Emil Johansson

Software Engineer · Embedded Systems · Backend

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Summary

I have an M.Sc in Mathematical Physics, and my interests include, but are not limited to, Linux and open source software, cryptocurrencies, quantum mechanics, and machine learning,. I have a year of experience in creating novel deep learning applications in physics during which I received the "NanoLund Junior Scientist Ideas Award". At ÅF I have been working with the IT security company Advenica, creating network segmentation solutions for critical infrastructure. My current assignment is at a large international undisclosed company developing in the backend using Scala, TypeScript, and Python.

In my spare time, I like to go hiking, read interesting articles and tutorials, work on private programming projects, and tinker with computers. An example is a Raspberry Pi that is running a network-wide ad-blocker, Plex media center, personal git repositories, and personal file storage. Many of my skills originate from learning in my spare time.

Skills

Programming	Python, Linux, Scala, Continious Integration, TypeScript, C/C++, LaTeX, git
Machine Learning	TensorFlow, Keras, Google Cloud
Languages	Swedish, English

Experience

Backend applications

Malmö, Sweden

Undisclosed — *Feb. 2018 - present*

- Working in the backend using Scala, TypeScript, and Python.
- Learning a lot about continious integration, the challenges of handling complexity in software, and working with aliging the work to create maximal value for the customer in large organisations.

IT security solutions for critical infrastructure

Malmö, Sweden

Advenica — *Sep. 2018 - Dec. 2018*

- Levering GNU/Linux and C/C++ knowledge as a consultant, developing support for a new protocol to their network segmentation products for critical infrastructure.
- Learned a lot about the challenges of adopting agile development practices and continuous integration in a security focused IT environment.

Applying Machine Learning to mathematical physics

Lund, Sweden

Lund University, Solid State Physics, Theoretical Physics, and Mathematical Physics — *Sep. 2017 - Aug. 2018*

- Explored novel ways to reformulate constrained optimization into machine learning, the results was interesting enough to warrant the "NanoLund Junior Scientist Ideas Award"
- Used to Google Cloud to fast scale up and down as demand for computational power (both CPU and GPU) changed during the project.

Full Stack Web Application

Lund, Sweden

Private Project — *Mar. 2017*

- Created a proof-of-concept "Wikipedia band name generator" web site levering public APIs, python code, cloud hosting, and flask to automatically generate silly band names and cover art.

IOS and Desktop QT Application

Lund, Sweden

Private Project

Sep. 2016

- My interest in automation resulted in that creating a Sudoku solver app seems more fun than solving Sudoku manually so that is what I did.
- Learned about connecting and separating back end a front end logic as well as the QT framework

Numerical Simulations of Nunneries

Lund, Sweden

Lund University, Mathematical Physics

Sep. 2016

- I wrote a code based on a quantum transport simulation library named Kwant, simulating the effects of different contact geometries on conductivity in nanowires.
- First interaction with one of my now favorite design patterns. Writing performance critical function calls in c/c++ and exposing them as python functions for the high level logic.

Education

Lund University

Lund, Sweden

M.Sc in Physics

Sep. 2016 - Jun. 2018

Focus on theoretical physics and computational physics using machine learning.

Lund University

Lund, Sweden

B.Sc in Physics

Sep. 2013 - Jun. 2016

Focus on computational and mathematical physics.

Employment

ÅF – Embedded Systems

Malmö, Sweden

Software Developer

Sep. 2018 – Present

Lund University, Faculty of Engineering

Lund, Sweden

Project Assistant

Jun. 2018 – Aug. 2018

Lund University, Faculty of Engineering

Lund, Sweden

Exercise Tutor

Sep. 2017 – Nov. 2017

Honors & Awards

2018 **NanoLund Junior Scientist Ideas Award**, For M.Sc project exploring novel applications of machine learning. *NanoLund*

2013 **Swedish Junior Water Price.**, Award for high school degree project. *Stockholm International Water Institute.*

Writing

Teaching a Neural Network Quantum Mechanics. A Deep Learning Approach to the N-Representability Problem.

M.Sc thesis.

Author

2018

https://lup.lub.lu.se/student-papers/search/publication/8951887

Numerical simulations of contact geometry effects on transport properties of semiconductor nanowires

B.Sc thesis.

Author

2016

https://lup.lub.lu.se/student-papers/search/publication/8878322