Jiang Liu

3rd year PhD Student, Computer Vision Group, Cardiff University

Research Interests: action quality assessment; image quality assessment; video understanding

Personal Information

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Education

Cardiff University, UK 2022.09 - Present
Ph.D in Computer Science and Informatics School
Supervisors: Prof. Hantao Liu and Dr. Katarzyna Stawarz.
China University of Mining and Technology (Top-Tier, 211), Xuzhou, China 2019.09 - 2022.06
M.Sc in Information and Communication Engineering **GPA: 87.4%**
China University of Mining and Technology (Top-Tier, 211), Xuzhou, China 2015.09 - 2019.06
B.Eng. in Electronic and Information Engineering **GPA: 81.78%**
Arizona State University, Arizona, USA 2019.01 - 2019.03
Semester exchange student in Global Launch

Research Projects

Action Quality Assessment

Adaptive Multiscale Graph Transformer Network for Action Quality Assessment **2024 - Present**

•We propose a novel adaptive multiscale graph module to enrich the local nuanced spatiotemporal relations within an individual clip and the semantic context across different clips.

•We propose a multiscale graph transformer framework that can capture both the local interactions within and across clips and the global dependencies of the entire long video.

•We conduct experiments on popular AQA datasets. The results show that our method achieves state-of-the-art performance.

Vision-based Human Action Quality Assessment: A Systematic Review **2023 – 2024**

•This study provides an up-to-date overview of current research in vision-based AQA, including a detailed summary of existing applications, data acquisition methods, public datasets, state-of-the-art methods and evaluation metrics described in 96 papers. As such, this paper provides a better understanding of recent developments and challenges in AQA.

Image Quality Assessment

KSIQA: A Knowledge Sharing Model for No-reference Image Quality Assessment **2023 – 2024**

•A novel deep learning network architecture for NR-IQA named knowledge sharing IQA (KSIQA) is proposed.

•A streamlined simulation of visual priors for NR-IQA is proposed.

•The proposed KSIQA consistently outperforms state-of-the-art no-reference IQA models across benchmark image quality assessment datasets.

Blind Image Quality Assessment via Adaptive Graph Attention **2023 – 2024**

•We devise a novel Adaptive Graph Attention module for deep learning-based IQA.

•We propose a Patch-wise-based Hierarchical Perceptual regression module to combine MSE and ordinal regression for inferring scores from different patches at various depths of the network.

•We show the substantial superiority of the proposed BIQA model over existing alternative models

Publications

- **Jiang Liu**, Huasheng Wang, Hantao Liu et al. Vision-based Human Action Quality Assessment: A Systematic Review. ***Expert Systems with Applications.*** ***(https://doi.org/10.1016/j.eswa.2024.125642)***
- Wang, H, **Liu, J.***, Tan, H., Lou, J., Liu, X., Zhou, W., & Liu, H. (2024). Blind Image Quality Assessment via Adaptive Graph Attention. ***IEEE Transactions on Circuits and Systems for Video Technology. (10.1109/TCSVT.2024.3405789)(Corresponding author)***
- Huasheng Wang, **Jiang Liu***, Hantao Liu et al. KSIQA: A Knowledge Sharing Model for No-reference Image Quality Assessment. ***IEEE Transaction on Image Processing. (Under Review)***
- **Jiang Liu**, Huasheng Wang, Hantao Liu et al. Adaptive Multiscale Graph Transformer Network for Action Quality Assessment. ***IEEE Transactions on Circuits and Systems for Video Technology. (Under Review)***
- Qiqi Huang**, Jiang Liu***, Hantao Liu et al. Towards Accessible Auditory Health: A Cloud-Based fNIRS Solution for Auditory Training and Assessment. **IEEE instrument.** (Under Review)
- Yueran Ma**, Jiang Liu**, et al. Eye-Tracking Data: An Insight into Identifying Radiologist Expertise Levels. **ICME** (Under review) equal contribution
- Yang, Y. , **J Liu**, Wang, W. , Cao, Y. , & Li, H. (2021). Incorporating slam and mobile sensing for indoor co2 monitoring and source position estimation - sciencedirect. ***Journal of Cleaner Production***. (10.1016/j.jclepro.2020.125780)
- LI Shiyin, ZHU Yuan, **LIU Jiang**, WANG Xiaoming, YANG Yuan. (2021). Research on 3D UWB indoor positioning method based on SAE-RF. ***Transducer and Microsystem Technologies***.

Patents

- Liu Jiang. 2024. The indoor personnel localization method based on feature extraction adaptive neural network and CO2. CN112484734B. ***Filed March 30, 2021, and issued July 23,2024.***
- Liu Jiang. 2021.Indoor multi-source environment health index monitoring and evaluating method based on mobile robot. CN112113603. ***Filed December 22, 2020, and issued July 23,2021.***
- Liu Jiang. 2021.Indoor positioning fingerprint database comprehensive generation method based on WiFi multipath similarity. CN111565452. ***Filed August 21, 2020, and issued January 12,2021.***
- Liu Jiang. Indoor personnel positioning method based on feature extraction adaptive neural network and CO2. CN112484734. ***Filed March 12, 2021. Patent Pending***.

Other Experience

Research Assistant of Prof. Paul Rosin in building Cardiff Conversation Database **2023.05 - 2023.07**
Teaching Assistant of Dr. Jianhua Shao in 23/24-CM2102 Database Systems **2023.10 - 2023.12**

Professional Activities

IEEE Transactions on Neural Networks and Learning Systems (TNNLS) **Reviewer**
IEEE Transaction on Circuits and Systems for Video Technology (TCSVT) **Reviewer**
IEEE Signal Processing Letters (SPL) **Reviewer**
Neurocomputing **Reviewer**

Language

English, Mandarin (native)

Major Awards

2022-2026 **Cardiff University-CSC Research Excellence Scholarships 2022**
2021 University-Level **First Prize Scholarship** (Top 20%)
2020 University-Level **Second Prize Scholarship** (Top 30%)
2019 University-Level **First Prize Scholarship** (Top 20%)
2019 Overseas Training Program **Scholarship** (Top 5%)
2018 Academic Excellence **Scholarship** (Top 30%)