

# XIAOGUANG ZHU

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Shanghai Jiao Tong University  
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## 🎓 EDUCATION

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**Shanghai Jiao Tong University, Shanghai** Apr. 2017 – Jun. 2022  
*PhD* Information and Communication Engineering

**Shanghai Jiao Tong University, Shanghai** Sep. 2014 – Mar. 2017  
*Master* Electronics and Communication Engineering

**Shanghai Jiao Tong University, Shanghai** Sep. 2010 – Jun. 2014  
*Bachelor* Electronic Science and Technology

## 📖 RESEARCH INTEREST

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**Representation Learning, Deep Generative Models, Model Generalization, Neural Stochastic Differential Equations, Action Recognition, EEG Signal Recognition**

## 👤 RESEARCH EXPERIENCE

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**Representation Learning for Image Retrieval** Dec. 2017 – Sep. 2022

*To address the generalization performance degradation problem in open-world image retrieval, graph-based network and uncertainty-aware metric learning method are proposed for representation learning of image retrieval.*

- Content-based image retrieval
- Cross-modal image retrieval
- Metric learning for image retrieval

**Human Action Analysis** Jul. 2018 – Jun. 2022

*A novel multi-modal fusion network is proposed to exploit the complementarity of skeleton and RGB modalities, which achieves competitive accuracy to SOTA but with lower computation. Deep generative models and domain adaptation method are proposed to enhance the generalization capability of action recognition models.*

- Multi-modal video action recognition
- Anomaly detection for action recognition
- Domain adaptation for action recognition

**EEG Signal Recognition** Sep. 2021 – Sep. 2022

*Deep learning models of Graph neural networks and neural stochastic differential equations are proposed for EEG signal recognition and SOTA performance is achieved on public benchmarks. Causal Models is used to analyze the casual relations through channels of EEG signals to enhance the generalization ability of deep models.*

- Deep models for EEG signal recognition
- Casual inference based domain generalization for EEG models

**GNSS Receiver Test and Evaluation** Jul. 2015 – Dec. 2016

*Implemented an algorithm to replay high-fidelity GNSS signals by modeling the error between real signal and recorded signals. Introduced a test method for GNSS receiver evaluation on various scenarios.*

- GNSS test and evaluation method with high fidelity playback
- Machine learning method for scenarios classification with GNSS signals

## ARTICLES

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- **Xiaoguang Zhu**, Jiuchao Qian, Haoyu Wang, Peilin Liu. Curriculum enhanced supervised attention network for person re-identification. *IEEE Signal Processing Letters*, Volume 27, September 2020, Pages 1665-1669.
- **Xiaoguang Zhu**, Haoyu Wang, Peilin Liu, Zhantao Yang, Jiuchao Qian. Graph-based reasoning attention pooling with curriculum design for content-based image retrieval. *Image and Vision Computing*, Volume 115, November 2021, Pages 104289.
- **Xiaoguan Zhu**, Ye Zhu, Haoyu Wang, Honglin Wen, Yan Yan, Peilin Liu. Skeleton sequence and RGB frame based multi-modality feature fusion network for action recognition. *ACM Transactions on Multimedia Computing, Communications, and Applications*, Volume 18, Issue 3, October 2021, Pages 1-24.
- **Xiaoguan Zhu**, Lianghong Chen, Peilin Liu. Uncertainty-aware asymmetric cycle consistency network for zero-shot sketch-based image retrieval. Submitted to *IEEE Transactions on Image Processing*, under review.
- **Xiaoguang Zhu**, You Wu, Zhantao Yang, Peilin Liu. Uncertainty-aware domain adaptation for action Recognition. *2021 28th International Conference on Neural Information Processing (ICONIP)*, December 2021, Pages 494-506.
- **Xiaoguang Zhu**, Siran Huang, Wenjing Fan, Yuhao Cheng, Huaqing Shao, Peilin Liu. SDAN: Stacked diverse attention network for video action recognition. *2021 IEEE International Symposium on Circuits and Systems (ISCAS)*, May 2021, Pages 1-5.
- **Xiaoguang Zhu**, Haoyu Wang, Ye Zhu, Peilin Liu. Graph-based aggregation for content-based image retrieval. Submitted to *2023 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*.
- Zhantao Yang, **Xiaoguang Zhu**, Jiuchao Qian, Peilin Liu. Dark-aware network for fine-grained sketch-based image retrieval. *IEEE Signal Processing Letters*, Volume 28, December 2020, Pages 264-268.
- Yuhao Cheng, **Xiaoguang Zhu**, Jiuchao Qian, Fei Wen, Peilin Liu. Cross-modal graph matching network for image-text retrieval. *ACM Transactions on Multimedia Computing, Communications, and Applications*, Volume 18, Issue 4, November 2021, Pages 1-24.
- Di Li, **Xiaoguang Zhu**, Liang Song. Mutual match for semi-supervised online evolutive learning. *Applied Intelligence*, May 2022, Pages 1-15.
- Minting Pan, **Xiaoguang Zhu**, Yongfu Li, Jiuchao Qian, Peilin Liu. MRNet: A keypoint guided multi-scale reasoning network for vehicle re-identification. *2020 27th International Conference on Neural Information Processing (ICONIP)*, November 2020, Pages 469-478.
- Jiameng Pan, **Xiaoguang Zhu**, Peilin Liu. Generating Adaptive Targeted Adversarial Examples for Content-Based Image Retrieval. *2022 International Joint Conference on Neural Networks (IJCNN)*, July 2022, Pages 1-9.
- Donglai Wei, Chengeng Liu, Yang Liu, Jing Liu, **Xiaoguang Zhu**, Xinhua Zeng. Look, listen and pay more attention: fusing multi-modal information for video violence detection. *2022 IEEE International Conference on Acoustics, Speech, & Signal Processing (ICASSP)*, May 2022, Pages 1980-1984.
- Yang Liu, Jing Liu, **Xiaoguang Zhu**, Donglai Wei, Xiaohong Huang, Liang Song. Learning task-specific representation for video anomaly detection with spatial-temporal attention. *2022 IEEE International Conference on Acoustics, Speech, & Signal Processing (ICASSP)*, May 2022, Pages 2190-2194.
- Yang Liu, Jing Liu, Mengyang Zhao, Dingkan Yang, **Xiaoguang Zhu**, Liang Song. Learning appearance-motion normality for video anomaly detection. *2022 IEEE International Conference on Multimedia & Expo (ICME)*, July 2022, Pages 1-6.
- Ye Zhu, **Xiaoguang Zhu**, Yuzhang Shang, Zhenghao Zhao, Yan Yan. Supplementing Missing Visions via Dialog for Scene Graph Generations. Submitted to *IEEE Transactions on Image Processing*, under review.
- Donglai Wei, **Xiaoguang Zhu**, Yang Liu, Jing Liu, Xinhua Zeng. MSAF: Multimodal Supervise-Attention enhanced Fusion for Video Anomaly Detection. *IEEE Signal Processing Letters*, accepted on September 2022.

