

Daniel Holmberg

Data Science Student

@ daniel.holmberg@cern.ch +358 40 5384 784 133 Rue Blaise Pascal, 01630 St Genis Pouilly
France danielholmberg.fi github.com/deinal linkedin.com/in/holmberg-daniel



Experience

Machine Learning Engineer

CERN

July 2021 – present Geneva, Switzerland

- Building end-to-end cloud native ML pipelines with Kubeflow
- Develop scalable particle physics usage samples
- Read and store data in S3 buckets
- Optimize models with Katib AutoML
- Serve Nvidia Triton models and measure inference time

Software Engineer

Fjuul Vision Oy

March 2020 – March 2021 Helsinki, Finland

- App development on Google Cloud Platform with Node.js and React
- Integrated the Withings tracker as an activity source
- Implemented OAuth handshakes, API subscriptions and data tables with Terraform

Research Assistant

Helsinki Institute of Physics

Nov 2020 – Jan 2021 Helsinki, Finland

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

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.

Publications

- A. Ovaska, E. Rauth, **D. Holmberg**, et. al. *Using machine learning to estimate accumulation mode particle concentrations based on in-situ measurements and reanalysis data*. Submitted to Actris.
- 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.

Education

M.Sc. Data Science

University of Helsinki

2020 – 2022

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

B.Sc. Physics

University of Helsinki

2016 – 2019

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

Organizations

Managing Editor

Spektrum rf

2021

- Oversee student paper publication process
- Wordpress admin for the website spektrum.fi/spektraklet

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

Skills

Python Kubeflow Bash JavaScript
Git PyTorch TensorFlow Docker

Data Analysis Computational Physics
Machine Learning Teamwork

Highlights

Speaker

KubeCon Europe 2022

📅 May 2022

- Talk about scalable cloud native ML pipelines for particle physics
-

Speaker

Learning to Discover @ Institut Pascal Paris-Saclay

📅 April 2022

- Talk about calibrating particle jets' energy with GNN regression
-

Kubeflow Facilitator

CMS ML Hackathon

📅 November 2021

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

Helper

CodeRefinery

📅 May – June 2020

- Participant of the June 2020 CodeRefinery instructor training in collaboration with Delft University of Technology
- Helper at the first online mega-CodeRefinery workshop

Languages

Swedish: Native, C2

English: Fluent, C1

Finnish: Intermediate, B1

German: Elementary, A1

Hobbies

- Football with CERN FC 2021-2022
- Futsal with Spektrum FC 2019-2021
- Anchor in the Jukola Orienteering Relay 2019
- Helsinki Half Marathon 2019
- Baltic Sea Half Marathon 2019