Lan WEI (She/Her)

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Innovation & Translation Hub
Imperial College London White City Campus
84 Wood Lane, London, UK, W12 0BZ

EDUCATION BACKGROUND

Imperial College London **10/2024-Present**

- Doctor of Philosophy in Robotics (4-year Full PhD Scholarship)
- Advisor: Dr Dandan Zhang
- Research Direction: Diffusion-based Sim-to-Real Image Generation for Robot Perception and Control, Efficient Vision-Language-Action Models

University of Science and Technology of China **09/2021-06/2024**

- Master of Engineering in Computer Science and Technology
- Advisor: Prof. Nikolaos M. Freris
- Thesis: Physics-Informed Multi-Layer Graph Neural Networks for Fluid Simulation and Prediction
- Core Modules: Combinatorial Mathematics, Graph Theory, Optimization, Algorithm Design and Analysis, Advanced Artificial Intelligence, Advanced Software Engineering, Advanced Quantum Computing

Xiamen University **09/2017-06/2021**

- Bachelor of Engineering in Computer Science and Technology
- GPA: 3.86/4.0 (Top 5%, Ranking: 3/61)
- Thesis: "Skin Lesion Segmentation: A Boundary-aware Transformer-based Solution"
- Core Modules: C++, MATLAB, UNIX, Data Structure, Numerical Methods, Digital Logic, Operating System, Computer Architecture, Compiler Principle, Computer Networks, Software Architecture and Development Environment

PUBLICATIONS

- F. Verstraete*, **L. Wei***, W. Fan, D. Zhang, "*TactEx: An Explainable Multimodal Robotic Interaction Framework for Human-Like Touch and Hardness Estimation.*" Under Review by ICRA 2026
- Z. Tan*, **L. Wei***, D. Zhang, "*Physics-Informed Machine Learning for Efficient Sim-to-Real Data Augmentation in Micro-Object Pose Estimation.*" Under Review by ICRA 2026
- S. Bhouri*, **L. Wei***, J. Zheng, D. Zhang, "*MultiDiffSense: Diffusion-Based Multi-Modal Visuo-Tactile Image Generation Conditioned on Object Shape and Contact Pose.*" Under Review by ICRA 2026
- G. Khurana*, **L. Wei***, D. Zhang, "*SARL: Spatially-Aware Self-Supervised Representation Learning for Visuo-Tactile Perception.*" Under Review by ICRA 2026
- **L. Wei,** G. V. Gonzalez, P. Kgwarae, A. Timms, D. Zahorovsky, S. Schultz, & D. Zhang, "*Coarse-to-Fine Learning for Multi-Pipette Localisation in Robot-Assisted In Vivo Patch-Clamp.*" IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Oct 2025.
- **L. Wei**, L. Genoud and D. Zhang, "*Physics-Informed Machine Learning with Adaptive Grids for Optical Microrobot Depth Estimation*." IEEE International Conference on Cyborg and Bionic Systems (CBS), Oct 2025. ***[Best Bionic System Award Finalist]***
- **L. Wei** and D. Zhang, "*A Dataset and Benchmarks for Deep Learning-Based Optical Microrobot Pose and Depth Perception.*" IEEE International Conference on Manipulation, Automation and Robotics at Small Scales (MARSS), Aug 2025. ***[Best Student Paper Award with the Highest Score]***
- **L. Wei** and N. Freris, "*Arctic Sea Ice Prediction based on Multi-scale Graph Modeling with Conservation Laws.*" Journal of Geophysical Research: Atmospheres, vol. 130, no.1, pp. e2024JD042136, 2025.
- Y. Zhang, **L. Wei,** N. Freris, "*Synergistic Patch Pruning for Vision Transformer: Unifying Intra- & Inter-Layer Patch Importance.*" Proceedings of the 12th International Conference on Learning Representations (ICLR), May 2024.
- **L. Wei** and N. Freris, "*Multi-scale Graph Neural Network for Physics-informed Fluid Simulation.*" The Visual Computer, vol. 41, pp. 1171-1181, 2025 (also presented at the 40th Computer Graphics International (CGI) Conference, Aug. 2023).

- J. Wang*, **L. Wei***, L. Wang, Q. Zhou, L. Zhu, & J. Qin, "*Boundary-aware transformers for skin lesion segmentation.*" Proceedings of the 24th Medical Image Computing and Computer Assisted Intervention Conference (MICCAI), Sep. 2021. ***[230+ Citation on Google Scholar]***
- Y. S. Gan, **L. Wei,** Y. Han, C. Zhang, Y. C. Huang, & S. T. Liong, "*A statistical approach in enhancing the volume prediction of ellipsoidal ham.*" Journal of Food Engineering 290 (2021): 110186.

PATENT

- **L. Wei** and N. Freris, "*A method for Arctic sea ice prediction based on multi-scale graph neural networks and conservation laws.*" CN119476634B, 2025.

INVITED TALKS

- **Machine Learning-Based Perception of Optical Microrobots**
  Oral presentation @ Trustworthy Embodied Intelligence Symposium, London, UK, July 2025
- **Sensors and Actuators for Biomedical Robotics**
  Invited talk @ Department of Bioengineering, Imperial College London, London, UK, March 2025

TEACHING

- **Co-supervisor**, MSc BME Computational Bioengineering, Imperial College London, Spring 2025, Summer 2025
- **Teaching Assistant**, Deep Learning, Imperial College London, Fall 2024, Fall 2025
- **Teaching Assistant**, COMP6224P: Optimization Theory, USTC, Spring 2023
- **Teaching Assistant**, COMP6209P: Queuing Theory and Its Application in Computer Networks, USTC, Fall 2022

HONORS AND AWARDS

- IROS 2025 IEEE RAS Travel Support with the amount of $1500 USD.
- The Best Student Paper Award with the highest score at MARSS 2025.
- 4-year Full PhD scholarship, Imperial College London, 2024-2028
- First-class Scholarship, University of Science and Technology of China (2020-2021, 2021-2022 and 2022-2023)
- National First Prize in the 11th China Adolescents Science and Technology Innovation Contest
- First-class Scholarship, Xiamen University (3%, 2019-2020)
- Second-class Scholarship, Xiamen University (10%, 2018-2019)
- The Highest score in Malaysia, Simon Marais Asia-Pacific Mathematics Competition (2018.10)

ADDITIONAL INFORMATION

Language Skills: Mandarin (native), English (fluent)
Hobbies: Photography, Film, and Hiking