

LIRUI GUO



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EDUCATION

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| ▪ Ph.D. in Civil and Environmental Engineering | Monash University, Clayton, VIC | 2022 – Present |
| ▪ B.Eng. (Honours) in Civil Engineering | Monash University, Clayton, VIC | 2022 |
| ▪ B.Com. in Business Analytics | Monash University, Clayton, VIC | 2022 |

RESEARCH EXPERIENCE

Graduate Researcher (Ph.D. candidate), with Dr. Wynita Griggs and Dr. Michael Burke 2022 – Present
Civil and Environmental Engineering, Monash University, Clayton, VIC

Thesis title: *From perception to interaction: Psychological drivers and adaptive conversational agents for shared autonomous vehicles (SAVs)*

- Proposed a framework to predict and visualize technology acceptance.
- Explored the role and triggering mechanisms of psychological ownership in autonomous mobilities.
- Evaluated different prompting strategies in designing Large Language Model (LLM)-powered SAV agents.
- Designing a control framework to regulate users' perceived user experience in human-SAV interactions.
- **Research outputs:** 1 published Q1 journal article (*Technological Forecasting & Social Change*, *IF=13.3*), 1 journal article under review, 1 accepted international conference paper (*IEEE ITSC 2025*), and 1 manuscript in preparation (*Automatica*).

Researcher Collaborator, with Associate Professor Nan Zheng and Dr. Linxin Hua 2024 – Present
Civil and Environmental Engineering, Monash University, Clayton, VIC

- Explored the applications of LLM in Engineering Education and designed LLM-powered Learning Assistant
- Proposed a novel proactive evaluation framework for Retrieval-Augmented Generation (RAG)-based learning assistants
- **Research outputs:** 1 accepted Q1 journal article (*Computer-Aided Civil and Infrastructure Engineering*, *IF=9.1*) and 1 published conference paper (AAEE 2024).

Research Assistant, with Dr. Hoam Chung, Dr. Michael Burke, Dr. Elahe Abdi, Dr. Hung Quang Luu 2022 – 2023
Mechanical and Aerospace Engineering, Monash University, Clayton, VIC

- Performed comprehensive literature reviews in high-quality journals, systematically identifying, filtering, and synthesizing research on risk assessment methodologies for autonomous system design.

TEACHING EXPERIENCE

Assistant Lecturer, Civil and Environmental Engineering, Monash University Jan 2025 – Present

- Assisted in coordinating administrative processes, led practical sessions, and managed student consultations for units with cohorts of up to 340 students.
- Developed assessments and teaching materials.
- Manage the online learning portal for course materials, discussions, and assessment markings.

Tutor, Sustainable Commerce, The University of Melbourne Feb 2024 – Present

- Assisted in delivering lectures. Assisted in delivering lectures and supporting a large first-year cohort of ~1,700 students per semester.

- Independently led and delivered tutorial sessions (20 students each) and interactive class activities to foster student engagement, personal growth, and a deeper understanding of sustainable commerce. Supported students in applying theoretical concepts to practical, real-world sustainability challenges.
- Managed consultations, graded assessments, and provided individualized support and guidance to students.

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| Teaching Associate , Civil and Environmental Engineering, Monash University | Feb 2023 – Jan 2025 |
| Undergraduate core and elective units, including <i>Spatial Communication in Engineering, Transport and Traffic Engineering</i> , and <i>Road Engineering</i> . | |
| Facilitated engaging and inclusive classroom environments to promote active learning and critical thinking. | |
| Guided students in computing engineering drawings, understanding traffic concepts, and road designs. | |
| Managed the consultation and graded assessments. | |

AWARDS AND HONORS

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| Best Student Presentation (Travel Behaviour Modelling) | Australasian Transport Research Forum (ATRF) | 2024 |
| Awarded 1st place for the top Ph.D. student presentation in the Travel Behaviour Modelling stream. | | |
| GHD Highway Design Prize | Monash University | 2022 |
| Awarded to the top 1% of student teams for the best highway design project in CIV4287 Road Engineering. | | |
| Monash Graduate Scholarship | Monash University | 2025 |
| Awarded to high-achieving doctoral candidates based on academic excellence and research achievements. | | |

