Mengtao (Tomy) LYU

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Postdoctoral Fellow
Georgia Institute of Technology

Education

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

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Employment

2026 Spr — **Adjunct Course Instructor**, Georgia Institute of Technology

2025-Now — **Postdoctoral Fellow**, Hybrid Intelligence (HI) Lab, Georgia Institute of Technology
(PI: Asst Prof. Mengyao Li, Prof. Jamie Gorman)

2025 — **Research Fellow** (Human Factors), Air Traffic Management Research Institute (ATMRI), Nanyang Technological University
(PI: Asst Prof. Mir Feroskhan)

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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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Selected Awards & Honors

2025	IEA/Kingfar Student Award ($1,000)
2022	Postgraduate Studentship Award, Hong Kong Polytechnic University

Publications

G Google Scholar

∗ → Corresponding author

† → Equal contribution

Journal Articles

[J1]   **Mengtao, Lyu** 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*, p. 103 617, 2025 Sep.

[J2]   Z. Li, F. Li*, and **Mengtao, Lyu**, "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.

[J3]   **Mengtao, Lyu**, 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.

[J4]   **Mengtao, Lyu**, 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.

[J5]   Q. Li, K. K. Ng*, C. Simon, C. Y. Yiu, and **Mengtao, Lyu**, "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.

[J6]   **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.

[J7]   **Mengtao, Lyu**, 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.

[J8]   X. Li*, **Mengtao, Lyu**, 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]   Z. Li, M.-H. Hsieh, M. P. Ramesh, I. Dhief, **Mengtao,Lyu**, and M. Feroskhan, "How multi-sector planning shapes shared situation awareness among air traffic controllers: A team-level eye-tracking evaluation," in *28th International Conference on Human-Computer Interaction (HCII 2026)*, Accepted, 2026.

[C2]   **Mengtao, Lyu**, Y. Sun, E. Rojas, and D. Li, "The mirror in the machine: Quantifying identity-based preference bias in human-ai co-creation," in *33rd International Conference on Transdisciplinary Engineering (TE2026)*, Accepted, 2026.

[C3]   M. P. Ramesh, **Mengtao,Lyu**, I. Dhief, Z. Li, and M. Feroskhan, "Human-ai decision support for sustainable atco workload: Forecast-informed, bilevel-optimized task-load estimation," in *28th International Conference on Human-Computer Interaction (HCII 2026)*, Accepted, 2026.

[C4]   Y. Sun, D. Dillion, K. Gray, **Mengtao,Lyu**, Z. Zhang, and F. Li, "From expectation to evaluation: Expectation cues systematically bias llm and human judgment," in *ACM CHI conference on Human Factors in Computing Systems (CHI '26)*, Accepted, 2026.

[C5]   **Mengtao, Lyu** and F. Li, "Patterning risk: An innovative task design method for simulating incidents in transportation studies," in *Advances in Human Factors of Transportation*, vol. 148, AHFE Open Acces, 2024.

[C6] **Mengtao, Lyu**, F. Li, and C.-H. Lee, "The effects of adaptive automation on pilots' flight control performance and visual attention distribution," in *Leveraging Transdisciplinary Engineering in a Changing and Connected World*, IOS Press, 2023, pp. 82–91.

Working papers

[W1] Y. Deng[†], **Mengtao, Lyu**[†], J. Gao, J. Xiao, and M. Feroskhan[*], *Trust-up: Trustworthy reinforcement learning using safe techniques for uav pursuit*, Advanced Engineering Informatics, under review, 2026.

[W2] Z. Li, **Mengtao, Lyu**, F. Li[*], H. Qiao, T. Yang, and C.-H. Chen, *Predicting detection failures in air traffic control: Leveraging fixation-state transitions and llm-driven probabilistic threshold tuning*, Advanced Engineering Informatics, under review, 2026.

[W3] **Mengtao, Lyu**, M. Li, and Q. Li[*], *The promise and peril of generative ai for hci in autonomous driving: A critical survey*, International Journal of Human-Computer Interaction, Working In Progress, 2026.

[W4] **Mengtao, Lyu** and Q. Li, *Methodological challenges in human factors research for air traffic management*, 2026 IEEE International Conference on Human-Machine Systems (ICHMS), Under Review, 2026.

[W5] **Mengtao, Lyu**, E. Rojas, M. Li, B. Bracken, N. Cooke, P. Desrochers, J. Gorman, L. Huang, M. Kilcullen, M. Rosen, M. Scalia, G. A. Yadav, X. Yin, E. Zahmat Doost, and S. Zhou, *Beyond dyads: Machine learning for team performance prediction in multi-member teams*, ASPIRE International Annual Meeting (HFES 2026), Under Review, 2026.

[W6] E. Rojas, **Mengtao, Lyu**, M. Li, B. Bracken, N. Cooke, P. Desrochers, J. Gorman, L. Huang, M. Kilcullen, M. Rosen, M. Scalia, G. A. Yadav, X. Yin, E. Zahmat Doost, and S. Zhou, *Identifying latent processes in multi-modal physiological signals for team performance: An exploratory approach*, ASPIRE International Annual Meeting (HFES 2026), Under Review, 2026.

Selected Talks & Presentations

[T1] *Through the lens of situation awareness: The promise and peril of generative ai for hci in autonomous driving*, HFES HART TG Monthly Member Conversation, Feb. 2026.

[T2] *Panel talk*, HFES- Georgia Tech Student Chapter, Oct. 2025.

[T3] *An innovative task design method for simulating incidents in transportation*, 15th International Conference on Applied Human Factors and Ergonomics, Jul. 2024.

[T4] *Catching the wanderer: Temporal and visual analysis of mind wandering in digital learning*, 31st International Conference on Transdisciplinary Engineering, Jul. 2024.

[T5] *Scenario-based analysis of smart product acceptance for the elderly in home-based care*, 31st International Conference on Transdisciplinary Engineering, Jul. 2024.

[T6] *The effects of adaptive automation on pilots' flight control performance and visual attention distribution*, 30th ISTE International Conference on Transdisciplinary, Jul. 2023.

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, Ergonomics, Frontiers in Neuroscience

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Projects

2025–, **Defense Advanced Research Projects Agency (DARPA)**
Bio-Behavioral Team Dynamics Measurement System (BioTDMS)

2025–, **International Centre for Aviation Innovation (ICAI) Singapore**
Multi Sector Planning

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

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Teaching

Georgia Institute of Technology

2026   **Instructor**, Science of Occupational Health and Safety (COS2801)

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)

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Advising

Graduate

2025-	Mercedes P. Ramesh	Nanyang Technological University	PhD Thesis
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)

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Other Experience

Industrial

2019-20   **IT Supervisor**, Asics China Trading Co., Ltd.

2017-19   **SAP Consultant**, ABeam Global Development Centre (Shanghai) Co., Ltd.

Certificates

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

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