# NIANSONG ZHANG

 zzzDavid ⬦ Profile ⬦ About ⬦ Blog
471B Rhodes Hall, Cornell University
(+1) 607 319 1342 ⬦ nz264@cornell.edu

EDUCATION

Cornell University   *August 2021 - Present*
Ph.D. in Computer Engineering, advised by Prof. Zhiru Zhang
Department of Electric and Computer Engineering

Sun Yat-sen University   *August 2016 - June 2020*
B.Eng. in Telecomminication Engineering   Outstanding Thesis, Overall GPA: 3.8/4
School of Electornics and Information Technology

WORK EXPERIENCE

Intel Labs   Feb 2021 – Aug 2021
Exempt Technology Employee, Mentor: Dr. Jin Yang, Dr. Xu Zhang   *SAVE Group, SCL/ADR/IL*

· Investigated and developed an ASIC backend (Cadence Stratus HLS) for HeteroCL.

Tsinghua University   Nov 2019 – Aug 2021
Research Intern, Advisor: Prof. Yu Wang   *NICS-EFC Lab*

· DPU compiler, efficient network pruning, FPGA virtualization, 3D scene understanding.

The University of Waterloo   Jul 2019 – Oct 2019
Research Intern, Advisor: Prof. Nachiket Kapre   *WatCAG Group*

· FPGA placement for large scale systolic arrays.

PUBLICATIONS & MANUSCRIPTS

· **Serving Multi-DNN Workloads on FPGAs: a Coordinated Architecture, Scheduling, and Mapping Perspective**
Shulin Zeng, Guohao Dai, **Niansong Zhang**, Xinhao Yang, Haoyu Zhang, Zhenhua Zhu, Huazhong Yang, Yu Wang
IEEE/ACM Transactions on Computers (TC), 2022

· **Accelerator Design with Decoupled Hardware Customizations: Benefits and Challenges**
⋆ **Invited Paper**
Debjit Pal, Yi-Hsiang Lai, Shaojie Xiang, **Niansong Zhang**, Hongzheng Chen, Jeremy Casas, Pasquale Cocchini, Zhenkun Yang, Jin Yang, Louis-Nol Pouchet, Zhiru Zhang
ACM/IEEE Design Automation Conference (DAC), 2022

· **CodedVTR: Codebook-Based Sparse Voxel Transformer with Geometric Guidance**
Tianchen Zhao, **Niansong Zhang**, Xuefei Ning, He Wang, Li Yi, Yu Wang
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022

· **RapidLayout: Fast Hard Block Placement of FPGA-optimized Systolic Arrays using Evolutionary Algorithms**
Niansong Zhang, Xiang Chen, Nachiket Kapre
ACM Transactions on Reconfigurable Technology and Systems (TRETS), November 2021

- **HeteroFlow: An Accelerator Programming Model with Decoupled Data Placement for Software-Defined FPGAs**
Shaojie Xiang, Yi-Hsiang Lai, Yuan Zhou, Hongzheng Chen, **Niansong Zhang**, Debjit Pal, and Zhiru Zhang.
ACM/SIGDA International Symposium on Field-Programmable Gate Arrays (FPGA), 2022.

- **RapidLayout: Fast Hard Block Placement of FPGA-optimized Systolic Arrays using Evolutionary Algorithms**
⋆ **Best Paper Nominee**
Niansong Zhang, Xiang Chen, Nachiket Kapre
International Conference on Field-Programmable Logic and Applications (FPL), 2020.

- **aw_nas: A Modularized and Extensible NAS framework**
Xuefei Ning, Changcheng Tang, Wenshuo Li, Songyi Yang, Tianchen Zhao, **Niansong Zhang**, Tianyi Lu, Shuang Liang, Huazhong Yang, Yu Wang
Available on arXiv: 2012.10388.

WORKSHOPS

- **Enabling Fast Deployment and Efficient Scheduling for Multi-Node and Multi-Tenant DNN Accelerators in the Cloud**
Shulin Zeng, Guohao Dai, **Niansong Zhang**, Yu Wang
IEEE/ACM International Symposium on Microarchitecture (MICRO) ASCMD Workshop, 2021.

PATENTS

Niansong Zhang, Tianyi Lu, Shuang Liang, *A Pruning Method and framework for Multi-task Neural Network Models*, Chinese Patent 202010805327.1, filed August 12, 2020.

Niansong Zhang, Songyi Yang, Shun Fu, Xiang Chen, *An Automatic Geometric Dimension Measuring Method for Industrial Sheets Based on Computer Vision Techniques*, Chinese Patent CN201811539019.8A, filed December 17, 2018, and issued April 19, 2019.

PROFESSIONAL SERVICES

- Student Volunteer: FCCM 2022.

HONORS & AWARDS

DAC Young Fellow	2021
FPL 2020 Best Paper Nomination (Michal Servit Award)	2020
Outstanding Bachelor Thesis Award	2020
Mitacs Canada Globalink Research Internship Award	2019
First-class Merit Scholarship (top 5%)	2018 & 2019
Lin and Liu Foundation Scholarship (2/172)	2017