Haoran WU

Flat 26 Garraway Apartments, East Acton Lane, LONDON, Middlesex, W3 7QG

+44 07529913387 | hw1020@ic.ac.uk | December 4th, 2000 | github.com/GeorgeWu1204 | linkedin.com/in/haoran-wu-a51329215/

Education

Imperial College London *London, UK*

MEng in Electronic and Information Engineering *Sept 2020 - Current*

- Dean's list (top 10% in the department) 2020/2021
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- Prize for runnners up of second year group project (second place in the department) 2021/2022

University College London *London, UK*

Foundation Programme *Sep 2019 - Jun 2020*

- Overall grade 88/100
- Graduated with Distinction

Work Experience

Institute of Computing Technology Chinese Academy of Sciences *Beijing, China*

Research Intern *Apr 2023 - Sep 2023*

- Develop a hardware fuzzer implemented on FPGA to automatically generate stimuli to the RISC-V processor.
- Develop a verification system executed fully on hardware SoC.

Imperial College London *London, UK*

Undergraduate Research Opportunities Programme *Jun 2022 - Sep 2022*

- Object Detection with Binary Neural Networks Based on FPGAs
- Conducted binary neural network training with Yolo model and constructed neural network hardware accelerators on FPGAs.
- Used Residual Binary Network and Tensorflow to train and convert the Yolo configuration into binary networks.

Southwest Jiaotong University State Key Laboratory of Traction Power *Chengdu, China*

Research Intern *Jun 2021 - Aug 2021*

- Tested the relative displacement and interaction force of the High Temperature Superconducting Maglev and published a paper for this research.
- Participated in fatigue experiments on bogie frame, coupler, damper of the bullet train.
- Designed a lighter coupler with high modulus capacity using carbon fiber and patented for it.

University Projects

FPGA Hardware acceleration *London, UK*

Imperial College London *Jan 2023 - Mar 2023*

- Apply hardware acceleration techniques like Cordic and Pipeline to speed up certain function calculations on FPGA.
- **Technical Skills:** Verilog, C++, Quartus

Mars Rover *London, UK*

Imperial College London *May 2022 - Jul 2022*

- Built a complete rover including both server-side and hardware side.
- Programmed the RGB camera and applying filters and algorithms on it to detect balls and cylinders in different colours.
- Applied algorithms to the rover, enabling it to explore the whole map without collapsing with the barriers on it.
- **Technical Skills:** C, C++, Python, Verilog.

C to MIPS Compiler *London, UK*

Imperial College London *Feb 2022 - Apr 2022*

- Studied different parts of the compiler and building a simplified version of C to MIPS compiler.
- **Technical Skills:** C, C++, Yacc, Lex, Makefile.

Game Based on FPGAs *London, UK*

Imperial College London *Nov 2022 - Dec 2022*

- Designed a multi-player pvp car racing video game by using an FPGA board as a gamepad.
- **Technical Skills:** C, C++, C#, Unity, UDP.

MIPS CPU *London, UK*

Imperial College London *Nov 2022 - Dec 2022*

- Constructed a non-pipe-lined and a pipe-lined MIPS CPU by Verilog, which both passed 98% of the examiner's test.
- Devised a test-bench with random MIPS-code generator and a mock CPU in C++ as the reference to verify the two CPUs.
- **Technical Skills:** Verilog, C++, Shell.

Circuit Simulator *London, UK*

Imperial College London *May 2021 - Jun 2021*

- Built a circuit simulator that could conduct AC and DC analysis for various circuits including diodes.
- **Technical Skills:** C++