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Professional Appointments

2022 – on **Senior Lecturer**
Department of Mechanical and Mechatronics Engineering
Faculty of Engineering
The University of Auckland, New Zealand

2019 – 2021 **Lecturer**
Department of Mechanical and Mechatronics Engineering
Faculty of Engineering
The University of Auckland, New Zealand

2017 – 2019 **Product Manager/R&D Lead**
FRAMECAD Ltd., New Zealand

2016 – 2017 **Business Analyst/Software Developer**
FRAMECAD Ltd., New Zealand

2015 – 2016 **Business Analyst**
Compact Sorting Equipment, New Zealand

Education

2012 – 2016 **PhD in Mechatronics Engineering**, The University of Auckland, New Zealand

2007 – 2012 **Bachelor in Mechatronics Engineering**, Dalian University of Technology, China

Grants

My research has been funded by:
- New Zealand and China government agencies
- New Zealand industry partners through strategic research development and knowledge transfer
- The University of Auckland

In total, I have generated grants totalling >**$610,000** (NZD) as principal investigator (PI) and I have participated in grants totalling >**$2,023,000** (NZD) as an associate investigator (AI) - altogether managed >**$2,633,000** (NZD) grants.

Awards & Honours

2021 **Best Paper Award**, Robotics and Computer-Integrated Manufacturing

2014 **Best Paper Shortlist**, IEEE International Conference on Industrial Engineering and Engineering Management

2010 **Tertiary Student of the Year (finalist, 100 students)**, Ministry of Education, China

2009 **Top10 Tertiary Student of the Year**, Department of Education, Liaoning Province, China

(2008,2011) **National Scholarship**, Ministry of Education, China

Academic Service

Editorship

2022 – on	Editorial Board Member, *Machines*
2022 – on	Associate Editor, *IET Cyber-Systems and Robotics*
2020 – on	Associate Editor, *IET Collaborative Intelligent Manufacturing*
2022	Managing Guest Editor, *International Journal of Computer-Integrated Manufacturing*
2021	Managing Guest Editor, *Robotics and Computer-Integrated Manufacturing*
2021	Guest Editor, *Neural Computing and Applications*

Committees

2021 – on	NAMRI/SME (The North American Manufacturing Research Institution of SME) Scientific Committee
2021 – on	IEEE RAS Technical Committee on Digital Manufacturing and Human-Centred Automation

Professional Committee Membership

2018 – on	Member, American Society of Mechanical Engineers
2019 – on	Member, Society of Manufacturing Engineers
2020 – on	Member, Institute of Electrical and Electronics Engineers

Chair/Committee, International Conferences

- **Organisation Chair**, 2023 IEEE 19th International Conference on Automation Science and Engineering (CASE)
- **Special Session Chair**, 2022 IEEE 18th International Conference on Automation Science and Engineering (CASE)
- **Organiser**, Symposium on Cloud Manufacturing at 2022 ASME MSEC Manufacturing Science and Engineering Conference
- **Session Chair**, 2020 IEEE 16th International Conference on Automation Science and Engineering (CASE)
- **Committee Member**, The 48th International Conference on Computers and Industrial Engineering
- **Special Session Organiser**, The 48th International Conference on Computers and Industrial Engineering
- **Organiser**, Symposium on Cognitive Manufacturing at 2020 ASME MSEC Manufacturing Science and Engineering Conference

Grant Assessor

- Fundamental Research Programme, University of Mons, Belgium
- National Research and Development Agency, Chile

Reviewer

- IEEE Transactions on Automation Science and Engineering
- Journal of Manufacturing Systems
- Journal of Intelligent Manufacturing
- International Journal of Production Research
- ASME Journal of Manufacturing Science and Engineering
- Robotics and Computer-Integrated Manufacturing
- Human-centric Computing and Information Sciences

- SME Manufacturing Letters
- Computers in Industry
- IEEE Transactions on Industrial Informatics
- Advanced Engineering Informatics
- Engineering
- IEEE Access

Teaching

Undergraduate

2019 – on	MECHENG352: Manufacturing Systems Course Coordinator, (50% of module)
2019 – on	MECHENG752: Technology Management ($\sim$30% of module)
2020 – on	MECHENG709: Industrial Automation (50% of module)
2022 – on	MECHENG754: Industry 4.0 Smart Manufacturing (33% of module)

