Ziyu Ying

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RESEARCH KEYWORDS

- ❑ Mobile/Edge Computing
- ❑ Software-hardware Co-design
- ❑ AR/VR & 3D Vision
- ❑ On-Device Video Processing
- ❑ DNN Inference Optimization
- ❑ Computer Architecture

EDUCATION

Penn State University
Aug. 2019 - Present
Ph.D., Computer Science and Engineering
- Advisor: Mahmut Kandemir, Chita Das

University of Science and Technology of China (USTC)
Sep. 2015 - Jun. 2019
B.E., Electronic Engineering and Information Science
- Advisor: Cong Shen, Wenyi Zhang

RESEARCH EXPERIENCE

High Performance Computing Lab (HPCL), Penn State, PA
Research Assistant Aug. 2019 - Present
- **Algorithm and System Co-Design for Optimizing Emerging Applications:**
  - **Efficient Point Cloud Analysis on Edge Devices:** speed up the point cloud-based DNNs by increasing its regularities and utilizing the edge GPUs. [***ISCA2023***]
  - **Pushing Point Cloud Compression to the Edge**: improve the performance and energy efficiency of point cloud compression on edge/embedded devices through parallelization. [***MICRO2022***]
  - **Accelerate Neural Network Inference on Mobile/edge Devices**: energy-efficient DNN inference on edge device by exploiting the reuse opportunities across video frames.[***ICDCS2022***]
- Supervised by Prof. Mahmut Kandemir & Prof. Chita Das

Wireless Information Network Lab, USTC, Hefei
Research Assistant Jan. 2019 - May 2019
- Parameter Estimation

Wireless@HKU Group, Hong Kong
Research Assistant Jul. 2018 - Aug. 2018
- Edge Training

The Laboratory for Future Networks, USTC, Hefei
Research Assistant Sep. 2017 - Dec. 2018

- Reinforcement Learning and Wireless Communication

WORK EXPERIENCE

Google LLC
Software Engineering Intern @ SysArch AI Experiences May. 2023 - Present

- Large language models profiling;
- Optimize the memory-bound layers via processing-in-memory.

Meta Platforms, Inc.
Software Engineering Intern @ Assistant Platform May. 2022 - Aug. 2022

- Library support for the Assistant framework;
- Develop Apps that can be invoked/enabled by the Assistant.

PUBLICATIONS

- **Ziyu Ying**, Sandeepa Bhuyan, Yan Kang, Yingtian Zhang, Mahmut T. Kandemir and Chita R. Das, EdgePC: Efficient Deep Learning Analytics for Point Clouds on Edge Devices. (**ISCA 2023**)
- **Ziyu Ying**, Shuli Zhao, Sandeepa Bhuyan, Cyan Subhra Mishra, Mahmut T. Kandemir, and Chita R. Das, Pushing Point Cloud Compression to the Edge. (**MICRO 2022**)
- **Ziyu Ying**, Shulin Zhao, Haibo Zhang, Cyan Subhra Mishra, Sandeepa Bhuyan, Mahmut T. Kandemir, Anand Sivasubramaniam, and Chita R. Das, Exploiting Frame Similarity for Efficient Inference on Edge Devices. (**ICDCS 2022)**
- Sandeepa Bhuyan, Shulin Zhao, **Ziyu Ying**, Mahmut T. Kandemir, and Chita R. Das, End-to-end Characterization of Game Streaming Applications on Mobile Platforms. (**SIGMETRICS 2022**)
- Shulin Zhao, Haibo Zhang, Cyan Subhra Mishra, Sandeepa Bhuyan, **Ziyu Ying**, Mahmut T. Kandemir, Anand Sivasubramaniam, and Chita R. Das, HoloAR: On-the-fly Optimization of 3D Holographic Processing for Augmented Reality. (**MICRO 2021**).
- Shulin Zhao, Haibo Zhang, Sandeepa Bhuyan, Cyan Subhra Mishra, **Ziyu Ying**, Mahmut T. Kandemir, Anand Sivasubramaniam, and Chita R. Das, Déjà view: spatio-temporal compute reuse for energy-efficient 360° VR video streaming. (**ISCA 2020**).
- Zhiyang Wang, **Ziyu Ying**, Cong Shen, OPPORTUNISTIC SPECTRUM ACCESS VIA GOOD ARM IDENTIFICATION. (**GlobalSIP 2018**).

TEACHING EXPERIENCE

Pennsylvania State University
Teaching Assistant
CMPSC 200: Programming for Engineers with MATLAB

SERVICE

- Reviewer: IEEE Transactions on Computer 2023

AWARDS

- ISCA Travel Grant 2023
- MICRO Travel Grant 2022
- Outstanding Student Scholarship of USTC 2016-2018

RELEVANT COURSEWORK

Pennsylvania State University (Graduate)

✧Operating System Design ✧Advanced Compiler Construction ✧Introduction to Computer Architecture ✧Algorithm Design and Analysis ✧Large-Scale Machine Learning ✧Computer Vision ✧Image Processing

SKILLS

- Programming & Tools: C/C++, Python, Java, Kotlin, CUDA, Git, Android SDK, FFMPEG, Shell, Pytorch, TensorFlow, Matlab
- Operating System: Linux, Windows, MacOS