Mengtao (Tomy) LYU

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Research Fellow @ATMRI
Nanyang Technological University

Education

2022-25	**Ph.D.**, Hong Kong Polytechnic University
2020-21	**M.Sc.**, Nanyang Technological University
2013-17	**B.Eng.**, Dalian University of Technology

Research Experience

2025	Research Fellow (Human Factors), Air Traffic Management Research Institute (ATMRI) in Singapore, Nanyang Technological University (PI: Asst Prof Mir Feroskhan, and Assoc Prof Sameer Alam)
2025	Postdoctoral Associate, SHINE Group, Hong Kong Polytechnic University (Advisor: Dr. Fan Li)
2020-21	Research Assistant, Delta-NTU Corporate Laboratory, Nanyang Technological University (Advisor: Prof. Chun-Hsien Chen)

Professional Affiliations

2025-	**Member** at Hong Kong Ergonomics Society
2024-	**Member** at Chinese Ergonomics Society
2024- 25	**(Student) Member** at Hong Kong Ergonomics Society

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Publications

G Google Scholar
∗ → Corresponding author

Journal Articles

[J1] Z. Li, F. Li∗, and **Lyu, Mengtao**, "Tracking the unseen and unaware: Deciphering controllers' detection failures to warnings through eye-tracking metrics," *International Journal of Human–Computer Interaction*, pp. 1–20, 2025.

[J2]   **Lyu, Mengtao**, F. Li*, C.-H. Lee, and C.-H. Chen, "Valio: Visual attention-based linear temporal logic method for explainable out-of-the-loop identification," *Knowledge-Based Systems*, vol. 299, p. 112 086, 2024.

[J3]   **Lyu, Mengtao**, F. Li*, X. Qu, and Q. Li, "Flashlight model: Integrating attention distribution and attention resources for pilots' visual behaviour analysis and performance prediction," *International Journal of Industrial Ergonomics*, vol. 103, p. 103 630, 2024.

[J4]   Q. Li, K. K. Ng*, C. Simon, C. Y. Yiu, and **Lyu, Mengtao**, "Recognising situation awareness associated with different workloads using eeg and eye-tracking features in air traffic control tasks," *Knowledge-Based Systems*, vol. 260, p. 110 179, 2023.

[J5]   **Mengtao, Lyu**, L. Fan*, X. Gangyan, and H. Su, "Leveraging eye-tracking technologies to promote aviation safety-a review of key aspects, challenges, and future perspectives," *Safety science*, vol. 168, p. 106 295, 2023.

[J6]   **Lyu, Mengtao**, X. Li*, and C.-H. Chen, "Achieving knowledge-as-a-service in iiot-driven smart manufacturing: A crowdsourcing-based continuous enrichment method for industrial knowledge graph," *Advanced Engineering Informatics*, vol. 51, p. 101 494, 2022.

[J7]   X. Li*, **Lyu, Mengtao**, Z. Wang, C.-H. Chen, and P. Zheng, "Exploiting knowledge graphs in industrial products and services: A survey of key aspects, challenges, and future perspectives," *Computers in Industry*, vol. 129, p. 103 449, 2021.

Conference Proceedings

[C1]   **Lyu, Mengtao** and F. Li, "Patterning risk: An innovative task design method for simulating incidents in transportation studies," in *Proceedings of the AHFE 2019 International Conference on Human Factors in Transportation*, vol. 148, AHFE Open Acces, 2024.

[C2]   **Lyu, Mengtao**, F. Li, and C.-H. Lee, "The effects of adaptive automation on pilots' flight control performance and visual attention distribution," in *Proceedings of the 30th ISTE International Conference on Transdisciplinary*, IOS Press, 2023, pp. 82–91.

Working papers

[W1]   **Lyu, Mengtao** and F. Li*, *Effect of atc communication density on pilots scanning behaviours*, Applied Ergonomics, Working.

[W2]   **Lyu, Mengtao** and F. Li*, *Do you need help? identifying and responding to pilots' troubleshooting through eye-tracking and large language model*, International Journal of Human - Computer Studies, 2nd round reviewing, 2025.

[W3]   Y. Sun, **Lyu, Mengtao**, F. Li*, D. Dillion, and K. Gray, *Llm judgment reflects human-like sensitivity to expectation violations*, Nature Computational Science, 1st round review, 2025.

Academic Service

Journal Referee

IEEE Transactions on Human-Machine Systems, International Journal of Human-Computer Interaction, Engineering Applications of Artificial Intelligence, Advanced Engineering Informatics, Knowledge-based systems, Computers & Industrial Engineering, Frontiers in Neuroscience

Projects

2025–, **University Grants Committee (UGC)**, Early Career Scheme (ECS)
Looking but Not Seeing? Mitigating Inattentional Blindness in Remote Digital Towers for Safe and Watchful Air Traffic Control

2025–, **National Natural Science Foundation of China (NSFC)**, Young Scientists Fund
Research on the Degradation Mechanism of Pilot Vigilance in Response to Dynamic Task Workload Conditions

2025–, **COMAC**
AI-driven Virtual Co-Pilots in Aviation

2023–, **Hong Kong Productivity Council (HKPC)**, Smart Traffic Fund (STF)
Driving Style-based Adaptive Virtual Training Platform: Build Safe Human Driving Habits in Autonomous driving

2023-, **Hong Kong Polytechnic University**
Investigating pilots' decision-making and cognitive performance in response to acute stress

2023-24, **Hong Kong Polytechnic University**
Improved Student Attention and Engagement via Visual Attention Analytics-based Slides and Lesson Plan Design

2022-24, **Hong Kong Polytechnic University**
Visual Attention Analytics in Aviation Automation via Deep Learning Model

2022-23, **Hong Kong Productivity Council (HKPC)**, Smart Traffic Fund (STF)
Investigation of an online data-driven intelligent automation platform for drivers considering the psychological condition instability and behaviours for a sustainable and safe transportation system

2021-23, **Hong Kong Polytechnic University**
Psychophysiological Data-based Knowledge Transfer Model for Adaptive Training

2020-21, **National Research Foundation (NRF) Singapore**
Stakeholder–oriented innovative user-centric design and solution generation

Teaching

Hong Kong Polytechnic University

2023   **Teaching Assistant**, Human Factors, Accident Prevention and Aircraft Maintenance (AAE5002)

2023   **Teaching Assistant**, Human Factors in Aviation (AAE4903)
2022   **Teaching Assistant**, Safety, Reliability and Compliance (AAE3006)

Advising

Graduate

2023-24	Donglin LI	Hong Kong Polytechnic University	Master Dissertation
2023-24	Henry CHAN	Hong Kong Polytechnic University	Master Dissertation

Undergraduate

2023-24	Cheung, Choi, & Kwok	Hong Kong Polytechnic University	Capstone Project (FYP)
2022-23	Leung, Tsang, & Lam	Hong Kong Polytechnic University	Capstone Project (FYP)

Other Experience

Industrial

2019-20   **SAP Consultant**, ABeam Global Development Centre (Shanghai) Co., Ltd.
2017-19   **It Supervisor**, Asics China Trading Co., Ltd.

Certificates

2022   Adult Cardio Pulmonary Resuscitation (ACPR)
2016   N1, Japanese-Language Proficiency Test (JLPT)

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