacteria levels.

Dyno Robotics for Saab Aeronautics

Candidate thesis

Linköping, Sweden :: Jan 2021 → Aug 2021

Paper: Exploring feasibility of reinforcement learning flight route planning (2021)

Investigated and implemented methods for planning flight routes in virtual 3D environments in hostile environments. We evaluated the ability of classical pathfinding against various reinforcement learning algorithms to find safe routes through the world towards goals. [Video](#).

- Implemented OpenGL renderer, world generator and aerodynamic simulation.
- Large C++ project with massive CPU multi-threading with synced GPU ML
- Own implementations of DQN, NAF, and PPO in LibTorch and TorchScript.1

Wolfram
Mathcore

Modelica & C++ Developer

Linköping, Sweden :: Jun 2020 → Aug 2020

Developed first version of a plug-in for Wolfram SystemModeler which enabled communication with ROS1, enabling control real world devices and other ROS-enabled environments.

- C++ with cross-platform Interprocess Communication, including lots of ROS-message introspection and deserialization logic.
- Demo of balancing pendulum controller with Q-table implemented in Python.

Other Experience

Robot
association
Linköping
University

Project lead

Linköping, Sweden :: Dec 2019 → May 2021

Service robotics project for humanoid robot Pepper. Was responsible for person detection first year, and became project manager for the 7-person group in autumn 2020. This brought with it challenges of leadership, team motivation, system architecture, and sub-system integration. In July 2019, we competed at RoboCup in Sydney, Australia.

- Person detection using DensePose, input sanitation through ConvNets, and tracker with Kalman filter. Classification and autoencoders were investigated.
- As lead, achieved more modularity, understandability, and faster onboarding times through deep restructuring of the legacy code base, by upgrading to ROS2, and by containerizing environments using Docker Compose.

Education

Linköping
University

Cognitive Science (Candidate 180hp)

Linköping, Sweden :: Aug 2017 → Jun 2021

An interdisciplinary program that outlines both the philosophical and empirical aspects of human thought and emotion. The main specializations are scientific methods, Psychology, Neuroscience and AI.

- General AI course. Classical and neural nets. Project in simulated evolution.
- Language technology. Project in own temporal t-SNE applied on Reddit data.

Escola
Politécnica
da USP

Polytechnic exchange studies

São Paulo, Brazil :: Aug 2019 → Dec 2019

Studies abroad for academic and cultural exchange. Courses were in Portuguese.

- AI course treating mathematical fundamentals and Prolog programming.
- Data science methods. Project in stock prediction using supervised learning.
- Virtual Reality course with game development in Unity3D.

Polhemsskolan

Technology program

Gävle, Sweden :: Aug 2014 → Jun 2017

Specialized in IT. Classes up to levels of Mathematics 5 and Physics 2.

- Received a scholarship from Tekniska Föreningen Gävle for project simulating and visualizing synaptic STDP-learning in spiking neural networks.

Languages

Swedish	Native speaker
English	Fluent, C2
Portuguese PT/BR	Intermediate, B2

Other qualifications

Drivers license	Swedish Type B
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