Xuanda Yang

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Education

University of California San Diego
Ph.D. in Computer Science — Sep. 2021 – Present
- Research area: computer graphics, programming languages, compilers

Zhejiang University
B.Eng. in Computer Science and Technology — Sep. 2016 – Jun. 2020

Publications

AStitch: Enabling A New Multi-Dimensional Optimization Space for Memory-Intensive ML Training and Inference on Modern SIMT Architectures — ASPLOS 2022
Zhen Zheng, **Xuanda Yang**, Pengzhan Zhao, Guoping Long, Kai Zhu, Feiwen Zhu, Wenyi Zhao, Xiaoyong Liu, Jun Yang, Jidong Zhai, Shuaiwen Leon Song, Wei Lin

Neural Reflectance Capture in the View-Illumination Domain — IEEE TVCG
Kaizhang Kang, Minyi Gu, Cihui Xie, **Xuanda Yang**, Hongzhi Wu, Kun Zhou

QuanTaichi: A Compiler for Quantized Simulations — SIGGRAPH 2021
Yuanming Hu, Jiafeng Liu, **Xuanda Yang**, Mingkuan Xu, Ye Kuang, Weiwei Xu, Qiang Dai, William T. Freeman, Fredo Durand

Experience

Alibaba Cloud, Platform of AI — Mar.2021 – Jul. 2021
Research Intern
- Worked on internal deep learning compiler stack involving TensorFlow XLA, MLIR, and TVM.
- Design new operator fusion and code generation for memory-intensive workload based TensorFlow XLA
- Work submitted to PPoPP 2021

Google Summer of Code 2021, The Julia Programming Language — May. 2021 – Sept 2021
Student Developer (Remote), advised by Jameson Nash and Shuhei Kadowaki
- Designed and implemented a prototype of **Escape Analysis** in the Julia Compiler
- Create a path-sensitive analysis pass to analyze per-statement escape information operating on Julia SSA IR
- Implement a prototype pass of heap-to-stack optimization leveraging escape information

Google Summer of Code 2020, Mypy — May. 2020 – Sept 2020
Student Developer (Remote), advised by Jukka Lehtosalo and Michael J. Sullivan
- Designed and implemented a low-level IR for mypyc, a high-performance compiler for typed Python
- Significantly improved mypyc's performance on various performance-critical operations
- Made the new experimental x86 assembly backend from impossible to practical

Teaching

GAMES 201: Advanced Physics Engines 2020: A Hands-on Tutorial
Teaching Assistant, lectured by Dr. Yuanming Hu — May. 2020 – Aug 2020

SELECTED PROJECTS

Mypy Nov. 2019 – Present

Project Collaborator

- Actively contributes to mypy since Nov. 2019
- Significantly improve the expressiveness of mypyc IR
- Review new PRs and maintain the project on a daily basis

Automatic Video Object Cutout System May. 2019 - Jun. 2019

- Designed a system to automatically segment interesting foreground regions from continuous frames of videos
- Implemented iterative post-processing and mixture-based discriminative model to improve details
- Implemented a user-friendly GUI with QT, enabling interactive user refinement to correct small errors

Deep High Dynamic Range System for Dynamic Scenes Oct. 2019 - Nov. 2019

- Implemented a system from SIGGRAPH 2017 paper to generate high-quality HDR images of dynamic scene
- Conducted quantitative and qualitative analysis on impacts of different flow methods as initial alignment
- Proposed a modified network architecture to generate less artifact and more visual pleasant results

SELECTED AWARDS AND HONORS

- Outstanding undergraduate thesis award of Zhejiang University (1%) 2020
- Zhejiang Daily & Alibaba Scholarship (3%) 2019
- Zhejiang Provincial Government Scholarship (5%) 2018
- Scholarship for Outstanding Merits of Zhejiang University 2018, 2019
- Scholarship for Academic Excellence of Zhejiang University 2018, 2019
- First Prize of ASC18 Student Supercomputer Challenge 2018

MISCS

- **Programming Languages:** C/C++, Python, CUDA
- **Frameworks and Tools**: PBRT, TensorFlow, OpenGL, OpenMP, MPI
- **Languages**: Chinese (Native), English (Fluent)
- **Open-Source Contribution**: mypy, taichi, julia