Erik Wallin – CV

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About me

I'm a physics student in Lund (Sweden) going into experimental particle physics, with a great interest for programming and mathematics. My main interests in programming are scientific programming, from my physics background, and graphics programming. I have a passion for particle physics,

Education

2017- Bachelor degree in general physics (ongoing).
Courses that I've enjoyed have been: Linear functional analysis, discrete mathematics with coding theory, theoretical particle physics with field theory, quantum physics, differential/Riemannian geometry and ring/group theory.

Experience

Jan 2020 - May 2020 Thesis project - Autoencoders for compression of ATLAS trigger jets

This project entailed the exploration of using machine-learning techniques, mostly autoencoders, to do data compression of particle jets at the ATLAS experiment at CERN. It is supervised by Caterina Doglioni at Lund Uni. I'm currently maintaining the Github repository of it, which also serves as a basis for a Google Summer of Code project supervised by Caterina Doglioni as well.

Skills: Deep learning, PyTorch, programming for particle physics, evaluation of neural networks for real-time computing constraints.

Jan 2018 - Ongoing The computer society at Lund University and the Faculty of engineering at Lund University
President (Jan 2018 -) / System administrator (Jan 2019 -)

As system administrator I've been responsible for the maintenance of the society's about 10 servers and networks. As president I've been responsible for the administrative tasks of the society, ultimately keeping 50 servers running under our network.

Skills: UNIX/Linux, Bash scripting, web servers and Apache, system administration, basic networking

April 2019 - Ongoing The wind-orchestra AMC Bleckhornen
IT-responsible and web developer

As IT-responsible I maintain the orchestras webpage, mail and internal services for the orchestra. I continue to develop these, both front-end web development and back-end web server programming.

Skills: PHP, HTML/CSS, SQL (MySQL), server- och network administration

Skills

- **Programming languages**

  With great experience:
  Python, having worked with: Scientific computation (Numpy) , scripting, web server programming (Flask), machine learning (PyTorch)
  C++, having worked with: Graphics programming (the low-level rendering pipeline, OpenGL), parallel programming (OpenMP, MPI), Make/CMake
  With experience:
  C#: Game programming
  With some programming:
  C
  PHP: Web server programming
  Bash: Linux scripting for system administration

- **Other skills**

  SQL: SQLite and MySQL
  Mathematics: Experience with formal mathematics and some complexity theory for programming. Fourier analysis, differential geometry, ordinary differential equations (ongoing course in dynamical systems), coding theory, and abstract algebra (discrete mathematics and an ongoing course in ring and group theory).
  Statistics: statistical mechanics and from machine learning contexts

Personal interests

- **Music, plays classical french horn**
- **Architecture photography**
- **Languages, currently learning German and Japanese**
- **Mathematics, especially abstract algebra**