

YUCHEN LIU

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EDUCATION

Princeton University

September 2017 – November 2022

Doctor of Philosophy in Electrical and Computer Engineering

Princeton, NJ, U.S.

Research interest: Generative Models, Efficient Deep Learning, Machine Learning for Systems

Supervisor: Prof. S.Y. Kung and Prof. David Wentzlaff

Hong Kong University of Science and Technology

September 2013 – June 2017

Bachelor of Engineering in Electronic and Computer Engineering

Hong Kong

Minor: Information Technology

EXPERIENCE

Adobe Research

December 2022 – Present

Research Scientist

San Jose, CA, U.S.

Work under the computational artistry team on image generation technology.

Adobe Research

May – November 2021

Research Intern in Computer Vision

San Jose, CA, U.S.

Work with Dr. Zhixin Shu on a 3D-controllable GAN for face manipulation.

Adobe Research

May – November 2020

Research Intern in Computer Vision

San Francisco, CA, U.S.

Work with Dr. Federico Perazzi and Dr. Zhixin Shu on compressing StyleGAN2.

Massachusetts Institute of Technology

June – August 2016

Summer Research Student

Cambridge, MA, U.S.

Work with Prof. Dina Katabi on gait velocity and stride length estimation from wireless signals.

PUBLICATIONS

P.1. [Yuchen Liu](#), Georgios Tziantzioulis, and David Wentzlaff. “Building Efficient Neural Prefetcher”. In Submission.

P.2. [Yuchen Liu](#), Zhixin Shu, Yijun Li, Zhe Lin, Richard Zhang, and S.Y. Kung. “3D-FM GAN: Towards 3D-Controllable Face Manipulation”. In Proceedings of the *European Conference on Computer Vision, ECCV 2022*. ([paper](#))

P.3. [Yuchen Liu](#), Zhixin Shu, Yijun Li, Zhe Lin, Federico Perazzi, and S.Y. Kung. “Content-Aware GAN Compression”. In Proceedings of the *Conference on Computer Vision and Pattern Recognition, CVPR 2021*. ([paper](#))

P.4. [Yuchen Liu](#), S.Y. Kung and David Wentzlaff. “Evolving Transferable Neural Pruning Functions”. In Proceedings of the *Genetic and Evolutionary Computation Conference, GECCO 2022*. ([paper](#))

P.5. [Yuchen Liu](#), David Wentzlaff and S.Y. Kung. “Class-Discriminative Network Compression”. Accepted to *International Conference on Pattern Recognition, ICPR 2022*. ([paper](#))

P.6. [Yuchen Liu](#), David Wentzlaff and S.Y. Kung. “Rethinking Class-Discrimination Based CNN Channel Pruning”. *ArXiv 2020*. ([arxiv](#))

P.7. S.Y. Kung, Zejiang Hou and [Yuchen Liu](#). “Methodical Design and Trimming of Deep Learning Networks: Enhancing External BP learning with Internal Omnipresent-Supervision Training Paradigm”. In Proceedings of the *International Conference on Acoustics, Speech, and Signal Processing, ICASSP 2019*. ([paper](#))

P.8. Chen-Yu Hsu, [Yuchen Liu](#), Zachary Kabelac, Rumen Hristov, Dina Katabi, and Christine Liu. “Extracting Gait Velocity and Stride Length from Surrounding Radio Signals”. In Proceedings of the *Conference on Human Factors in Computing Systems, CHI 2017*. ([paper](#))

SELECTED RESEARCH PROJECTS

3D-FM GAN: Towards 3D-Controllable Face Manipulation

May – November 2021

Supervisor: Dr. Zhixin Shu

Adobe Research, Adobe, U.S.

- Develop a conditional StyleGAN generator for 3D-controllable and identity-preserved face manipulation.
- Keyword: StyleGAN2, 3DMM, conditional GAN, controllable image manipulation. Paper in ECCV 2022 ([paper](#)).

Content-Aware GAN Compression

May – November 2020

Supervisor: Dr. Federico Perazzi and Dr. Zhixin Shu

Adobe Research, Adobe, U.S.

- Develop a content-aware strategy to compress state-of-the-art generative adversarial networks (GANs), StyleGAN2.
- Keyword: StyleGAN2, network compression, image editing. Paper published in *CVPR 2021* ([paper](#)).

Evolving Transferable Neural Pruning Functions

Supervisor: Prof. David Wentzlaff

August 2019 – June 2020
ECE Dept., Princeton University, U.S.

- Learn novel and transferable closed-form pruning functions by an evolution strategy.
- Keyword: MobileNet-V2, channel pruning, genetic programming. Paper accepted to *GECCO 2022* ([paper](#)).

Building Efficient Neural Prefetcher

Supervisor: Prof. David Wentzlaff

February – October 2022
ECE Dept., Princeton University, U.S.

- Building efficient neural network for memory prefetching in micro-architectures system.
- Keyword: SPEC CPU benchmark, memory access pattern, neural prefetcher. Paper in submission.

Class-Discriminative CNN Compression

Supervisor: Prof. S.Y. Kung

November 2020 – March 2021
ECE Dept., Princeton University, U.S.

- Develop a class-discriminative approach for pruning and distillation to compress classification CNNs.
- Keyword: Channel pruning, discriminant functions, knowledge distillation. Paper accepted to *ICPR 2022* ([paper](#)).

Methodical Design and Trimming of Deep Learning Networks

Supervisor: Prof. S.Y. Kung

August 2018 – February 2019
ECE Dept., Princeton University, U.S.

- Introduce an internal omnipresent-supervision training paradigm for neural network's growing and trimming.
- Keyword: Channel pruning, channel growing, hidden layer's supervision. Paper published in *ICASSP 2019* ([paper](#)).

Gait Parameters Extraction Using RF Signal

Supervisor: Prof. Dina Katabi

June 2016 – November 2016
CSAIL, MIT, U.S.

- Extract gait velocity and stride length using wireless signals reflected from the human body.
- Keyword: Wireless sensing, continuous monitoring. Paper published in *CHI 2017* ([paper](#)).

HONORS & AWARDS

HKUST Outstanding Undergraduate

Awarded to top 3% of graduating undergraduate students.

May 2017

The 14th National Challenge Cup, National Round, Third Prize

Innovation competition joined by more than 2.5 million students from over 3,000 institutions

October 2015

HKUST 2015 President's Cup, Gold Award

University undergraduate innovative research competition, involving more than 40 groups of students

June 2015

The 6th HKUST Robot Design Contest, Silver Prize

University robot design contest with over 100 participants

December 2014

Scholarship Scheme for Continuing Undergraduate Students

Awarded to the top 5% of students

2013 – 2017

Dean's List

Acknowledgement from HKUST's dean to students with excellent academic performance

2014 – 2017

HKSAR Reaching Out Award

Awarded to students with international research experience

June 2016

EXCHANGE/VISITING

Massachusetts Institute of Technology, MA, U.S.

June – August 2016

Cornell University, NY, U.S.

August – December 2015

Peking University, Beijing, China

June – August 2014

SKILLS & TEST SCORES

Programming

C/C++, Python, HTML/CSS, Javascript, VHDL, Verilog, Android, UNIX shell script

Tools and libraries

TensorFlow, PyTorch, OpenCV, MATLAB, Mathematica, iPython, ROS

Languages

Mandarin (Native), Cantonese (Native), English (Proficient)