

Lei Wang

RESEARCH FELLOW · COMPUTER SCIENTIST · VISITING SCIENTIST

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I am a hardworking, passionate, and self-disciplined researcher.

Lei Wang holds the position of Research Fellow at ANU and serves as a Visiting Scientist at Data61/CSIRO. Additionally, he works as a Computer Scientist at Active Intelligence Australia Pty Ltd. Since 2018, he has been employed as a Computer Vision Researcher at iCetana Pty Ltd. In the past, he held roles as a Visiting Researcher at Data61/CSIRO and at UWA.

Research Interests: action recognition in videos | anomaly detection | video image processing | one- and few-shot learning | deep learning | tensor learning | domain adaptation

Education

Doctor of Philosophy (PhD), Computer Science , The Australian National University (ANU)	2019/07-2023/02
Master of Professional Engineering, Software Engineering , The University of Western Australia (UWA)	2016/02-2018/03

Experience

Research Fellow (Level B) ANU College of Engineering, Computing and Cybernetics	2023/02-present
Visiting Researcher, Postgraduate research student, Visiting Scientist CSIRO's Data61, Australia	2018/09-present
Computer Scientist Active Intelligence Australia Pty Ltd, Perth, Australia	2021/07-present
Machine Learning Researcher Ebenezer Technologies, Barranquilla, Colombia	2020/09-2021/01
Visiting Researcher Department of Comput. Sci. and Softw. Eng., UWA, Perth, Australia	2018/10-2019/10
Computer Vision Research Intern, Computer Vision Researcher iCetana Pty Ltd, Perth, Australia	2018/07-2020/09

Research Projects & Grants

- **Chief Investigator (CI)**, "Towards building general-purpose multimodal foundation models", NCI Adaptater Scheme Q4 2023 (HPC funding scheme), 2023/10/01-2023/12/31
- **Grant / Project Award** (Oracle Cloud credits award), "Automatic, large-scale screening of failure cases in autonomous driving", **A\$ 48,000**, 2023/07/26-2024/07/25
- **Co-Investigator (Co-I)**, "Sharing early insights for more resilient communities", **A\$ 71,089**, 2023/04/06-2023/10/31
- **Industry innovation** (Active Intelligence Corp.), "Anomaly detection in surveillance videos", **A\$ 123,368**, 2021/07/01-2022/06/30

Teaching

Teaching Assistant Department of Comput. Sci. and Softw. Eng., UWA	2018/03-2018/07
<ul style="list-style-type: none">• CITS5508 Machine Learning• Unit Coordinator(s): A/Prof. Du Huynh & Prof. Mark Reynolds• Job Duties: set assignment questions, supervise laboratory classes & help with assignment marking	

Recognition & Honors

- **The Sang Uk Lee Best Student Paper Award**, ACCV 2022, 2022/12/08
- **The Incentive Unit Award**, Active Intelligence Corp., 2022/09/09-2032/09/08
- **Outstanding reviewer**, ECCV 2022, 2022/10/19
- **Data61 Top-up Scholarship**, Data61/CSIRO, 2019/07/01-2023/06/30
- **Data61 PhD Scholarship**, Data61/CSIRO, 2019/07/01-2023/06/30
- **ANU HDR Fee Remission Merit Scholarship**, ANU, 2019/07/01-2023/06/30
- **Outstanding Graduate Award**, Yangzhou University, 2015/06
- **Jingwen Zhu Scholarship**, Yangzhou University, 2015/03
- **Principal's Scholarship (First Class)**, Yangzhou University, 2014/12
- **The Second Prize of Lanqiao Cup Competition (C/C++ Program Design)**, National Software and Information Technology Professional Talent Competition, 2014/04

- **Principal's Scholarship (Second Class)**, Yangzhou University, 2013/12

Professional Service

- I have the honor of serving as an **Area Chair** for the 27th International Conference on Pattern Recognition (ICPR 2024) by invitation from Prof. Cheng-Lin Liu (CASIA).
- I regularly review technical papers for the following journals, conferences & workshops.
 - Journals: TPAMI, TCSVT, TMM, PR, CVIU, NCAA, JVCJ, SIVP, TVCJ, IET Computer Vision, Electronics Letters
 - Conferences: ICLR 2023-2024, AAAI 2022-2024, NeurIPS 2022-2023, ICML 2022-2023, CVPR 2022-2023, ICCV 2023, ECCV 2022, WACV 2024, BMVC 2020-2023, IEEE CAI 2023
 - Workshops: The AI City Challenge Workshop (CVPR 2023), Vision Datasets Understanding (CVPR 2022-2023), Deep Vision Workshop (CVPR 2020)

