

Yichen Zhang

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EDUCATION

Xiamen University

09/2016-07/2020

B.E. Cognitive Science and Technology, Department of Artificial Intelligence, School of Informatics

- GPA(Major): 3.78(3.83) / 4.0
- Ranking: 1 / 32

National University of Singapore

08/2020-present

M.S. Artificial Intelligence, School of Computing

- Current CAP: 4.5 / 5.0
- Taken module: Neural Network and Deep Learning, Uncertainty Modeling in AI, AI Planning and Decision Making
- Taking module: Neural Network and Deep Learning II, 3D Computer Vision, Advance Topic in AI

PUBLICATIONS

- ✧ Mingbao Lin, Rongrong Ji, Yan Wang, **Yichen Zhang**, Baochang Zhang, Yonghong Tian, Ling Shao. HRank: Filter Pruning using High-Rank Feature Map. Computer Vision and Pattern Recognition(CVPR) 2020 Oral.
- ✧ Jiao Xie, Shaohui Lin, **Yichen Zhang**, Linkai Luo. Training Convolutional Neural Networks with Cheap Convolutions and Online Distillation. Submitted.

RESEARCH EXPERIENCES

Master Thesis

01/2021-present

Supervisor: Dr. Ying Zhang, Prof. Roger Zimmermann, NUS

- Title: Discovering Cross-Domain Patterns for Cervical Cancer Images

Undergraduate Thesis

02/2020-06/2020

Supervisor: Dr. Mingbao Lin, Prof. Rongrong Ji, Xiamen University

- Title: Meta Learning and Knowledge Distillation Based Network Pruning.
- Use knowledge distillation to instruct the training of meta network and thus generate better predicted pruned network.
- Outcome: undergraduate thesis.

Network Pruning

08/2019-11/2019

Supervisor: Dr. Mingbao Lin, Prof. Rongrong Ji, Xiamen University

- Observed the activation values of all samples at a given layer with almost identical rank through experiments, and thus optimized the model with better performance on public dataset.
- Found that filter with a large rank contained more information, and utilized this character to prune neural networks, surpassing many other state-of-the-art methods on the performance of the pruned model.
- Outcome: 1 paper received by CVPR 2020.

Knowledge Distillation and Compact Structures of Neural Networks

05/2019-08/2019

Supervisor: Dr. Shaohui Lin, Prof. Rongrong Ji, Xiamen University

- Conducted knowledge distillation with network ensemble on the basis of Shift-Net structure, to achieve better results of the model. A trained neural network with large number of parameters was utilized as a "Teacher Network" to guide student nets through KL divergence to converge faster and yield better results.
- Worked on theories and experiments on the compact structure which intended to make small models as powerful as large model with fewer parameters or calculations.
- Outcome: 1 paper submitted.

Basis and Quantization (Neural Network Compression)

05/2018-12/2018

Supervisor: Dr. Shaohui Lin, Prof. Rongrong Ji, Xiamen University

- Learned deep learning and TensorFlow. Worked with different datasets, read source codes and wrote Python scripts. Learned CV models including MobileNet, ShuffleNet, and DenseNet with compact structures.
- Conducted compression experiments on large CNN models including Alexnet, VGG-16 and ResNet, as well as compression experiments on the language model of RNN, mainly the LSTM model. Reduced the storage space of models and improved the efficiency of model operations.
- Proposed nonlinear quantization algorithm for multi-bit deep neural network, which could quantify the weights of trained model without training process, and could select different bits and quantify nonlinear mapping functions in accordance with the characteristics of diverse models, thereby reducing quantitative accuracy loss. (Proposal approved by the Neural Network Compression Group by the 67th AVS Conference Committee).

PROJECT EXPERIENCES

Time Lotus Tunnel

06/2018-12/2018

Team leader, *Xiamen University Undergraduate Innovation and Entrepreneurship Training Program*

- Aimed to capitalize on image retrieval technology to realize the storage and reproduction of murals to solve the problem of Graffiti on the walls, so that visitors could take photos of an existing mural and search for historical images in the area using a mobile app, which could help promote tunnel culture to some extent.
- Developed an Android APP to reproduce the historical murals in Lotus Tunnel in the light of users' locations, display the previous murals of the location in pursuance of current murals and the former images in the database.
- Conducted image retrieval in the database of images uploaded on the mobile terminal harnessing LIRE Open Source Image Retrieval Library.
- Achieved communications between mobile terminal and server by Socket mechanism.

Visual Indoor Positioning System Based on TensorFlow

12/2018-06/2019

Team member, *National Undergraduate Innovation and Entrepreneurship Training Program, Google China Cooperation Program*

- Aimed to realize the positioning from cameras inside the shopping mall through computer vision.
- Conducted fine-tune on account of a pre-trained MobileNet model.
- Designed effective algorithm combining image classification and gyroscopes.
- Took charge of debugging and training of the deep learning model.

HONORS AND AWARDS

- ✧ Third Prize of Xiamen University Trials in the 2020 KPMG Ideation Challenge League (2019)
- ✧ First Prize of Academic Excellence Scholarship (2019&2017)
- ✧ Dean's Honors List (2018&2019)
- ✧ Merit Student of Xiamen University (2018&2019)
- ✧ Zhongxian Huang Fellowship (2018)
- ✧ Third Prize of Group Programming Ladder Tournament (2018)
- ✧ First Prize of Undergraduate Group in Fujian Division of China Mathematical Contest in Modeling (2018)
- ✧ Outstanding Young Volunteer (2017)
- ✧ Lecturer Certificate of Appreciation for Sharing the Machine Learning Study Jam to GDG Xiamen (2018)
- ✧ Volunteer Certificate of Appreciation on I/O Extended 2018 in Recognition of Your Outstanding Dedication and Commitment to GDG Xiamen (2018)
- ✧ Certificate of Attendance for being the Organizer and successfully Attending the Machine Learning Study Jam (2018)
- ✧ Second Prize of Summer Social Practice Report (Xiamen University, 2017)
- ✧ Excellent Investigation Report of Summer Social Practice (Xiamen University, 2017)

EXTRACURRICULAR ACTIVITIES

Office manager, Maker Association, Xiamen University

04/2017-06/2018

Secretary, Youth Volunteer Association of Xiamen University

10/2016-10/2017

Secretary, Student Union, School of Information Science & Technology, Xiamen University

10/2016-10/2017