PUBLICATION

JOURNAL ARTICLE

- Guo, L.**, Burke, M. G., & Griggs, W. M. (2025). A new framework to predict and visualize technology acceptance: A case study of shared autonomous vehicles. *Technological Forecasting and Social Change*, 212, 123960. <https://doi.org/10.1016/j.techfore.2024.123960> (**Q1, IF 13.3, ABS 3**)
- Hua, L., **Guo, L.**, Zheng, N., Lu, Y., Xu, J., & Deng, J. (2025). Proactive framework for evaluating retrieval-augmented generation-based learning assistants in engineering education. *Computer-Aided Civil and Infrastructure Engineering*, 1–18. <https://doi.org/10.1111/mice.70063> (**Q1, IF 9.1**)

PREPRINTS (UNDER REVIEW)

- Guo, L.**, Burke, M. G., & Griggs, W. M. (2025). Exploring human-SAV interaction using large language models: The impact of psychological factors on user experience. arXiv.org. <https://arxiv.org/abs/2504.16548>

CONFERENCE PROCEEDING

- Guo, L.**, Burke, M. G., & Griggs, W. M. (2025). Sentiment matters: An analysis of 200 human-sav interactions. *Proceedings of the IEEE International Conference on Intelligent Transportation Systems (ITSC)*, Gold Coast, Australia, Nov. 18–21, 2025
- Hua, L., Zheng, N., Lu, Y., **Guo, L.**, & Xu, J. (2024). Use of large language models in engineering education: A case study on infrastructure design report introductions. *Proceedings of AAEE 2024. 35th Australasian Association for Engineering Education Annual Conference*, Christchurch, New Zealand. <https://easychair.org/publications/preprint/XpQv/download>

Conference Presentations

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| IEEE International Conference on Intelligent Transportation Systems (ITSC) , Gold Coast, Australia <i>"Sentiment matters: An analysis of 200 human-sav interactions."</i> | 2025 |
| The 35th Australasian Association for Engineering Education (AAEE 2024) Annual Conference, Christchurch | 2024 |

- "Use of Large Language Models in Engineering Education: A Case Study on Infrastructure Design Report Introductions"*
- Australasian Transport Research Forum (ATRF), Ph.D. Student Research Symposium, Melbourne, Australia 2024
"Exploring User Interaction with Shared Autonomous Vehicles: The Impact of Psychological Ownership and Anthropomorphism on User Experience"
 - Monash 4th Engineering Postgraduate Conference, Melbourne, Australia 2024
"Exploring User Interaction with Shared Autonomous Vehicles: The Impact of Psychological Ownership and Anthropomorphism on User Experience"
 - ITS Australia Global Summit, Melbourne, Australia 2023
"A Random Forest Approach to Predict and Visualize Public Acceptance of Shared Autonomous Vehicles"
 - Monash 3rd Engineering Postgraduate Conference, Melbourne, Australia 2023
"Sentiment Analysis of Shared Autonomous Vehicle Voice Assistants: The Role of Psychological Ownership and Anthropomorphism in Chatbot Responses"

ACADEMIC SERVICE

Monash University, Clayton, VIC

- Mental Health First Aider (MHFA) | Faculty of Engineering 2024 – Present
- First Aider | Monash Robotics 2024 – Present
- First-Year Branch Selection Event, Civil Engineering Specialization Representative 2024
- Monash University Open Day Civil Engineering Student Volunteer 2023 – 2024

Journal Reviewer

- The IEEE Robotics and Automation Letters, Acta Psychologica 2024 – Present

MENTORING PROGRAM EXPERIENCE

Access Monash Mentoring – Mentor

Monash University | 2023

- Provided one-on-one mentoring to Year 11–12 students navigating the Victorian Certificate of Education (VCE).
- Support students from under-represented communities to explore campus and university life and discover their dream careers.

MentorLinkPhD – Mentee (Mentored by Professor Jeremy Barr)

Monash University | 2025

- Engaged in structured mentoring with senior academics and fellow PhD students from diverse disciplinary backgrounds.
- Discussed strategies for academic success, professional development, and post-PhD career planning.

LANGUAGES AND SKILLS

Computer languages:

R, Python

Languages:

Fluent in English and Chinese (Mandarin)

Technical & Software:

Survey & user study design, Qualtrics, educational technologies (Canvas, Moodle, Zoom), AutoCAD, SketchUp, ArcGIS

Licenses & certifications:

Working With Children Check (Employee), Standard Mental Health First Aider, Provide First Aid, White Card