

YUCHEN LIU

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EDUCATION

Princeton University

September 2017 – Present

Doctor of Philosophy in Electrical Engineering (expected August 2022)

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 Engineering

Hong Kong

Minor: Business, Information Technology

Major GPA: 4.078/4.30

EXPERIENCE

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. “3D-IP GAN: Towards 3D-Controllable Identity-Preserved Face Manipulation”. Under Reviews.

P.2. 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.3. Yuchen Liu, David Wentzlaff and S.Y. Kung. “Class-Discriminative Network Compression”. *ArXiv 2021*. ([arxiv](#))

P.4. Yuchen Liu, S.Y. Kung and David Wentzlaff. “Evolving Transferable Pruning Functions”. *ArXiv 2021*. ([arxiv](#))

P.5. Yuchen Liu, David Wentzlaff and S.Y. Kung. “Rethinking Class-Discrimination Based CNN Channel Pruning”. *ArXiv 2020*. ([arxiv](#))

P.6. 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.7. 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](#))

RESEARCH PROJECTS

3D-IP GAN: Achieving 3D-Controllable Identity-Preserved Face Manipulation

May – November 2021

Supervisor: Dr. Zhixin Shu

Adobe Research, Adobe, U.S.

- Develop a conditional GAN with StyleGAN2 generator for 3D-controllable and identity-preserved face synthesis.
- Keyword: StyleGAN2, 3DMM, conditional GAN, controllable image manipulation. Paper in submission.

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 Pruning Functions

August 2019 – June 2020

Supervisor: Prof. David Wentzlaff

ELE 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 at ([arxiv](#)).

Class-Discriminative CNN Compression

Supervisor: Prof. S.Y. Kung

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

- Develop a class-discriminative approach for pruning and distillation to compress classification CNNs.
- Keyword: MobileNet-V2, channel pruning, discriminant functions, knowledge distillation. Paper at ([arxiv](#)).

Methodical Design and Trimming of Deep Learning Networks

Supervisor: Prof. S.Y. Kung

August 2018 – February 2019
ELE 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](#)).

Evolving Neural Networks for Memory Prefetching

Supervisor: Prof. David Wentzlaff

September 2020 – Present
ELE Dept., Princeton University, U.S.

- Evolve neural network structures for memory prefetching.
- Keyword: SPEC CPU benchmark, evolution strategy, workload analysis, memory access pattern.

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)