Yining Mao

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EDUCATION BACKGROUND

Zhejiang University (ZJU), Chu KoChen Honors College Hangzhou, China
Bachelor of Science in Computer Science and Technology 09/2018-06/2022 (expected)

- **Overall GPA: 3.92**/4.0 (**90.2**/100); Junior Year GPA: 3.97/4.0 (92.6/100)
- **Ranking:** top **2%** of 269 students

Main Courses and Scores

Computer Vision	97	Computer Graphics	93	Computer Architecture	98
Operating System	97	Computer Networks	94	Object-Oriented Programming	95
Digital Logic Design	96	Theory of Computation	93	Matlab Image Processing	100
C Programming	95	Linux Programming	95	Digital Image Processing	96

MIT Summer Online Program Online
Machine Learning and Deep Learning courses (2 weeks) 08/2020

- Completed a final project *"COVID-19 detection from X-Ray Images"* with 90% score as the team leader.

PUBLICATION OR MANUSCRIPT

[1] Yongcheng Jing, **Yining Mao**, Yiding Yang, Yibing Zhan, Mingli Song, Xinchao Wang, Dacheng Tao. "Learning Graph Neural Networks for Image Style Transfer". In submission to *ECCV*, 2022.

[2] Jingwen Ye, **Yining Mao**, Jie Song, Xinchao Wang, Cheng Jin, Mingli Song. "Safe Distillation Box". *AAAI*, 2022.

[3] Zunlei Feng, Zhonghua Wang, Xinchao Wang, **Yining Mao**, Thomas Li, Jie Lei, Yuexuan Wang, Mingli Song. "Mutual-Complementing Framework for Nuclei Detection and Segmentation in Pathology Image". *ICCV*, 2021.

[4] Jiacong Hu, Zunlei Feng, **Yining Mao**, Jie Lei, Dan Yu, Mingli Song. "A Location Constrained Dual-branch Network for Reliable Diagnosis of Jaw Tumors and Cysts".*MICCAI*, 2021.

SELECTED RESEARCH EXPERIENCE

Learning Graph Neural Networks for Image Style Transfer 08/2021-02/2022
Summer Research Internship, Supervisor: Prof. Xinchao Wang, NUS

- The first to propose a semi-parametric neural style transfer framework with graph neural networks (GNNs).
- Developed an elaborated attention-based heterogeneous GNN model with image patches as the graph vertices, preserving undistorted content structures while assigning suitable position-related style patterns.
- Introduced a deformable graph convolution operation for cross-scale style-content matching.
- Further achieved diversified patch-based stylization with a single model by controlling edge number at the inference stage.
- **Publication:** "*Learning Graph Neural Networks for Image Style Transfer*", 2022's ECCV conference (submitted)

Key-based Safe Knowledge Distillation Box 05/2021-09/2021
"Visual Intelligence and Pattern Analysis Research Group (VIPA)", Supervisor: Prof. Mingli Song, ZJU

- Developed a framework termed as Safe Distillation Box (SDB) aimed at solving the task of intellectual property protection in knowledge distillation.
- Implemented with three strategies: key embedding to integrate a randomly generated key into training, knowledge disturbance to confuse knowledge or soft labels while keeping the predicted results, and knowledge preservation to maintain and augment the knowledge for the authorized users.
- **Publication:** "*Safe Distillation Box*", 2022's AAAI conference (accepted)

Combating Noisy Labels in Long-Tailed Classification 04/2021-09/2021
"Zhejiang Lab", Supervisor: Dr. Lechao Cheng

- Made an early effort to tackle the image classification task with both long-tailed distribution and label noise.
- To deal with the label noise, proposed an inference matching paradigm between the weakly and strongly augmented data with dual-branch batch normalization to screen out noisy samples and a leave-noise-out regularization to eliminate the effect of the recognized noisy samples.
- To deal with long-tailed distribution, incorporated a prediction penalty based on online prior distribution superior in capturing the class fitting degree in real time.
- **Publication:** "*Combating Noisy Labels in Long-Tailed Classification*", IEEE Transactions on Image Processing (submitted)

SELECTED PROJECTS

Flashing Flight Game (C++: OpenGL) | *Lead Programmer of a 3-member Team* 01/2021

- An integrated tunnel flying game with an installer package that can be installed and played by Windows 10 users.
- Based on OpenGL, implemented and encapsulated the random-generated sweeping tunnels, obj-model import, gravity simulation, real-time collision detection, particle effects and multi-source lighting system.

COVID-19 detection from X-Ray Images (Python: Tensorflow) | *Lead Programmer of a 5-member Team* 08/2020

- Leveraged COVID-19 X-ray images of a small dataset of 100+ samples to predict the infection, accuracy up to 75%.
- Based on VGG-19, implemented lung-segmentation, transfer learning and Class Activation Mappings (CAM).

Comparative Study of Watermark Detection & Removal Algorithms (Python) 04/2020-04/2021

Student Research Training Program, Supervisor: Prof. Mingli Song

- Extensively read 10+ papers on watermark detection & removal algorithms. Reproduced a multi-image matting algorithm and a conditional GAN algorithm. Tested on both public datasets and a self-constructed small dataset.
- Proposed a method to split the dataset by pixel values and train separately to improve results.
- Optimized the matting method to apply on the full screen watermark.

Chinese Calligraphy Character Retrieval (Matlab) 07/2019

- Searched for the same calligraphic characters in a dataset of 30 characters with 8~20 samples each (different styles).
- Developed erosion and dilation algorithms with mask, elastic meshing technique and directional feature extraction.
- Implemented a graphical interface presenting the results with original samples. Recall Ratio > 80% for half samples.

PROFESSIONAL SKILLS

- **Programming Language:** C/C++, Python, Java, JavaScript, Verilog, Matlab, Shell.
- **Tool/Library/Software:** OpenCV, OpenGL, Pytorch, Tensorflow, MySQL, Latex, Adobe Ps/Ai/Lr.
- **English Proficiency:** TOEFL iBT: **108** (R28+L29+S24+W27); GRE: V155+Q170+AW3.5.

AWARDS AND HONORS

Scholarship

- First-Class Scholarship of Zhejiang University, ZJU (Top 3%) 2018-2019, 2019-2020
- Zhejiang Provincial Government Scholarship 2019-2020

Leadership

- Vice Minister, Computer Science College Communist Youth League Committee 09/2020-09/2021
- Vice Minister, Chu KoChen Honors College Student Union 09/2019-09/2020

Extracurricular Activities

- Five-star Volunteer of Zhejiang University: 250+ volunteer hours 05/2020
- Zhejiang University Enrollment Propaganda Team (Online Speech Representative) 04/2020
- Supporting Education (2-week teaching in Yunnan; 2-week teaching in Sichuan) 07/2019, 08/2019