Dong Ho Lee

Curriculum Vitae

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Education

The University of Texas at Austin (UT Austin) Texas, USA
Ph.D. in Aerospace and Engineering Mechanics (Advisor: Prof. Fridovich-Keil) *Aug. 2023 – May 2028 (expected)*

- Current project: A fast and efficient solver for model predictive game play and control with hierarchies of objectives and constraints

Korea Advanced Institute of Science & Technology (KAIST) Daejeon, Korea
Master of Science (MS) in Aerospace Engineering (Advisor: Prof. Jaemyung Ahn) *Sep. 2020 – Aug. 2022*

- Thesis: Multiple UAV Routing for Re-planning under Dynamic Environment using Deep Reinforcement Learning
- GPA: 4.11/4.30

Bachelor of Science (BS) in Aerospace Engineering *Sep. 2012 – Feb. 2017*

- Class Rank: 56/573, Top 9.8%
- GPA: 3.92/4.30, *Magna Cum Laude*

Research Experiences

Control & Learning for Autonomous Robotics Lab, UT Austin 🔗 Texas, USA
Research Assistant *Aug. 2023 – Present*

1. **Games of Ordered Preference (GOOPs)**
   - Developed GOOPs to model strategic agents with hierarchical objectives, together with tractable reformulations and scalable optimization algorithms that enable real-time operation in autonomous robotic systems [J1], [JR1], [C2]
2. **Multi-agent Games with Inter-Agent Hierarchies**
   - Developed game-theoretic models and solution methods for systems with hierarchical relationships among agents, including hierarchical routing and mixed-hierarchy games [J2], [C1]
3. **Information-Aware Noncooperative Games**
   - Developed strategic information-gathering methods for decision-making in noncooperative games [C3]

Strategic Aerospace Initiative, KAIST 🔗 Daejeon, Korea
Research Assistant *Sep. 2020 – Jul. 2023*

1. **Routing Problems Considering Value System for Exploration Missions**
   - Proposed a data-efficient deep reinforcement learning algorithm to train a Transformer-based policy network for solving routing problems [J3], [C4], [T1]
2. **Data-driven Flow Modeling and Analysis**
   - Developed a deep-learning model for efficient prediction of aerodynamic coefficients under extreme flow conditions [J4], [C5]

Aerospace Technology Research Institute, ADD 🔗 Daejeon, Korea
First Lieutenant (Research Officer for National Defense†) (Mentor: Dr. Woohyuk Chang) *Jun. 2017 – May. 2020*

1. **Autonomous Navigation and Mission Management Technology**
   - Developed an online mission-planning algorithm for multiple UAVs operating in dynamic environments
2. **Autonomous Mission Planning System Simulator**
   - Developed an autonomous mission-planning program for a UAV simulator on Linux [P1]

Unmanned Systems Research Group, KAIST 🔗 Daejeon, Korea
Undergraduate Research Intern (Advisor: Prof. David Hyun-chul Shim) *Dec. 2015 – Sep. 2016*

1. **Development of Modular Drone with Self-Configuration**
   - Received *Excellent Research Award* among 53 projects in Undergraduate Research Participation (URP) program

† Rond: Korean research program modeled after Israel's Talpiot program, selecting 20 undergraduates across the country to serve their military duties as research officers at Agency for Defense Development (ADD)

Journal Publications

[J1] **Lee, D. H.**, Peters, L., & Fridovich-Keil, D. (2025). You Can't Always Get What You Want: Games of Ordered Preference. *IEEE Robotics and Automation Letters*, 10(7), 7182–7189.

[J2] **Lee, D. H.**, Donnel, K., Li, M. Z., & Fridovich-Keil, D. (2025). A Convex Formulation of Game-Theoretic Hierarchical Routing. *IEEE Control Systems Letters*, 9, 318–323.

[J3] **Lee, D. H.** & Ahn, J. (2024). Multi-Start Team Orienteering Problem for UAS Mission Re-Planning with Data-Efficient Deep Reinforcement Learning. *Applied Intelligence*, 54(6), 4467–4489.

[J4] **Lee, D. H.**, Lee, D. U., Han, S., Seo, S., Lee, B. J., & Ahn, J. (2023). Deep Residual Neural Network for Predicting Aerodynamic Coefficient Changes with Ablation. *Aerospace Science and Technology*, 136, 108207.

