YUFAN REN

Chu Kochen Honors College, Zhejiang University
Computer Science
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EDUCATION

Zhejiang University **Hangzhou, China**
Bachelor of Engineering Degree (expected) Sept. 2016 - June 2020

- Major: Computer Science and Technology
- Overall GPA: **3.99/4.00** (91.71/100); Major GPA: **4.0/4.0** (93.35/100); **Rank: 1/48**
- **Chu Kochen Honors College: Advanced Honor Class of Engineering Education** (Honored minor for the selected top 40 students with leadership and research capacity from about 5,600 engineering students in ZJU)
- **Honors Program: Morningside Culture China Scholar** (Aiming to inspire and develop future world leaders who are deeply rooted in Chinese civilization yet who possess a broad understanding of global issues)

University of California, Los Angeles (UCLA) **CA, U.S.**
Cross-disciplinary Scholars in Science and Technology (CSST) Program July 2019 - Oct. 2019

- *Top 100 Selected Students from across China and Japan*
- Overall GPA: **4.0/4.0**

PUBLICATIONS & UNDER REVIEW

- Ruiqi Gao, Jianwen Xie, Siyuan Huang, **Yufan Ren**, Song-Chun Zhu, Ying Nian Wu. *Learning vector representation of local content and matrix representation of local motion, with implications for V1*. (under review)
- 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

RESEARCH EXPERIENCE

Large Realistic Depth Dataset Driven by Multi-View Stereo with MVSNet **HKUST**
Computer Vision Group Oct. 2019 - Jan. 2020
Undergraduate Research Intern; Advisor: Prof. Long Quan

- Developed data process pipeline and ran experiments to compare other current state-of-the-art datasets
- (In progress)

Research on the Vector Representation of Local Content and Matrix Representation of Local Motion, with Implications for Primary Visual Cortex (V1) **UCLA**
Sept. 2019 - Oct. 2019
Center for Vision, Cognition, Learning, and Autonomy (VCLA)
Undergraduate Research Intern; Advisor: Prof. Yingnian Wu, Prof. Song-Chun Zhu

- Developed the V1 model, which can be approximated by Gabor filters as well as artificial neural network
- Capacitated the model to execute (1) Vector representation of local image content and (2) Matrix representation of local displacement
- Introduced the V1 model into common flow prediction problem dataset (, Sintel, as an example) by devising multi-resolution scheme and redesigning the smooth restriction, which managed to outperform the newest benchmark model FlowNet without need of Deep Neural Network

Energy Based Model and Generative Model **UCLA**
Center for Vision, Cognition, Learning, and Autonomy (VCLA) July 2019 - Sept. 2019
Undergraduate Research Intern; Advisor: Prof. Yingnian Wu, Prof. Song-Chun Zhu

- 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 of HMC and Langevin dynamics

Automatic Music Generation Model and Platform **Zhejiang University**
Next Lab of Zhejiang University Oct. 2018 - Sept. 2019
Research Assistant; Advisor: Prof. Kejun Zhang

- Established the startup - Mind Band at Hangzhou, P.R. China, devoting to automatic music generation and innovating the way of emotional expression; assumed the CTO role
- Mainly worked on symbolic music generation (, esp chord learning) by innovatively using Wasserstein GAN
- 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

Music Note Classification **Zhejiang University**
Next Lab of Zhejiang University July 2019 - Sept. 2019
Research Assistant; Advisor Prof. Kejun Zhang

- 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 of Programming (Python, Shell Script), Machine Learning (object classification task), Computer Vision and Music

Machine Learning with Differential Privacy **Zhejiang University**
Computer Network Security Course Project; Advisor: Dr. Kai Bu Mar. 2019 - June 2019

- Searched for and summarized literature on relevant topics for research direction
- Proposed a noise introducing method to prevent membership attack on pretrained model as well as to 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

Other projects : Oasis in the Sky - A first-person game by WebGL [code]; CPP: Compiler for Pascal in Python [code], etc.

SCHOLARSHIPS & AWARDS

- **National Scholarship**, Top 0.2% across China, 2019 & 2018 & 2017[1]
- **Tang Lixin Scholarship**, 40 out of 23,000 undergraduate students, 2018
- **First-Class Scholarship for Outstanding Students**, Top 3% across Zhejiang University, 2019 & 2018 & 2017
- **First-Class Scholarship for Outstanding Merits**, Top 3% across Zhejiang University, 2019 & 2018 & 2017
- **Golden Award for the 4th China College Students Internet+ Innovation and Entrepreneurship Competition**, Top 0.1% out of 60,000 teams, 2018
- **Outstanding Winner of China Collegiate Computing Contest - Mobile Application Innovation Contest**[2], 2018
- The Second Prize, Provincial Innovation Competition of Physics, 2017

EXTRA-CURRICULAR

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

SKILLS & INTERESTS

- Programming: Python, MATLAB, C/C++, Linux Shell
- Frameworks: PyTorch, Tensorflow, QT, OpenCV
- Operating Systems: Linux, MacOS, Windows
- Language: Native speaker of Mandarin Chinese and fluent English
- Interests: Novels and Science Fiction Literature, Ancient Chinese Books, Swimming, Jogging

[1]Referring to more than one year

[2]Highest prize of the only official competition by Apple Inc. in China