

Yang (Adrian) Liu

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EDUCATION

Fudan University Shanghai, China

Master of Science in Electronics Science and Technology

Sep. 2022 – Present

- **GPA: 3.85/4.00** **Rank: 1st** (out of 45) **Core Courses GPA: 4.00/4.00**
- **Major Courses:** Advanced Digital Integrated Circuits Design, Parallel Computing, Discrete Mathematics & Optimal Decision, System-Level FPGA Design, Digital Signal Processing VLSI Design

Cornell University Ithaca, USA

Visiting: Graduate Intern in Electrical and Computer Engineering Department

June 2024 – Jan. 2025

- **Projects:** Programming Model for Composable Accelerator Design, Tile-based Programming Interface

Fudan University Shanghai, China

Bachelor of Engineering in Microelectronic Science and Engineering

Sep. 2018 – June 2022

- **GPA: 3.80/4.00** **Rank: 3rd** (out of 147) Graduated with Highest Distinction
- **Thesis:** A Software-Hardware Co-design Acceleration of Squeeze-and-excite Network on SOC Platform

RESEARCH EXPERIENCE

Research Intern, Computer Systems Laboratory *Advisor:* Prof. Zhiru Zhang

Cornell University, Ithaca, USA

June 2024 – Jan. 2025

- **Research Field:** Domain Specific Compiler, Programming Language

Research Assistant, State Key Laboratory of ASIC and System *Advisor:* Prof. Jun Yu, Kun Wang

Fudan University, Shanghai, China

Feb. 2022 – Present

- **Research Field:** Computer-Aided Design, Integrated Circuit and System Design

Research Intern, Intelligence Computing Lab *Advisor:* Prof. Jun Yu, Jicheng Lu

Shanghai Fudan Microelectronics Group Co., Ltd, Shanghai, China

July 2021 – Feb. 2023

- **Research Field:** Hardware Accelerator, Artificial Intelligence Application

PUBLICATION

- [1] **TransLib: An Extensible Graph-Aware Library Framework for Automated Generation of Transformer Operators on FPGA**

Yang Liu, Tianchen Wang, Yuxuan Dong, Zexu Zhang, Shun Li, Jun Yu, Kun Wang

43rd ACM/IEEE International Conference on Computer-Aided Design (ICCAD), 2024

- [2] **DIF-LUT: A Simple Yet Scalable Approximation for Non-linear Activation Function on FPGA**

Yang Liu, Xiaoming He, Jun Yu, Kun Wang

33rd International Conference on Field Programmable Logic and Applications (FPL), 2023

- [3] **ATE-GCN: An FPGA-based Graph Convolutional Network Accelerator with Asymmetrical Ternary Quantization**

Ruiqi Chen, Jiayu Liu, Shidi Tang, Yang Liu, Yanxiang Zhu, Ming Ling, Bruno da Silva

28th Design, Automation and Test in Europe Conference (DATE), 2025

- [4] **Deploying Diffusion Models with Latency-Oriented Scheduling and Memory Overflow Prevention Based on Graph Optimization**

Hao Zhou, Yang Liu, Hongji Wang, Enhao Tang, Shun Li, Yifan Zhang, Guohao Dai *et al.*

30th Asia and South Pacific Design Automation Conference (ASP-DAC), 2025

[5] **Fitop-Trans: Maximizing Transformer Pipeline Efficiency through Fixed-Length Token Pruning on FPGA**

Kejia Shi*, Manting Zhang*, Keqing Zhao, Xiaoxing Wu, Yang Liu, Jun Yu, Kun Wang
34th International Conference on Field-Programmable Logic and Applications (FPL), 2024

[6] **SDAcc: A Stable Diffusion Accelerator on FPGA via Software-Hardware Co-Design**

Hao Zhou, Yang Liu, Hongji Wang, Enhao Tang, Shun Li, Yifan Zhang, Kun Wang
32nd IEEE International Symposium On Field-Programmable Custom Computing Machines (FCCM), 2024

[7] **CSTrans-OPU: An FPGA-based Overlay Processor with Full Compilation for Transformer Networks via Sparsity Exploration**

Yueyin Bai*, Keqing Zhao*, Yang Liu, Hongji Wang, Hao Zhou, Xiaoxing Wu, Jun Yu, Kun Wang
61st ACM/IEEE Design Automation Conference (DAC), 2024

(Papers Under Review)

[8] **DIF-LUT Pro: An Automated Tool for Simple yet Scalable Approximation of Nonlinear Activation on FPGA**

Yang Liu, Shuyang Li, Yu Li, Ruiqi Chen, Shun Li, Jun Yu, Kun Wang
IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)

AWARDS AND HONORS

- **National Scholarship** *Nov. 2024*
 - **Fudan University Outstanding Student (Graduate)** *Oct. 2024*
 - **Fudan University Outstanding Administrative Assistant** *June 2024*
 - **Fudan University Graduate Student Excellence Scholarship First Prize** *Dec. 2023*
 - **Shanghai Outstanding Graduates (Undergraduate)** *June 2022*
 - **Fudan University Undergraduate Student Excellence Scholarship First Prize** *May 2022*
 - **Fudan University Outstanding Student (Undergraduate)** *Oct. 2021*
 - **Shanghai Municipal Scholarship** *Dec. 2020*
 - **Fudan University Outstanding Internet Culture Work: Second Prize** *Dec. 2019*
- Co-founded a student mental health social media page, achieving 2k+ followers and nearly 30k views in one semester*

