Yulin Fu

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PhD student in Computer Science at the University of Auckland. My research focuses on hardware acceleration for deep learning - including FPGA-based edge AI systems, high-level synthesis (HLS) automation, and FPGA-driven LLM acceleration.

Education

Sep 2025 - present **PhD, Computer Science**
University of Auckland | Auckland, New Zealand

Mar 2023 - Sep 2025 **M.Sc., Computer Science**
University of Auckland | Auckland, New Zealand

Sep 2019 - Jun 2023 **B.E., Computer Science**
Northeast Forestry University | Harbin, China

Supervision and Research Interests

Main Supervisor: Dr. Sean Longyu Ma
Co-supervisor: Associate Professor Bruce Sham

FPGA-based Hardware Acceleration | Edge AI Systems | Neural Network Accelerators | High-Level Synthesis (HLS) | LLM Acceleration

Publications

1. 2026 **RedPIM: An Efficient PIM Accelerator Design with Reduced Analog-to-Digital Conversions**
J. Li, Y. Fu, S. Longyu, et al.
ACM Transactions on Design Automation of Electronic Systems | *journal*
DOI: 10.1145/3769122

2. 2026 **SGRM: Sensitivity-Guided Resource Minimization for FIFO Design Space Exploration in HLS Dataflow Designs**
Y. Fu, J. Zhu, J. Li, et al.
The 2026 International Conference on Field Programmable Technology (FPT 2026) | *conference*
Accepted Aug 19, 2026

3. 2025 **A Review of FPGA-Driven LLM Acceleration**
Y. Fu, J. Li, C. Cheng, et al.
2025 IEEE 18th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoC) | *conference*
DOI: 10.1109/MCSOC67473.2025.00018

4. 2025 **FPGA-based real-time image tampering detection system for edge computing**
Y. Fu, J. Li, S. Longyu, et al.
2025 IEEE 14th Global Conference on Consumer Electronics (GCCE) | *conference*
DOI: 10.1109/GCCE65946.2025.11274616

5. 2025 **An Efficient FPGA-Based Edge AI System for Railway Fault Detection**
Y. Fu, D. Yan, J. Li, et al.
IEEE Consumer Electronics Magazine | *journal*
DOI: 10.1109/MCE.2025.3527118 Repository

6. 2025 **Enhancing Synthesis Efficiency in HLS through LLM-Based Automated Code Correction**
Z. Zhang, Y. Fu, J. Li, et al.
2025 IEEE 14th Global Conference on Consumer Electronics (GCCE) | *conference*
DOI: 10.1109/GCCE65946.2025.11274689

7. **2025** **Efficient Real-Time Railway Fault Detection Using FPGA-Based Edge AI System**
Y. Fu (S. L. Ma, editor)
Masters Thesis, University of Auckland | *thesis*
Repository

8. **2024** **A Framework for Mapping Convolutional Neural Network onto Memristor Crossbars**
J. Li, Y. Fu, C.-W. Sham, et al.
2024 IEEE 13th Global Conference on Consumer Electronics (GCCE) | *conference*
DOI: 10.1109/GCCE62371.2024.10760655 Repository

9. **2024** **An Edge AI System Based on FPGA Platform for Railway Fault Detection**
J. Li, Y. Fu, D. Yan, et al.
2024 IEEE 13th Global Conference on Consumer Electronics (GCCE) | *conference*
DOI: 10.1109/GCCE62371.2024.10760330 Repository

Talks and Presentations

Dec 2025 **Presented at MCSoC 2025**
Online
Presented at the IEEE 18th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoC 2025).

Oct 2025 **Online presentation at GCCE 2025**
Online
Delivered an online presentation at the IEEE 14th Global Conference on Consumer Electronics (GCCE 2025).

Nov 2024 **Presented on-site at GCCE 2024 in Japan**
Kitakyushu, Japan
Delivered an in-person presentation at the IEEE 13th Global Conference on Consumer Electronics (GCCE 2024).

Selected Activities

Aug 2026 **Participated in the University of Auckland Open Day 2026**
Auckland, New Zealand

May 2026 **Attended the 8th Beijing Zhiyuan Conference**
Beijing, China

May 2024 **Pervasive AI Developer Contest with AMD on Hackster.io**
Participated with a railway inspection robot project for automated fault detection.

Jan 2024 **Joined Dr. Sean Longyu Ma's research group**

Academic Service

Reviewer, ICONIP 2024 Certificate

Reviewer, ICCAD 2026

Reviewer, IEEE Consumer Electronics Magazine

Reviewer, Journal of Systems Architecture (JSA) Certificate