

Daniel Holmberg

Data Science Student

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Experience

Machine Learning Engineer

CERN

📅 July 2021 – present 📍 Geneva, Switzerland

- Work on Kubeflow, a cloud-native machine learning service for training, versioning and serving of models
- Develop scalable particle physics usage samples

Research Assistant

Helsinki Institute of Physics

📅 Nov 2020 – Jan 2021 📍 Helsinki, Finland

- I research how jet energy corrections can be performed using graph neural network regression under the guidance of Dr. Henning Kirschenmann and Associate Prof. Mikko Voutilainen.

Software Engineer

Fjuul Vision Oy

📅 March 2020 – March 2021 📍 Helsinki, Finland

- Full stack development for the Fjuul health application
- Used a range of Google Cloud services such as BigQuery, PostgreSQL and Cloud Functions
- Integrated the Withings tracker into the Fjuul platform, which involved implementing oauth handshake, API subscriptions, data retrieval, setting up data tables using Terraform, and updating the app frontend.

Research Assistant

University of Helsinki

📅 May – June 2018, May – Aug 2019 📍 Helsinki, Finland

- Assisted Dr. Antti Kuronen and Dr. Pekko Kuopanportti on the project *Atomistic modeling of kinetics on surfaces and interfaces of iron-chromium alloys*, where I tested the performance of new interatomic potentials for different compositions of the Fe-Cr alloy using molecular dynamics simulations.

Teaching Assistant

University of Helsinki

📅 March – May 2018, 2019, 2020 📍 Helsinki, Finland

- Helped students with their homework in the bachelor's course on special theory of relativity

Private Teacher

Uplus Yksityisopetus Oy

📅 January 2017 – May 2018 📍 Helsinki, Finland

- Tutoring in mathematics, physics and chemistry

Education

M.Sc. Data Science

University of Helsinki

📅 2019 – present

- Thesis title: *Jet Energy Corrections with Graph Neural Network Regression*
- GPA: 4.3/5

B.Sc. Physics

University of Helsinki

📅 2016 – 2019

- Thesis title: *Interatomic Potentials for Simulating Fe-Cr*
- GPA: 4.3/5

Studentexamen

Ekenäs Gymnasium

📅 2013 – 2016

- Laudatur: Chemistry, English, History
- Eximia cum laude approbatur: Math

Organizations

Managing Editor

Spektrum rf

📅 2021

- Oversee student paper publication process
- Wordpress admin for the website spektrum.fi/spektraklet
- Keep members up to date on social media

Vice-Chairman

Nyland Brigade Conscript Committee

📅 2018

- Hosted meetings for conscript representatives and officers to discuss current affairs at the brigade
- Arranged working life events and a study fair with some 20 universities and polytechnics
- Visited other finnish brigades together with our chairman to keep joint Conscript Committee meetings

Publications

- P. Kuopanportti, M. Ropo, **D. Holmberg**, H. Levämäki, K. Kokko, S. Granroth, A. Kuronen. *Interatomic Fe-Cr potential for modeling kinetics on Fe surfaces*, *Computational Materials Science* journal (2022), doi: 10.1016/j.commatsci.2021.110840.

Workshops

Kubeflow Facilitator

CMS ML Forum

📅 November 2021

- Helped phycisists run deep learning workflows as scalable jobs on cern's internal cloud resources
- Developed hyperparameter-tuning configuration files for Kubeflow

Participant

CMS Data Analysis School

📅 January 2021

- Learned about high energy physics software from researchers at Fermilab
- Hands-on exercises ending with a detailed physics measurement on top-quark mass

Helper

CodeRefinery

📅 May – June 2020

- Advancing research software development FAIRness (findability, accessibility, interoperability, and reusability) through CodeRefinery, a project within the Nordic e-Infrastructure Collaboration
- Participant of the June 2020 CodeRefinery instructor training in collaboration with Delft University of Technology
- Helper at the first online mega-CodeRefinery workshop

Projects

Atmospheric Aerosol Modeling

INAR

- Predicted aerosol concentrations using ML based on satellite data from Copernicus Atmosphere Monitoring Service
 - Collaboration between a group of data science students and University of Helsinki Institute for Atmospheric and Earth System Research
- 🔗 github.com/deinal/aerosol-modeling

Spektrum App

Spektrum rf

- Made a mobile application that fetches the university lunch menu, the student paper and the activities calendar among other things
- 🔗 play.google.com/store/apps/details?id=fi.spektrum.app

Discord Bot

Spektrum rf

- Bot running in the cloud adding some fun features to the student association's Discord server
- 🔗 spektrumrf.github.io/bot

Languages

Swedish: Native, C2

English: Fluent, C1

Finnish: Intermediate, B1

German: Elementary, A1

Skills

Python R Git Jupyter Docker
JavaScript Bash TensorFlow
Data Analysis Computational Physics
Machine Learning Teaching

Talks

- *Jet Energy Corrections with DNN Regression*, CMS ML Forum 8.9.2021
- *Atmospheric Aerosol Modeling*, HU Data Science Project 12.5.2020
- *Emerging Computing Architectures*, HU Distributed ML Seminar 22.3.2020
- *Interatomic Potentials for Fe-Cr*, Helsinki Accelerator Laboratory Simummeet 26.8.2019

Stipends

- Huawei Scholarship “given to the best Master’s theses in data security and software engineering”, 2021
- Study grant from the J. Pippingsköld and F. J. Wiik fund, 2020
- Study grant from the W. Brenner and R. Donner fund, 2019
- Scholarship from the Swedish cultural foundation, 2019
- Scholarship from Sophie von Julin’s foundation, 2019
- University of Helsinki study grant “to undergraduate students of mathematics and natural sciences whose academic performance has been excellent”, 2018

Hobbies

- Football with CERN FC 2021
- Futsal with Spektrum FC 2019-2021
- Anchor in the Jukola Orienteering Relay 2019
- Helsinki Half Marathon 2019
- Baltic Sea Half Marathon 2019