

Philipp Jung

SOFTWARE ENGINEER · RESEARCH & DEVELOPMENT

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“Software Engineer/C++ enthusiast with 3+ years of professional and academic experience developing performance-critical C++ applications following DevOps and agile principles. Looking to grow as an engineer and architect in a cloud context.”

Experience

Volume Graphics GmbH

Heidelberg, DE

SOFTWARE ENGINEER “RESEARCH & DEVELOPMENT: SIMULATION ON COMPUTED TOMOGRAPHY DATA”

04/2019 – Present

- Drove a system-wide architectural change improving startup time of a multi-million LOC cross-platform C++ application by 30%
- Achieved a paradigm shift to a trunk-based pull-request workflow with automated CI/CD pipeline based on Jenkins and Docker
- Accomplished 90 % reduced feedback times from CI services as part of a two person task force using infrastructure-as-code principles
- Developed voxel-based simulation techniques on large datasets from industrial computed tomography following agile principles
- **Technologies:** C++14/17, Google Test Framework, CMake, QT, Conan, Python, Docker, Jenkins, Scrum

Institute of Computer Science

Heidelberg University, DE

MAINTAINER OF LIBPRTL, A PROPRIETARY C++17 LIBRARY FOR SCALAR/VECTOR AND TENSOR FIELD PROCESSING

04/2017 – 05/2019

- Provided reference implementations of widely used performance-critical algorithms in the field of scientific visualization
- Added rapid prototyping capabilities using python bindings (pybind11) for C++ reducing development lead times by a multiple
- Used clean-code principles and test-driven development using Catch2/Doctest with regular code reviews in a team of two
- **Technologies:** C++14/17, Eigen, Boost, Catch2/Doctest, CMake, Python (pybind11), CUDA, OpenMP, VTK, Gitlab CI, Docker

Institute of Computer Science

Heidelberg University, DE

RESEARCH-INTEGRATED MASTER’S PROGRAM

04/2017 – 03/2019

- Research project: “Feature Extraction from Time-Dependent and Uncertain Vector Fields”
- Developed and implemented high-performance visualization algorithms for chaotic dynamical systems
- **Technologies:** C++14/17, Eigen, Python, CMake, CUDA, OpenMP, VTK

Institute of Computer Science

Heidelberg University, DE

STUDENT RESEARCH ASSISTANT

10/2016 – 09/2017

- Developed visualization tools with the ParaView/VTK framework using modern C++
- Designed and implemented analysis tools for tropical cyclones for the use within the Waves2Weather research project
- Wrote and presented a paper to an international audience at a conference in Brazil
- **Technologies:** C++11/14, Eigen, CMake, VTK

Education

Heidelberg University

Heidelberg, DE

M.SC. IN APPLIED COMPUTER SCIENCE, MINOR IN MATHEMATICS · GERMAN GPA: 1.0 WITH DISTINCTION

04/2017 – 03/2019

- Thesis Project: “On the Frame of Reference in Flow Visualization“, supervised by Prof. Dr. Filip Sadlo, grade: 1.0 (A+)
- **Technologies:** C++14/17, Eigen, Catch2/Doctest, CMake, Python, Matlab, Docker, VTK

Heidelberg University

Heidelberg, DE

B.SC. IN APPLIED COMPUTER SCIENCE, MINOR IN ECONOMICS · GERMAN GPA: 1.5

10/2013 – 03/2017

- Thesis Project: ‘Interpolation-Consistent Visualization of Bifurcations 2D Time-Dependent Vector Fields‘, supervised by Prof. Dr. Filip Sadlo, grade: 1.0 (A+)
- **Technologies:** C++11, Eigen, Catch2/Doctest, CMake, VTK

Skills

PROGRAMMING LANGUAGES

- | | |
|---------------------------|--------------|
| • C++11/14/17/20 | Advanced |
| – Eigen | Advanced |
| – Catch2/Doctest | Advanced |
| – Google Test Framework | Intermediate |
| – Boost Numeric & Atomics | Intermediate |
| – (Modern) CMake | Intermediate |
| • Python | Advanced |
| • Rust | Intermediate |
| • Matlab | Basic |
| • SQL | Basic |
| • JavaScript | Basic |

TOOLS & FRAMEWORKS

- | | |
|-----------------------|--------------|
| • Git | Advanced |
| • Linux (Arch/Debian) | Advanced |
| • Docker | Advanced |
| • Jenkins | Advanced |
| • \LaTeX | Advanced |
| • VTK/ParaView | Advanced |
| • Scrum | Intermediate |
| • Gitlab CI | Intermediate |
| • CUDA | Intermediate |
| • OpenMP | Basic |
| • Proxmox | Basic |
| • Kubernetes | Basic |

LANGUAGES

- English (TOEFL iBT 115/120) Fluent
- German Native

SOFT SKILLS

- Problem-Solving
- Responsibility
- Critical Thinking
- Leadership
- Effective Communication
- Teamwork

Personal Projects

Easy-Utility-Cost

WEB-BASED UTILITY COST CALCULATION TOOL FOR APARTMENT BUILDINGS AND LANDLORDS

02/2019 – Present

- Designed asynchronous business logic in Rust compiled to WebAssembly
- Developed a fast client-side page rendering based on JavaScript
- Implemented server-client architecture with an NGINX-based web server running inside a Docker container
- **Technologies:** *Rust, WebAssembly, JavaScript, Docker, NGINX*

Publications

DNA Accessibility of Chromosomes Quantified by Automated Image Analysis

Nature: Scientific Reports

M. WÜRTZ, D. AUMILLER, L. GUNDELWEIN, P. JUNG ET AL.

09/2019

- Interdisciplinary research project with the German Cancer Research Center (DKFZ)
- Designed an automated Matlab pipeline and implemented image denoising preprocessing steps using OpenCV
- **Technologies:** *Matlab, C++, OpenCV, ~~TeX~~, Git*

Tumble-Vortex Core Line Extraction

SIBGRAPI WWIS, 2017

P. JUNG, P. HAUSNER, L. PILZ, J. STERN, C. EULER, M. RIEMER, AND F. SADLO

10/2017

- Conceived and implemented a new algorithm in C++ to detect vortex core lines in previously unsolved cases
- Visualized analytical and simulated datasets using custom C++ plugins for ParaView/VTK
- **Technologies:** *C++14/17, Eigen, Catch2/Doctest, CMake, ParaView, VTK*

Honors & Awards

Research Scholarship, sponsored by HGS MathComp and DFG

08/2017 – 07/2018

Award for Exceptional Students, sponsored by Beer Foundation

10/2017

Germany Scholarship, sponsored by Leonie Wild Foundation

10/2015 – 09/2016

Volunteer Activity

Working Committee for Education

Student Representation

STUDENT REPRESENTATIVE

10/2016 – 03/2019

- Organized weekly meetings coordinating university-wide student representation

Senate Committee for Education

Heidelberg University, DE

STUDENT REPRESENTATIVE

12/2016 – 09/2018

- Negotiated flexible university-wide attendance rules in lectures
- Represented student interest's concerning university-wide changes in study guidelines

Child Care Project e.V., Humanitarian Organization

Heidelberg, DE

MEMBER

06/2014 – 02/2016

- Successfully organized multiple fundraising events to finance a new primary school building in Uganda
- Designed and maintained website based on Hugo