

# Seokbin Yoon

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## RESEARCH INTERESTS

My research focuses on developing autonomous systems that are reliable, safe, and capable of high level reasoning. I am particularly interested in generative models for prediction and planning under uncertainty, and in methods that enable machines to perform structured decision making with high reliability. I believe machines surely can do what humans have done, such as air traffic control and driving, and at some point will perform these tasks even better.

## EDUCATION

### George Washington University

Doctor of Philosophy - PhD, Mechanical and Aerospace Engineering

Aug. 2026 – Present

Washington, DC, USA

- Advisor: Dr. Peng Wei
- Key Courses: Large Language Vision Models, Advanced Software Paradigms

### Korea Aerospace University

Master of Science - MS, Air Transport, Transportation, and Logistics

March. 2022 – Feb. 2024

Goyang, South Korea

- Advisor: Dr. Keumjin Lee
- Key Courses: Advanced Computer Vision, Unmanned Air Transportation, Machine Learning, Airport Design with Simulation, Airport Planning, Probability and Statistics, Probability Models, Economic Analysis of Engineering Project

### Korea Aerospace University

Bachelor of Science - BS, Air Transport, Transportation, and Logistics

March. 2020 – Feb. 2022

Goyang, South Korea

- Key Courses: Air Traffic Management, Aeronautical Telecommunications, Aviation Meteorology, Flight Operation Planning & Control, ATC Training, Aviation Weather Service, Air Navigation and Facility, Aeronautical Information Service, Air Transport System, Aviation Policy, Aviation Law

## PUBLICATIONS

### Journal Publications

- J1.** H. Kim, B. Kang, **Seokbin Yoon**, K. Lee, "Can Vision Models Read the Radar Display? On the Feasibility of Radar Imagery for Air Traffic Complexity Estimation,"  
*Journal of the Air Transport Research Society*, under review, 2026, available at [\[here\]](#)
- J2.** **Seokbin Yoon**, K. Lee, "Multi-Agent Inverted Transformer for Flight Trajectory Prediction,"  
*IEEE Transactions on Intelligent Transportation Systems*, 2026, available at [\[here\]](#)
- J3.** **Seokbin Yoon**, K. Lee, "Aircraft Trajectory Dataset Augmentation in Latent Space,"  
*International Journal of Aeronautical & Space Sciences*, 2025, available at [\[here\]](#)
- J4.** **Seokbin Yoon**, K. Lee, "Aircraft Trajectory Prediction with Inverted Transformer,"  
*IEEE Access*, 2025, available at [\[here\]](#)

### Conference Publications

- C1.** J. Lee, **Seokbin Yoon**, K. Lee, H. Baik, S. Jung, "Airport Terminal Passenger Queue Forecasting for Departure Gates and Security Checkpoints,"  
*AIAA/IEEE Digital Avionics System Conference (DASC)*, 2026, 🏆, available at [\[here\]](#)

- C2.** H. Kim, B. Kang, **Seokbin Yoon**, D. Jeon, K. Lee, “Reading the ATC Display: Vision Transformers Learn Air Traffic Complexity From Radar Imagery,”  
*Air Transport Research Society World Conference*, 2026
- C3.** K. Kim, **Seokbin Yoon**, K. Lee, “Probabilistic Multi-Agent Aircraft Landing Time Prediction,”  
*AIAA SciTech*, 2026, , available at [\[here\]](#)
- C4.** H. Chai, **Seokbin Yoon**, K. Lee, “Learning to Explain Air Traffic Situation,”  
*US-Europe Air Transportation Research & Development Symposium*, 2025, available at [\[here\]](#)
- C5.** J. Kang, **Seokbin Yoon**, K. Lee, SH. Kim, “Urban Air Mobility Fleet Rebalancing with Real-Time Updates on Estimated Time of Arrival,”  
*AIAA/IEEE Digital Avionics System Conference (DASC)*, 2024, , available at [\[here\]](#)
- C6.** **Seokbin Yoon**, K. Lee, “Improving Aircraft Trajectory Prediction Accuracy with Over-sampling Technique,”  
*AIAA/IEEE Digital Avionics System Conference (DASC)*, 2023, available at [\[here\]](#)
- C7.** NH. Gray, S. Shin, **Seokbin Yoon**, Y. Park, H. Chai, K. Lee, H. Kim, S. Jung, “Safety and Capacity Analysis Framework for Integrated UAM Operation in Airports,”  
*AIAA/IEEE Digital Avionics System Conference (DASC)*, 2023, , available at [\[here\]](#)

## HONORS AND AWARDS

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- H1.** Best Paper of the Session at AIAA/IEEE Digital Avionics Systems Conference, 2026
- H2.** Best Student Paper at AIAA SciTech, 2026
- H3.** Best Paper of the Session at AIAA/IEEE Digital Avionics Systems Conference, 2024
- H4.** Best Paper of the Session at AIAA/IEEE Digital Avionics System Conference, 2023
- H5.** President’s Award, Korea Aerospace University, 2023
- H6.** Brain Korea 21 Plus (BK21+) Research Scholarship at Korean Government, 2022

## CERTIFICATIONS AND LICENSES

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- L1.** Air Traffic Controller, Ministry of Land, Infrastructure and Transport, South Korea, 2023
- L2.** Machine Learning with Python-From Linear Models to Deep Learning, edX, 2023

## REVIEW SERVICES

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### Journal Reviews

- AIAA Journal of Aerospace Information Systems

## TECHNICAL SKILLS

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**Programming** : Python, MATLAB,  $\text{\LaTeX}$

**Frameworks** : PyTorch, NumPy, Scikit-learn, OpenCV

**Languages** : Korean (Native), English