Philipp **Jung**

SOFTWARE ENGINEER · RESEARCH & DEVELOPMENT

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"C++ and Rust enthusiast with 5+ years of professional and academic experience developing performance-critical C++ applications following DevOps and agile principles. Passionate about developer experience and looking to grow as an engineer and architect."

Experience

Senior Software Engineer "HANA Database Kernel: Storage Engine"
Walldorf, DE

SAP SE
01/2023 – Present

- TODO: Mergedog
- Introduced a Rust-based tool monitoring compile times to improve developer experience and reduce costs
- Part of an internal group to manage department-wide quality standards
- **Technologies:** *C++17/20/23, Rust, Python, Google Test/Benchmark Framework, CMake, Docker*

Software Engineer "HANA Database Kernel: Storage Engine"
Walldorf, DE

SAP SE
01/2021 – 12/2022

- Developed new optimization to improve performance at scale for very large table partitions of billion rows
- Drove large refactoring efforts reducing code complexity and increase development velocity
- **Technologies:** *C++17/20, Python, Google Test/Benchmark Framework, CMake, Docker*

Software Engineer "R&D: Simulation on Computed Tomography Data"
Heidelberg, DE

VOLUME GRAPHICS GMBH
04/2019 – 12/2020

- Drove a system-wide architectural change improving startup times of a multi-million LOC cross-platform C++ application by 30%
- Achieved 90% reduction in CI feedback times by a paradigm shift toward a pull-request workflow with automated CI/CD pipeline
- **Technologies:** *C++14/17, Python, Google Test Framework, CMake, QT, Conan, Docker, Jenkins, Scrum*

Maintainer of libPRTL "C++ library for Scalar/Vector and Tensor field processing"
Heidelberg University, DE

INSTITUTE OF COMPUTER SCIENCE
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++, significantly reducing development lead times
- **Technologies:** *C++14/17, Python (pybind11), Eigen, Boost, Catch2/Doctest, CMake, CUDA, OpenMP, VTK, Gitlab CI, Docker*

Research-Integrated Master
Heidelberg University, DE

INSTITUTE OF COMPUTER SCIENCE
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, Python, Eigen, CMake, CUDA, OpenMP, VTK*

Student Research Assistant
Heidelberg University, DE

INSTITUTE OF COMPUTER SCIENCE
10/2016 – 09/2017

- Designed and developed visualization tools for tropical cyclones with the ParaView/VTK framework using modern C++
- **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: "On the Frame of Reference in Flow Visualization", *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: 'Interpolation-Consistent Visualization of Bifurcations 2D Time-Dependent Vector Fields", *grade: 1.0 (A+)*
- **Technologies:** *C++11, Eigen, Catch2/Doctest, CMake, VTK*

Skills

PROGRAMMING LANGUAGES		TOOLS & FRAMEWORKS		LANGUAGES	
• C++11/14/17/20/23	Advanced	• Git	Advanced	• English (TOEFL iBT 115/120)	Fluent
– Google Test Framework	Advanced	• Gerrit	Advanced	• German	Native
– (Modern) CMake	Advanced	• Linux (Arch/Debian)	Advanced		
– Catch2/Doctest	Intermediate	• Docker	Advanced		
– Google Benchmark	Basic	• LaTeX	Advanced		
• Rust	Intermediate	• Agile(Scrum)	Intermediate		
• Python	Intermediate	• CI/CD(Jenkins/Github)	Intermediate		
• SQL	Basic	• CUDA	Basic		
• JavaScript	Basic	• Kubernetes	Basic		

LANGUAGES

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

SOFT SKILLS

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

Personal Projects

Compile Time Explorer

AUTOMATED WEB-BASED VISUALIZATION TOOL TO TRACK COMPILATION TIMES OF (LARGE) C++ PROJECTS   *05/2023 – Present*

- Build on-top of clangs *-ftime-trace* profile and ClangBuildAnalyzer
- Allows interactive exploration of compile times by translation units, headers, functions and templates
- **Technologies:** *Rust, JavaScript, Docker, NGINX*

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
- **Technologies:** *Rust, WebAssembly, JavaScript, Docker, NGINX*

Publications

DNA Accessibility of Chromatosomes 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, LaTeX, Git*

Tumble-Vortex Core Line Extraction   *SIBGRAPI WVIS, 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

08/2017 – 07/2018   **Research Scholarship,** sponsored by HGS MathComp and DFG

10/2017   **Award for Exceptional Students,** sponsored by Beer Foundation

10/2015 – 09/2016   **Germany Scholarship,** sponsored by Leonie Wild Foundation

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