

MR. Bangyu Lan

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RESEARCH INTERESTS

Computer Vision, Sequential Model, Multimodal Machine Perception, Generative Models, Cognitive Science, etc.

EDUCATION

ROCHESTER INSTITUTE OF TECHNOLOGY

Rochester, U.S.A.

College of Computing and Information Sciences

Sept. 2021 to June 2022

☐ **1st year P.h.D. student**, supervised by Dr. Yu Kong and Dr. Matthew Wright

☐ Passed the Research Potential Accessment (RPA), **Not continued, forbided by U.S. VISA policy.**

HARBIN INSTITUTE OF TECHNOLOGY, WEIHAI

Shandong, China

School of Information Science and Engineering

Bachelor of Electronic Information Engineering

Sept. 2016 to June 2020

☐ **GPA:** 89.85/100

☐ **Rank of Major courses:** 12/116

☐ **Scholarship:** 1st Level People's Scholarship (two times)
2nd Level People's Scholarship
3rd Level People's Scholarship (three times)

PAPERS & SUBMISSION

- **Bangyu Lan, Yu Kong, Matthew Wright.** Spontaneous facial motion generation by disentangling freeform visual attributes, **submitted to WACV 2023**
- **Bangyu Lan.** Spontaneous Facial Motion Controllable Talking Face Generation, **2022 RPA report**
- **Bangyu Lan.** Class check-in system based on collective face recognition, **2020 Undergraduate Thesis**
- **Bangyu Lan.** Re-finding the value of deep learning technology from a mathematical point of view, **HIT Haite College Student Academic Forum 2018** (the Special Prize)

PROFESSIONAL ACTIVITIES

- Conference Reviewer of ICCV 2022, CVPR 2022, AAAI 2022, ACM MM 2022, FG 2022, MLSP 2022, etc.
- Teaching Assistant in CSCI-631, Foundations of Computer Vision, RIT, Spring 2022.

RESEARCH EXPERIENCES (In Chronological Order)

Generate More Realistic Deepfake Videos

Rochester, U.S.A.

Independent Researcher, Supervised by Dr. Yu Kong(RIT) and Dr. Matthew Wright (RIT) 50 hours/week, 30 weeks

Key Words: Multimodal Generation, Attributes Disentanglement, VAE, Modulated Convolved Generator

- ☐ Propose multiple attributes disentanglement method to extract visual features from audio.
- ☐ Incorporate probabilistic sampling strategy to traditional audio-visual mappings process to bring diversity.
- ☐ Propose first method to generate spontaneous facial motion in deepfake videos, surpass previous SOTA methods.
- ☐ Pass RPA examination and submitted to WACV 2023.

Make Sequential Model Foresighted and Calibrated

Guangzhou, China

Assistant Researcher, Cooperate with Yiming Hao (I.C.T., C.A.S.)

50 hours/week, 12 weeks

Key Words: X-LAN, X-transformer, Foresighted, Calibration

- ☐ Adopt gradients penalty in sequential model to control the gradient spread, and increase calculation efficiency.
- ☐ Adopt our method in three different kinds of sequential model: X-LAN, meshed-memory-transformer, AoAnet.
- ☐ Independently adjust hundreds of model parameters experiments and cooperate to finish eight versions algorithms.
- ☐ Cooperately propose an indicator measuring the extent of calibration and take charge of all verification experiments.

Face Recognition under Various Environment Interference (Outstanding Bachelor Thesis)

Shandong, China

Independent Researcher, Supervised by Dr. Gongliang Liu(HIT)

50 hours/week, 14 weeks

Key Words: Deformable Face Net, SEBlock, FH-GAN, Ring loss

- ❑ Propose several independently methods to overcome facial recognition difficulties: (1) add supervisonal signals in DFNv2 to solve occlusion problems, (2) use SEBlock as a channel selection for model to adapt different resolutions, (3) combine FH-GAN with DFNv2 to handle small faces recognition, (4) discover connections between facial representations norm and image lighting, and use which to increase generation lighting.
- ❑ Among the above four schemes, the third and the fourth scheme are successful (not fully test), because of its enhanced effects. Due to the lack of time, I do not implement the first and the second method.

Class Check-in System Based on Face Recognition (Engineering Project)

Shandong, China

Team Leader, Supervised by Dr. Gongliang Liu(HIT)

30 hours/week, 20 weeks

Key Words: Facial Recognition, Image Super-resolution, Finetune

- ❑ Program class check-in system for all students at HITWH, and try to figure out the problem of recognizing all attending students with just one picture in low resolution;
- ❑ Assign works, respectively the mobile APP design, cloud server configuration, algorithm engineering and theory, to 4 members, and collaborated with all members in the project;
- ❑ Reengineer at least 20 open sources to establish a sign-in system that can overcome problems in reality;
- ❑ Finetune the Arcface Neural Network structure and enhance 10% recognition accuracy.
- ❑ Won the first prize in the 2019 'Goertek's Cup' Innovation and Entrepreneurship Competition.
- ❑ Won the second prize in the 2019 'Principal's Cup' Innovation and Entrepreneurship Competition.

Research Best Solution for Optimal Power Allocation Based on Reinforcement Learning

Shandong, China

Assistant Researcher, Cooperate with Zhixiang Hu (ZJU)

40 hours/week, 4 weeks

Key Words: DDPG, Reinforcement learning, Tensorflow

- ❑ Assisted Prof. Liu in finding the best solution for optimal power allocation, and tried neural network methods;
- ❑ Researched and applied the reinforcement learning such as DQN, DDPG, policy gradient, etc. in the project to resolve problems such as discrete data and continuous data, randomness in the operation, etc.;
- ❑ Concluded, while our current solutions could not perfectly solve the problems due to the high complexity and No Free Lunch, we decided to get inspirations from the alphaGO model to improve our future models.

INTERNSHIP

Guangdong Sanweijia Information Technology Co., Ltd.

Guangdong, China

Algorithm Intern, pix2pixHD, pix2pix, GAN

40 hours/week, 4 weeks

- ❑ Build a coloring system based on pix2pixHD model to solve problems in coloring the ceramic tile.
- ❑ Adopt other thesis' methods to optimize the coloring algorithm and achieve different results under certain condition, which makes me get deeper understanding of the engineering and scientific features of the deep learning, including jump connections adopted in the Generator net, modifying the loss function, adopting the Single-color-encode-RGB method instead of the traditional method.

China DN Information Security Co., Ltd.

Guandong, China

Internet Security Intern Engineer: Python, Chatterbot, MongoDB

40 hours/week, 4 weeks

- ❑ Designed the testing platform Athena 0.1.1 that could: generate yaml files for training, train robots with yamls and general database in mongodb, AI answering based on database, test the accuracy of data;
- ❑ Applied python chatterbot api to encapsulate interface and provide mutual test to verify and calculate accuracy;
- ❑ Composed a software manual for users in the companies;
- ❑ Learned mongoDB, highly improved Python programming ability.

SKILLS

Language: Chinese, English

Programming: Python, Matlab

Frameworks: Pytorch, TensorFlow, Mxnet

FOR FUTURE SUPERVISORS

I am very grateful 🌈 to every respectful professors and nice students, who provides me new angles and support me through the hard times. I deeply understand that a good research requires good ideas, enough efforts and optimistic attitudes, which will bring wonderful and attractive outcomes. I hope I can cooperate with you to explore much more powerful machine intelligence!