

# YANG YANG

## PERSONAL INFORMATION

<i>birth</i>	Born in China, Sept. 2001
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## EDUCATION

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

## AWARDS

<i>Undergraduate</i>	The First Prize Scholarship	<i>Sept. 2020</i>
<i>Academic Year</i>	The Second Prize Scholarship	<i>Sept. 2021</i>
<i>Scholarship</i>		

## RESEARCH EXPERIENCE

<i>ETECA Lab</i>	<i>Emerging Technology Enabled Computer Architecture, Jilin University</i>	<i>Feb. 2022 – Present</i>
	<b>Lab Website:</b> <a href="#">here</a>	
	<b>Advisor:</b> <a href="#">Prof. Jingweijia TAN</a>	
	<b>Research on:</b> 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

<i>Languages</i>	C/C++ · Assembly (x86, RISC-V) · Python · Go
<i>Frameworks</i>	CUDA · Pytorch
<i>Hardware</i>	HDLs: Verilog Modelsim Basic analog circuit design
<i>Software</i>	LINUX/UNIX/Windows GIT L <sup>A</sup> T <sub>E</sub> X · Markdown GNU compiler (gcc, etc.)

## OTHER INFORMATION

<i>Languages</i>	CHINESE · Native proficiency. ENGLISH · Professional proficiency.
<i>Interests</i>	Literature (Latin-American, magic realism) · Physics · NBA (Golden State Warriors) · Classical (Chopin)
<i>Characteristic</i>	Strong patience · Highly self-motivated · Creative · Communication and collaboration skilled.

# PROJECTS

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## 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.<sup>1</sup>

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](#).

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<sup>1</sup> 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](#).