

# YANJUN YANG

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## EDUCATION

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### **Tongji University**

*BEng. in Electronic Science and Technology*

Sept, 2017 - July, 2021

*Shanghai, China*

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

### **Nanyang Technological University**

*MSc (Electronics)*

Aug, 2021 - Aug, 2022

*Singapore*

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

### **The University of Edinburgh**

*PhD Candidate, IMNS*

Sept, 2022 - present

*Edinburgh, Scotland*

- Supervisors: Alex Serb, Themis Prodromakis
- Research theme: Cognitive processing system implementation based on memristor associative memory

## RESEARCH EXPERIENCE

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### **ASOCA2**

*The University of Edinburgh*

Nov, 2022 - Dec, 2023

*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**

*Nanyang Technological University*

Aug, 2021 - July, 2022

*MSc Dissertation Project*

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

### **Design of a hierarchical memory management mechanism**

*Tongji University*

Aug, 2021 - Jan, 2022

*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**

*Tongji University*

Mar, 2021 - Jun, 2021

*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

## CURRENT PROJECTS

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### **ASOCA3-FPGA**

*The University of Edinburgh*

Jan, 2024 - present

*PhD Sub-project*

- Developing a graph database accelerator system at million-entry level
- Fully in charge of architecture iterating

## **Saliency detector**

*The University of Edinburgh, STMicro*

Feb, 2024 - July, 2024

*PhD Sub-project*

- Developing a defect detection and recognition algorithm in half-symbolics

## **ASOCat**

*The University of Edinburgh*

Sept, 2022 - present

*PhD Sub-project*

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

## **PUBLICATIONS**

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### **A Hardware-friendly Database Structure For Storing Semantic Information in First-order Logic**

*The University of Edinburgh*

Apr, 2023 - Dec, 2023

*PhD Sub-project*

- Proof and theoretical simulation of novel graph database structures
- Demonstration of a novel graph database process representation

### **A Single-layer Wideband Microwave Absorber with Reactive Screen, A Novel Design of Microwave Absorber for Reduction of Radar Cross Section**

*Tongji University*

Dec, 2019 - May, 2020

*Second Author*

- In charge of HFSS antenna simulation and analyses of experimental data
- Published two academic papers accepted by IEEE AP-S/URSI 2020 as the second author

## **PROFESSIONAL SKILLS**

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Familiar with both FPGA and digital ASIC workflows.

### **Programming Languages**

- Proficient in SystemVerilog/Verilog
- Skilled in Python, Bash, Tcl
- 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 Chinese and New Xiang, proficient in English*

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

## **TEACHING**

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### **Digital Systems Design 2**

1st Semester, 2024

- Demonstrator

### **Embedded Systems Design 2**

1st Semester, 2024

- Marker

## Digital Systems Design 3

2rd Semester, 2024

- Demonstrator

## Microelectronics 3

2rd Semester, 2024

- Marker

## HONOURS AND AWARDS

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### 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 for the outstanding work as minister of Rights and Welfare Department in Students' Union

## INTERESTS

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Prefer *Scotches*.

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

Neovim user under WSL2.

Jay Chou and Aska Yang fan.

(Was) Practising the harmonica.

Reads Kafka, Hai Zi, Shelley and Allan Poe.

Always plannig to do something in film criticism and lyric writing.