

YIXIN DONG

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EDUCATION

Carnegie Mellon University, Pittsburgh, USA 2024.9 – Present

Ph.D. in Machine Learning (Advisor: Prof. Tianqi Chen)

Shanghai Jiao Tong University, Shanghai, China 2020.9 – 2024.6

B.S. in Computer Science (ACM Honors Class, an honor program for top 5% students), Zhiyuan College

- GPA: 4.03/4.3 (2/37); *summa cum laude*

RESEARCH INTERESTS

Large Language Models, LLM Agents, Machine Learning Systems, Machine Learning Compilers

OPEN SOURCE PROJECTS

Apache TVM —  [Github](#) ★ 11.8k  3.5k 2022.8 – Present

- Open source machine learning compiler, enabling deployment models on diverse hardware backends
- Leading the TVM Unity-AD project, the next-generation automatic differentiation framework featuring compilation optimization and cross-platform deployment
- Contributing to several key features: TVM Unity IR, DLight GPU Scheduler, TVM Runtime
- Serving as Apache TVM Reviewer in the community

MLC-LLM —  [Github](#) ★ 19.1k  1.6k 2023.2 – Present

- Compile and deploy LLMs natively and fast on various platforms, including laptops, Macs, iPhones, and Android devices
- Main contributor to the project, contributing to GPU kernel generation, API integration, and LLM code generation

XGrammar —  [Github](#) ★ 753  37  3.5M 2024.11 – Present

- An LLM structured generation engine that accepts user-specified format and outputs in this format with 100% accuracy, benefiting downstream applications
- 10x faster than the current state-of-the-art structured generation solution Outlines
- Integrated into major LLM serving engines, including SGLang, MLC-LLM, vLLM, TensorRT-LLM, etc.

RESEARCH INTERNSHIPS

Deepseek, Hangzhou, China 2024.3 – 2024.7

Research Intern

- **LLM Pretraining and Inference Optimization**
 - Involved in the training and inference optimization of Deepseek-V2, a strong Mixture-of-Experts (MoE) language model characterized by economical training and efficient inference
 - Designed a code generation engine for Deepseek-V2-Coder, enhancing code generation and function-calling capabilities

SAMPL, University of Washington 2023.7 – 2024.1

Research Intern, advised by Prof. Luis Ceze and Prof. Tianqi Chen (CMU)

- **On-device Deployment of Large Language Model Fine-tuning**
 - Enabled fine-tuning of large language models on Mac, AMD, and iPhone GPUs (for the first time)
- **Efficient GPU Kernel Generation**
 - Designed an automatic GPU kernel generation framework for LLMs, achieving state-of-the-art performance on both NVIDIA and Apple GPUs

Research Intern, advised by Prof. Yong Yu and Prof. Weinan Zhang

- **Training Optimization for Machine Learning Compilers**

- Designed TVM Unity-AD, a next-generation automatic differentiation framework for Apache TVM

HONORS

Programming Competitions

Gold Medal, 2020 ICPC Asia East Continent Final 2021.4

Gold Medal, 2020 ICPC Asia Shanghai Regional Contest 2020.11

Gold Award, 2020 China Collegiate Programming Contest, Mianyang Site 2020.11

Scholarships

Fan Hsu-Chi Chancellor's Scholarship 2023.8, 2022.8

Highest-level scholarship at SJTU, awarded to the top 0.1% students (15 out of 15,000)

China National Scholarship 2021.11

Awarded to top 0.2% students nationwide

Hanyingjuhua Outstanding Student Scholarship 2021.11

Zhiyuan Honor Scholarship 2022.12, 2021.12, 2020.12

SELECTED INDIVIDUAL PROJECTS

CompilerStorm 2022.1

A compiler designed from scratch that compiles a C++-like language into RISC-V assembly, featuring JIT compilation and register allocation optimization

Hummingbird 2021.11

A RISC-V processor implemented in Verilog with out-of-order execution and branch prediction, running on an FPGA development board

SELECTED TALKS

XGrammar: Flexible and Efficient Structured Generation Engine for Large Language

Models, CMU Catalyst; THU IIS 2024.10, 2024.12

Universal Deployment of LLM Finetuning, UW SAMPL 2023.11

On-device Training on Machine Learning Compiler, SJTU Apex Lab 2023.4

Cross-platform Training Using Automatic Differentiation on Relax IR, TVMCON 2023 2023.3

LEADERSHIP

Co-organizer of the 2023 ACM-Class Student Academic Festival (ASAF2023) 2023.6

Coordinated the conference schedule and helped invite seven professors and 14 Ph.D. students worldwide

Team Leader of the Overridea team in ACM-ICPC 2020.9-2021.6

TEACHING

Operating Systems, taught by Prof. Alei Liang 2023.3-2023.7

Teaching assistant leading the design of an education-oriented OS

C++ Programming, taught by Prof. Huiyu Weng 2021.9-2022.1

Teaching assistant delivering lectures and designing the course final project