

New Zealand Standard Curriculum Vitae

PART 1

1a. Personal details	
Title (optional)	Dr
First Name(s)	Luyao
Family Name	Xia
Iwi Affiliation, Pacific identity and/or any other as applicable	Not applicable (Asian)
Present position	Postdoctoral Fellow Auckland Bioengineering Institute (ABI)
Organisation/Employer	The University of Auckland (UoA)
Contact Address	Auckland Bioengineering House 70 Symonds Street, Grafton, Auckland, New Zealand
Mobile	+64 2040007197
Email	luyao.xia@auckland.ac.nz
Personal website (if applicable)	https://luyaoxia.com/
Research identifier (if applicable)	https://scholar.google.com/citations?user=mkXaUrIAAAAJ&hl=zh-CN

1b. Academic qualifications	
2025	Ph.D. , Control Science and Engineering, Tongji University, China
2020	M.E. , Control Engineering, Tongji University, China
2015	B.E. , Electrical Engineering and Automation, China University of Mining and Technology, China

1c. Professional positions held	
July 2025 - Present	Postdoctoral Fellow , ABI, The University of Auckland, NZ
Sep 2020 - Jan 2021	Research Assistant Tongji University, China
July 2019 - Oct 2019	AI Engineer , China UnionPay, China
July 2015 - Apr 2016	R&D Engineer , KingClean, China

1d. Present research/professional speciality	
<p>Dr. Luyao Xia is a Postdoctoral Fellow at the Auckland Bioengineering Institute (ABI), where he specializes in computer vision, embodied AI, and biomedical engineering. He received his PhD from Tongji University, and his current research focuses on 3D spatial understanding, robotic systems, and embodied AI for healthcare applications, encompassing multimodal perception, causal inference, and human-robot interaction. He develops soft tissue segmentation and reconstruction, deformation-aware tracking, and embodied AI systems that integrate tactile sensing, visual perception, and Robotic VLA algorithm for healthcare platforms. His work has resulted in 22 publications with 258 Google Scholar citations, reflecting his growing contributions to 3D spatial understanding and intelligent systems for biomedical engineering.</p>	

1e. Career break events (if applicable)	
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1f. Professional distinctions and memberships (including honours, prizes, grants, scholarships, boards, editorial and/or governance roles, etc.)

2026	Gold Reviewer Reward , Forty-Third International Conference on Machine Learning (<i>ICML</i>)
2026 - 2027	Research Grant from <i>Beijing Dajia Internet Information Technology Co., Ltd.</i> (PI, \$119,047 NZD), Supply Value and Cannibalization Effect of Recommendation System, New Zealand
2025	ABI research project fund (Rapid-test) (PI, \$120,00 NZD), Force-Augmented Visual Tracking for Soft Tissue Deformation in Mixed-Reality Surgical Guidance, New Zealand
2025	ABI research project fund (Consolidate) (AI, \$129,35 NZD), Foundation Models for Dynamic Human-Space Understanding in Clinical Environments, New Zealand
2024 - 2025	Industry-Sponsored Research Grant (PI, \$115,720 NZD), Development of a Large Language Model Bridge Agent, China
2025 - Pres.	Membership , Artificial Intelligence Researchers Association, New Zealand
2020 - 2025	Membership , Chinese Association for Artificial Intelligence (CAAI), China
2025	Excellent Doctoral Dissertation , Tongji University, China
2022	The Second Prize Scholarship , Tongji University, China
2020	Scientific and Technological Achievement Appraisal Certificate , Shanghai Society of Artificial Intelligence, China
2020	The First Prize Scholarship , Tongji University, China
2019	The Phoenix Scholarship , Phoenix Contact, Germany

1g. Total number of <i>peer reviewed</i> publications	Journal articles	Books	Book chapters, books edited	Conference proceedings
	6			16

PART 2

2a. Research publications and dissemination

Peer-reviewed journal articles
<ul style="list-style-type: none"> • Xia, L., Lu, J., Lu, Y., Zhang, H., Fan, Y., & Zhang, Z. (2024). Augmented reality and indoor positioning based mobile production monitoring system to support workers with human-in-the-loop. <i>Robotics and Computer-Integrated Manufacturing</i>, 86, 102664. • Xia, L., Lu, J., Lu, Y., Gao, W., Fan, Y., Xu, Y., & Zhang, H. (2024). Semantic knowledge-driven A-GASeq: A dynamic graph learning approach for assembly sequence optimization. <i>Computers in Industry</i>, 154, 104040. • Xia, L., Lu, J., Zhang, H., Xu, M., & Li, Z. (2022). Construction and application of smart factory digital twin system based on DTME. <i>The International Journal of Advanced Manufacturing Technology</i>, 120(5), 4159-4178. • Lu, J., *Xia, L., Zhang, H., & Xu, M. (2022). Research and application of manufacturing enterprise digital twin ecosystem. <i>Computer Integrated Manufacturing System</i>, 28(8), 2273. *Corresponding author • Lu, J., Xu, Y., Xia, L., & Zhang, H. (2022). A review of equipment failure prediction and health management methods supported by digital twins. <i>Automation Instrumentation</i>, 43(6), 1–7. • Lu, J., Xia, L., Bai, O., Yu, T., & Li, Z. (2021). Research on the full life-cycle of product digital twins under intelligent manufacturing. <i>Automation Instrumentation</i>, 42(3), 1–7.
Peer reviewed books
Peer reviewed book chapters, books edited

