Bastian Köpcke

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University Education

since 2018 **Ph.D. studies**, *University of Münster*, Münster, Germany.
Supervisor: Prof. Sergei Gorlatch
Main research interests: High-level performance-portable programming abstractions for high-performance computing, Programming and optimization of programs for modern multi- and many-core processors.

2014 – 2018 **Master of Science in computer science**, *University of Münster*, Münster, Germany, *Final grade in computer science: –tbd–*.
Thesis title: *Implementing and Optimizing Fast Fourier Transforms in Lift*,
In this thesis, I methodically derive expressions for FFTs based on high-level functional primitives and extend the Lift compiler framework to generate high-performance GPU code from the derived expressions. *Grade for thesis: –tbd–*

2011 – 2014 **Bachelor of Science in computer science**, *University of Münster*, Münster, Deutschland, *Final Grade in computer science: gut(2,0)*.
Thesis title: *Implementing SDN-based Multicast in RTF*,
In this thesis, I extend the communication layer of the Real-Time Framework, developed at the University of Münster, to support multicast in software defined networks. *Grade for thesis: gut(1,7)*

Publications

2015 [1] F. Stahl, A. Godde, B. Hagedorn, **B. Köpcke**, M. Rehberger, and G. Vossen. "High Quality Information Delivery: Demonstrating the Web in Your Pocket for Cineast Tourists". In: *Proceedings of the BTW 2015*. 2015, pp. 667–670.

2014 [2] F. Stahl, A. Godde, B. Hagedorn, **B. Köpcke**, M. Rehberger, and G. Vossen. "Implementing the WiPo architecture". In: *E-Commerce and Web Technologies*. Springer, 2014, pp. 1–12.

Research Projects

since 03/2018 **LIFT**, *A Novel Approach to Achieving Performance Portability on Accelerators*.
Ongoing research, *www.lift-project.org*
The Lift project is a novel approach to generate high-performance OpenCL kernels from high-level functional programs. My contribution to the project has been focused on using Lift to express complex high-performance applications at the example of Fast Fourier Transforms.

2014 – 2017 **KETTI**, *Competence Development of Student Teaching Assistants in Computer Science*.
Project webpage, *https://www.uni-muenster.de/Ketti/en/index.html*
As a student and later research assistant, I assisted in qualitative and quantitative research towards the implementation of a competence model for teaching assistants. The aim of KETTI is to formalize the preparation of teaching assistants to activate students and support their learning.

Teaching

Winter 2018 Teaching assistant for the course: *Introduction to Java*

Winter 2014 Student teaching assistant for the course: *Introduction to Programming*

Summer 2014 Student teaching assistant for the course: *Data Structures and Algorithms*

Attended Academic Events

12/2015 PRACE course – *Advanced Parallel Programming with MPI and OpenMP*, Jülich Supercomputing Centre, Germany

03/2015 BTW – *16th Conference on Database Systems for Business, Technology, and Web*, Hamburg, Germany

Technical Skills

Programming Languages **Scala, C/C++, Java, Python**.
Experiences: Fast Fourier Transforms in Lift (Scala), Python C-API used for the simulation of interface accesses in the RTF Multicast Module, Profiling library for OpenCL programs (C++), SDN-based Multicast Modul for the Real-Time Framework (C/C++), Implementation of the WiPo architecture (Java),

Parallel Programming **OpenCL, CUDA, OpenMP, MPI**.
Experience: Performance portability evaluation of OpenCL Kernels on NVIDIA GPUs. JIT compilation of a DSL using LLVM and CUDA Driver API.