Shuai Yuan

Senior Software Engineer, Dorabot Company
Mobile: (86)13539623264
Email: yszheda@gmail.com
Personal Profile: http://yszheda.github.io
Blog: http://galoisplusplus.coding.me

Education

- Master in Computer Science, National Tsing Hua University, Taiwan, 2014 (GPA: 4.23/4.3).
- Bachelor in Computer Science and Technology, Zhejiang University, China, 2012 (GPA: 3.84/4.0).

Research Experiences

- Lab member of LSA (Large-scale System Architecture) Lab, National Tsing Hua University, 2012–2014: work in the field of Cloud Storage System, Erasure Codes and GPGPU under the supervision of Prof. Jerry Chou. I was the TA of the CUDA lab class in my supervisor's "Parallel Programming" course.
- Research intern in LRI (Laboratoire de Recherche en Informatique) of the University of Paris XI, France, 2011,10–2012,4: work on "automated constraint verification for databases" under the guidance of Prof.Véronique Benzaken and Prof. Évelyne Contejean.

Career Experiences

- Senior Software Engineer, Dorabot Company, 2018/10–current.
  - I'm mainly working on collision detection and performance optimization related to robot motion planning. My contributions include, but are not limited to:
    * Performance optimization on collision detection for arm motion planning. I have achieved 6x speedup compared to the original implementation.
    * Maintain our fork of flexible collision library FCL. Use **SSE** and **AVX** to accelerate BVH overlap checking. My patch can improve the performance of OBB overlap checking by 30-60% compared to the latest version of FCL.
    * Implement collision detection feature for grasp planning to support checking whether the moving gripper is collided with the obstacles in the environment. Use **OpenMP** to accelerate point cloud and octree processing.
    * Implement Seidel linear programming solver to improve the performance of TOPP-RA parameterizer. We can achieve 16x speedup compared to previous implementation using the qpOASES library.
- Heterogeneous Parallel Computing Engineer, Tunicorn Technology, 2017/7–2018/9.
  - My contributions in Glass Flaw Detecting Project:
    * Parallelize previous phone-glass flaw detecting implementation from 10s+ per glass to 1.2s.
    * Implement GPU version of car-glass flaw detecting. We have achieved 5-6s for detecting flaws for each car glass.

    - Accelerating Connected Component Labeling using **CUDA**.
    - Optimize Morphology Erode/Dilate. In our cases, my implementation have gained 3-8 speedup compared to Nvidia NPP library.
  - My contributions in FPGA Smart Camera Project:
    - Implement fixed-point quantization of Convolutional Neural Networks in C/C++ for verification.
  - My contributions in Mobile Face Detecting Project:
    - Optimize YUV/RGA conversion, rotation etc. in RenderScript.

- Mobile game developer in Xinyoudi Studio, Leqee Company, 2014/7–2017/5.
  - Join a startup team and develop a 2D mobile game (now available on `Google Play` and `App Store`).
  - As a leading client developer, I get my hands dirty on development using `cocos2d-x` and `quick-cocos2d-x`. Besides, I also take part in server development using `OpenResty`.
  - My main contributions include, but are not limited to:
    - Trace errors and crash, work on fixing or workarounding upstream bug, some of the patches are accepted by quick-cocos2d-x (`PR#407`, `PR#438`, `PR#440`).
    - Customize UI widgets.
    - Write **Bash** or **Python** scripts for automate work flow, sorting and distribution of errors and crashes, server API press test, etc.
    - Develop multiple modules in our game.
    - Use **Docker** for quick deployment and scaling up.

Project Experiences

- GPU-RSCode: a GPGPU approach to accelerating Reed-Solomon codes for fault-tolerance in RAID-like system, 2012/12–2014/5.
  - Written in **CUDA C/C++**. Source code and documents are available under GPLv3: `https://github.com/yszheda/GPU-RSCode`
  - We present an optimized GPU implementation of Reed-Solomon Codes, which can achieve a speedup of 14.71 over the current best CPU implementation Jerasure.

I have made some contributions to the following open-source projects:

- Multi-platform game framework: `cocos2d-x` and `quick-cocos2d-x`.
- Octopress plugin: octopress-syncPost (`PR#8` & `PR#9`, one accepted).
- Utilities for nginx module development `openresty-devel-utils` (a simple patch `PR#9` for lua-releng, accepted).
- Python wrapper for extended file system attributes: `xattr` (a simple patch `PR#8`, accepted).

Skills

- Programming Language: **Lua**, **C**, **C++**, **Bash**, etc.
- Framework/API: **CUDA**, **MPI**, **cocos2d-x**, **quick-cocos2d-x**, **OpenResty**, etc.
- IDE/Programming Tools: **XCode**, **Eclipse**, etc. (I use **Vim** as an editor, use **automake** to build my own project, have experience with **gdb**, **valgrind**, **gprof**, **cuda-gdb**, **cuda-memcheck**, **nvprof**, **adb**, **ndk-stack**, etc.)
- Operating System: **GNU/Linux** (Ubuntu, Debian, now I'm using ArchLinux).
- Version Control Tools: **git**, svn (As a git fan, now I prefer **git-svn** instead XD).
- Documentation: LaTeX

Honor and Awards

- Honor:
  - Bravo Award in Tunicorn Technology Company, 2017–2018.
  - outstanding employee in Leqee Company, 2014–2015.
  - outstanding student in Zhejiang University, 2008–2009, 2009–2010, 2010–2011.
- Scholarship:
  - Hong Hai/Foxconn scholarship, 2012–2013.
  - Second prize of outstanding student scholarship and scholarship for academic, 2010–2011.
  - Third prize of outstanding student scholarship and scholarship for academic, 2009–2010.
  - Second prize of outstanding student scholarship and scholarship for academic, 2008–2009.
- Awards:
  - Outstanding thesis paper among undergraduate stundents, 2012.
  - Second prize of Zhejiang University-Intel Embedded Online Contest, 2010.
  - Third prize of Zhejiang University ACM Programming Contest, 2009.
  - Second prize of Zhejiang Province Calculus Contest, 2009.

Interests

- violin, Classical music, badminton, hiking, table tennis