Journals Under Review

[JR1] **Lee, D. H.**, Li, J., Peters, L., Bakirtzis, G., & Fridovich-Keil, D. (2026). Breaking Exponential Complexity in Games of Ordered Preference: A Tractable Reformulation. Under review at *SIAM Journal on Optimization*.

Conference Proceedings

[C1] Khan, H., **Lee, D. H.**, Li, J., Qiu, T., Ellis, C., Milzman, J., Suttle, W., & Fridovich-Keil, D. (2026). Efficiently Solving Mixed-Hierarchy Games with Quasi-Policy Approximations. In *Workshop on the Algorithmic Foundations of Robotics (WAFR 2026)*. (Accepted)

[C2] de las Heras Molins, P., Roy-Almonacid, E., **Lee, D. H.**, Peters, L., Fridovich-Keil, D., & Bakirtzis, G. (2025). Approximate Solutions to Games of Ordered Preference. In *IEEE International Conference on Intelligent Transportation Systems (ITSC 2025)*.

[C3] Palafox, F., Milzman, J., **Lee, D. H.**, Park, R., & Fridovich-Keil, D. (2025). Smooth Information Gathering in Two-Player Noncooperative Games. In *Proceedings of the 24th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2025)*, 1595–1603.

[C4] **Lee, D. H.**, & Ahn, J. (2023). A Deep Reinforcement Learning Approach to Solve the Vehicle Routing Problem with Resource Constraints. In *AIAA Scitech Forum 2023*, Maryland, USA. (Session: Autonomy IV)

[C5] **Lee, D. H.**, Lee, D. U., Lee, J., Lee, B. J., & Ahn, J. (2022). Prediction of Multiple Aerodynamic Coefficients of Missiles Using CNN. In *AIAA Scitech Forum 2022*, San Diego, USA. (Session: Learning, Reasoning, and Data Driven Systems III)

Invited Talk / Seminar

[T1] "Multiple UAV Re-planning using Deep Reinforcement Learning," Aerospace Technology Research Institute, Agency for Defense Development, Daejeon, Korea, Nov. 2022.

Patents (Registered)

[P1] Chang, W., **Lee, D. H.**, Jang, H., Method and apparatus for optimization of unmanned vehicle mission allocation, KR102063851 (Jan. 2020)

Awards & Honors

- **Excellent Paper Award**, Avionics Systems Symposium Korea *July. 2018*
- **Excellence in Leadership & Volunteer Activity**, KAIST *Apr. 2016*
  - Granted to top 5% students with active participation in the leadership programs.
- **Excellent Research Award in URP**, KAIST *Aug. 2016*
- **Dean's List**, College of Engineering, KAIST *Feb. 2016*
  - Awarded to top 3% (Fall 2015 GPA: 4.22/4.3)

Scholarships

- **National Scholarship for Graduate Study**, KAIST *2020 - 2022*
  - Full support for graduate school tuition and monthly stipends
- **Department Honors Scholarship**, KAIST *Feb. 2016*
- **The Boeing Company-KAIST Undergraduate Scholarship**, KAIST *2014 - 2016*
  - Merit-based scholarship which offered $1,500 per semester for academic excellence
- **National Scholarship for Science & Engineering**,
  Korea Student Aid Foundation (KOSAF) *2015 - 2016*
  - Full support for university tuition and $8,700 scholarship as a *ROND* cadet
- **National Scholarship for Undergraduate Study**, KAIST *2012 - 2014*

Teaching

Teaching Assistant at UT Austin

- ASE330M Linear System Analysis *Spring 2025*

Teaching Assistant at KAIST

- AE201 Introductory Flight Project *Spring 2021*
- HSS024/HSS025 Advanced English Writing & Reading *Spring 2015–Spring 2016*
- LG-KAIST Science Camp; Academic English Camp *2014–2015*

Professional Service

Reviewer *7 reviews, 2024–2026*

- IEEE Robotics and Automation Letters (RA-L) *2025, 2026*
- American Control Conference (ACC) *2025, 2026*
- IEEE Int. Conf. on Robotics and Automation (ICRA) *2026*
- Workshop on the Algorithmic Foundations of Robotics (WAFR) *2026*

Languages

Fluent in **English** and native in **Korean**

Programming Skills

Python {PyTorch, NumPy, Matplotlib}, Julia, MATLAB, C/C++, NVIDIA CUDA, LaTeX