



Daniel Ploug Hall

Portfolio: daphall.github.io

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Profile

I have 2 years of professional software development experience, and I have used Python for around 9 years. Here, I have written data pipelines in which the endpoint was a database such as Postgres. Further through my education, I have developed physics simulations. This gave a strong understanding of performance profiling, writing high performance programs and executing problems in parallel. While this indicates a focus on performance, I actually prioritise programmer usability. This is done through interface design and code readability. For readability, I use the function length should be inversely proportional to its complexity. Feel free to visit my portfolio linked at the top to see some of my projects.

Professional qualifications

- **Languages:** Python, SQL, C (GCC, clang), C++ (GCC, clang)
- **Version Control:** Git, TortoiseSVN
- Numerical Methods
- Finite Difference-, Finite Volume methods
- Data analysis
- Parallel Programming
- Performance optimization
- Dissemination of complex concept
- Unit testing

Personal qualifications

- Verbal Communicator
- Helpful
- Detail orientated
- Curious
- Caring

Working Experience

Software developer at Septima P/S - Nov 2023 - Aug 2024

- Solved a 10 year old database bug by analytically tracing the problematic data back to its origin. Here, it was discovered that some base rules needed to be modified. The data in question was 4 people out of every house owner in Denmark.
- Solved various ad hoc assignments, such as route calculation. Here, I created a small parallel Python program that reads locations from a database, calls a web service for the route, and writes the result into a new schema. I further provided the customer with documentation for the process.

Industrial PhD student at Dansk brand- og sikrings institut and KU - Jun 2022 - May 2023

- I researched fire safety by focusing on moisture transport in fire retarded wood.
- Balanced the KU and DBIs' needs and interests in the project. This was done with a regular meeting where I informed the project's progress while listening to the key points that (primarily) DBI wished for.

Postgres and Python developer at Danmark Statistik - Nov 2021 - Jun 2022

- Created a system for handling privileges, such that the admins could easily control what data internal and external users had access to with the press of a button. This was archived for Postgres by accessing the database's metadata through pg catalogue, and then transforming it into a dynamic executable SQL.
- Solved a year long problem involving PyInstaller and MKL by using my knowledge about the numerical ecosystem. I recommended changing the backend of numpy from MKL to OpenBLAS.

TA at Datalogisk Institut (DIKU, KU) i Computational Methods in Simulation - Apr - Jun 2021

- Graded the students' assignments while giving good and constructive feedback.

TA at the Niels Bohr Institute in High-Performance Parallel Computing - Feb - Apr 2021

- Disseminated knowledge of the memory model of threads and processes, Race conditions, Mutex locks, strong and weak scaling.

TTA at Datalogisk Institut (DIKU, KU) in Numerical Methods - Sep - Nov 2020

- Disseminated knowledge about numerical methods, including Gaussian Quadrature, Finite Difference Methods, etc.

Education - University of Copenhagen (KU)

Master in Physics with a specialty in Computational Physics - Sep 2019 - Jun 2021

- Average grade: 10.2
- Thesis: "Dust dynamics in a collapsing Prestellar core" under Troels Haugbølle
- Developed a post-processing dust simulation for one of my supervisors codebases

Bachelor In Physics with a speciality in Astrophysics - Sep 2016 - Jun 2019

- Average grade: 7.4
- Bachelor Project in "Dust dynamics in a protoplanetary disk" under Troels Haugbølle
- Recreated a 1D protoplanetary disk simulation with dust coagulation

About me

In my spare time, you will find me engaging with my biggest hobby, tabletop role playing, either through playing, reading or attempting to do some design. Other than that, I usually read fiction such as Frankenstein, 1984 and The Haunting of Hill House. Or program some home projects, such as a statistical library for Python, which allows me to model complex dice mechanics with no effort. I also have an annual tradition of hiking with my friends; we are currently talking about going to Norway.