Dion Häfner

SCIENTIFIC PROGRAMMER | PROGRAMMING SCIENTIST

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I am a Physicist specialized on all things scientific computing, with industry experience in data processing and machine learning. My main research interest is "human learning": How can we build machines that teach us something about our physical world?

Relevant Work Experience

Sep 2017 – Dec 2018

Software development specialist @ DHI GRAS

At DHI GRAS, I built robust data pipelines, powerful statistical tools, and optimized remote sensing workflows.

Relevant Software Projects

Veros — A high-performance ocean model in pure Python

I am the main developer and maintainer of Veros, a full-fledged primitive equation ocean model capable of accurate, realistic simulations of the global ocean. It leverages the JAX library for state-of-the-art performance on CPU and GPU clusters. See on GitHub

Terracotta — A light-weight geospatial raster tile server

Terracotta is a cloud-ready raster tile server, leveraging the cloud-optimized GeoTiff format and a modern geospatial Python stack. See on GitHub

Programming Skills

ML frameworks

I am familiar with modern machine learning workflows and have good knowledge of scikit-learn, Tensorflow / Keras, PyMC, and JAX.

Python

I have both deep and broad experience within the Python ecosystem, especially concerning (but not limited to) data analysis, machine learning, visualization, and scientific computing. I love working with the modern scientific Python stack and am well-versed with NumPy, SciPy, matplotlib, xarray, JAX, Numba, and Pandas.

Tools

Experience with tools handling version control (git), documentation (Sphinx, Doxygen), build systems (CMake), deployment (Docker), testing (pytest), GUI (Qt), continuous integration (Travis CI / Github Actions), and typesetting (LaTeX).

I am comfortable working in all major operating systems, and am familiar with basic server administration tasks, including cloud providers like AWS and GCP.

Education

- PhD in Physical Oceanography @ University of Copenhagen — In my project, I use statistics / machine learning on large amounts of real-world data to quantify how and under which conditions extreme ocean waves (rogue waves) are generated.
- BSc and MSc in Physics @ Heidelberg University — GPA of 1.3 and 1.2, respectively ("very good"). Exchange year at KTH Stockholm in 2014. Specialization in computational physics.

Other Skills & Interests

- Strong mathematical and analytical skills, and an affection for data.
- Good theoretical foundation of applied mathematics and scientific computing (including ODE / PDE solvers, numerical optimization, signal processing, and automatic differentiation).
- A knack for probabilistic reasoning and Bayesian data analysis: I like to make my assumptions and uncertainties explicit.
- I am passionate about open-source software development, and have contributed code to several big projects on GitHub.
- A special interest in effective communication through writing, oral presentations, and data visualization. I take the quality of my publications seriously, and love to present my work.
- Languages: German (native), English (fully proficient), Swedish (proficient), Danish (elementary)