YANJUN YANG

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EDUCATION

The University of Edinburgh Sept, 2022 - present
PhD Student in Engineering, Centre for Electronics Frontiers *Edinburgh, Scotland*

- Supervisors: Dr Alex Serb, Prof Themis Prodromakis
- Research theme: Cognitive processing system implementation based on associative memories

Nanyang Technological University Aug, 2021 - Aug, 2022
MSc (Electronics) *Singapore*

- Core units taken: Digital Integrated Circuit Design, Electromagnetic Compability Design, Genetic Algorithms and Machine Learning, Advanced Wafer Processing, Integrated Circuit Packaging

Tongji University Sept, 2017 - July, 2021
BEng. in Electronic Science and Technology *Shanghai, China*

- Core units taken: Design and Analysis of Digital Integrated Circuits, Computer Architecture, Principles for Design of Integrated Circuit Chips, Embedded Systems

CURRENT PROJECTS

ASOCA3-FPGA Jan, 2024 - present
The University of Edinburgh *PhD Sub-project*

- Developing a high-performance graph database accelerator on FPGA at million-entry level
- Project leader in architecture and system design

ASOCat Sept, 2022 - present
The University of Edinburgh *PhD Sub-project*

- Building a Copycat-based cognitive model compatible with an associative memory chip
- Designing and implementing its software/hardware interface

PUBLICATIONS

A Resource-efficient Dually-addressable Memory Architecture on FPGA May, 2025
ISCAS 2025 *London, United Kingdom*

- Presented a resource-efficient BRAM-based DAM architecture on FPGA
- Implemented onto Virtex-7/Virtex UltraScale+ FPGAs with 100% storage efficiency

A Modular Graph Database Accelerator September, 2024
ECML PKDD 2024 *Vilnius, Lituania*

- Presentation in 2^{nd} International Workshop on Deep Learning meets Neuromorphic Hardware

A Single-layer Wideband Microwave Absorber with Reactive Screen, and A Novel Design of Microwave Absorber for Reduction of Radar Cross Section July, 2020
AP-S/URSI 2020 *Montréal, Canada*

- Carried out antenna simulation under HFSS and experimental data analyses

RESEARCH EXPERIENCE

Saliency detector Feb, 2024 - July, 2024
The University of Edinburgh, STMicro *PhD Sub-project*

· Developed a hybrid defect detection and classfication prototype
· Produced a result analysis and development report

ASOCA2 Nov, 2022 - Dec, 2023
The University of Edinburgh *PhD Sub-project*

· Successful tape-out of a memristor-based associative memory SoC
· Core digital hardware developer and verification engineer

ReMap: a Mitchell-based logarithmic conversion circuit Aug, 2021 - July, 2022
Nanyang Technological University *MSc Dissertation Project*

· Optimised a Mitchell-based binary logarithmic approximation method
· Implemented and evaluated corresponding integrated circuits

Design of a hierarchical memory management mechanism Aug, 2021 - Jan, 2022
Tongji University *Part-time Internship*

· Led a hierarchical SRAM-flash interface design with page replacement algorithm
· Applied the design on an automobile-orientated MCU

CoNM: Core of Normal Microarchitecture Mar, 2021 - Jun, 2021
Tongji University *Graduation Design*

· Designed a four-stage RV32I CPU core with static branch prediction in Verilog
· Implemented onto PYNQ-Z1 FPGA board for a successful verification

PROFESSIONAL SKILLS

Familiar with both FPGA and digital ASIC design flows.

Computer Languages

· Proficient in SystemVerilog/Verilog
· Skilled in Bash, Tcl, Python
· Competent in C/C++, VHDL
· Developing skills in CHISEL

Professional Software

· Skilled in Synopsys, Vivado, Cadence
· Good command of MATLAB, ModelSim
· Good knowledge of HFSS, ISE, Keil

Languages
Native in Mandarin and New Xiang, proficient in English

· IELTS 8.0/9.0 (2020), equivalent to CEFR level C1
· Elementary reading proficiency of French

SEMINARS & TALKS

IMNS Seminar November, 2024
Institute for Integrated Micro and Nano Systems *Edinburgh, Scotland*

· Title: Graph Database Acceleration in Digital Hardware

PGR Conference April, 2024
The University of Edinburgh *Edinburgh, Scotland*

· Title: Symbolic Processing Systems Based on Associative Memory

TEACHING

The University of Edinburgh 1st Semester, 2024

· Demonstrator - Digital Systems Design 2 (ELEE08015)
· Marker - Software and Embedded Systems Laboratory 2 (ELEE08022)

The University of Edinburgh 2nd Semester, 2024

· Demonstrator & Marker - Digital Systems Laboratory 3 (ELEE09018)

The University of Edinburgh 1st Semester, 2025

· Tutor & Marker - Digital Systems Design 2 (ELEE08015)
· Marker - Software and Embedded Systems Laboratory 2 (ELEE08022)

HONOURS AND AWARDS

Tongji University 1st Semester, 2017
Advanced Summer Internship Individual

· Awarded for the great performance during summer internship

Tongji University 1st Semester, 2019
Outstanding Student Cadre

· Awarded as the minister of Rights and Welfare Department in Students' Union

INTERESTS

Prefer *Scotches*.

$\frac{1}{2}$ geek, $\frac{1}{2}$ bartender.

Neovim sponsor under WSL2.

Reads Kafka, Hai Zi, and Allan Poe.

Jay Chou, Green Day and Aska Yang fan.

Minesweeper minesweeper. (Best time: 114.696s)

Always planning to do some film criticism and lyric writing.