Cheng Wang

Software Engineer at Microsoft

Summary

Cheng is a passionate programmer. He loves to adapt himself quickly for learning new ideas, concepts and techniques. Cheng is familiar with full-stack software development using a variety of technical skills. He always enjoys in working with a team of great developers to learn, explore and impact the world.

Cheng obtained a Ph.D. degree in Computer Science at the University of Houston in 2016. His research interests encompass programming languages, compilers, and environments with a focus on High-Performance Computing (HPC). His advisor is Dr. Barbara Chapman.

The goal of Cheng's Ph.D. work is to perform cutting-edge research and development in programming languages, compilers, tools and applications for performance, programmability and productivity in HPC systems. He strives to increase programmer productivity, enhance application performance, develop novel implementation technologies that anticipate architectural changes and emerging user needs, and provide implementations of his research ideas. His research combines the knowledge of compiler, computer architecture, and operating systems.

During Cheng's Ph.D. study, he also closely works with industry and open-source community to seek out, develop and evaluate emerging technologies and software products. He also actively participates in programming standards of HPC community.

Cheng is also particularly fascinated by big data and infrastructures, e.g., Hadoop and Spark. He worked as a software engineer intern at Facebook and participated in building the most challenging data infrastructure in the world.

His specialties include but not limited to:
-- Proficient in Java and C/C++
-- Work experience in data infrastructure and big data tools in Hadoop, Hive, and Giraph
-- 5+ year experience in parallel programming models including MPI, Pthread, OpenMP, CUDA, OpenCL and OpenACC

Experience

Software Engineer at Microsoft
July 2016 - Present
Software engineer @ Azure SQL data warehouse team.

Graduate Research Assistant at University of Houston

September 2011 - May 2016 (4 years 9 months)

Past projects:

1. PsFFT: High-Performance Sparse FFT for Emerging Computing Systems

Collaborative research with Shell and MIT. Developed a high-performance parallel sparse FFT (PsFFT) algorithm for x86, GPUs, and an ARM+DSP heterogeneous embedded system. PsFFT is a novel compressive sensing algorithm which achieves more than 10x faster than the regular FFT. The research significantly accelerates scientific and engineering applications which heavily perform the FFT operations.

2. Heterogeneous OpenMP: Portable High-Level Programming Model for Embedded Systems

Collaborative research with Freescale Inc. Explored programming challenges of developing a productive and portable programming model for emerging low-power heterogeneous embedded systems. Developed heterogeneous OpenMP, a high-level parallel programming standard, to serve as a vehicle for productive programming of heterogeneous embedded systems. The research benefits the embedded community to seek out a novel programming model for better performance, programmability, and portability rather than vendor proprietary programming approaches.

3. An OpenACC Compiler Validation Suite

Collaborative research with NVIDIA/PGI, CAPS, and CRAY. Developed a compiler validation testsuite used to validate the correctness in OpenACC compiler implementations. The tool has been integrated into the Titan supercomputer at Oak Ridge National Laboratory for production use.

4. An OpenACC Benchmark Suite for Accelerating Compute-Intensive Applications

Collaborative research with NVIDIA/PGI, CAPS, and CRAY. Developed an optimized OpenACC benchmark suite covering a diverse range of scientific & engineering applications. It has been integrated into the official SPEC benchmark suite.

5. An OpenMP Validation Suite

Collaborative research with OpenMP ARB. Developed an OpenMP validation suite for checking the correctness in the compiler implementation. The tool has been integrated into the LLVM testing infrastructure, LIT.

Software Engineering Intern at Facebook

May 2015 - August 2015 (4 months)

Move fast and break things.

Sometimes slow down and fix the broken things..

Worked in the data infrastructure team with world's most talented rockstars!

Used Apache Giraph and hacked the world's largest social graph.

Software Engineering Intern at Shell

May 2014 - August 2014 (4 months)

Developed a parallel compressive sensing algorithm on the Texas Instruments Multicore ARM+DSP KeyStone II System-on-Chip (SoC). The work helped Oil & Gas industries in exploring energy-efficient solutions for large-scale HPC applications

Research Intern at Shell

May 2013 - August 2013 (4 months)

Explored a variety of programming models and state-of-the-art computing architectures on kernels and applications of high interest to Oil & Gas industries. The achieved results helped in examining key algorithms and applications used in large-scale O&G computations to efficiently exploit emerging and future large-scale HPC computing systems

Education

University of Houston

Ph.D, Computer Science, 2011 - May 2016

Wayne State University

2010 - 2011

Xidian University

Bachelor's degree, Telecommunications Engineering & Information Security, 2006 - 2010

Wuhuan Middle School

1999 - 2005

Honors and Awards

Best Ph.D. Student Award, ACM SIGPLAN Professional Activities Award, Texas Public Educational Grant (TPEG)

Cheng Wang

Software Engineer at Microsoft

Contact Cheng on LinkedIn