CHENG YICHAO

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GOAL

I intend to invent tools to help people better **understand** and **create** complex systems.

WORK EXPERIENCE

2014–Present Support Staff, USTC Sugon team

USTC-Sugon

Working in the USTC Sugon team and will take part in the Student Cluster Competition 2014, a competition on **supercomputing** located in Leipzig, Germany.

Sep–Dec 2013 Teaching Assistant, University of Science and Technology of China, Hefei

USTC

Tutored students in **Introduction to Computing Systems** course and designed the lab and discussion sessions in an innovative way. Used a lot of metaphors and visualization techniques to help students understand the basic concepts of computers. homepage

Jul–Aug 2011 Software Engineer Intern, ALIPAY.COM, Shanghai

Alipay.com

Worked in the business service department and helped to develop a system for monitoring transaction trend of the business partners.

EDUCATION

2012–Present University of Science and Technology of China, Hefei, China

Masters of Science

Direction: Computer Architecture · School: Computer Science and Technology
Description: Taught the knowledge of parallel programming, heterogeneous computing, VLSI design, etc. I proposed several approaches to implement efficient graph algorithms on GPU. My thesis is intended to provide a fast, easy, and scalable **graph processing framework** on GPU.
Advisor: Prof. Hong AN

2008–2012 Tongji University, Shanghai, China

Bachelor of Science

GPA: 4.2/5 · School: Computer Science and Technology
Description: Taught the basic principles of computers. Studied information theory, operating systems, computer organization, compiler principles, circuits, etc.
Honors: first-class and third-class scholarships

PUBLICATIONS

March 2014 Understanding the SIMD Efficiency of Graph Traversal on GPU

To be submitted

I invent a model to analyze the components of SIMD underutilization in GPU architecture. I develop metrics to quantify the SIMD efficiency of BFS on GPU.
Authors: Yichao Cheng, etc.

August 2013 A Criticality-aware DVFS Runtime Utility for Optimizing Power Efficiency of Multithreaded Applications

HPPAC (IPDPS Workshop) — We designed a runtime utility, which can find critical threads in multithreaded programs and then optimize the power and performance by scaling frequency. Authors: Haibo Zhang, Wenting Han, Feng Li, Songtao He, Yichao Cheng, etc.

SIDE PROJECTS

Dreamsome — A XKCD-style online comic book. homepage

The Vivid Schemer — An interactive version of **The Little Schemer** / Online interpreter for Scheme Language (subset). This work was once on the Top 10 **Hacker News**. homepage

WeakPoint — A slide authoring tool by using markup languages. This work is stared by over 40 people on **Github**. homepage

Blastroid — A shooting game created with Allegro 5.0 library in Pure C.

Hazard — A signal-level MIPS CPU simulator.

Grafic — A lightweight **painting tool** providing both pixel and vector mode.

Myvfs — A toy UNIX-like virtual filesystem.

GeekMusic — An electronic organ in x86 assembly language.

EasyLab — A command-line tool to run **experiments**, collect result, and **plot figures** automatically. User can use sql to query results in a free manner.

Visualization Techniques — Visualizing the graph traversal algorithms. demo

Visualizing the datapath of a MIPS machine. demo

A Visualized CUDA programming tutorial. demo

OTHER INFORMATION

Translated Books — *Head First C* · O'Reilly Media

Programming Massively Parallel Processors, Second Edition · Nvidia

Talks — Understanding Tomasulo Algorithm · In this presentation, I used a **producer-consumer** model to illustrate the idea of Tomasulo Algorithm. slide

Computer Skills — C, C++, Python, Java, Scheme, JavaScript, HTML, CSS, Assembly languages, LaTeX, Excel, MySQL, Linux, Photoshop, Sketchbook, CUDA, OpenMP, MPI

Interests — Drawing · Designing webpages · Running · Writing (my blog) · Soccer