

Xin Xie

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EDUCATION

Dalian University of Technology - School of Information and Communication Engineering

Sep.2021 - present

- M.E. in Information and Communication Engineering (Artificial Intelligence)
- Advisor: Associate Prof. Yi Li
- GPA: 3.83 / 4.0
- Main courses: Machine Learning, Object-Oriented Programming Technology, Matrix and Numerical Analysis
- Research interests: Disentangled Representations, Style Transfer, Image Generation

Dalian Maritime University - College of Marine Electrical Engineering

Aug.2017 - Jun.2021

- B.E. in Automation
- GPA: 4.01 / 5.0 Rank: 7 / 123
- Main courses: Signals and Systems, Automatic Control Theory, Basics of Computer Software
- Research interests: Object Detection, Image-to-image Translation

PUBLICATIONS

Artistic Style Discovery with Independent Components

CVPR, 2022

Xin Xie, Yi Li, Huaibo Huang, Haiyan Fu, Wanwan Wang, Yanqing Guo*

- We introduce a novel unsupervised algorithm that can discover various styles from the latent space, advancing the ability of controllable stylization.
- We obtain the independent style components from the mixed latent style dimensions in style transfer, resulting in multiple artistic stylizations and lowering computational costs.
- Our method is generally applicable without training and we demonstrate the effectiveness and flexibility of our approach via abundant experiments on several state-of-the-art style transfer models.

A Compact Transformer for Adaptive Style Transfer

ICME, 2023

*Yi Li, Xin Xie, Haiyan Fu, Xiangyang Luo, Yanqing Guo**

- To alleviate the computation burden, we design a compact transformer with shared and detached architectures to achieve artistic style transfer, reducing the model scale by about 20% compared to StyTr².
- To address the inherent style leak in the transformer, we integrate AdaIN with the decoder layer, further encouraging the attention to select the style element adaptively by the content.
- Extensive experimental results on generation, efficiency and ablation verify that our framework is capable of generating high-quality stylization with less computation cost.

Federating Hashing Networks Adaptively for Privacy-Preserving Retrieval

ICME, 2023

Yi Li, Meihua Yu, Xin Xie, Haiyan Fu, Hao He, Yanqing Guo*

- Different from those that most focus on classification, we tailor a novel federated learning paradigm FedA-Hash for hashing networks and benefit the retrieval model training process under the privacy-preserving constraint.
- To address the non-IID issue, we propose a simple but effective solution that blends the bilateral knowledge between the global model and the local model by adopting the KL-divergence loss, making each client obtain the personalized model fit for its data.
- FedA-Hash is a collaborative paradigm with universality. Abundant experiments are conducted on various backbones as well as in different settings. The results demonstrate the superiority of FedA-Hash in tasks including general image retrieval and person re-identification.

RoNet: Rotation-oriented Continuous Image Translation

TNNLS, Under Review

Yi Li, Xin Xie, Lina Lei, Haiyan Fu, Yanqing Guo, Ming Yao

- To achieve continuous I2I translation, we propose a novel rotation-oriented mechanism which embeds the style representation into a plane and utilizes the rotated representation to guide the generation. RoNet is accordingly implemented to learn the rotation plane automatically while disentangling the content and the style of an image simultaneously.
- To produce realistic visual effects on challenging textures like trees in forests, we design a patch-based semantic style loss. It first matches the patches from different domains and then learns the style difference with high pertinency.
- Experiments on various translation scenarios are conducted, including season shifting in forests, *real face* \rightarrow *comic portrait*, solar day shifting of streetscapes and *iphone* \rightarrow *dslr*. With the guidance of the rotation, RoNet successfully generates realistic as well as continuous translation results with a single input image.

SELECTED HONORS

Huawei Scholarship , Dalian University of Technology	Oct.2022
First-class Scholarship , Dalian University of Technology	Oct.2022
Outstanding Postgraduate Student , Dalian University of technology	Oct.2022
Second-class Scholarship , Dalian University of Technology	Oct.2021
Outstanding Graduate , Dalian Maritime University	Jun.2021

SKILLS

Programming: Python, PyTorch, LaTeX

Languages: English (conversant), Mandarin (native)

SERVICES

Reviewer: CVPR 2022, IJCAI 2022, CVPR 2023, ICCV 2023, MICCAI

Internship Experiences:

- **Intelligent Creation**, Infrastructure department of Douyin Vision, AI lab, **Bytedance** Jun.2022 - Feb.2023
 Worked together with the counterparts in North America and Singapore, the interesting special vision effects for users is achieved and published on TikTok, such as rendering picture in Van Gogh style, transferring the natural scene into an oasis or a snowy landscape. Besides, deep exploration of diffusion model verified the sufficient effectiveness of generating more realistic images with fine-grained control over their structure and style, being useful to produce a new dataset. My programming ability has been improved a lot by developing such challenging projects.
- **Center for Research on Intelligent Perception and Computing**, Institute of Automation Jul.2021 - Sep.2021
Chinese Academy of Sciences (CASIA)
 Diving into the style transfer, there is rich latent information in the high-dimensional feature space, which is worth further in-depth research. Based on disentanglement technology, style components are separated from the style features, which control different artistic style effect, such as line, texture, shape, etc. Then artistic style editing is achieved by modifying the style features according to these style components. Extensive experiments demonstrate the interpretability of style components. During my internship at the research center, I officially began my academic journey, learning how to research with related reference works, summarize, apply and innovation.