Zhaoying PAN

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Education

University of Michigan — Ann Arbor, USA
Master of Science in Electrical and Computer Engineering — *Sept. 2021 - May. 2023(expected)*
- GPA: 4.0/4.0, majoring in Computer Vision
- Advisor: Prof. Andrew Owens

University of Chinese Academy of Sciences — Beijing, China
Bachelor of Engineering in Electronic and Information Engineering — *Sept. 2017 - Jun. 2021*
- GPA: 3.59/4.0
- Advisor: Prof. Xian Sun, Prof. Kun Fu

Publication (Accepted & Under Review)

*Zhiqiang Yuan, Wenkai Zhang, Chongyang Li, **Zhaoying Pan**, Jialiang Chen, Yongqiang Mao, Shuoke Li, Hongqi Li, Xian Sun. "Learning to Evaluate Performance of Multi-modal Semantic Localization." IEEE Transactions on Geoscience and Remote Sensing, 2022.*

Zhaoying Pan, Jinge Ma*. "Face Animation with Multiple Source Images." In Submission to British Machine Vision Conference (BMVC), 2022. (* equal contribution)*

*Jinzhe Liu, Zhiqiang Yuan, **Zhaoying Pan**, Yiqun Fu, Li Liu, Bin Lu. "Diffusion Model with Detail Complement for Super-resolution of Remote Sensing." In Submission to Remote Sensing, 2022.*

Ongoing Research

Motion Magnification — May. 2022 – Present
Research Associate, University of Michigan — *Advisor: Andrew Owens*
- Demonstrated the effectiveness of using optical flow to guide the prediction of frames.
- Currently developing an unsupervised method to predict the frames with magnified motion.

Artwork Space Exploration — Apr. 2022 – Present
Independent Research with Jinge Ma and Yutong Xie
- Applied auto-encoder, CLIP, and artCLIP to construct the artwork space.
- Performed dimensionality-reduction methods including PCA and UMAP to visualize the distribution of the space.
- Explore the attributes of the artwork space.

Past Research

Face Animation with Multiple Source Images — Oct. 2021 – May. 2022
Independent Research — *Collaborator: Jinge Ma*
- Collected a set of high-quality representative videos to construct an evaluation set for face animation.
- Proposed flexible animation methods with multiple source images to improve the animation performance of previous models, especially in scenarios with large changes in views.
- Conducted experiments and user studies to compare our method with previous methods (Monkey-Net, FOMM, MRAA).

Super-resolution of Remote Sensing Images with Diffusion Model — Jan. 2022 – Jul. 2022
Research Assistant — *Advisor: Zhiqiang Yuan*
- Involved in implementing the diffusion model with detailed complementary mechanisms for super-resolution on remote sensing images.
- Compared the proposed method with the previous methods.

Evaluation Protocol of Multi-modal Semantic Localization — Apr. 2021 – May. 2022
Research Assistant — *Advisor: Zhiqiang Yuan and Xian Sun*
- Involved in collecting the Semantic Localization (SeLo) Testset.
- Participated in comparison of SeLo Performance on different trainsets and retrieval models

Image Caption Generating of High-Resolution Remote Sensing Images — Nov. 2020 – Apr. 2021
Bachelor's Thesis — *Advisor: Fu Kun and Xian Sun*
- Reviewed image captioning algorithms, including *Show and Tell*, *Show, Attend and Tell*, Transformer, Attention on Attention (AoA).
- Implemented the above four algorithms to three remote-sensing image datasets, Sydney-Captions Dataset, UCM-Captions Dataset, and RSICD Dataset.
- Compared and analyzed the models qualitatively and quantitatively to obtain a model for practical applications.

Object Detection Implementation Aug. 2020 – Oct. 2020

Summer Research Assistant, Chinese Academy of Sciences *Advisor: Xian Sun, Kun Fu*

- Reviewed object detection algorithms, including Faster-RCNN, YOLO v3, and YOLO v4.
- Implemented YOLO v3 on the DOTA dataset to detect objects in remote sensing images.

Image Captioning Implementation Jul. 2019 – Aug. 2019

Summer Research Assistant, Chinese Academy of Sciences *Advisor: Xian Sun, Kun Fu*

- Implemented simple CNN and LSTM on MNIST dataset with PyTorch.
- Implemented *show and tell* algorithm on UCM dataset with TensorFlow.

Awards and Honors

Bachelor's Thesis with Distinction, *University of Chinese Academy of Sciences* 2021

Academic Excellence Scholarship (second-class), *University of Chinese Academy of Sciences* 2019

Merit Student, *University of Chinese Academy of Sciences* 2018 – 2019

Gold Medal, Best Open Project, *International Genetically Engineered Machine (iGEM) Foundation* 2017 – 2018

Skills

- Programming Language: Proficient in Python, C, Matlab, Verilog, familiar with HTML
- Tools: Proficient in PyTorch, OpenCV, Numpy, Linux operating system, LaTeX, familiar with TensorFlow