

Sicheng Gao

Male – Beijing – China

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Education

Beihang University

Master, Pattern Recognition and Intelligent Systems

Supervised by Prof. Baochang Zhang; GPA 85/100

Beijing

2021–Present

China Agricultural University

Bachelor, Agricultural Mechanization and Automation

GPA 3.64/4, Rank Top 3

Beijing

2017–2021

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.