MR. Bangyu Lan

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INTERESTS

Robotics and Mechatronic, Signal Processing, Computer Vision, Natural Language Processing, Multimodal Machine Learning, Software Engineering, etc.

EDUCATION

UNIVERSITY OF TWENTE Enschede, Netherlands
Faculty of Electrical Engineering, Mathematics and Computer Science
Master of Electrical Engineering (Robotics and Mechatronic track) Sept. 2022 to June 2024

- **GPA:** 7.5/10
- **Fresh year M.S. student**, supervised by Dr. Niu Kenan (U. Twente)
- Research signal detection and interpretation for ultrasound data

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 (M.S.U) and Dr. Matthew Wright (R.I.T.)
- Research Deepfake videos generation (generate vivid expressions using only audio)
- Passed the first-year Ph.D. Research Potential Accessment **(RPA)**
- **Stop, forbided by U.S. VISA rejection.**

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 , 2nd , 3rd Level People's Scholarship (six times)

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.

PROJECTS (In Chronological Order)

Generate More Realistic Deepfake Videos Rochester, U.S.A.
***Independent Researcher,** Supervised by Dr. Yu Kong(MSU) and Dr. Matthew Wright (RIT)* 50 hours/week, 30 weeks
***Key Words:** Multimodal Generation, Attributes Disentanglement, VAE, Modulated Convoluted Generator*

- Propose multiple attributes disentanglement method to extract visual features from audio.
- Incroporate 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 Bachorlor 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 supervisional 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.

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 recognizing all attending students with just one picture in low resolution;
- ❒ 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 neutral 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.

SKILLS

Language: Chinese, English, Dutch (A0)
Programming: Python, Matlab, C++, C
Frameworks: Pytorch, TensorFlow
Hobbies: Swimming, Table Tennis, Cooking, etc.

PAPERS & SUBMISSION

- **Bangyu Lan**, Yu Kong, Matthew Wright. Spontaneous facial motion generation by disentangling freeform visual attributes, **rejected by 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, etc.