

# GO NAM LUI

United Kingdom

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## EDUCATION

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<b>PhD in Mechanical Engineering (Scientific Computation Concentration)</b> <i>Hong Kong University of Science and Technology</i>	09/2018 – 09/2022 <i>Hong Kong</i>
<b>MSc in Aeronautical Engineering</b> <i>Hong Kong University of Science and Technology</i>	09/2017 – 07/2018 <i>Hong Kong</i>
<b>BEng in Engineering Mechanics</b> <i>Harbin Institute of Technology</i>	09/2013 – 06/2017 <i>China</i>

## ACADEMIC & RESEARCH POSITIONS

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<b>SMARTS Senior Research Associate</b> <i>Lancaster University</i>	12/2023 – Present <i>United Kingdom</i>
<b>Postdoctoral Fellow</b> <i>Hong Kong University of Science and Technology</i>	11/2022 – 11/2023 <i>Hong Kong</i>

## RESEARCH INTERESTS

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- Air traffic management (ATM)
- Weather-resilient ATM systems
- Mixed-integer programming
- Dynamic airspace configuration
- Terminal airspace modeling
- Decision-focused learning

## KEY RESEARCH PROJECTS

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### [SMARTS - Smart Sectors](#)

12/2023 – Present

- *Grant:* SESAR Joint Undertaking; UK Research and Innovation
- *Role:* Major Participant
- Leading 3 work packages in €1.5M EU aviation project, coordinating with 6 international partners including NATS, Eurocontrol, and DLR to deliver production-ready airspace design and configuration algorithms
- Deployed real-time airspace configuration API on AWS (ECR + App Runner) using FastAPI, processing optimization requests in 20 seconds for operational air traffic control systems
- Developed mixed-integer programming solutions using NetworkX and Gurobi, achieving more than 15% improvement in airspace efficiency validated by industry partners

### [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
- Framing the proposal and leading the R&D activities in this HKD 1.1 million Innovation and Technology Fund project
- Built two-stage gradient boosting models predicting aircraft arrival delays with 90%+ accuracy using 430K+ flight records and real-time weather data from Hong Kong Observatory
- Developed open-source air traffic simulation platform (AirTrafficSim) with 60+ GitHub stars, enabling researchers and industry practitioners to prototype and evaluate optimization algorithms

## PUBLICATIONS

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Alberto Blanch Romero, Tomás De Urrengoechea, Daniel Delahaye, Andrés Guitart, M. Florencia Lema-Esposto, **Go Nam Lui**, **Guglielmo Lulli\***, Rasoul Sanaei, Julian Solzer. “SMARTS solution for airspace design and configuration.” *SESAR Innovation Days 2025*, [link](#).

**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*, **Best Paper Award**, [link](#).

**Go Nam Lui**, Guglielmo Lulli\*. “A mixed integer programming approach for airspace sector design problem.” *the 12<sup>th</sup> 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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<sup>th</sup> International Conference of Hong Kong Society for Transportation Studies*, 2023, DOI: [1783.1/135674](https://doi.org/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](https://doi.org/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<sup>th</sup> International Conference of Hong Kong Society for Transportation Studies*, 2022, DOI: [1783.1/122610](https://doi.org/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](https://doi.org/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](https://doi.org/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<sup>th</sup> AIAA/CEAS Aeroacoustics Conference*, 2019, DOI: [10.2514/6.2019-2622](https://doi.org/10.2514/6.2019-2622).

## WORKING PAPERS

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[Under review at *Journal of Air Transportation (AIAA)*, invited via special issue] **Go Nam Lui**, Guglielmo Lulli\*, Luigi de Giovanni, Martina Galeazzo, Rebeca Llorente Martinez, Iciar Garcia-Ovies Carro. “Robust dynamic airspace configuration: an optimization approach.”

[Manuscript, submitting to *INFORMS Journal on Computing*] **Go Nam Lui**, Nicos Pavlidis, Guglielmo Lulli\*. “Functional representation and clustering for spatio-temporal flight trajectory data.”

[Working Paper, targeting high impact *Operations Research/Transportation Journal*] **Go Nam Lui**, Ahmed Kheri, Guglielmo Lulli\*. “Optimal airspace sector design: exact and approximation algorithms.”

[Working Paper, targeting high impact *Operations Research Journal*] Martina Galeazzo, Luigi de Giovanni, **Go Nam Lui**, Guglielmo Lulli\*. “The robust dynamic airspace configuration with uncertain air traffic flows.”

[Working Paper, targeting high impact *Aviation Journal*] Lijing Liu, Christian Reyner, Dajung Kim, **Go Nam Lui**, Rhea Patricia Liem\*. “Operation-aware and fuel-efficient aircraft conceptual design optimization for enhancing sustainability.”

## INVITED TALKS

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

“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

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### 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

*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

*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.

## INDUSTRY EXPERIENCE

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### Co-founder & Chief Technology Officer

01/2024 – Present

*FinCatch*

*Hong Kong*

- Secured over USD 560K in funding across 4 competitive funding programs (HK Tech 300, Tenity Singapore, HKSTP×Google, Cyberport)

## PROFESSIONAL SERVICES

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### Session chair and Committee:

- “Data-driven Methods for Analyzing the Terminal Airspace.” *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; Journal of Traffic and Transportation Engineering; 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)

## AWARDS & RECOGNITION

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- **UK Global Talent Visa – Exceptional Promise (Academia)**, do not need visa sponsorship in UK
- **Best Paper Award**, Air Traffic Flow Management track, US-Europe Air Transportation Research & Development Symposium (ATRDS) 2025
- **HKUST RedBird Academic Excellence Award** (2022)
- **4-Year PhD Fellowship**, HKUST (2018-2022)

## SKILLS

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- **Optimization & operations research:** Gurobi, mixed-integer programming, NetworkX, algorithm design, parallel computing
- **Machine learning:** PyTorch, PyMC, PyEPO, XGBoost, LightGBM, Scikit-learn, model deployment
- **Scientific computing:** Python, MATLAB, NumPy, Pandas, Optuna,  $\LaTeX$
- **Cloud & deployment:** AWS (ECR, EC2, App Runner, SageMaker), GCP, Docker, PostgreSQL

## LANGUAGES

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