

Jiale Cai | CV

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Education

Huazhong University of Science and Technology (HUST), Wuhan, China Sept. 2021 -
M.S. in Cyberspace Security **Major GPA: 3.92/4.0**
School of Cyber Science and Engineering Supervisor: Junqing Yu
Huazhong University of Science and Technology (HUST), Wuhan, China Sept. 2017 - Jun. 2021
B.S. in Cyberspace Security **Major GPA: 3.61/4.0**
School of Cyber Science and Engineering

Research Interests

My research primarily revolves around the application of Deep Learning in Computer Vision, with a specific focus on the domains of robustness, weakly supervised and the utilization of diffusion models. Extensive investigations have been conducted to develop deep learning models that exhibit robustness and resilience in handling various challenges encountered in computer vision tasks, including occlusion, noise, and adversarial attacks. Specific research focuses are as follows:

Image Forgery Detection [1]: Aim to build a weakly supervised system to identify modifications or manipulations made to images in order to deceive or misrepresent information.

Image Editing [2]: propose a diffusion-based model within the Progressive Image Generation framework to incrementally insert desired elements into an existing image.

Occluded person Re-ID [3]: Design a feature pruning and consolidation framework identifying and matching individuals on cases where people are partially or fully occluded by objects or other individuals.

Algorithm Robustness [4]: Improve the reliability of algorithms in adversary environments.

In the future, I am committed to improving visual content generation or manipulation and open-world recognition algorithms, with a focus on improving their robustness and enhance their applicability in the real world.

Publication & Manuscripts

[1] **AAAI 2024, IN PREPARATION** (all experiments have been completed):

Jiale Cai, Hang Zhou, YuTeng Ye, Junqing Yu, Wei Yang. “*Semantic-Guided Weakly Supervised Image Splicing Localization*”. Submitting to the Association for the Advancement of Artificial Intelligence.

[2] **CVPR 2024, IN PREPARATION** (all experiments have been completed):

YuTeng Ye, Jiale Cai, Hang Zhou, Junqing Yu, Wei Yang. “*Semantics and Relationship-Guided Diffusion Model for Progressive Image Generation*”. Submitting to the International Conference on Medical Image Computing and Computer Assisted Intervention.

[3] **ICCV2023, UNDER REVIEW:**

YuTeng Ye, Hang Zhou, Junqing Yu, Jiale Cai, Chenxing Gao, Youjia Zhang, Junle Wang, Qiang Hu, Wei Yang. “*Dynamic Feature Pruning and Consolidation for Occluded Person Re-Identification*”. The IEEE International Conference (ICCV) 2023. Under review. **Note: three "weak accept"**.

[4] ICCV 2023, UNDER REVIEW:

Chenxing Gao, Hang Zhou, Junqing Yu, YuTeng ye, **Jiale Cai**, Junle Wang, Wei Yang. “*Attacking Transformers with Feature Diversity Adversarial Perturbation*”. The IEEE International Conference (ICCV) 2023. Under review. **Note: one "borderline", two "weak reject"**

Miscellaneous Experience

Awards:

"Second-class Scholarship for Postgraduates" of Huazhong University of Science and Technology

"Merit Postgraduate" of Huazhong University of Science and Technology

" Outstanding Undergraduate " of Huazhong University of Science and Technology

Certification:

The National College English Test Band Four Certificate

The National College English Test Band Six Certificate

Skills

Coding: Pytorch, C, C++, Python, SQL, Markdown

Misc.: Academic research, LATEX typesetting and publishing