Go Nam Lui

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ACADEMIC POSITIONS

Lancaster University **12/2023 – Present**
SMARTS Senior Research Associate *United Kingdom*

Hong Kong University of Science and Technology **11/2022 – 11/2023**
Postdoctoral Fellow *Hong Kong*

EDUCATION

Hong Kong University of Science and Technology **09/2018 – 09/2022**
PhD in Mechanical Engineering (Scientific Computation Concentration) *Hong Kong*

Hong Kong University of Science and Technology **09/2017 – 07/2018**
MSc in Aeronautical Engineering *Hong Kong*

Harbin Institute of Technology **09/2013 – 06/2017**
BEng in Engineering Mechanics *Heilongjiang, China*

RESEARCH INTERESTS

- Air traffic management
- Airspace design
- Aviation weather
- Machine learning
- Operations research
- Data science

PROJECTS

SMARTS - Smart Sectors **12/2023 – Present**

- *Grant:* SESAR Joint Undertaking; UK Research and Innovation
- *Role:* Major Participant
- *Summary:* Collaborate with stakeholders, including ENAIRE, CRIDA, Eurocontrol, NATS, and DLR, to develop mathematical models, algorithms, and AI applications for the airspace sector design and dynamic configuration process.

From Weather-aware Terminal Air Traffic Modeling to Arrival Delay Mitigation Strategies **12/2021 – 11/2023**

- *Grant:* Innovation and Technology Fund of Hong Kong
- *Role:* Major Participant, assist in drafting the proposal and framing the research
- *Summary:* Highly cooperate with Hong Kong Observatory to quantify the weather impact and optimize the arrival strategies, based on over 55,000 local meteorological reports and 430,000 arrival flights.

PUBLICATIONS

Go Nam Lui, Guglielmo Lulli*, Luigi de Giovanni, Martina Galeazzo, Rebeca Llorente Martinez, Iciar Garcia-Ovies Carro. "A robust optimization approach for dynamic airspace configuration." *US-Europe Air Transportation Research & Development Symposium 2025*, link.

Go Nam Lui, Guglielmo Lulli*. "A mixed integer programming approach for airspace sector design problem." *the 12th Triennial Symposium on Transportation Analysis conference (TRISTAN XII)*, 2025, link.

Go Nam Lui*, Soner Demirel. "Gradient-based smart predict-then-optimize framework for aircraft arrival scheduling problem." *Journal of Open Aviation Science*, vol. 2, no. 2, Apr. 2025, DOI: 10.59490/joas.2024.7891.

Go Nam Lui, Chris HC. Nguyen, Ka Yiu Hui, Kai Kwong Hon, Rhea Patricia Liem*. "Enhancing aircraft arrival transit time prediction: a two-stage gradient boosting approach with weather and trajectory features." *Journal of the Air Transport Research Society*, Volume 4, 2025, 100062, DOI: 10.1016/j.jatrs.2025.100062.

Go Nam Lui, Guglielmo Lulli*, M. Florencia Lema-Esposto, Rebeca Llorente Martinez. "Airspace sector design: an optimization approach." *SESAR Innovation Days 2024*, DOI: 10.61009/SID.2024.1.32.

Ka Yiu Hui, Chris HC. Nguyen, **Go Nam Lui***, Rhea Patricia Liem*. "AirTrafficSim: An open-source web-based air traffic simulation platform." *Journal of Open Source Software*, 8(86), 4916, 2023, DOI: 10.21105/joss.04916.

Richard Louie, **Go Nam Lui**, Tak Shing Tai, Rhea Patricia Liem*. "Data-driven analysis of inefficient arrival separation." *AIAA Aviation Forum,* 2023, DOI: 10.2514/6.2023-3258.

Richard Louie, Chris HC Nguyen, Tak Shing Tai, **Go Nam Lui**, Rhea Liem*. "Data-Driven Analysis of Arrival Flight Transit Efficiency." 27^{th} *International Conference of Hong Kong Society for Transportation Studies,* 2023, DOI: 1783.1/135674.

Go Nam Lui, Kai Kwong Hon, Rhea P. Liem*. "Weather impact quantification on airport arrival on-time performance through a Bayesian statistics modeling approach." *Transportation Research Part C: Emerging Technologies*, Volume 143, 2022, 103811, DOI: 10.1016/j.trc.2022.103811 .

Chris HC. Nguyen, **Go Nam Lui**, Ka Yiu Hui, Rhea Patricia Liem*. "Tactical routing for air transportation in HKIA terminal maneuvering area." 26^{th} *International Conference of Hong Kong Society for Transportation Studies,* 2022, DOI: 1783.1/122610.

Go Nam Lui, Rhea Patricia Liem, and Kai Kwong Hon*. "Towards understanding the impact of convective weather on aircraft arrival traffic at the Hong Kong International Airport." *IOP Conference Series: Earth and Environmental Science. Vol. 569. No. 1. IOP Publishing,* 2020, DOI: 10.1088/1755-1315/569/1/012067.

Go Nam Lui, Thierry Klein, and Rhea Patricia Liem*. "Data-driven approach for aircraft arrival flow investigation at terminal maneuvering area." *AIAA Aviation Forum,* 2020, DOI: 10.2514/6.2020-2869.

