Yufeng Gu

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━━ EDUCATION

University of Michigan   **Ann Arbor, MI, USA**
Ph.D. Student, Computer Science and Engineering Department   *Sep. 2020 - Aug. 2025*
Advisor: Prof. Reetuparna Das, GPA: 3.88/4.00

Zhejiang University (ZJU)   **Hangzhou, China**
B.Eng., College of Information Science and Electronic Engineering   *Sep. 2016 - June 2020*
GPA: 3.96/4.00

━━ EMPLOYMENT

Intel Labs   **Hillsboro, OR, USA**
Graduate Research Intern, Manager: Nilesh Jain   *June 2022 – Aug. 2022*
Optimized AI QoS on next generation heterogenous datacenter platform.

Tenstorrent Inc.   **Santa Clara, CA, USA**
Performance Architect Intern, Manager: Wei-han Lien   *May 2023 – Aug. 2023*
Built performance model for RISC-V CPU and AI accelerator.

━━ RESEARCH EXPERIENCE

University of Michigan   **Ann Arbor, MI, USA**
Graduate Research Assistant, Advisor: Reetuparna Das   *Sep. 2020 - Present*

GenomicsBench: A Benchmark Suite for Genomics
- Collected time consuming kernels from commonly used genomics secondary analysis pipeline.
- Profiled instruction and memory access characteristics of genomics kernels.

GenDP: A Framework of Dynamic Programming Acceleration for Genome Sequencing Analysis
- Designed the ISA and Microarchitecture of the dynamic programming acceleration accelerator.
- Designed a cycle-accurate simulator to evaluate the accelerator.

AI QoS Optimization on Xeon Server

PIM-based Large Language Model Accelerator

Yale University   **New Heaven, CT, USA**
Student Intern, Advisor: James Duncan   *Nov. 2019 – Mar. 2020*
Interpretation on ASD with fMRI and Deep Learning Models
- Used LSTM-VAE to extract features from Regions of Interests (ROIs) in fMRI.
- Applied graph neural network on interpreting ASD Biomarkers and classification.
- Applied privacy-preserving federated learning framework on multi-site fMRI analysis.

École Polytechnique Fédérale De Lausanne (EPFL)   **Lausanne, Switzerland**
Student Intern, Advisor: Babak Falsafi   *July 2019 – Sep. 2019*
QFlex Simulator
- Build CMake compilation for QFlex simulator.
- Patch for GCC-8, Boost Library and Travis-CI code formatting test.
Activation Function Optimization for DNN Accelerator

- Optimized LSTM activation functions with second-order polynomial approximations and lookup table for both forward computation and back-propagation.
- Designed digital implementation of the optimized activation functions in Verilog.

Zhejiang University (ZJU) **Hangzhou, China**
Student Intern, Advisor: Peng Liu *Sep. 2018 – May. 2019*
DNN Accelerator
- Designed a systolic array based matrix-matrix multiplication unit.

▬▬ PUBLICATIONS

Yufeng Gu, Arun Subramaniyan, Tim Dunn, Alireza Khadem, Kuan-Yu Chen, Somnath Paul, Md Vasimuddin et al. "GenDP: A Framework of Dynamic Programming Acceleration for Genome Sequencing Analysis." In Proceedings of the 50th Annual International Symposium on Computer Architecture (ISCA), pp. 1-15. 2023.

[1] Arun Subramaniyan, **Yufeng Gu**, Timothy Dunn, Somnath Paul, Md Vasimuddin, Sanchit Misra, David Blaauw, Satish Narayanasamy, and Reetuparna Das. "GenomicsBench: A Benchmark Suite for Genomics." In 2021 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS), pp. 1-12. IEEE, 2021.

[2] Xiaoxiao Li, **Yufeng Gu**, Nicha Dvornek, Lawrence H. Staib, Pamela Ventola, and James S. Duncan. "Multi-site fMRI analysis using privacy-preserving federated learning and domain adaptation: ABIDE results." Medical image analysis 65: 101765. *IF = 11.148*

[3] Xiaoxiao Li, Yuan Zhou, Nicha C. Dvornek, **Yufeng Gu**, Pamela Ventola, and James S. Duncan. "Efficient Shapley Explanation for Features Importance Estimation Under Uncertainty." In International Conference on Medical Image Computing and Computer-Assisted Intervention, pp. 792-801. Springer, Cham, 2020.

▬▬ SKILLS

- **English Test**: TOEFL 103 (R29/ L26/ S21/ W27), GRE 321 (V151/ Q170/ AW4.0)
- **Programming Language**: C/C++, Python, Verilog, Linux Bash, MATLAB.
- **Development Skills**: VCS Design Compiler, PyTorch, TensorFlow, ModelSim, Vivado, Latex.
- **Others**: Swimming, Tennis, Badminton, Table Tennis, Chinese Calligraphy.

▬▬ AWARDS & ACHIEVEMENTS

- Fellowship of Summer@EPFL (2% applicants awarded) *July 2019*
- Tang Lixin Fellowship (60/36,000 students in Zhejiang University) *Nov. 2017, 2018, 2019*
- Outstanding Student Leaders in Zhejiang University (3% students awarded) *Oct. 2017, 2019*
- Honorable Mention in Mathematical Contest in Modeling (MCM) *Feb. 2018*
- First-Class Scholarship for Outstanding Students (2% students awarded) *Oct. 2017*

▬▬ SERVICES

- Artifact evaluation reviewer for IISWC 2021, ISCA 2023.
- Reviewer for University of Michigan graduate student admission, 2021, 2022.
- Voluntary teacher in Tuanlin Primary School, Guizhou *Aug. 2017*