Invited Talk

- “The next generation of international Chinese young students face to face” Issue 21, International Cooperation and Exchange Program Series Activities of Harbin Institute of Technology (Shenzhen), 2023/08/12
 - Topic: Action Recognition: Past, Present and Future
 - Host: Prof. Haijun Zhang, Department of Computer Science, Harbin Institute of Technology, Shenzhen

Publications

- Conference/journal papers
 - **Lei Wang** and Piotr Koniusz. “3Mformer: Multi-order Multi-mode Transformer for Skeletal Action Recognition.” *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2023. **A***
 - **Lei Wang** and Piotr Koniusz. “Uncertainty-DTW for Time Series and Sequences.” *European Conference on Computer Vision*. Cham: Springer Nature Switzerland, 2022. **A***, **oral**
 - **Lei Wang** and Piotr Koniusz. “Temporal-Viewpoint Transportation Plan for Skeletal Few-shot Action Recognition.” *Proceedings of the Asian Conference on Computer Vision*. 2022. **B**, **oral**, **Best Student Paper Award**
 - Zhenyue Qin, Yang Liu, Pan Ji, Dongwoo Kim, **Lei Wang**, R.I. (Bob) McKay, Saeed Anwar, and Tom Gedeon. “Fusing Higher-Order Features in Graph Neural Networks for Skeleton-Based Action Recognition.” *IEEE Transactions on Neural Networks and Learning Systems* (2022). **IF: 14.255**
 - **Lei Wang** and Piotr Koniusz. “Self-supervising Action Recognition by Statistical Moment and Subspace Descriptors.” *Proceedings of the 29th ACM international conference on multimedia*. 2021. **A***
 - Piotr Koniusz, **Lei Wang** and Anoop Cherian. “Tensor Representations for Action Recognition.” *IEEE Transactions on Pattern Analysis and Machine Intelligence* 44.2 (2021): 648-665. **IF: 24.314**
 - **Lei Wang**, Piotr Koniusz, and Du Q. Huynh. “Hallucinating IDT Descriptors and I3D Optical Flow Features for Action Recognition with CNNs.” *2019 IEEE/CVF International Conference on Computer Vision*, IEEE Computer Society, 2019. **A***
 - **Lei Wang**, Du Q. Huynh, and Piotr Koniusz. “A Comparative Review of Recent Kinect-based Action Recognition Algorithms.” *IEEE Transactions on Image Processing*, 29 (2019): 15-28. **IF: 11.041**
 - **Lei Wang**, Du Q. Huynh, and Moussa Reda Mansour. “Loss Switching Fusion with Similarity Search for Video Classification.” *2019 IEEE International Conference on Image Processing (ICIP)*, IEEE, 2019. **B**, **1 AU patent**
- Patents
 - **Lei Wang**. “System and Method of Detecting Anomalies from Mass Data.” (US provisional, SN 63/326,525)
 - **Lei Wang** and Graeme Woods. “Method and System for Classifying Video Data.” (au 2019903775, provisional patent filed 07/10/2019)
 - **Lei Wang**, Moussa Reda Mansour, and Graeme Woods. “System and Method of Video Data Retrieval.” (au 2019900316, provisional patent filed 01/02/2019)
- Theses
 - **Lei Wang**. “Robust Human Action Modelling.” *Ph.D. dissertation*, The Australian National University, Canberra, ACT, Australia, Oct. 2023.
 - **Lei Wang**. “Analysis and evaluation of Kinect-based action recognition algorithms.” *M.S. thesis*, School Comput. Sci. Softw. Eng., Univ. Western Australia, Perth, WA, Australia, Nov. 2017.
- arXiv preprints
 - **Lei Wang**, Piotr Koniusz, Tom Gedeon, and Liang Zheng. “Adaptive Multi-head Contrastive Learning.” *arXiv*, 2023.
 - **Lei Wang** and Piotr Koniusz. “Flow Dynamics Correction for Action Recognition.” *arXiv*, 2023.
 - **Lei Wang**, Jun Liu and Piotr Koniusz. “3D Skeleton-based Few-shot Action Recognition with JEANIE is not so Naïve.” *arXiv*, 2021, an extended version has been accepted by ACCV’22 [oral].
 - **Lei Wang**, Piotr Koniusz and Ke Sun. “High-order Tensor Pooling with Attention for Action Recognition.” *arXiv*, 2021, an extension of our TPAMI’20.
 - **Lei Wang**. “AI in Software Engineering: Case Studies and Prospects.” *arXiv*, 2017, technical report.