Sicheng Gao

Male – Beijing – China

+86 17778196539 • scgao@buaa.edu.cn • ree1s.github.io

Education

Beihang University **Beijing**
Master, Pattern Recognition and Intelligent Systems *2021–Present*
Supervised by Prof. Baochang Zhang; GPA 85/100

China Agricultural University **Beijing**
Bachelor, Agricultural Mechanization and Automation *2017–2021*
GPA 3.64/4, Rank Top 3

Research Interests

Computer Vision and Machine Learning, including Image and Video Generation and Synthesis; 3D Scene Rendering; Medical Image Analysis; Network Compression.

Publications

My name is in bold, and # indicates equal contribution.

- **Sicheng, Gao**#, Xuhui, Liu#, Bohan Zeng#, Sheng Xu, Yanjing Li, Xiaoyan, Luo, Jianzhuang, Liu, Xiantong, Zhen, Baochang, Zhang. Implicit Diffusion for Continuous Super-Resolution (CVPR 2023).

- **Sicheng, Gao**#, Feng, Yutang#, Linlin Yang, Xuhui Liu, Zichen Zhu, David Doermann, Baochang Zhang MagFormer: Hybrid Video Motion Magnification Transformer from Eulerian and Lagrangian Perspectives (BMVC 2022).

- **Sicheng, Gao**, Runqi Wang, Liuyang Jiang, Baochang Zhang. 1-bit WaveNet: Compressing a Generative Neural Network in Speech Recognition with Two Binarized Methods. (ICIEA 2021).

- **Sicheng, Gao**, Wenting Jin, Baochang Zhang, Xiantong Zhen. Variational Multimodal Learning for Fine-grained Lung Disease Classification (MICCAI 2023, submitted).

- Bohan, Zeng#, Xuhui, Liu#, **Sicheng, Gao**#, Jianzhuang, Liu, Baochang Zhang. Coarse-to-Fine Face Animation with Diffusion Model (CVPRW 2023, submitted).

Languages and Skills

English: IELTS 6.0

Skills: Proficient in Python, including PyTorch, and OpenCV. Partial experience in C++ and MATLAB

Working Experience

United-Imaging Intelligence

Computer Vision Researcher Intern **Beijing**

Supervised by Prof. Dr. Xiantong Zhen. *11/2022–Present*

Lung diseases such as tuberculosis, lung cancer, and pneumonia are major causes of morbidity and mortality worldwide.

Detailed achievements:

- Implement a hierarchical variational multi-modal learning framework to distinguish subtle differences between intractable lung diseases.
- Use implicit neural representations to constrain the shape information in medical segmentation tasks.

SenseTime Research

Computer Vision Researcher Intern **Beijing**

Supervised by Dr. Yu Zhang. *01/2021–07/2021*

Detailed achievements:

- Found the blurry phenomenon of prior art in rotated scenes and aimed to use event cameras to solve this problem.
- Established a super-resolution GAN based on implicit neural representations.
- Completed some camera noise calibration tasks by using Python and MATLAB.

Project Experience

Pattern Recognition Lab, Beihang University

Model Quantization and Compression **Beijing**

10/2022–Present

Detailed achievements:

- Deploying a quantization-aware training (QAT) method in low-level Transformer models (IPT, Restormer).
- The purpose is to quantize all weights of neural networks (except the head and the tail) into 4-bit with holding high accuracy and speed.

Microvibration Video Motion Magnification **Beijing**

03/2022–08/2022

Detailed achievements:

- Inspired by Euler and Lagrange, we introduced an end-to-end video motion magnification framework, called MagFormer, which includes the optical flow extractor, the motion-guided attention module, the feature separator, and the reconstruction module.
- Collected a new vibration dataset by a modal exciter and measured motion magnification effect via amplitude and frequency.

1-bit WaveNet in Speech Recognition **Beijing**

09/2020–09/2021

Compressed a speech recognition model WaveNet with binary neural networks and achieved a negligible performance compared with real-valued models on the specified dataset.

Department of Computer Science, Swiss Federal Institute of Technology in Zurich

Algorithms for (Sparse) Linear Regression and Experiments **Online**

Supervised by Prof. David Steurer. *05/2019–09/2021*

Detailed achievements:

- Mastered the basic theories including optimization and gradient descent, linear regression and sparsity, principal component analysis, non-negative matrix decomposition, etc.
- Implemented a program and conducted simulation experiments including the LASSO algorithm.