Postgraduate

2020 – on	MECHENG710: Advanced Industrial Automation (25% of module)
2020 – 2021	MECHENG751: Advanced CAD/CAM/CNC (50% of module)
2022 – on	MECHENG753: Advanced Industry 4.0 Smart Manufacturing (33% of module)

Student supervision (Main Supervisor)

Current Students (20)

PhD Students (**10**)

2022 – on	Regina Lee	Jiaxu Niu
2021 – on	Yonghui Tao	Dazzle Johnson	Akhil Ramesh	Wanqing Xia
2020 – on	Zengkun Liu	Hao Zheng	Saahil Chand
2019 – on	Zhaojun Qin

Master Students - Research Thesis (**1**)

2022 – on	Joshua Goh

MEngSt Students - Research Project (**1**)

2022 – on	Cooper Li

Undergraduate Honours Students (**8**)

2022 – on	Andrew Fairweather	Tom Grimwood	Jae Lee	Sheung Ip Jonas Wan	Eric Che	Benedict Loeng	Nageesh Sharma	Robert Tate

Alumni (30)

Master Students - Research Thesis (3)

2022	Karen Wang	Sidhant Raje
2021	Munirah Mahadi
2020	Ziwei Su

MEngSt Students - Research Project (4)

2020	Akhilnandh Ramesh	Dinghe Liu	Leon Rodrigues	Jiaxu Niu

Undergraduate Honours Students (23)

2021	Regina Lee	Zifan Li	Josh Fenn	Raani Kelderman	Molina Vincent	Keegan Fernandes	Sam McGillicudy	Walter Xu
2020	Morgan Davies	Reuben Hughes	Finn O'Brien	Blake Wagstaff	Hamish Marsden	Stephen Monaghan	Joshua Stanaway	Zhuoyun Zhang	Yonghui Tao	Nimesha Witharana	Anna Saunders
2019	Joshua Goh	Wanqing Xia	Nikhil Harilal	Steve Tran

Media & Outreach

2021	Interviewed by The University of Auckland, *"A robot to help workers on the factory floor"*: a-robot-to-help-workers-on-the-factory-floor
2021	Interviewed by Facteon, *"Customer Stories: University of Auckland: Flexible & Mobile Automation for Manufacturers"*: university-of-auckland-flexible-and-mobile-automation-for-manufacturers

Presentations

Invited & Keynotes

2021	Manufacturing Smarter after the Pandemic, *Tech Tuesday*. Recording: ▶ youtube.com/watch?v=UWdSxRgcppI
	Manufacturing Business Innovation Driven by Deep Tech Disruption, *Callaghan Innovation Morning Talks*.
	Commuication, Coordination and Control in Smart Manufacturing Systems, *Overseas Scientist Forum, Huazhong University of Science and Technology*.
	Manufacturing Paradigm Shifts and Impact on Future Talents, *Donghua University*.
2019	Manufacturing Intelligence in the Era of Industry 4.0, *Donghua University*.
	Smart Manufacturing and Artificial Intelligence, *Jiangsu University*.

Publications

Peer-reviewed Articles

[70] Guo, L., Yan, F., Li, T., Yang, T., **Lu, Y.,** "An automatic method for constructing machining process knowledge base from knowledge graph," *Robotics and Computer-Integrated Manufacturing*, vol. 73, 2022. DOI: `10.1016/j.rcim.2021.102222`.

[69] Johnson, D., Chen, G., **Lu, Y.,** "Multi-agent reinforcement learning for real-time dynamic production scheduling in a robot assembly cell," *IEEE Robotics and Automation Letters*, 2022.

[68] Liu, S., **Lu, Y.**, Zheng, P., Shen, H., Bao, J., "Adaptive reconstruction of digital twins for machining systems: A transfer learning approach," *Robotics and Computer-Integrated Manufacturing*, vol. 78, 2022. DOI: 10.1016/j.rcim.2022.102390.

