ZIYI WU

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EDUCATION

Tsinghua University, Beijing, China *Aug, 2017 – Jul, 2021 (expected)*

- **Bachelor** of Engineering in the Department of Automation (expected)
- **GPA: 3.9/4.0, Ranking: 2^{nd}/173**
- **Bachelor** of Management in the School of Economy and Management (expected, second degree)
- **Chairman** of Spark Program, Tsinghua University

Core Courses

- **Mathematics**: Calculus A (4.0/4.0), Linear Algebra (4.0/4.0), Introduction to Complex Analysis (4.0/4.0), Probability and Statistics (4.0/4.0), Signals and System Analysis (4.0/4.0), Numerical Analysis and Algorithms (4.0/4.0), Introduction to Systems Engineering (4.0/4.0)
- **Programming**: Computer Languages and Programming (4.0/4.0), C++ Program Design and Training (4.0/4.0), Data Structure and Algorithms (4.0/4.0), Computer Principles and Applications (4.0/4.0), Computer Network and Applications (4.0/4.0), Fundamental Artificial Intelligence (4.0/4.0), Pattern Recognition and Machine Learning (4.0/4.0)

SCHOLARSHIPS & AWARDS

- **2019 Fang Chongzhi Scholarship** (Highest honor in the Dept. of Automation, **0.1%**)
- **2019 Tsinghua Spark Program Membership** (Top student program in the field of academic research in Tsinghua University, $<$ **1%**)
- **2018 National Scholarship** (Highest scholarship given by the government of China, $<$ **0.1%**)
- **2018 Champion** in the 20^{th} **Electronic Design Competition** (Highest level competition in Tsinghua University in the field of **Electronic Engineering**)
- **2018 5^{th} place** in the 1^{st} **Artificial Intelligence Challenge** Group A2 (Top level challenge in Tsinghua University in the field of **AI**)

PUBLICATIONS & MANUSCRIPTS

1 Ziwei Wang, Jiwen Lu, **Ziyi Wu**, Jie Zhou. Learning Efficient Binarized Object Detectors with Information Compression. In submission to *IEEE Transactions on Pattern Analysis and Machine Intelligence*. Under review.

2 Ziwei Wang, **Ziyi Wu**, Jiwen Lu, Jie Zhou. BiDet: An Efficient Binarized Object Detector. Accepted by *2020 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. arXiv

3 Zimeng Tan, Yongjie Duan, **Ziyi Wu**, Jianjiang Feng, Jie Zhou. A Cascade Regression Model for Anatomical Landmark Detection. Accepted by *2019 Medical Image Computing and Computer Assisted Intervention (MICCAI) Workshop*. Springer

4 Zhanwei Xu, **Ziyi Wu**, Jianjiang Feng. CFUN: Combining Faster R-CNN and U-net Network for Efficient Whole Heart Segmentation. arXiv

RESEARCH INTEREST

Fields Efficient Inference, 3D Vision, Unsupervised/Self-supervised Learning

Methods Deep Learning, Reinforcement Learning, Neural Networks, Information Theory

RESEARCH EXPERIENCES

Stanford University, CA, U.S. *May, 2020 – present*
Geometric Computing Group, Department of Computer Science
Research Assistant, Advisors: Profs. Leonidas Guibas
Project: Adversarial Attack and Defense in 3D Point Clouds

- Propose that existing attack methods fall into three categories and analyze the shortcomings of current defense methods
- Perform optimization-based defense utilizing the information from both input point clouds and 3D reconstruction results to handle attacks from all three categories
- Achieve state-of-the-art defense results against all the attacks on various network architectures

Tsinghua University, Beijing, China *Apr, 2019 – Apr, 2020*
Intelligent Vision Group, Department of Automation
Research Assistant, Advisors: Profs. Jiwen Lu & Jie Zhou
Project: BiDet: An Efficient Binarized Object Detector

- Consider the problem of object detection for binary neural networks, which is the first attempt to the best of our knowledge
- Employ Information Bottleneck principle for redundancy removal to fully utilize the capacity of binary network and learn sparse object priors to concentrate posteriors on informative predictions
- Achieve state-of-the-art performance in various detection frameworks on large scale datasets comparing with existing binary neural network methods

Project: Learning Efficient Binarized Object Detectors with Information Compression

- Propose AutoBiDet, which is an extension of BiDet that automatically adjusts the information bottleneck trade-off and utilize class-aware sparse priors to alleviate false positives more effectively
- Achieve new state-of-the-art performance on large scale datasets under different structures
- Generalize AutoBiDet to other model compression methods including quantization, pruning and efficient architecture design to show the universality of the proposed method

PROGRAMMING SKILLS

Proficient Python, Pytorch, C/C++, C#, Markdown

Familiar Linux, TensorFlow, Keras, LaTeX, etc.

LANGUAGE SKILLS

TOEFL iBT 109/120 (Reading 30, Listening 26, Speaking 23, Writing 30)

GRE 333/340+4.5/6.0 (Verbal 163, Quantitative 170, Analytical Writing 4.5)