

# YUFAN REN

+1 6265168124 ✦ [renyufan@zju.edu.cn](mailto:renyufan@zju.edu.cn) / [renyufan@g.ucla.edu](mailto:renyufan@g.ucla.edu)

Department of Computer Science, College of Computer Science and Technology  
Zhejiang University, P.R. China

## RESEARCH INTERESTS

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- **Machine Learning and Computer Vision**, especially generative model for image and music generation, e.g. Generative Adversarial Nets (GAN) and Energy Based Models (EBM)
- **Cross-disciplinary Areas**, where Machine Learning and Computer Vision can be applied and boost other subjects

## EDUCATION

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### Zhejiang University

*Bachelor of Engineering (expected)*

Hangzhou, China

*Sept. 2016 - Jun. 2020*

- **Cumulative GPA: 3.99/4.00 (91.71/100); Major GPA: 4.00/4.00 (93.35/100); Rank: 1/48**; admitted to Zhejiang University on the basis of outstanding performance on national college entrance exam (top 2‰ statewide)
- **Chu Kochen Honors College: Advanced Honor Class of Engineering Education; GPA: 4.00/4.00** (Honored minor for the selected top 40 students with leadership and research capacity from about 5600 engineering students in Zhejiang University)
- **Honors Program: Morningside Culture China Scholar** (This program aims to nurture future social leaders who are knowledgeable about Chinese culture and have a global vision)

### University of California, Los Angeles

*Visiting Student*

CA, U.S.

*Jul. 2019 - Sept. 2019*

- Cross-Disciplinary Scholars in Science and Technology (CSST)
- Advisor: Prof. Ying Nian Wu
- Project: Generative Model and Hamiltonian Monte Carlo (Details see Research Experience)

## PUBLICATION

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- Zhaolin Qiu, **Yufan Ren**, Canchen Li, Hongfu Liu, Yifan Huang, Yiheng Yang, Songruoyao Wu, Hanjia Zheng, Juntao Ji, Jianjia Yu, Kejun Zhang. *Mind Band: A Crossmedia AI Music Composing Platform*. Proceedings of the 27th ACM international conference on Multimedia. ACM, 2019 (preprint)

## RESEARCH EXPERIENCE

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### Energy Based Model and Generative Model

UCLA

*Center for Vision, Cognition, Learning, and Autonomy; Advisor Prof. Ying Nian Wu*

*Jul. 2019 - Sept. 2019*

- Proposed the implementation of Hamiltonian Monte Carlo (HMC) methods in Generative models for more realistic image generation, which managed to go beyond simple MCMC methods
- Conducted overall experiments on benchmark dataset CIFAR-10 to compare both the efficiency and accuracy between HMC and Langevin dynamics

### Automatic Music Generation Model and Platform

Zhejiang University

*Next Lab; Advisor Prof. Kejun Zhang*

*Oct. 2018 - Jul. 2019*

- Established the startup - *Mind Band* at Hangzhou, P.R. China, devoting to automatic music generation and innovating the way of emotional expression
- Mainly worked on symbolic music generation (, especially chord learning) with the innovation of using Wasserstein GAN; wrote a 10-page paper about this model and submitted to ISMIR<sup>1</sup>
- Built a large platform (an app and a website) with teammates to combine music generation, music emotion extraction and humming recognition
- One of our paper is accepted by ACM Multimedia 2019

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<sup>1</sup>some generated samples can be found at my webpage

## Music Note Classification

Next Lab; Advisor: Prof. Kejun Zhang

Zhejiang University

Jul. 2019 - Sept. 2019

- Program: National Undergraduate Training Program for Innovation
- Established a music note recognition framework (OCR) to translate sheet music into Musical Instrument Digital Interface (MIDI) for the ease of editing and preservation
- Conducted a systematic study and practice of the knowledge for Programming (Python, Shell Script), Machine Learning (object classification task), Computer Vision and Music

## Machine Learning with Differential Privacy

Computer Network Security Course Project, Advisor: Prof. Kai Bu

Zhejiang University

Mar. 2019 - Jun. 2019

- Searched for and summarized literature on relevant topics for research direction
- Proposed a noise introducing method to prevent membership attack on pretrained model and provide differential privacy
- Programmed for the study and conducted toy example on MNIST and CIFAR-10
- Wrote and presented an introduction paper on this topic

## SCHOLARSHIPS

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- 2018: **Tang Lixin Scholarship**, 40 out of 23,000 undergraduate students
- 2018 & 2017<sup>2</sup>: **National Scholarship**, Top 0.2% across China
- 2018 & 2017: **First-Class Scholarship for Outstanding Students**, Top 3% across Zhejiang University
- 2018 & 2017: **First-Class Scholarship for Outstanding Merits**, Top 3% across Zhejiang University

## AWARDS

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- 2018: **Golden Award for China College Students Internet+ Innovation and Entrepreneurship Competition**, 58 winners teams out of 60,000
- 2018: **Outstanding Winner of China Collegiate Computing Contest - Mobile Application Innovation Contest**, highest prize of the only official competition by Apple Inc. in China
- 2017: **The Second Prize of Provincial Innovation Competition of Physics**

## ADDITIONAL INFORMATION

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### Additional Professional and Extracurricular Experiences

- **Mornside Scholars Program's American Visit**: Coordinator and active member (2019 summer)
- **College Students' Summer Supporting Education Activities**: Active member in Dream of Meitan (2017 summer)
- **Students Quality Training Project**: Team leader of residential college website design (2016)

### Interests

- **Novels and Science fiction literature**: *Guns, Germs and Steel: A short history of everybody for the last 13000 years*, *The Three-Body Problem*, *Love in the Time of Cholera*
- **Ancient Chinese books**: *Mencius*, *the Great Learning*
- **Sports**: swimming, jogging

### Computer and Language Skills

- **Computer Languages**: Python, MATLAB, C++, Linux Shell, C
- **Frameworks**: PyTorch, Tensorflow, QT, OpenCV
- **Operation Systems**: Linux, MacOS, Windows
- **Language**: Native speaker of Mandarin Chinese and fluent English

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<sup>2</sup>referring to more than once