Zhanghao Wu

Undergraduate in computer science

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Education

Shanghai Jiao Tong University (SJTU) *Shanghai, China*

B.S. in Computer Science *Sep. 2016 - Jun. 2020 (expected)*

- A student of ACM Honors Class, an elite CS program for top 5% talented students. (GPA: 92.07 / 100, **Rank: 2**)
- Interested in deep learning, especially natural language processing, speech and efficient AI.

Research Experience

HanLab *Massachusetts Institute of Technology, USA*

Research Assistant, supervised by Prof. Song Han *Jul. 2019 - Jan. 2020 (expected)*

- Focusing on privacy preserving and efficient machine learning.
- Working on efficient natural language processing, especially for machine translation. Proposed a novel primitive with higher capacity than the original transformer under mobile settings and submitted to ICLR 2020.
- Designed an efficient privacy-preserving cloud-edge inference method utilizing the linearity of neural networks.
- Won first place in the CVPR'19 Visual Wake Words challenge and third place (first place of all academic groups) in CVPR'19 Low Power Image Recognition Competition.

SpeechLab *Shanghai Jiao Tong University, China*

Undergraduate Researcher, advised by Prof. Yanmin Qian and Prof. Kai Yu *Jul. 2018 - PRESENT*

- Focused on Rich Audio Analysis (RAA), analysis and classification of non-text information within human speech.
- Implemented Deep Canonical Correlation Analysis (DCCA) in pytorch and released the code on GitHub.
- Participated in the translation of the book: *Reinforcement Learning: An Introduction by Sutton, R.S., Barto, A.G.*
- Established a VAE based data augmentation to improve the robustness of speaker verification systems by modelling the patterns of noise and reverberation in the speaker embeddings. It was accepted by Interspeech 2019 **(oral)**.

Publications

Data Augmentation using Variational Autoencoder for Embedding based Speaker Verification

Zhanghao Wu, Shuai Wang, Yanmin Qian, Kai Yu — Interspeech 2019 **(oral)**,*Sep. 2019*

Real-Time Image Classification with Proxyless Neural Architecture Search And Quantization-Aware Finetuning

Han Cai, Tianzhe Wang, **Zhanghao Wu**, Kuan Wang, Ji Lin, Song Han — ICCV 2019 workshop,*Oct. 2019*

Teaching Experience

Compiler (MS208), Teaching Assistant — Shanghai Jiao Tong University, *Spring 2019*

C++ Programming (CS152), Teaching Assistant — Shanghai Jiao Tong University, *Spring 2018*

Honors & Awards

First place, Visual Wakeup Words (VWW) Challenge — CVPR'19, *2019*

Third place, Low Power Image Recognition Competition — ICCV'19, *2019*

Outstanding Winner, Mathematical Contest in Modeling (Top 0.5%, international) — COMAP, *2017*

National Scholarship, (Top 1%) — Ministry of Education of P.R. China, *2018 & 2019*

Fan Hsu-Chi Chancellor's Scholarship, (Top 0.1%) — Shanghai Jiao Tong University, *2017*

Merit Student — Shanghai Jiao Tong University, *2017*

Zhiyuan Honorary Scholarship — Shanghai Jiao Tong University, *2016 - 2018*

Selected Projects

VWW mit-han-lab/VWW *May. 2019*

- Won first place in the CVPR'19 Visual Wake Words challenge. The task is human detection on IoT device that has a tight computation budget: <250KB model size, <250KB peak memory usage, <60M Mult-Adds.

DeepCCA Michaelvll/DeepCCA *Dec. 2018*

- An implementation of Deep Canonical Correlation Analysis in pytorch with 40 stars.

MW Compiler Michaelvll/MWCompiler *Jun. 2018*

- Designed a compiler implemented in Java from scratch, translating Mx*, a Java-and-C-like language, program into x64-nasm code.
- Implemented optimizations for the compiler, faster than gcc O1 on test set, **98/100**.

RISCV CPU Michaelvll/RISCV_CPU *Jan. 2018*

- An FPGA-supported RISC-V CPU with 5-stage pipeline in Verilog HDL. It was the only two implementations that could actually be executed on the FPGA in class, **100/100**.