Yiming ZUO

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Education

Princeton University, Princeton, USA   Aug 2021 - Present
Ph.D. in Computer Science
- Research Advisor: Prof. Jia Deng

Carnegie Mellon University, Pittsburgh, USA   Aug 2019 - Aug 2021
M.S. in Robotics (MSR)
- Research Advisor: Prof. Katerina Fragkiadaki
- GPA: 4.19/4.33
- Core Courses: Computer Vision, Machine Learning, Reinforcement Learning, Robotics Manipulation & Control

Tsinghua University, Beijing, China   Sep 2015 - Jul 2019
B.Eng. in Electronic Engineering (with honors)
- GPA: 3.80/4.00, Ranking: 21/246 (top 10%).
- Core Courses: Signal and Systems (A+), Image Processing (A+), Signal Processing Methods(A+), Machine Learning and Cognition(A), Probabilistic Theory and Stochastic Process (A).

National University of Singapore, Singapore   Aug 2017 - Dec 2017
Exchange student, Dept. of ECE
- GPA: 5.0/5.0, with all five courses graded A+

Johns Hopkins University, Baltimore, USA   Jun 2018 - Sep 2018
Visiting Student at CCVL Lab
- Research Advisor: Prof. Alan L. Yuille

Publications

1. Adam Harley, **Yiming Zuo**, Katerina Fragkiadaki, et al. Track, Check, Repeat: An EM Approach to Unsupervised Tracking. In Proceedings of CVPR 2021 (pp. 16581-16591). [pdf]
2. **Yiming Zuo,** Weichao Qiu, Yizhou Wang, Alan L. Yuille, et al. CRAVES: Controlling Robotic Arm with a Vision-based Economic System, in proceedings of CVPR 2019 (pp. 4214-4223). [pdf | website]
3. Xuecheng Nie, Jiashi Feng, **Yiming Zuo** and Shuicheng Yan, Human Pose Estimation with Parsing Induced Learner, in proceedings of CVPR 2018 (pp. 2100-2108). [pdf]

Research Experience

Carnegie Mellon University, USA   Aug 2019 - Now
Research Assistant to Prof. Katerina Fragkiadaki
- Proposed an Expectation-Maximization based approach for unsupervised object discovery and tracking. Our model takes RGBD videos as input, and iteratively finds agreements among modules and trains on pseudo labels.
- One of the main developers of a PyTorch-based 3D learning repository used by everyone in the research group (30+ people).

Johns Hopkins University, USA and Peking University, China   Jun 2018 - Dec 2018
Research Assistant to Prof. Alan L. Yuille and Prof. Yizhou Wang
- Designed a visual servoing system for a low-cost, sensor-free robotic arm based on a single RGB camera. Proposed a novel algorithm for domain adaptation using synthetic data for network training. Demonstrated that our system can accomplish complicated tasks like stacking dices.
- Project website: https://craves.ai/

Research Assistant, National University of Singapore, Singapore   Aug 2017 - Dec 2017
Research Assistant to Prof. Jiashi Feng
- Trained an hourglass-like neural network for human pose estimation and proposed an improvement on the estimation pipeline structure. Reached the state-of-the-art human pose estimation accuracy on MPII dataset.

Course Projects

Conditional Image Generation
Carnegie Mellon University 10-617, Fall 2020
- Re-implemented the Self-Attention GAN (SAGAN). Compared the quality and diversity of the image generated with different conditional embedding strategies and auxiliary loss functions on fine-grained, few-shot datasets. [pdf]

Trajectory Tracking
Carnegie Mellon University 16-711, Spring 2020
- Implemented a PID controller using Simulink. Compared centralized and de-centralized PID control system with Luenberger Observer and Butterworth Filter that solved trajectory tracking problem in a simulated noisy environment. [pdf]

Unsupervised Image Classification

Carnegie Mellon University 10-701, Spring 2020

- Re-implemented and compared the performance of several state-of-the-art unsupervised image classification algorithms, including MoCo, InfoGAN, and Capsule Autoencoder. Tested the accuracy and speed on MNIST and ShapeNet. [pdf]

Motion-Controlled Game

Tsinghua University, Electronic System Design, Fall 2018

- Developed a "Battle City" game controlled by players' motion and gesture. Used Microsoft Kinect for capturing RGBD videos. Deployed on FPGA and achieved real-time inference speed for a light-weighed neural network.

Teaching Experience

Teaching Assistant, *Media and Cognition*, Tsinghua University, taught by Prof. Shengjin Wang, Fall 2018

Academic Services

Reviewer for ICRA 2021

Academic Awards

- Outstanding Undergraduate (Bachelor's Degree with Honors), top 10% students, Tsinghua University, 2019
- GE Annual Book Prize for the Best Student in Communications, General Electric, Inc, 2018
- TI Book Prize for the Best Student in Digital Signal Processing and Systems, Texas Instrument, Inc, 2018
- Tsinghua Research Excellence Award, top 5%, Tsinghua University, 2018
- Tsinghua Academic Excellence Award, top 5%, Tsinghua University, 2018
- Qualcomm Scholarship (60 among 3000, top 2%), Qualcomm, Inc, 2017
- Wong Lo-Kat Scholarship for Outstanding Academic Performance, Wong Lo-Kat, Inc, 2017
- Scholarship for Outstanding Undergraduates, China Scholarship Council (CSC), 2017
- First Prize, Chinese High School Biology Olympiad, Zoological and Botanical Society of China, 2014

Technical Skills and English Proficiency

- Solid Programming skills with C/C++, Python, MATLAB, Java, and Verilog
- Hands-on experience with deep-learning frameworks (e.g. PyTorch)
- Hands-on experience with 3D engines (e.g. Blender, UE4)
- Mathematics: Probability theory, Stochastic Process, Complex Analysis, Calculus, Linear Algebra, and Game Theory
- TOEFL 111 (speaking 26), GRE 336 (verbal reasoning 166 + quantitative reasoning 170)