COMPETITIONS

- 2024 CAD Contest at ICCAD** *May 2024 – Sep. 2024*
- **Outcomes: Honorable Mention**, Participation Mode: Team
 - Contest Problem: Power and Timing Optimization Using Multibit Flip-Flop
 - Implemented a comprehensive cost model for metrics such as area and delay
 - Developed a visualization interface for layout placement results
- 2021 AIWIN Fall – ECG Diagnosis Track** *Oct. 2021 – Feb. 2022*
- **Outcomes: Fifth Place**, Participation Mode: Team
 - Proposed post-process algorithms for feature correlation analysis
 - Implemented mathematical feature extraction as a prior
 - Employed existing Python libraries to make further adjustments to the network's prediction
- 2021 Shanghai Digital Transformation Intelligent Algorithm Competition** *Aug. 2021 – Nov. 2021*
- **Outcomes: Grand Prize**, Participation Mode: Team (leader)
 - Designed a multi-DNN application scheme for posture recognition in urban scenarios
 - Proposed and integrated filter algorithms in the object detection phase
 - Collected and transformed appropriate dataset for the urban scenarios

SELECTED PROJECTS

- Allo-DF** | *Python, C++, HLS, MLIR; Vitis, Pytest, CI* *July 2024 – Present*
- Explore the potential of agile design for programmable architecture with advanced programming model
 - Develop tile-based programming interface and relevant features for dataflow architecture
- TransLib** | *Python, Verilog HDL, C++, Shell; PyTorch, ONNX, Docker, Vivado* *June 2023 – May 2024*
- Proposed an automated and extensible framework for the accelerator generation of transformer networks
 - Proposed an innovative graph analysis and matching algorithms, ideal for large-scale networks
 - Designed a configurable template library of various operations to explore the design space
- DIF-LUT** | *Python, Verilog HDL, Shell; Vivado* *Feb. 2023 – Sep. 2024*
- Proposes a simple yet scalable and effective approximation for Non-linear function
 - Designed an automation toolchain for table generation and precision evaluation
 - Integrated as an computing unit in FPGA-based accelerator for DNN and Nerf
- SEResnet Accelerator on SOC** | *Verilog HDL, C++, Python, Shell; Vivado, VStudio* *Feb. 2022 – Dec. 2022*
- Organized the acceleration flow of hardware and software co-design with the compiler
 - Deployed specific operations on programmable logic resource of SOC
 - Programmed and registered C++ operations on host CPU for simulation
- The Straggler - A Vertically Scrolling Shooting Game** | *C++; VStudio* *Feb. 2021 – June 2021*
- Pay homage to the classic shooting game – Raiden, based on a C++ pixel engine
 - Developed various game mechanics including skill upgrades, level progression, and boss battles
 - Incorporated numerous game features, including pause-and-save, background music, and sound effects

ACADEMIC AND EDUCATIONAL ENGAGEMENT

- 43rd ACM/IEEE International Conference on Computer-Aided Design (ICCAD)**
Newark, New Jersey, USA *Oct. 2024*
- Oral** TransLib: An Extensible Graph-Aware Library Framework for Automated Generation of Transformer Operators on FPGA
- 61st ACM/IEEE Design Automation Conference (DAC)**
Moscone West, San Francisco, USA *June 2024*
- Oral** TrafficHD: Efficient Hyperdimensional Computing for Real-Time Network Traffic Analytics
- 33rd International Conference on Field Programmable Logic and Applications (FPL)**
Chalmers University of Technology, Gothenburg, Sweden *Sep. 2023*
- Poster** DIF-LUT: A Simple Yet Scalable Approximation for Non-linear Activation Function on FPGA
- Teaching Assistant: Methodology of Integrated Circuit Design**
Fudan University, Shanghai, China *Spring 2023*
- Teaching Assistant: Psychological Training of Success Qualities**
Fudan University, Shanghai, China *Fall 2019*

OTHER WORK EXPERIENCE

- Administrative Assistant, Mental Health Center of Fudan University**
Fudan University, Shanghai, China *Feb. 2024 – June 2024*
- Middle Manager, Work-Study Program Entity of Fudan University**
Student Book Kiosk, Fudan University, Shanghai, China *Jan. 2020 – Jan. 2021*

TECHNICAL SKILLS

- Languages:** Python, C/C++, Verilog HDL, HLS, Shell, Assembly, Tcl, etc.
- Developer Tools:** Vivado, Vitis, Quartus, Docker, Visual Studio, PyCharm, VMWare Workstation, L^AT_EX, etc.
- Frameworks & Libraries:** MLIR, PyTorch, OpenCV, Pytest, NetworkX, Matplotlib, etc.