

# Axel Wickman

## Applied Machine Learning Robotics



### Summary

I am a driven generalist programmer who enjoys development all the way from abstract idea, to concrete and value-providing solution. Programming for 14 years, I have wide experience in a range of languages and technologies, but specialize in AI for real world contexts. I am a communicative person and enjoy working in, and occasionally leading teams. I am looking to work on meaningful projects that have real world impact.

### Skills

			Typescript	Svelte	FastAPI
			Rust	WebAssembly	SLAM
			C++	Blender	OpenCV
			Python	3D printing	ABB RobotStudio
			PyTorch	Unity	OpenAPI
			Linux	IPC	Kafka
			Docker	Parallelization	Redis
			ROS2	Qdrant	Postgres
	Core skills	Areas		Technologies	

### Experience

#### Dyno Robotics

##### Robotics Software Developer

Remote :: Aug 2022 → Jun 2025

Consultancy role, implementing both experimental prototypes projects, and in-the-field (often literally) solutions.

- 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.
- Developed and deployed to live wide-area 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, and RobotStudio, integrating UNets, Gaussian Splatting, and custom path planning. Implemented an automated sorting solution within an industrial production pipeline.
- Led software side of project for machine learning landmine detection using hyperspectral cameras. Explored supervised, unsupervised, and self-supervised methods.

#### 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.
- Implementing payment flows in Java.

#### Dyno Robotics for Saab Aeronautics

##### Candidate thesis

Linköping, Sweden :: Jan 2021 → Aug 2021

##### 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.

- Implemented OpenGL renderer, world generator and aerodynamic simulation.
- 12,000+ lines of C++ with massive CPU multi-threading in synergy with GPU
- Own implementations of DQN, NAF, and PPO in LibTorch and TorchScript.

**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 ROS, enabling control real world devices and other ROS-enabled environments.

- C++ with cross-platform Interprocess Communication.
- Demo of balancing pendulum controller with Q-table implemented in Python.

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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.

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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.

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Languages

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

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Other qualifications

<b>Drivers license</b>	Swedish Type B
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