Aofan Jiang

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🎓 Education

Master of Information and Communication Engineering　　　　　　　Sept. 2022 – Present
Shanghai Jiao Tong University (SJTU), Shanghai, China

Bachelor of Computer Science　　　　　　　　　　　　　　　　　Sept. 2018 – July 2022
Shanghai Jiao Tong University (SJTU), Shanghai, China

⚙ Research Interests

- Anomaly Detection, Computer Vision and Machine Learning

ℹ Publication

- **Multi-scale Cross-restoration Framework for ECG Anomaly Detection (MICCAI 2023, early accept)**
  Aofan Jiang*, Chaoqin Huang*, Qing Cao, Shuang Wu, Zi Zeng, Xinchao Wang, Kang Chen, Ya Zhang
  Detecting anomalies in Electrocardiogram data across multiple patients is particularly challenging due to the substantial inter-individual differences and the various presence of anomalies. Imitating the diagnostic process followed by experienced cardiologists, we propose a novel multi-scale cross-restoration framework for ECG anomaly detection and localization. One model for all patients, our method achieves state-of-the-art performance on our new proposed benchmark and two other well-known ECG datasets.

- **Multi-Scale Memory Comparison for Zero-/Few-Shot Anomaly Detection (CVPRW 2023)**
  Chaoqin Huang*, **Aofan Jiang***, Ya Zhang, Yanfeng Wang (* equal contribution)
  To overcome complex industrial scenarios involving multiple objects, we propose a multi-scale memory comparison framework combining Segment Anything Model and CLIP model for zero-/few-shot anomaly detection. Without any training, our method achieved 4th place in the zero-shot track and 2nd place in the few-shot track of the Visual Anomaly and Novelty Detection (VAND) competition.

- **Registration based Few-Shot Anomaly Detection (ECCV 2022, oral)**
  Chaoqin Huang, Haoyan Guan, **Aofan Jiang**, Ya Zhang, Michael Spratling, Yanfeng Wang
  Considered few-shot anomaly detection (FSAD), where only a limited number of normal images are provided for each category at training. Inspired by how humans detect anomalies, *i.e.,* comparing an image in question to normal images, we leveraged registration, an image alignment task that is inherently generalizable across categories, as the proxy task, to train a category-agnostic anomaly detection model. This is the first FSAD method that requires no re-training or parameter fine-tuning for new categories.

- **OoDHDR-Codec: Out-of-Distribution Generalization for HDR Image Compression (AAAI 2022)**
  Linfeng Cao, **Aofan Jiang**, Wei Li, Huaying Wu, Nanyang Ye
  Considered developing a deep model for high dynamic range image compression with wide luminance distribution, we view HDR data as distributional shifts of SDR data and the HDR image compression can be modeled as an out-of-distribution generalization (OoD) problem. Our OoD generalization algorithmic framework can be applied to any deep compression model in addition to the network architectural choice.

👥 Research Experiences

John Hopcroft Center, Shanghai Jiao Tong University　　　　　　　　Shanghai, China
Research Assistant | Supervised by: Prof. Nanyang Ye　　　　　　　Mar. 2021 - Sept. 2021

Cooperative Medianet Innovation Center, Shanghai Jiao Tong University　　Shanghai, China
Master Student | Supervised by: Prof. Ya Zhang　　　　　　　　　Sept. 2022 - Present

Shanghai Artificial Intelligence Laboratory　　　　　　　　　　　　Shanghai, China
Research Intern | Supervised by: Prof. Ya Zhang　　　　　　　　　June 2023 - Dec. 2023