[67] Liu, S., Sun, Y., Zheng, P., **Lu, Y.**, Bao, J., "Establishing a reliable mechanism model of the digital twin machining system: An adaptive evaluation network approach," *Journal of Manufacturing Systems*, vol. 62, pp. 390–401, 2022. DOI: 10.1016/j.jmsy.2021.12.008.

[66] Liu, T., Wang, J., Huang, X., **Lu, Y.**, Bao, J., "3dsmda-net: An improved 3dcnn with separable structure and multi-dimensional attention for welding status recognition," *Journal of Manufacturing Systems*, vol. 62, pp. 811–822, 2022. DOI: 10.1016/j.jmsy.2021.01.017.

[65] **Lu, Y.**, Wang, L., Bao, J., Lastra, J., Ameri, F., "Semantic artificial intelligence for smart manufacturing automation," *Robotics and Computer-Integrated Manufacturing*, vol. 77, 2022. DOI: 10.1016/j.rcim.2022.102333.

[64] **Lu, Y.**, Zheng, H., Chand, S., "Outlook on human-centric manufacturing towards industry 5.0," *Journal of Manufacturing Systems*, vol. 62, pp. 612–627, 2022. DOI: 10.1016/j.jmsy.2022.02.001.

[63] Wang, H., Tao, J., Peng, T., "Dynamic inventory replenishment strategy for aerospace manufacturing supply chain: Combining reinforcement learning and multi-agent simulation," *International Journal of Production Research*, 2022. DOI: 10.1080/00207543.2021.2020927.

[62] Zhang, R., Li, J., Zheng, P., **Lu, Y.**, Bao, J., Sun, X., "A fusion-based spiking neural network approach for predicting collaboration request in human-robot collaboration," *Robotics and Computer-Integrated Manufacturing*, vol. 78, 2022. DOI: 10.1016/j.rcim.2022.102383.

[61] Zheng, H., Cheng, G., **Lu, Y.**, Liu, C., Li, Y., "A general fault diagnosis framework for rotating machinery and its flexible application example," *Measurement*, p. 111 497, 2022.

[60] Zhou, B., Shen, X., **Lu, Y.**, "Semantic-aware event link reasoning over industrial knowledge graph embedding time series data," *International Journal of Production Research*, 2022. DOI: 10.1080/00207543.2021.2022803.

[59] Aheleroff, S., Xu, X., Zhong, R., **Lu, Y.**, "Digital twin as a service (dtaas) in industry 4.0: An architecture reference model," *Advanced Engineering Informatics*, vol. 47, 2021. DOI: 10.1016/j.aei.2020.101225.

[58] Fan, W., Zheng, L., Ji, W., Xu, X., **Lu, Y.**, Wang, L., "A machining accuracy informed adaptive positioning method for finish machining of assembly interfaces of large-scale aircraft components," *Robotics and Computer-Integrated Manufacturing*, vol. 67, 2021. DOI: 10.1016/j.rcim.2020.102021.

[57] Guo, L., Yan, F., **Lu, Y.**, Zhou, M., Yang, T., "An automatic machining process decision-making system based on knowledge graph," *International Journal of Computer Integrated Manufacturing*, vol. 34, no. 12, pp. 1348–1369, 2021. DOI: 10.1080/0951192X.2021.1972461.

[56] Guo, L., Zhou, M., **Lu, Y.**, Yang, T., Yang, F., "A hybrid 3d feature recognition method based on rule and graph," *International Journal of Computer Integrated Manufacturing*, vol. 34, no. 3, pp. 257–281, 2021. DOI: 10.1080/0951192X.2020.1858507.

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[54] Liu, S., Bao, J., **Lu, Y.**, Li, J., **Lu, S.**, Sun, X., "Digital twin modeling method based on biomimicry for machining aerospace components," *Journal of Manufacturing Systems*, vol. 58, pp. 180–195, 2021. DOI: 10.1016/j.jmsy.2020.04.014.

[53] Liu, S., **Lu, S.**, Li, J., Sun, X., **Lu, Y.**, Bao, J., "Machining process-oriented monitoring method based on digital twin via augmented reality," *International Journal of Advanced Manufacturing Technology*, vol. 113, no. 11-12, pp. 3491–3508, 2021. DOI: 10.1007/s00170-021-06838-5.