Peng Zhou, **Go Nam Lui**, and Xin Zhang*. "An experimental investigation of the effect of owl-inspired velvety coating on trailing edge noise." 25^{th} *AIAA/CEAS Aeroacoustics Conference,* 2019, DOI: 10.2514/6.2019-2622.

MANUSCRIPTS IN PREPARATION

Go Nam Lui, Ahmed Kheri, Guglielmo Lulli*. "Optimal airspace sector design: exact and approximation algorithms." Manuscript under preparation.

Go Nam Lui, Nicos Pavlidis, Guglielmo Lulli*. "Functional representation learning for spatiotemporal trajectory clustering." Manuscript under preparation.

Go Nam Lui, Guglielmo Lulli*, Luigi de Giovanni, Martina Galeazzo. "Graph-based robust optimization approach for dynamic airspace configuration." Manuscript under preparation.

Martina Galeazzo, Luigi de Giovanni, **Go Nam Lui**, Guglielmo Lulli*. "The robust dynamic airspace configuration with uncertain air traffic flows." Manuscript under preparation.

Lijing Liu, Christian Reyner, Dajung Kim, **Go Nam Lui**, Rhea Patricia Liem*. "Operation-aware and fuel-efficient aircraft conceptual design optimization for enhancing sustainability." Manuscript under preparation.

Tak Shing Tai, Richard Louie, **Go Nam Lui**, Chi Ho Yeung, Rhea Patricia Liem*. "Coordinating air traffic flow on spatio-temporal networks." Manuscript under preparation.

INVITED TALKS

"3D Optimal Airspace Sector Design with Mixed Integer Linear Programming." *2025 INFORMS Annual Meeting*.

"Machine learning application in airspace operation: from terminal airspace to dynamic configuration." *Applied Machine Learning Days (AMLD) EPFL 2024*.

"Data-driven weather impact quantification for airport arrival on-time performance inside the terminal airspace." *2023 INFORMS Annual Meeting*.

"Machine learning applications in aircraft design and transportation," *The interface among physics, neural science, and machine learning,* The Education University of Hong Kong, December 2022.

TEACHING EXPERIENCE

Hong Kong University of Science and Technology **09/2019 – 01/2022**
Teaching assistant *Hong Kong*

- Best TA award (2019-2020)
- **Average Student Evaluation:** 82.5/100
- **Course:** MECH 1907 Introduction to Aerospace Engineering

Hong Kong University of Science and Technology **09/2018 – 07/2022**
Co-supervisor *Hong Kong*

- Co-supervised theses and final year projects of undergraduate students, and MSc students in Mechanical and Aerospace Engineering. The topics include but not limited to UAV prototype, aviation weather investigation, aircraft arrival sequencing, and data science application in ATM.

University of Milano-Bicocca **12/2023 – present**
Co-supervisor *Italy*

- Co-supervised theses of undergraduate students in statistics and computer science, on different aspects of machine learning application in air traffic management, including GPU-enhanced clustering, aircraft arrival flight time prediction.

PROFESSIONAL SERVICES

Session chair and Committee:

- "Data-driven Methods for Analyzing the Terminal Airspace." *2023 INFORMS Annual Meeting*
- "Simulation, Modeling, and Optimization for Air Transportation and Emerging Mobility." *2023 INFORMS Annual Meeting*
- "Innovative Approaches to Efficient Airspace Management." *2025 INFORMS Annual Meeting*
- Committee member for the Best Student Presentation Award, Aviation Application Section (AAS), *2025 INFORMS Annual Meeting*

Reviewer for scholarly journals and conferences:

- **Journals:** Transportation Research (Part C, D); Journal of Air Transport Management (JATM); Sustainable Cities and Society; Natural Hazards; IEEE Open Journal of Intelligent Transportation Systems; Journal of the Air Transport Research Society; Journal of Revenue and Pricing Management; Scientific Reports; npj Sustainable Mobility and Transport; Applied Science; Aerospace; Drones; Electronics; Meteorology; Sustainability; Remote Sensing; Systems
- **Conferences:** International Conference on Research in Air Transportation (ICRAT); ATM R&D Seminar; SESAR Innovation Days (SIDs); US-Europe Air Transportation Research & Development Symposium (ATRDS)

ACADEMIC AWARDS

- Best Paper Award, Air Traffic Flow Management (ATFM) and Optimization track, US-Europe Air Transportation Research & Development Symposium 2025.
- HKUST RedBird Academic Excellence Award, 2022.
- Postgraduate Studentship (PGS), 2018 – 2022.
- MSc Excellent Student Scholarship, 2018.

SKILLS

- **Programming languages:** Python, JavaScript, TypeScript, MDX, HTML, CSS, LaTeX, Matlab
- **Software engineering:** GitHub, Docker, GCP, AWS, Airflow, PostgreSQL, Next.JS, Neo4j, FastAPI
- **Generative AI:** Large Language Models (LLMs), GraphRAG, Google ADK, LangChain, LlamaIndex
- **Machine learning:** PyTorch, PyMC, PyEPO, XGBoost, LightGBM, Scikit-learn
- **Data science & optimization:** Gurobi, NetworkX, Optuna, Pandas, NumPy, Cartopy, Matplotlib, Seaborn

LANGUAGES

- **Native:** Cantonese, Mandarin
- **Fluent:** English