Meiyu Zhong

meiyuzho@usc.edu · Los Angeles · (323) 841-2101
· https://www.linkedin.com/in/meiyu-zhong-3a22b0193

Education

University of Southern California **Sep 2019 - May 2021 (Expected)**
Master in Electrical Engineering
GPA: 3.7/4.0

Shanghai University, Shanghai, China **Sep 2015 - July 2019**
Bachelor in Electrical Engineering
Major GPA 3.77/4.0

Skills

Programming Languages: C/C++, Python, Java, Matlab
Frameworks: Pytorch, Tensorflow, OpenCV, OpenVINO,
Hardwares: FPGA, Arduino, Raspberry Pi, Wireshark
Research Interests: Federated Learning, Auto machine learning, Network Optimization and Distributed system

Researches Experiences

Backdoor Attacks on Federated Meta-Learning **May 2020 - Now**
Research Assistant
Advisor: Leana Golubchik

- Evaluated the whether the initial meta-training by benign users do not include correctly-labeled examples of backdoor classes
- Investigated the case where backdoor classes are present, with correct labels, also during fine-tuning.
- Explored the effects of additional supervised fine-tuning with the same learning rate η = 0.001 and then explore the influence of the learning rate η during fine-tuning
- Propose a defense mechanism applied by each benign user, without relying on the parameter server. The idea is inspired by matching networks, a popular meta-learning framework exploiting recent advances in attention mechanisms and external memories in neural networks.
- Preparing a paper

Neutral ensemble search on off-line quantization **May 2020 - Now**
Research Assistant
Advisor: Leana Golubchik

- Pre-trained model preparing for the quantization
- Collected a dataset to train a accuracy predictor
- Selected three best model quantized parameters by using evolution search and accuracy predictor

- Using neutral ensemble search to search the best performance quantization model
- Preparing a paper

Neutral architecture search using Thompson Sampling on ImageNet **May 2020 - Now**

Research Assistant

Advisor: Leana Golubchik

- Used proxylessNet as the basic model to do the neutral architecture search
- Revised the method using Thompson Sampling — assigned each operations a beta distribution and reward for each iteration; for each iteration, selected the best performance operation for each layer and updated each operation's distribution and reward; after 500 iterations, the best performance model has been selected.

Robotic Network Routing Optimization using Multi-Armed Bandit

USC Direct Research **Jan 2020 - May 2020**

Advisor: Bhaskar Krishnamachari

- Compared the regrets of Dijkstra's algorithm with Thompson Sampling , Upper Confidence Bound and Greedy Algorithm;
- Chose linear combination of arms (edges) each time rather than one edge each time to avoid exponential growth actions
- Used the optimal algorithm—Thompson Sampling in the distributed robotic network system with Bellman Ford algorithm to search for the shortest route.
- Calculated the new bound of regrets for the linear combination Thompson Sampling

Deployment of Yolov3-Tiny on Raspberry Pi **Feb 2019 - June 2019**

Excellent Shanghai University Graduation Design

Advisor: Weimin Zhou

- Optimized Yolov3-tiny's parameters to process and identify target in the video and photograph based on machine learning;
- Improved accuracy of bounding boxes' positions and sizes;
- Combined Intel Movidius2 and Raspberry Pi to achieve the improvement of synchronization of software and hardware;

Neural Network Optimization Using Complex Value **Sep 2017 - Nov 2018**

National College Students' Innovation Project

Advisor: Shenshen Gu

- Optimized neural network based on Single-Shot Multi-box Detector (SSD) by replacing real variables with complex-valued variables: batch-processed to normalize complex-values and initialized weight function of complex-values by plural convolutions;
- Improved image recognition precision to enable sized bounding box at more accurate testing position;
- Reduced data loading of each layer by shrinking matrix's size to simplify complexity of the neutral network;
- Modified testing procedure of image recognition to reduce testing duration;

Basketball Robot Group of SHU Strive Team **Feb 2018 - Sep 2018**

The first prize (champion) of the China Robot Competition, Yibin, Sichuan, P.R.China
Advisor: Wanmi Chen

- Designed and refitted electromagnetic launch system of basketball robot to improve shooting efficiency and hit rate: recharged capacitance with increased voltage, discharged the capacitance through inductor to produce magnetic field which could control pontil of the launch system more preciously
- Remodeled power source system: changed old linear power supply into switching power supply, adjusted output voltage through modifying duty ratios, installed more shield and grounding measures
- Applied the optimized neural network on image recognition to process color images and depth map, as well as to use the depth map to measure distance

Publications

- X. Li, **M. Zhong***, "*Hardware Design of Basketball Robot based on Flyback Topology and Verilog HDL*", International Conference on Information Systems and Computer Aided Education (ICISCAE), 2018, Vol 2:508-510.

Internships & Activities

GIANT KONE Co., Contract Evaluation Dept., Shanghai, China **Aug 2018 - Nov 2018**

- Processed data of related official files into System Application & Production (SAP) customer system

President of SHU Blue Bond Voluntary Association **Dec 2015 - Sep 2018**

- Organized volunteer activities
- Voluntary teacher of Maths

Scholarships

- Academic Excellent Scholarship Level I (top 5) Sep 2018 - Jul 2019
- Hezong Welding Academic Scholarship Level II Sep 2017 - Jul 2018
- Hezong Welding Academic Scholarship Level III Sep 2016 - Jul 2017
- Leadership Scholarship Sep 2015 - Jul 2016