Chen, Zihan

Software Engineer @ Intel PSG

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WORKING EXPERIENCE

Heterogeneous Computing team, Software Engineer *03/2018 - Present*

Software development including the Open Computing Language (OpenCL) Runtime, Intel FPGA Board Package & Driver, the OpenCL Compiler CLI and automated testing infrastructure for the Intel oneAPI Toolkits

PROGRAMMING SKILLS

Language: C++, C, Python, Java, Bash, Golang, JavaScript, Perl, HTML, SQL, Verilog HDL, MATLAB

Toolkits: Git, OpenCL/SYCL/CUDA/MPI/OpenMP, Node.js, MySQL, Hadoop/MapReduce, Docker, Redis

PROJECTS & RESEARCH

The OpenCL Runtime new features and improvement *2018 - Present*

- Multi-threading support for the OpenCL Runtime, FPGA Board Package and Driver, including multi-devices concurrent reconfiguration, thread-safe memory channel, and async out-of-order event queue using C++
- Fast context switch with minimum memory transfer. Achieved runtime overhead reduced by **16.7%**
- Implementing the feature of callback support and event handler for the OpenCL multiple-context system

Fault-tolerant Distributed Key-Value storage system, an MIT 6.824 course project 2019 - 2020

- Use Raft for log entry replication, supporting persistence, snapshot and limited shard reconfiguration
- A Redis based message queue that schedules the communication among clients and service master

online-oclsycl.com: an OpenCL & SYCL online compiler *2019*

- A Node.js based online editor and compiler for learning heterogeneous computing using OpenCL & SYCL
- Tech-stack: JQuery, Node.js (Express), MySQL, Docker, Intel oneAPI Toolkits, AWS Lightsail

OpenCL Compiler CLI and Usability *2018 - 2019*

- Module owner of the OpenCL Compiler CLI, drove the new compilation flow and usability improvement
- Developed the installer, config and diagnose tools for the FPGA component of the Intel oneAPI Toolkits

Single-source Heterogeneous Programming for OpenCL (SYCL) Conformance Test *2019 - Present*

- Driving the conformance of OpenCL component and cooperating with broader Intel and the Khronos group
- Development including the testing infrastructure, bug fixes and hardware lab setup. Achieved **100%** pass

Thesis: Computational Fluid Dynamics Toolkit for Vascular Modeling and Simulating *2016 - 2017*

- 3D geometry reconstruction and Delaunay meshing of the cardiovascular system from its MRI images
- Implementing MPI for solving the Navier-Stokes equations via Finite Element Analysis in parallel
- Achieving: **93%** of studied cases show great consistency with the clinical data

Recommender System, Hadoop/Map Reduce *2017*

- Implementing the item collaborative filtering algorithm to generate the co-occurrence matrix and the user-specific rating vector based on the users' rating history from the Netflix Prize Data Set
- Matrix computation with Map Reduce jobs to find out the recommending movie(s) for specific users

EDUCATIONAL QUALIFICATIONS

University of Toronto, Master of Applied Science *09/2015 – 11/2017*

Overall GPA: 4.0/4.0 | Research assistant at Signal Integrity Laboratory | IEEE Student Member

Research Area: High Performance Computing, Distributed System, Computer Graphics, Machine Learning

Zhejiang University, Bachelor of Engineering (Honors) *09/2011 - 06/2015*

Overall GPA: 3.85/4.0 | Information Engineering | Ranking: Top 5% of 149 students

Research & Coursework: Computer Vision, Software Engineering, Operating Systems, Embedded System

CONFERENCE AND PUBLICATION

[1] Z. Chen, F. Ballarin, G. Rozza, A. M. Crean, L. Jimenez-Juan, P. Triverio, "Non-invasive assessment of aortic coarctation severity using computational fluid dynamics: a feasibility study," in 20th Annual Scientific Sessions, Society for Cardiovascular Magnetic Resonance, Washington, DC, Feb. 1--4 2017