[52] Liu, S., **Lu, Y.**, Li, J., Song, D., Sun, X., Bao, J., "Multi-scale evolution mechanism and knowledge construction of a digital twin mimic model," *Robotics and Computer-Integrated Manufacturing*, vol. 71, 2021. DOI: 10.1016/j.rcim.2021.102123.

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[48] Qin, Z., **Lu, Y.**, "Self-organizing manufacturing network: A paradigm towards smart manufacturing in mass personalization," *Journal of Manufacturing Systems*, vol. 60, pp. 35–47, 2021. DOI: 10.1016/j.jmsy.2021.04.016.

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[45] Zhou, B., Hua, B., Gu, X., "An end-to-end tabular information-oriented causality event evolutionary knowledge graph for manufacturing documents," *Advanced Engineering Informatics*, vol. 50, 2021. DOI: 10.1016/j.aei.2021.101441.

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[39] **Lu, Y.**, Liu, C., Wang, K.-K., Huang, H., Xu, X., "Digital twin-driven smart manufacturing: Connotation, reference model, applications and research issues," *Robotics and Computer-Integrated Manufacturing*, vol. 61, 2020. DOI: 10.1016/j.rcim.2019.101837.

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[30] Zhu, L., Cao, X., **Lu, Y.,** "Design method and characteristics study on actuator of giant magnetostrictive harmonic motor," *Jixie Gongcheng Xuebao/Journal of Mechanical Engineering*, vol. 54, no. 22, pp. 204–211, 2018. DOI: 10.3901/JME.2018.22.204.

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[28] Zheng, P., **Lu, Y.,** Xu, X., Xie, S., "A system framework for okp product planning in a cloud-based design environment," *Robotics and Computer-Integrated Manufacturing*, vol. 45, pp. 73–85, 2017. DOI: 10.1016/j.rcim.2016.04.001.

[27] **Lu, Y.**, Xu, X., "Protecting intellectual property in a cloud manufacturing environment: Requirements and strategies," *IFIP Advances in Information and Communication Technology*, vol. 460, pp. 404–411, 2015. DOI: 10.1007/978-3-319-22759-7_47.

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[24] **Lu, Y.**, Xu, X., Xu, J., "Development of a hybrid manufacturing cloud," *Journal of Manufacturing Systems*, vol. 33, no. 4, pp. 551–566, 2014. DOI: 10.1016/j.jmsy.2014.05.003.

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Book Chapters

[22] Rong, Z., Jinsong, B., Yuqian, L., Jei, L., Qibin, L., "Human-robot collaborative assembly based on cps," in *Cyber-Physical Systems*, CRC Press, 2022, pp. 71–85.

[21] Ahel Eroff, S., Polzar, J., Huang, H., "Smart manufacturing based on digital twin technologies," in *Industry 4.0 Challenges, Trends, and Solutions in Management and Engineering*, 3, C. Machado and J. Davim, Eds., 1st Edition, Boca Raton: Taylor & Francis Group, 2020, ISBN: 9781351132992. DOI: 10.1201/9781351132992-3.

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Peer-reviewed Conference Proceedings

[19] Chohan, B., Xu, X., **Lu, Y.,** "Mes dynamic interoperability for smes in the factory of the future perspective," vol. 107, 2022, pp. 1329–1335. DOI: 10.1016/j.procir.2022.05.153.

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[17] Liu, S., Shen, H., Li, J., **Lu, Y.,** Bao, J., "An adaptive evolutionary framework for the decision-making models of digital twin machining system*," vol. 2021-August, 2021, pp. 771–776. DOI: 10.1109/CASE49439.2021.9551595.

[16] Qin, Z., **Lu, Y.,** "Multi-agent-based self-organizing manufacturing network towards mass personalization," vol. 2, 2021. DOI: 10.1115/MSEC2021-63990.

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[14] ——, "Human cyber-physical systems: A skill-based correlation between humans and machines," vol. 2020-August, 2020, pp. 1313–1318. DOI: `10.1109/CASE48305.2020.9216843`.

[13] Letford, F., Rogers, M., Xu, X., **Lu, Y.,** "Machine learning to empower a cyber-physical machine tool," vol. 2020-August, 2020, pp. 989–994. DOI: `10.1109/CASE48305.2020.9216842`.

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