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.
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.

2011 – 2014 **Bachelor of Science in computer science**, *University of Münster*, Münster, Germany.
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.

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. As one of the main developers of the project, I have been mostly working on extending Lift in order to express complex high-performance applications with a particular focus on Fast Fourier Transforms.

2014 – 2017 **KETTI**, *Competence Development of Student Teaching Assistants in Computer Science*.
Project webpage, *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.

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

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*

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 Module 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 and CUDA Kernels on NVIDIA GPUs. JIT compilation of a DSL using LLVM and CUDA Driver API.