SHEN Ruiqi

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EDUCATIONAL BACKGROUND

Qiushi Honors College, Tianjin University (111 selected out of 4804 students) **09/2019-06/2021**

Future Intelligent Machines and Systems platform, **the University-Level Selective Class**

STEM courses with higher difficulty and stricter assessment (e.g., Mathematical Analysis, Advanced Algebra)

School of Electrical and Information Engineering, Tianjin University **09/2021-06/2023**

Major: Electronic Information Engineering GPA: 92.606% Rank: 6/126

Focusing on: Deep Learning, Pattern Recognition, Digital Image&Video Processing, Information Engineering

Electrical and Electronic Engineering, National University of Singapore **09/2022-05/2023**

Joint education programme Outstanding student (15 out of 156 students)

Final Year Project and courses at NUS Research Institute

Supervisor: **Prof Chengkuo Lee**

Imperial College London **09/2023-11/2024**

MSc Applied Machine Learning (Awarded ***Master of Science with distinction*** on November 1st, 2024)

Supervisor: **Prof Deniz Gunduz**

MSc Project: "Beyond pixels: CLIP-based semantic feature compression"

RESEARCH INTERNSHIP

Research Assistant at Fudan University, Member of the FVL(Fudan Vision and Learning Group) (2024.06-)

I'm now a full-time research assistant working at FVL Lab, Fudan University, my research topic focuses on segmentation, particularly video object segmentation (VOS). My current research aims to enhance SAM2 by incorporating a long-term memory module, semantic prompts, and appearance-based matching to improve occluded object visibility during VOS, with the goal of submitting the work to ICCV 2025.

National Key Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences

Member of the BRAVE Group, CASIA (2023.05-2023.08)

Focus on multi-camera depth estimation for autonomous driving vehicles. Specifically,

• Reproduce a self-supervised multi-view depth estimation method on the real-world scenes at CASIA.

• Designed an end-to-end heterogeneous depth estimation method that combines fisheye and pinhole cameras.

Specifics (Visualization Outcomes & Full Technical Documentation)

Huawei – Shanghai Kunpeng Ecology Innovation Center (2021.07-2021.08)

Develop a gesture-controlled mini-car that can perform well in night-vision environment.

RESEARCH EXPERIENCE

CLIP-based semantic feature compression – MSc Project at Imperial College (2023.12 - 2024.09)

([Member of IPC Lab]) Supervisor: Professor Deniz Gunduz

• We propose a novel compression paradigm termed CLIP-based semantic feature compression, which preserves essential semantics at extremely low compression ratios.

• We benchmark our compression paradigm against various competitive deep learning-based image compression methods, demonstrating on par or superior semantic preservation while utilizing less than 5% of the bit count.

"CLIP-based semantic feature compression" ----- Ruiqi Shen, Haotian Wu, Wenjing Zhang, Jiangjing Hu, Deniz Gunduz

To be published in January 2025.

Specifics (Code & Presentation)

MASE (Machine-Learning Accelerator System Exploration Tools) code (team leader) (2024.01-2024.03)

• Developed a trainable pruning pipeline that automatically prunes and compresses neural networks while maintaining comparable performance to training.

• Research on different pruning methods, sparsity levels, pruning granularities, pruning scopes with extensive experiments. (2024.1 – 2024.3)

Sign language recognition system enhanced by visual-sensory-based multimodality machine learning
Final Year Project at NUS Research Institute Supervisor: Prof Chengkuo Lee (2022.10-2023.5)
Developed an end-to-end system is developed for recognition of American Sign Language (ASL) gestures.
The system integrates multi-modal (images, triboelectric sensor, IMU) data for recognition, with multi-modal learning outperforms other baselines. code

AWARDS & CERTIFICATES

• Outstanding student of ECE at NUS Research Institute (Academic Year 2022-2023) 05/2023
• Student Member of the Machine Vision Committee of the China Society of Images and Graphics 06/2022
• Merit Student Scholarship of Tianjin University 06/2022
• University of Oxford: Best Teamwork award '*Global Challenges for the Future of Humanity*' 02/2021
• Internship at Shanghai Big Data Centre where I worked with others on improving the consulting service using LLMs at shanghai.gov.cn & gave lectures on basic NLP skills (08/2023-09/2023)

ENGLISH PROFICIENCY & PROFESSIONAL SKILLS

IELTS: 7.5, **GRE**: 156+168+3.5
Proficient in **Python/C++/Matlab/GoLang, Pytorch, Tensorflow, Linux, OpenCV, Git operations**
Proficient in practical experience with large-scale code projects and collaborative skills