**Chengzhi Cao**

Email: [chengzhicao@mail.ustc.edu.cn](mailto:chengzhicao@mail.ustc.edu.cn) | [Homepage](https://chengzhi-cao.github.io/)

Education

**South China University of Technology Project 985 & 211, Guangdong, China**

Bachelor of Technology in Electrical Engineering and Automation 2017.9 - 2021.6

• Overall GPA: 3.85/4.0

**University of Science and Technology of China Project 985 & 211, Anhui, China**

School of Information Science and Technology 2021.9 - Present

Honors

**• National Scholarship (top1%, highest scholarship from Ministry of Education of China) 2018**

**• National Scholarship (top1%, highest scholarship from Ministry of Education of China) 2019**

**• National Scholarship (top1%, highest scholarship from Ministry of Education of China) 2020**

• First Prize in RoboMaster University League 2020

Research INTERESTs

Video Restoration (deblurring and super-resolution), bayes learning and bio-inspired Intelligence

Publications

### **[1] [Event-guided Person Re-Identification via Sparse-Dense Complementary Learning](https://www.ijcai.org/proceedings/2022/0112.pdf)**

**Chenzhi Cao**, Xueyang Fu\*, Hongjian Liu, Yukun Huang, Kunyu Wang, Jiebo Luo, Zheng-jun Zha

**IEEE Conference on Computer Vision and Pattern Recognition (CVPR Accept)**. Mar. 2023 [[Paper](https://openaccess.thecvf.com/content/CVPR2023/papers/Cao_Event-Guided_Person_Re-Identification_via_Sparse-Dense_Complementary_Learning_CVPR_2023_paper.pdf)] [[Code](https://github.com/Chengzhi-Cao/SDCL)]

### **[2] [Event-driven Video Deblurring via Spatio-Temporal Relation-Aware Network](https://www.ijcai.org/proceedings/2022/0112.pdf)**

**Chenzhi Cao**, Xueyang Fu\*, Yurui Zhu, Gege Shi, Zheng-jun Zha

**IJCAI (Long Oral Accept, Acceptance Rate<3.75%)**. Apr. 2022 [[Paper](https://www.ijcai.org/proceedings/2022/0112.pdf)] [[Code](https://github.com/Chengzhi-Cao/STRA)]

### **[3] [Generalized UAV Object Detection via Frequency Domain Disentanglement](https://www.ijcai.org/proceedings/2022/0112.pdf)**

Kunyu Wang, Xueyang Fu\*, Hongjian Liu, Yukun Huang, **Chengzhi Cao**, Gege Shi, Zheng-jun Zha

**IEEE Conference on Computer Vision and Pattern Recognition (CVPR Accept)**. Mar. 2023

**[4] Single Image Shadow Detection via Complementary Mechanism**

Yurui Zhu, Xueyang Fu\*, **Chengzhi Cao**, Xi Wang, Qibin Sun, Zheng-jun Zha

**Proceedings of the ACM International Conference on Multimedia (ACM MM Accept)**. Jun. 2022 [[Paper](https://dl.acm.org/doi/pdf/10.1145/3503161.3547904)][[Code](https://github.com/zhuyr97/SDCM)]

**[5] Discovering Intrinsic Spatial-Temporal Logic Rules to Explain Human Actions**

**Chengzhi Cao**, Chao Yang, Shuang Li\*

**Conference on Neural Information Processing Systems (NeurIPS Under Review)**, May. 2023.

**[6] Event-guided Video Restoration with Spiking-Convolutional Architecture**

**Chenzhi Cao**, Xueyang Fu\*, Yurui Zhu, Zhijing Sun, Zheng-jun Zha

**IEEE Transactions on Neural Networks and Learning Systems (TNNLS Under Review)**, Sep. 2022

Research Experience

**Bio-inspired Video Restoration with Guidance of Events** University of Science and Technology of China

Sep. 2021 - Present

Advisors: **Prof.[Xueyang Fu](https://xueyangfu.github.io/) and [Zhengjun Zha](https://research.com/u/zheng-jun-zha)**

• Propose a spatio-temporal relation-aware network for event-driven video deblurring, and achieve better performance through fusing features of frames and events properly.

• Propose a spiking neural temporal memory module by capturing long-term relations of event sequences.

• Extracts the spatial correlation between frames and events to exploit the complementary information from them.

• Extensive experiments show that our method achieves the SOTA performance on banchmark of GoPro and HQF.

**Spatial-Temporal Logic Learning to Explain Human Actions** Chinese University of Hong Kong

Oct. 2022 - Mar. 2023

Advisors: **Prof.Shuang Li**

• Propose a tractable and differentiable algorithm that can jointly learn the rule content and model parameters from observational data.

• The overall procedure is an expectation-maximization algorithm, where we treat the rule set as latent variables.

• In the E-step, the posterior distribution over the latent rule set is evaluated. In the M-step, the model parameters are optimized by maximizing the expected log-likelihood with respect to the current posterior.

• We demonstrated the promising performance of 64 our model in terms of human action prediction and explanation on two interesting real datasets.

**Low-quality Video Detection and Filtering** Tencent, Shenzhen

March. 2021 - July. 2021

Advisors: **Prof.[Kwok Wai Hung](https://scholar.google.nl/citations?user=61DydQUAAAAJ&hl=zh-CN&oi=ao) and [Simon Lui](https://scholar.google.nl/citations?hl=zh-CN&user=zP8lA0UAAAAJ)**

• Design a multi-scale structure to take advantage of inter-scale correlation for video super-resolution in QQ Music, optimize it by removing unnecessary modules to simplify the network architecture.

• Smoke Detection. Identify the key points of multiple faces, and use them to locate the user’s mouth; calculate the matching parameters between the cigarette and mouth. This project is now under implementation.

• **Patent Application Number:** 2021111598150, 2021109153727, 2021107976749