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: 2nd/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), Operations Research (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), Fundamental Artificial Intelligence (4.0/4.0), Pattern Recognition and Machine Learning (4.0/4.0)

SCHOLARSHIPS & AWARDS

- **2020 Xiaomi Scholarship** (Highest honor in Tsinghua University sponsored by Xiaomi Corp., **0.1%**)
- **2019 Fang Chongzhi Scholarship** (Highest honor in the Dept. of Automation, **0.1%**)
- **2019 Innovation Award of Science and Technology** (Awarded to undergraduate students with excellent scientific potential in Tsinghua University, **0.2%**)
- **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 Chinese government, **< 0.1%**)
- **2018 Champion** in the 20th **Electronic Design Competition**, Tsinghua University
- **2018 5th place** in the 1st **Artificial Intelligence Challenge**, Tsinghua University

PUBLICATIONS & MANUSCRIPTS

1 **Ziyi Wu***, Yueqi Duan*, He Wang, Qingnan Fan, Leonidas J. Guibas. IF-Defense: 3D Adversarial Point Cloud Defense via Implicit Function based Restoration. In submission to *International Conference on Learning Representations (ICLR)*. Under review.

2 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 (TPAMI)*. Under major revision.

3 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

4 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

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: IF-Defense: 3D Adversarial Point Cloud Defense via Implicit Function based Restoration

- Summarize the effects of 3D adversarial attacks on point cloud into two aspects through comprehensive study of existing attack methods

- Propose a novel defense algorithm for 3D point cloud via accurate surface recovery and optimization based point restoration

- Achieve state-of-the-art defense performance against all existing attacks on four typical point cloud networks

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

- Apply binary neural networks (BNNs) in the object detection task for efficient inference, which is the first attempt to the best of our knowledge

- Employ the Information Bottleneck (IB) principle for redundancy removal to fully utilize the capacity of BNNs and learn sparse object priors to eliminate the false positives in the prediction output

- Achieve state-of-the-art performance under various detection frameworks on large scale datasets compared with existing binary detectors

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 utilizes class-aware sparse priors to alleviate the false positives more effectively

- Achieve new state-of-the-art performance on large scale datasets comparing to BiDet

- Generalize AutoBiDet to boost the performance of other efficient inference algorithms including quantization, pruning and light-weight model design to show the universality of our proposed method

PROGRAMMING SKILLS

Proficient	Python, Pytorch, C#, Markdown, LaTeX
Familiar	Linux, C/C++, TensorFlow, Keras, 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)