

# AOFAN JIANG

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## 🎓 EDUCATION

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

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

## ⚙️ RESEARCH INTERESTS

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- Anomaly Detection, Computer Vision and Machine Learning

## 📄 PUBLICATION

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- **Adapting Visual-Language Models for Generalizable Anomaly Detection in Medical Images**  
Chaoqin Huang\*, **Aofan Jiang\***, Jinghao Feng, Ya Zhang, Xinchao Wang, Yanfeng Wang (**CVPR 2024**)  
To adapt large-scale visual-language models, originally pre-trained on natural images, for medical anomaly detection, we present a pioneering lightweight multi-level adaptation and comparison framework based on CLIP. This framework aims to address the domain gap between natural and medical domains. The adapted features demonstrate enhanced generalization across diverse medical data types, even in zero-shot scenarios where the model encounters previously unseen medical modalities and anatomical regions during training.
- **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.

## 🐾 RESEARCH EXPERIENCES

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**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 June 2023 - June. 2024