Zhuohang **Jiang**

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Summary

I am an undergraduate student at Sichuan University(SCU),majoring in Computer Science & technology. **My Major GPA (CS cources): 3.79/4, 89.39/100;** Overall GPA: 3.78/4, 89.25/100. I have 3 years of programming experience; 1 years of research experience with nueral network and causal inference;

In the Sichuan University, I am working as a research assistant at **MachineILab** since 2022, advised by Prof. JiZhe Zhou. I am participating in one **National Natural Science Foundation of China** and one **National Key R&D Program of China**.

I'm interested in **computer vision, machine learning, and causal inference**.Much of my research is about **generate SCM(structual causal model) and NCM(neural causal model)** which help the neural network soluble.My goal is to **build soluble neural network which can be next generation of general artificial Intelligence with low parameter model** . Hoping the combination of causal models and other artificial intelligence can achieve better training effects.

Education

Sichuan University   *Chengdu, Sichuan, China*

BACHELOR'S OF SCIENCE (B.S.) IN COMPUTER SCIENCE   *Sep. 2020 - Jun. 2024 (expected)*

- **Major GPA (CS cources): 3.79/4, 89.39/100;** Overall GPA: 3.78/4, 89.25/100
- High-level language programming(A), calculus(A-,A), linear algebra(A), probability statistics(A), discrete mathematics(A), Experiment on Principles of Computer Composition(A), computer network(A), software engineering(A)

Publication

PREPRINTS

Contour-Aware Contrastive Learning for Image Manipulation Localization   *TIP*

QIN LI, CHUNFANG YU, **ZHUOHANG JIANG**, AND JIZHE ZHOU

We propose a novel Contour-aware Contrastive Learning Network (CaCL-Net) based on the encoder-decoder architecture. On the encoder side, since the contour is foremost concerned in IML, we consider the image patches sampled along the manipulation contour are the hard examples and set them as the anchor. The patches of pure tampered and authentic pixels are set as positives and negatives respectively to conduct contrastive learning. The decoder then manages to specify the manipulated regions and restores the explicit contours of the manipulations through the proposed Contour Binary Cross-Entropy (CBCE) loss.

Not Only Pre-train: Perceptual MAE for Image Manipulation Localization   *ACM MM*

XIAOCHEN MA, **ZHUOHANG JIANG**, AND JIZHE ZHOU

This necessitates IML models to carry out a semantic understanding of the entire image. In this paper, we reformulate the IML task as a high-level vision task that greatly benefits from low-level features. We propose a method to enhance the Masked Autoencoder (MAE) by incorporating high-resolution inputs and a perceptual loss supervision module, which we term Perceptual MAE (PMAE). While MAE has demonstrated an impressive understanding of object semantics, PMAE can also comprehend low-level semantics with our proposed enhancements. This paradigm effectively unites the low-level and high-level features of the IML task and outperforms state-of-the-art tampering localization methods on five publicly available datasets, as evidenced by extensive experiments.

Experience

MachineILab   *Sichuan University, Chengdu, Sichuan, China*

RESEARCH ASSISTANT   *Sep. 2022 - present*

- Advisor: Prof. JiZhe Zhou

Covariant association   *Sichuan University, Chengdu, Sichuan, China*

THE PRESIDENT OF THE COVARIANT ASSOCIATION   *Sep. 2022 - present*

- the Covariant association obtain at least **400+** members, in which communicate the technology of the computer science.

Research Projects

Research on Scene Graph Structure Learning Method for Private Object Detection　*Chengdu, Sichuan, China*

R<small>ESEARCH INTERN</small>　　　　　　　　　　　　　　　　　　　　　　　　　　　*Mar. 2023 - present*

- **National Natural Science Foundation of China**
- **Research Topics:** Computer vision, Image understanding, Privacy-sensitive Object Detection, Sence Analysis, Deep learning.
- This project intends to build a set of privacy-sensitive objectdetection methods with scene reasoning capability through scene graphs. Unlikeother tasks, privacy-sensitive object detection requires a non-parametric scenegraph structure to keep the graph sparse, dynamic, and interpretable.

Intelligent control and full life feedforward deduction technology through pre planning and post evaluation　*Chengdu, Sichuan, China*

R<small>ESEARCH INTERN</small>　　　　　　　　　　　　　　　　　　　　　　　　　　　*Mar. 2023 - present*

- **National Key R&D Program of China**
- **Research Topics:** Causal inference, knowledge graph, front-door adjust, Deep learning
- This project solve external knowledge under small sample conditions A series of technical challenges such as database construction and human-computer interactive verification, and the development of a complete set of reasoning based on big data and causality To improve the causal link network diagram of the pre planning and post evaluation dimensions, and establish a set of technical means that can be based on the Software that directly outputs causal paths from the planning dimension to implement a full life cycle feedforward inference technique of pre planning and post evaluation.

"Listening" - A Seismic Audio Detection System Based on Deep Learning　*Chengdu, Sichuan, China*

TEAM LEADER　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Oct. 2022 - Oct. 2023*

- **National level project of Innovation and Entrepreneurship Project for College Students**
- **Research Topics:** Sound Enhancement, Deep learning

"Dazzling Shadow" - 2D and 3D game material generation system based on textureGAN and pixel NeRF technology　*Chengdu, Sichuan, China*

TEAM MEMBER　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Oct. 2021 - Oct. 2022*

- **National level project of Innovation and Entrepreneurship Project for College Students**
- **Research Topics:** GAN, Deep learning

Project Portfolio

I AM SCUer　*Chengdu, Sichuan, China*

P<small>ERSON IN CHARGE</small>　　　　　　　　　　　　　　　　　　　　　　　　　　*Oct. 2021 - Dec. 2021*

- A WeChat applet for beautifying WeChat avatars to commemorate the 125th anniversary of the founding of Sichuan University
- More than **1000+** users used I AM SCUer in the SCU campus.
- Second prize of software design competition at school level

Honors & Awards

C<small>OMPETITION</small>

2022	**Honorable Mention,** Mathematical Contest In Modeling(MCM/ICM)	*U.S.A*
2023	**Provincial First Prize,** Computer Design Competition	*Sichuan, China*
2022	**Provincial Second Prize,** China Undergraduate Mathematical Contest in Modeling (CUMCM)	*Sichuan, China*
2022	**Provincial Second Prize,** The Chinese Mathematics Competitions (CMC)	*Sichuan, China*
2022	**Provincial Third Prize,** Blue Bridge Cup	*Sichuan, China*

S<small>CHOLARSHIP</small> & H<small>ONORS</small>

2022	**Intermediate Engineer,** Software Design Engineer	*China*
2023	**Top 1%,** Comprehensive First Class Scholarship	*Sichuan, China*
2023	**Top 2%,** Tencent Scholarship	*Sichuan, China*
2022	**Top 5%,** Outstanding students of Sichuan University	*Sichuan, China*

Skills

Research	Causual inference, Knowledge graph, Computer vision, Graph neural network, Deep learning
Back-end	Spring, SpringBoot, Django, flask, Express
Front-end	Vue, React, Next.js, Nuxt,js, HTML5, LESS, SASS, Flutter, Electron
Programming	Node.js, Python, JAVA, C, C++, LaTeX
Frameworks	PyTorch, Tensorflow, NumPy, Flask, MySQL, Git, Anaconda, OpenCV
Languages	Chinese, English