Sören Peters

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Hi, I am a research software engineer with a passion for software development and its applications in scientific research. Thereby I strive to develop sustainable software solutions that are easy to maintain, extend and understand.

Experience

Reseach Software Engineer / TU Braunschweig / 2020-present

I have been actively involved in the SURESOFT project, which focuses on sustainable research software solutions. During this time, I have been involved in the following projects:

VirtualFluids

Developing and maintaining the CFD code VirtualFluids for the simulation of turbulent fluid flow. Working on the implementation of new features, code optimization, and the integration of new solvers. Besides the development of the code, I rewrote the CMake-based build system and established an extensive CI/CD pipeline, Virtualisation and Documentation for the project.

Technologies: C++, CMake, MPI, CUDA, Docker

Fieldcompare

Support the development of a Python tool Fieldcompare for the comparison of simulation results with experimental data.

Technologies: Python, VTK

SURESOFT HPC Workflow

Combination of Fieldcompare, HPC-Rocket and Singularity to provide a workflow for testing the software in high-performance computing environments. The SURESOFT HPC Workflow aims to make the results of research reproducible.

Technologies: Python, Singularity, GitLab CI, Bash, C++, MPI

Chemotion ELN

Maintaining and extending the open-source electronic lab notebook Chemotion ELN for chemists. International, distributed team of developers at KIT, TU Braunschweig, RWTH Aachen, and Halle.

Technologies: Ruby on Rails, Docker, Javascript, React, PostgreSQL

Software Developer / GOM Metrology / 2019 - 2020

Working on the development of a software formerly called GOM CT for CT data analysis in the field of industrial metrology.

Technologies: C++, Qt, Python

Research Assistant / TU Braunschweig / 2017-2019

Working on the coupling of a particle solver with the simulation framework VirtualFluids. Describing the simulation of particles interacting with the surrounding fluid.

Technologies: C++, CMake, MPI, Boost, Paraview

Technologies

Languages: C++, Swift, Java, Python, JavaScript, Bash

Parallel Computing: CUDA, OpenMP, MPI

Version Control, Collaboration & DevOps: Git, Continuous Integration, Docker, Apptainer (Singularity)

Paradigms: Clean Code, Object-oriented Design, Design Patterns, Test-driven Development, Design Principles (SOLID)

Frameworks: CMake, GoogleTest, Qt, Boost

Platforms: macOS, Linux, Windows

Education

Master of Science (M.Sc.), Bauingenieurwesen, Technische Universität Braunschweig, 2017 (Abschlusnote: 1,2)

- Thesis: "Entwicklung eines skalierbaren massiv parallen Gittergenerators unter Einsatz von GPGPUs"

- Fachrichtung: Strömungsmechanik, High Performance Computing, Bauinformatik
- Ausgezeichnet mit dem Matthäi-Preis für ausgezeichnete Leistungen im Studium

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