Peer reviewed conference proceedings

- Liu, Y. †, **Xia, L. †**, Liu, H., Liang, J., Li, H., Gai, K., & Bai, H. (2026, April). ALM-MTA: Front-Door Causal Multi-Touch Attribution Method for Creator-Ecosystem Optimization. In Proceedings of the *Fourteenth International Conference on Learning Representations (ICLR)*, a premier international conference in artificial intelligence.
† Co-first authors / Equal contribution
- Liu, Y., Miao, Y., & ***Xia, L.** (2025, April). Direct Routing Gradient (DRGrad): A Personalized Information Surgery for Multi-Task Learning (MTL) Recommendations. In Proceedings of the *AAAI Conference on Artificial Intelligence* (Vol. 39, No. 12, pp. 12238-12245), a premier international conference in artificial intelligence.
***Corresponding author**
- Gao, W., Zhang, H., Lu, J., **Xia, L.**, & Han, T. (2023, August). Design of Government Low-Carbon Subsidy Contract Considering Cloud Manufacturing Service Platform. In *2023 IEEE 19th International Conference on Automation Science and Engineering (CASE)* (pp. 1-6). IEEE.
- Li, Z., Zhang, H., Lu, J., & **Xia, L.** (2022, August). Research on Augmented Reality Assisted Material Delivery System in Digital Workshop. In *International Conference on Intelligent Computing* (pp. 685-698). Cham: Springer International Publishing.
- Wang, Y., Lu, J., Lin, Z., Dai, L., Chen, J., & **Xia, L.** (2022, August). Development and application of augmented reality system for part assembly based on assembly semantics. In *International Conference on Intelligent Computing* (pp. 673-684). Cham: Springer International Publishing.
- Xu, M., Hao, Z., Chen, X., Wang, X., & **Xia, L.** (2021, July). Research on logistics planning of discrete manufacturing workshop based on plant simulation. In *2021 40th Chinese Control Conference (CCC)* (pp. 1-6). IEEE.
- Zhang, Z., Lu, J., **Xia, L.**, Zhang, H., Wang, Y., & Qian, L. (2021, March). Design of workshop visual production monitoring system based on UWB localization. In *2021 IEEE 5th Advanced Information Technology, Electronic and Automation Control Conference (IAEAC)* (Vol. 5, pp. 924-929). IEEE.
- Xu, M., Lu, J., **Xia, L.**, Wang, X., & Xu, M. (2021, March). Research on balance problem of non-standard oil cylinder production line based on customer interaction. In *2021 IEEE 5th Advanced Information Technology, Electronic and Automation Control Conference (IAEAC)* (pp. 1580-1586). IEEE.
- **Xia, L.**, Lu, J., & Zhang, H. (2020, August). Research on construction method of digital twin workshop based on digital twin engine. In *2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications (AEECA)* (pp. 417-421). IEEE.
- Wang, X., Lu, J., Chen, R., Xu, M., & **Xia, L.** (2020, June). Research on design and planning of pulsating aero-engine assembly line based on plant simulation. In *2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference (ITNEC)* (Vol. 1, pp. 591-595). IEEE.
- Zhang, Z., Lu, J., **Xia, L.**, Wang, S., Zhang, H., & Zhao, R. (2020, June). Digital twin system design for dual-manipulator cooperation unit. In *2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference (ITNEC)* (Vol. 1, pp. 1431-1434). IEEE.
- Zhang, H., Zhang, Z., **Xia, L.**, Wang, S., Zhao, R., Chen, X., & Liu, S. (2020, April). Augmented reality-based auxiliary device for workshop logistics delivery. In *Proceedings of the 2020 International Conference on Computing, Networks and Internet of Things* (pp. 117-121).
- **Xia, L.**, Lu, J., Zhang, Z., Chen, R., Wang, S., & Zhang, H. (2019, December). Development and application of parts assembly guidance system based on augmented reality. In *2019 IEEE 4th Advanced Information Technology, Electronic and Automation Control Conference (IAEAC)* (pp. 1325-1330). IEEE.
- Chen, R., Lu, J., Zhang, H., & **Xia, L.** (2019, November). Research on scheduling problem of discrete manufacturing workshop for major equipment in complicated environment. In *IOP Conference Series: Materials Science and Engineering* (Vol. 688, No. 5, p. 055048). IOP Publishing.
- **Xia, L.**, Lu, J., Zhang, C., Wang, S., & Zhang, H. (2019, May). Development and application of workshop virtual monitoring system based on unity. In *2019 IEEE 8th Data Driven Control and Learning Systems Conference (DDCLS)* (pp. 928-933). IEEE.

- **Xia, L.**, Dai, H., Lu, J., & Zhang, H. (2018, December). Development and application of virtual collaborative experiment technology based on unity platform. In *2018 IEEE International Conference of Safety Produce Informatization (IICSPI)* (pp. 546–550). IEEE.

Other forms of dissemination (reports for clients, technical reports, patents, popular press, public outreach, community engagement etc.)

Patents:

- Lu, J., Zhang, H., Zhao, R., Tao, L., Han, D., Qian, L., **Xia, L.**, & Wu, W. (2022). An electric vehicle bidirectional charging and discharging control system and method (China Patent No. CN 110979083 B). China National Intellectual Property Administration.
- Lu, J., **Xia, L.**, Zhang, H., Wang, X., Zhang, Z., Xu, M. (2020). A workshop production monitoring server, mobile terminal, and application (China Patent No. CN 111770450 B). China National Intellectual Property Administration.

Software Copyrights:

- Software Copyright of Tongji Production Monitoring System Based on Augmented Reality (V1.0). Certificate No.0949442, **July 2021**. (Issued Software)
- Software Copyright of Tongji Part Assembly Induction Prototype System Based on Augmented Reality (V1.0). Certificate No.4749595, **September 2019**. (Issued Software)
- Software Copyright of Tongji iOS Experimental Unit Digital Twin System (V1.0). Certificate No.3003770, **June 2018**. (Issued Software)