

# YUCHEN LIU

<https://lychenyoko.github.io>

+1 609-356-2121  $\diamond$  yl16@princeton.edu

## EDUCATION

### Princeton University

September 2017 – October 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

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 *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”. Accepted to *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**

---

<b>Programming</b>	C/C++, Python, HTML/CSS, Javascript, VHDL, Verilog, Android, UNIX shell script
<b>Tools and libraries</b>	TensorFlow, PyTorch, OpenCV, MATLAB, Mathematica, iPython, ROS
<b>Languages</b>	Mandarin (Native), Cantonese (Native), English (Proficient)