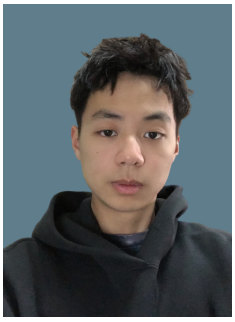
YANG YANG

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

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 — ***EOS*** is a 32bit ***nix** operating system developed in **C** language. *Sept. 2021*
Till now EOS contains a basic **bootloader**, 2-level **paging**, 4GB **memory management** support and **kenel-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 thoses x86 applications. This project is still *active* and it will provide a glibc-like library and compiler support in the future. You can find the codes here.

MapReduce Engine — ***MapReduce Engine*** is a **Go** language implementation of the paper.[1] *Apr. 2022*
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.

WYZ-BAR — ***WYZ-BAR*** is a bar management system developed in **C** language. *Mar. 2020*
With **multi-process** organization and a simple **relational-database** inside, WYZ-BAR is a *collaborative project* (WYZ stands for 3 members) and I am the leader. WYZ-BAR is my *first* 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.

CUDA-FFT — ***CUDA-FFT*** is a CUDA implementation of the **Fast Fourier Transform** algorithm. *Dec. 2021*
This project implemented 3 ways to do the *polynomials multiplication*, 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.

Others — You can find more projects including course labs (like MIT 6.828) and an Android application(SmogDetector) in GitHub

OTHER INFORMATION

Languages — Chinese · Mothertongue

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.