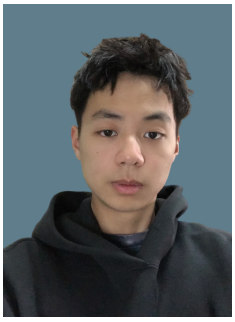
YANG YANG

PERSONAL INFORMATION



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EDUCATION

Undergraduate

Jilin University, Changchun, China *Feb. 2019 – Present*
GPA: 3.69/4.0
Rank: 10%
Major: Computer Science and Technology
Interests: Operating System, Computer Architecture and High Performance Computing.

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) · Python · Go

Frameworks CUDA · Pytorch

Hardware
HDLs: Verilog
Modelsim
Basic analog circuit design

Software
LINUX/UNIX/Windows
GIT
LaTeX · Markdown
GNU compiler (gcc, *etc.*)

OTHER INFORMATION

Languages
Chinese · Native proficiency.
English · Professional proficiency.

Interests Literature (Latin-American, magic realism) · Physics · NBA (Golden State Warriors) · Classical (Chopin)

Characteristic Strong patience · Highly self-motivated · Creative · Communication and collaboration skilled.

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** 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 *active* and it will provide a *GNU C Project* 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 (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.

WYZ-BAR

WYZ-BAR is a bar management system developed in **C** language. *Mar. 2020*
WYZ-BAR is a *collaborative project* (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 *first* 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.

CUDA-FFT

CUDA-FFT is a CUDA implementation of the **Fast Fourier Transform** algorithm. *Dec. 2021*
This project implemented 3 algorithms 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), Android application (SmogDetector), *etc.*, in GitHub.

[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.