

Gustaf Rydholm

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Experience

Software Engineer

Nexure/Electrolux AB

Stockholm, Sweden, Aug 2021 – present

- Develop and maintain microservices for payments and subscriptions.
- Take part in architectural design discussions.
- Participate in the code review process.
- Contribute to the infrastructure with updates to k8s resources and AWS resource management via Terraform.
- Monitor logs for bugs in different environments, e.g. staging and production.

Keywords: Microservices, Kubernetes, Infrastructure, Helm, CI/CD, Kotlin, Spring, AWS, Terraform

Machine Learning Engineer (Cyber Security)

Saab

Stockholm, Sweden, Aug 2020 – Aug 2021

- Created data mining pipelines for extracting, cleaning, and creating datasets for machine learning models, i.e. train/test sets.
- Was a driving force in making the system more asynchronous using message passing between microservices, by deploying and maintaining a Kafka instance. This improved the architecture by allowing multiple services to subscribe to incoming sensor data and process the information, instead of fetching the data from databases in batches.
- Developed a modular pipeline for training and evaluating deep learning models with different architectures and/or losses. Automatic extraction of the best model based on user defined metric, ready for serving.
- Built and deployed deep learning models for multi-modal trajectory predictions in production.
- Took initiative and deployed and maintained a private Python Package Index (PyPI) for all developers. Greatly improving the development workflow, e.g. forcing versioning, and reducing/eliminating cross dependencies between on-premise developed Python packages.
- Developed a graph algorithm for sensor fusion. Deployed it as a microservice listening to incoming sensor data. This enabled more complex pattern analysis in downstream services.
- Reduced the docker image size of the Python microservices from 2 GB to 73 MB by utilizing multistage builds and alpine base images.
- Built pipelines for CI/CD and packages deployment in Tekton.
- With my docker images and pipelines we were able to reduce the average build times from 10-30 minutes down to seconds, mostly thanks to improved caching capabilities.

Keywords: Deep Learning, Python, Microservices, Kubernetes, Infrastructure, Helm, CI/CD

Machine Learning Engineer (Electronic Warfare)

Saab

Stockholm, Sweden, Aug 2018 – Aug 2020

- Built simulation software for generating realistic signal environments with both radar and/or communication signals. Implemented the most common signal encoding for communications, as well as basic to SOTA radar modulations. This enabled the team to develop and evaluate different machine learning models and ideas.
- Researched machine learning models in different stages of the radar warning receiver, with regards to compute and data limitations.
- Held in several presentations of machine learning papers in a company reading group.
- Shared the knowledge of implementing and using machine learning to multiple business areas within Saab.

Keywords: Deep Learning, Signal Processing, Python, VHDL

Education

KTH Royal Institute of Technology

Master of Science in Electrical Engineering

2013 – 2018

Undergraduate and graduate course within electrical engineering.

Imperial College London

Electrical and Electronic Engineering

2016 – 2017

Exchange year during my M.Sc.

Personal Projects

Unix Sysadmin

Ongoing

I self host many applications, such as: email, website, git server, encrypted chat server (xmpp), and calendar.

Text Recognizer

Ongoing

Reimplemented the Full Stack Deep Learning course with best practices in Python. I started this project to develop the best structure for PyTorch projects. But now it keeps me motivated to experiment with new architectures and read up on the latest research developments, e.g. self supervised learning, vision transformers, multi-modal models.

Keywords: PyTorch, PyTorch Lightning, Hydra, Nox, Poetry, Pyenv, Python

Trading Robot

Ongoing

I am currently working on a algorithmic trading system with signal processing and convex optimization. I mostly done literature study and data collection so far.

Technical Skills

Programming

Haskell – Familiar

Just started picking up Haskell and I find it incredibly inspiring.

Rust – Familiar

Limited experience, written some web-services for work.

Python – Fluent

Used it for almost a decade; web services, scientific computing, you name it.

Scripting

Shell – Proficient

Used it for various small tasks, e.g. adding functionality to my operating system.

Lua – Fluent

Used extensively while configuring Neovim and creating plugins.

Fennel – Proficient

I rewrote my Neovim config since I wanted to learn the Lisp syntax.

Markup

LaTeX – Fluent

Mastered it during my university years.

HTML – Familiar

Working knowledge, I used it for my personal website.

Databases & Message Brokers

NoSQL – Intermediate

I have experience with both MongoDB and Redis.

SQL – Intermediate

I have experience working with PostgreSQL and TimescaleDB.

Kafka – Intermediate

Deployed and maintained a Kafka instance in a private cloud.

Machine Learning

PyTorch – Proficient

Used extensively for +6 years.

PyTorch Lightning – Proficient

Used with PyTorch for +3 years.

Miscellaneous

Git – Proficient

I have used Git for +8 years and I host my own Git server.

Kubernetes – Experienced

I have worked with Kubernetes since 2019, self-hosted and at cloud providers.

Terraform – Intermediate

Used it at work for updating infrastructure and deploying k8s.

Containers – Proficient

I have in depth knowledge of the concept. I work with Docker daily, and I enjoy building the most efficient Dockerfiles possible, e.g. multi-stage builds.

CI/CD pipelines – Proficient

Experience with Tekton, CircleCI, GitHub actions.

Architecture

I adhere to the Unix and Suckless philosophy. I found the book *Tao of Microservices* to be really inspiring, as he presents a framework to design microservices from first principles.

Operating Systems

I use Artix Linux, OpenBSD, and macOS.

General Skills

Languages

- Swedish – native
- English – C2