

MARCIN COPIK | Curriculum Vitae

✉ marcin.copik@inf.ethz.ch • 📞 (+41) 76 200 65 62
🐙 GitHub • 🌐 Personal Website

SUMMARY

PhD student working on serverless programming models to bridge the gap between high-performance computing systems and cloud data centers.

EDUCATION

ETH ZÜRICH

PhD in Computer Science

Supervisor: Prof. Torsten Hoefer

2018–

Zürich, Switzerland

RWTH AACHEN

MSc in Simulation Sciences

Grade: 1.5. Interdisciplinary program. Major subject: High-Performance Computing

2014–2017

Aachen, Germany

UNIVERSITY OF PERUGIA

Scuola Matematica Interuniversitaria

Summer school in mathematics. Courses: Stochastic Processes, Functional Analysis

VIII 2014

Italy

SILESIAN UNIVERSITY OF TECHNOLOGY

B.Sc. in Mathematics

GPA: 4.6/5.0. Finished two of three years program.

2012–2014

Gliwice, Poland

SILESIAN UNIVERSITY OF TECHNOLOGY

B.Sc. in Computer Science

Grade 5(A). An engineering degree. Major subject: Software Engineering

2010–2014

Gliwice, Poland

EXPERIENCE

RESEARCH INTERN

Microsoft

Analyzing microarchitectural implications of serverless workloads. Supervisor: Bobbie Manne.

VII–XI 2019

Redmond, WA, USA

MENTOR

Google Summer of Code

Mentoring students working on HPX.

2017, 2018

Organization: The STE||AR Group

STUDENT ASSISTANT

RWTH Aachen, High-Performance and Automaton Computing

Benchmarking linear algebra frameworks. Supervisor: Prof. Paolo Bientinesi.

2016 – 2017

Aachen, Germany

RESEARCH ASSISTANT

Louisiana State University, STE||AR Group

Integrating single-source GPU programming in HPX. Supervisor: Dr Hartmut Kaiser.

IV–VIII 2016

Baton Rouge, LA, USA

STUDENT ASSISTANT

Jülich Supercomputing Centre

Develop tools for performance analysis of parallel applications at Scalasca. Supervisor: Dr Pavel Saviankou.

2014 – 2016

Jülich, Germany

SOFTWARE ENGINEER

Google Summer of Code

Integrating single-source GPU programming in HPX. Supervisor: Dr Hartmut Kaiser.

2015

Organization: The STE||AR Group

SOFTWARE ENGINEER

Google Summer of Code

Improve statistical model checking. Supervisors: Dr Vojtěch Forejt, Dr Dave Parker.

2014

Organization: PRISM model checker

STUDENT ASSISTANT

The Institute of Theoretical and Applied Informatics

Implementing GPU simulator of Markov Chains, Supervisors: Dr Mateusz Nowak, Dr Artur Rataj.

2012–2013

Gliwice, Poland

STUDENT ASSISTANT

Silesian University of Technology

Implementing algorithms for registration of respiratory motion. Supervisor: Dr Dominik Spinczyk.

2012–2014

Gliwice, Poland

SKILLS

PROGRAMMING LANGUAGE

Experienced: C++ | Python | Java
Pascal | x86 ASM

Familiar: Matlab | Julia | Mathematica | R |

TECHNOLOGIES

MPI | OpenMP | LLVM | OpenCL | SYCL | C++AMP | Docker | Kubernetes

TOOLS

Git | SVN | Mercurial | CMake | autotools | SLURM

EXPERIENCE

serverless computing | parallel programming | cloud computing | performance modeling | GPU programming | CPU branch prediction | model checking

HONORS & AWARDS

ACM/IEEE GEORGE MICHAEL MEMORIAL HPC FELLOWSHIP

Awarded for contributions into high-performance serverless.

2022

GOLD MEDAL AT THE ACM STUDENT RESEARCH COMPETITION

ACM/IEEE Supercomputing 2022

1st place at the graduate students category.

2022

AWS CLOUD CREDIT FOR RESEARCH APPLICATION

2022

GOOGLE CLOUD RESEARCH CREDITS

2022

MICROSOFT RESEARCH PHD FELLOWSHIP

Awarded for the 2021/2022 academic year.

2021

GOLD MEDAL AT THE ACM STUDENT RESEARCH COMPETITION

ACM/IEEE Supercomputing 2019

1st place at the graduate students category.

2019

PROFESSIONAL ACTIVITIES

REVIEWER

ISC 2019, LLVM-HPC 2020, International Journal of High Performance Computing Applications

TEACHING

Parallel Programming, Numerical Methods for Computational Science and Engineering, Design of Parallel and High-Performance Computing, Compiler Design, Information Systems for Engineers

PRESENTATIONS AND TALKS

Copik M. "Serverless As a Bridge Between HPC and Clouds", invited talk, AWS Cloud for Research at ETH.

Copik M. "Serverless As a Bridge Between HPC and Clouds", invited talk, 5th Workshop on Parallel AI and Systems for the Edge (PAISE), IPDPS 2023.

