

YANG YANG

PERSONAL INFORMATION



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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

In short, 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. Therefore I have also been researching on **hardware variability** related to Multi-Chip-Module (**MCM**)-GPUs. Simultaneously, developing a hybrid approach to model and predict the **energy consumption** of the GPGPU 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

L^AT_EX · Markdown

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 and kernel multithreads. For user environment, it provide a set of traditional shell programs and multi-process mechaism. It follows the x86 ABI, so it's easy to port thoses x86 applications. This project is still <i>active</i> and it will provide a <i>GNU C Project</i> 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 (mapf & reducef). 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-scale 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>WYZ-BAR is a <i>collaborative project</i> (WYZ stands for 3 members and Y is for me) and I am the leader. With the multi-process organization and a simple builtin sqlite style database, WYZ-BAR is my <i>first</i> course project in the university and it made me a minor celebrity. The development flow follows the modern open source software's way. A lot of parsing techniques are 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 algorithms 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), Android application (SmogDetector), <i>etc.</i>, in GitHub.</p>

OTHER INFORMATION

Languages	CHINESE · Mother tongue
	ENGLISH · Intermediate (conversationally fluent)
Interests	Literature (Latin-American, magic realism) · Physics · NBA (Golden State Warriors) · Classic (Chopin)
Characteristic	Strong patience · Highly self-motivated · Creative · Communication and collaboration skilled.

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](#).