

YANG YANG

PERSONAL INFORMATION



birth Born in China, Sept. 2001
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EDUCATION

Undergraduate

Jilin University, Changchun, China

Feb. 2019 – Present

GPA: 3.67/4.0

Rank: 10%

Major: Computer Science and Technology

Interests: Operating System, Computer Architecture and HPC.

AWARDS

Undergraduate
Academic Year
Scholarship

The First Prize Scholarship

Sept. 2020

The Second Prize Scholarship

Sept. 2021

RESEARCH EXPERIENCE

ETECA Lab

Emerging Technology Enabled Computer Architecture, Jilin University

Feb. 2022 – Present

Lab Website: [here](#)

Advisor: Prof. Jingweijia TAN

Research on: Computer architecture & High-Performance Computing

Briefly, I am doing research on the **microarchitecture** of General-Purpose Graphics Processing Unit (GPGPU). Due to the **FinFET** and state-of-the-art **chiplet** (based on package-level integration), nanometer scale is much more reachable, as a consequence, **process variation** is more complex than before. Hence I have also been researching on **hardware variability** related to Multi-Chip-Module(MCM) GPUs. Meanwhile, developing a hybrid approach to model the **energy consumption** of the new hardware under various condition and optimizing it using methods like dynamic voltage/frequency scaling (DVFS) is what I am exploring now.

SKILLS

Languages

C/C++ · Assembly(x86, RISC-V)
CUDA · Python
Go

Hardware

HDLs: Verilog
Modelsim
Basic analog circuit design

Software

LINUX/UNIX/Windows
GIT
LATEX
GNU compiler (gcc, etc.)

PROJECTS

EOS	<p>EOS is a 32bit *nix operating system developed in C language. Sept. 2021</p> <p>Till now EOS contains a basic bootloader, 2-level paging, 4GB memory management support and kernel-multithreads. For user environment, it provide a set of traditional shell programs and multi-process mechanism. It follows the x86 ABI, so it's easy to port those x86 applications. This project is still <i>active</i> and it will provide a glibc-like library and compiler support in the future. You can find the codes here.</p>
MapReduce Engine	<p><i>MapReduce Engine</i> is a Go language implementation of the paper.¹ Apr. 2022</p> <p>This engine consists of a fault tolerance(failures like crash and communication-lose of workers) master and a worker cluster. Users can specify their cluster size and working functions(map & reduce). With a simulated distributed file system, the workers can communicate with the master through Remote Procedure Call. This MapReduce Engine is a basic component for building a distributed system used for operations over large datasets. You can find the codes here.</p>
WYZ-BAR	<p><i>WYZ-BAR</i> is a bar management system developed in C language. Mar. 2020</p> <p>With multi-process organization and a simple relational-database inside, WYZ-BAR is a <i>collaborative project</i> (WYZ stands for 3 members) and I am the leader. WYZ-BAR is my <i>first</i> course project in university and it made me a minor celebrity. The development flow follows the modern free software's way. A lot of parsing techniques were used to deal with all kinds of data input, this system is purposely optimized for unqualified input like the real world. You can find the codes here.</p>
CUDA-FFT	<p><i>CUDA-FFT</i> is a CUDA implementation of the Fast Fourier Transform algorithm. Dec. 2021</p> <p>This project implemented 3 ways to do the <i>polynomials multiplication</i>, including ordinary multiplication, recursive-FFT and gpu-FFT. The performance was well tested and the contrast was shown in the report. This is my first time doing heterogeneous computing and this project leads me to the research of HPC & GPGPU. You can find the codes, slide, and report here.</p>
Others	<p>You can find more projects including course labs (like MIT 6.828) and an Android application(SmogDetector) from GitHub.</p>

OTHER INFORMATION

Languages	CHINESE · Mother tongue
	ENGLISH · Intermediate (conversationally fluent)
Interests	Literature (Latin-American, magic realism) · Physics · NBA
Characteristic	Strong patience, communication, and collaboration skills.

¹ J. Dean and S. Ghemawat, "MapReduce: simplified data processing on large clusters," *Commun. ACM*, vol. 51, no. 1, pp. 107–113, Jan. 2008, doi:[10.1145/1327452.1327492](#).