- Guiyu Liu, Jiuchao Qian, Fei Wen, **Xiaoguang Zhu**, Rendong Ying, Peilin Liu. Action recognition based on 3d skeleton and rgb frame fusion. *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, November 2019, Pages 258-264.
- Junyu Dai, Jiuchao Qian, Zheng Tao, Junhong Chen, **Xiaoguang Zhu**, Huaqing Shao, Zheng Gong, Peilin Liu. A system integrating speech interaction and vision sensing applying in smart home scenario. *2019 IEEE International Symposium on Circuits and Systems (ISCAS)*, May 2019, Pages 1-5.
- Hanqi Wang, **Xiaoguang Zhu**, Tao Chen, Chengfang Li, Liang Song. Rethinking saliency map: An context-aware perturbation method to explain EEG-based deep learning model. Submitted to *IEEE Transactions on Biomedical Engineering*, under review.
- Chengfang Li, **Xiaoguang Zhu**, Xinhua Zeng, Liang Song. Graph-based networks with channel selection for EEG signal learning. Submitted to *IEEE Transactions on Biomedical Engineering*, under review.
- Jing Liu, **Xiaoguang Zhu**, Yang Liu, Wei Zhu, Liang Song. Distributional and spatial-temporal robust representation learning based on multimodal sensing. Submitted to *Pattern Recognition*, under review.

## ⚙ OTHER EXPERIENCES

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**Invited Reviewer:** CVPR 2021, CVPR 2022, ICCV 2021, ECCV 2022, BMVC 2020, BMVC 2021, IEEE Signal Processing Letters

**Technical Program Committee:** 2021 & 2022 International Conference on Networking System of AI (INSAI)

**visiting Fellowship:** Shanghai key lab of networking system of AI, Fudan University, 2021-2022

**Teaching Assistant:** Digital Circuits, Shanghai Jiao Tong University, 2015

**Counselor for undergraduates:** Leader of Academic Science and Technology Department

## ♡ AWARDS

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| Graduate National Scholarship                                  | 2015             |
| RongChang Scholarship, Shanghai Jiao Tong University (10/year) | 2017-2019        |
| Shanghai Outstanding Communist Youth League Member             | 2018             |
| Shanghai Jiao Tong University Outstanding Student (5%)         | 2013, 2016, 2020 |
| Outstanding Graduates of Shanghai                              | 2022             |