Copik M., Calotoiu A., Hoefler T. "Software Resource Disaggregation for HPC with Serverless Computing", Supercomputing 2022 Poster, **Gold Medal at the ACM Student Research Competition.**

Copik M., Chrapek M., Calotoiu A., Hoefler T. "Software Resource Disaggregation for HPC with Serverless Computing", SuperCompCloud at ACM/IEEE Supercomputing 2022 (SC22)

Copik M., Calotoiu A., Hoefler T. "Interactive Computing with Serverless Functions in rFaaS", UrgentHPC at ACM/IEEE Supercomputing 2022 (SC22)

Copik M., Calotoiu A., Grosser T., Wicki N., Wolf F., Hoefler T. "Extracting Clean Performance Models from Tainted Programs", SIAM Conference on Parallel Processing for Scientific Computing (PP22) minisymposium.

Copik M., Hoefler T. "perf-taint: Taint Analysis for Automatic Many-Parameter Performance Modeling.", Supercomputing 2019 Poster, **Gold Medal at the ACM Student Research Competition.**

Copik M., Bientinesi P., Berkels B. "Parallel Prefix Algorithms for the Registration of Arbitrarily Long Electron Micrograph Series.", Supercomputing 2017 Poster, ACM Student Research Competition.

Copik M., "HPX and GPU-parallelized STL.", C++Now 2016. Aspen, USA

PEER-REVIEWED PUBLICATIONS

Copik M., Böhringer R., Calotoiu A., Hoefler T. "FMI: Fast and Cheap Message Passing for Serverless Functions", ICS 2023, [arXiv 2305.08763](#)

Copik M., Taranov K., Calotoiu A., Hoefler T. "rFaaS: Enabling High Performance Serverless with RDMA and Leases", IPDPS 2023, [arXiv 2106.13859](#)

Schmid L., **Copik M.**, Calotoiu A., Werle D., Reiter A., Selzer M., Koziol A., Hoefler T. "Performance-Detective: Automatic Deduction of Cheap and Accurate Performance Models". ICS 2022, Acceptance Rate 24.2% (39/161), DOI [10.1145/3524059.3532391](#)

Chelini L., Barthels H., Bientinesi P., **Copik M.**, Grosser T., Spaminato D. "MOM: Matrix Operations in MLIR.". 12th International Workshop on Polyhedral Compilation Techniques, **Paper**

Copik M., Grosser T., Hoefler T., Bientinesi P., Berkels B. "Work-stealing prefix scan: Addressing load imbalance in large-scale image registration". IEEE Transactions on Parallel and Distributed Systems (TPDS), DOI [10.1109/TPDS.2021.3095230](#)

Copik M., Kwasniewski G., Besta M., Podstawski M., Hoefler T. "SeBS: A Serverless Benchmark Suite for Function-as-a-Service Computing", Middleware 2021, Acceptance Rate 31% (33/107), DOI [10.1145/3464298.3476133](#)

Copik M., Calotoiu A., Grosser T., Wicki N., Wolf F., Hoefler T. "Extracting Clean Performance Models from Tainted Programs", PPOPP 2021, Acceptance Rate 21% (31/150), DOI [10.1145/3437801.3441613](#)

Besta M. [and 18 others, including **Copik M.**] "GraphMineSuite: Enabling High-Performance and Programmable Graph Mining Algorithms with Set Algebra", VLDB 2021, [arXiv 2103.03653](#)

Besta M. [and 18 others, including **Copik M.**] "SISA: Set-Centric Instruction Set Architecture for Graph Mining on Processing-in-Memory Systems", MICRO 2021, DOI [10.1145/3466752.3480133](#)

Barthels H., **Copik M.**, Bientinesi P. "The Generalized Matrix Chain Algorithm.", CGO 2018, Acceptance Rate 28.6% (30/105), DOI [10.1145/3168804](#)

Copik M., Kaiser H. "Using SYCL as an Implementation Framework for HPX.Compute.", DHPCC++ Workshop at IWOCL 2017, DOI [10.1145/3078155.3078187](#)

Copik M., Rataj A., Woźna-Szcześniak B. "A GPGPU-based Simulator for Prism: Statistical Verification of Results of PMC [extended abstract]". CS&P 2016

Spinczyk D., Karwan A., **Copik M.** "Methods for abdominal respiratory motion tracking.", Computer Aided Surgery 2014, DOI [10.3109/10929088.2014.891657](#)

PREPRINTS AND REPORTS

Copik M., Chrapek M., Calotoiu A., Hoefler T. "Software Resource Disaggregation for HPC with Serverless Computing", 2022, **Working copy**

Copik M., Calotoiu A., Bruno R., Böhringer R., Hoefler T. "Process-as-a-Service: FaaS Stateful Computing with Optimized Data Planes", 2022, **Working copy**

Copik M., Calotoiu A., Taranov K., Hoefler T. "FaaSKeeper: Scalable and Consistent Storage as a Serverless Service", [arXiv 2022 2203.14859](#)