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

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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 improve 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 listing 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 where 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

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

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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 task, 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 by 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