

KEYWORDS

Safety-Critical Learning and Control, Human–Robot Interaction, Decision-Making under Uncertainty

RESEARCH INTERESTS

I push the boundaries of **safety assurance** for intelligent systems. In doing so,

- I integrate insights from **control theory**, **reinforcement learning (RL)**, and **dynamic game theory** to certify and enforce safety of high-dimensional, black-box systems under uncertainty.
- I investigate the **interplay between humans and robots** in safety-critical scenarios and how to foster safe, smooth, and **trustworthy collaboration**.

Ultimately, I envision a world where robots operate safely amidst other agents, including humans, in **unstructured, open-world environments**.

EDUCATION

Princeton University

July 2024–May 2029 (Expected)

Ph.D. student, Department of Electrical and Computer Engineering

- Advisor: [Prof. Jaime Fernández Fisac](#)
- Cumulative GPA: 3.90/4.00

Seoul National University

Mar. 2017–Aug. 2024

B.S. in Aerospace Engineering & B.S. in Artificial Intelligence

- Advisor: [Prof. Hyoun Jin Kim](#)
- Cumulative GPA: 4.11/4.30 (3.92/4.00)—**ranked 2nd** of 71 students.

PUBLICATIONS

Conference Proceedings

[C1] Provably Optimal Reinforcement Learning under Safety Filtering
[D. D. Oh*](#), D. P. Nguyen*, H. Hu, J. F. Fisac
International Association for Safe & Ethical AI (IASEAI), 2026

[C2] Safety with Agency: Human-Centered Safety Filter with Application to AI-Assisted Motorsports
[D. D. Oh*](#), J. Lidard*, H. Hu, H. Sinhmar, E. Lazarski, D. Gopinath, E. S. Sumner, J. A. DeCastro, G. Rosman, N. E. Leonard, J. F. Fisac
Robotics: Science and Systems (RSS), 2025

[C3] Safety-Critical Control Under Multiple State and Input Constraints and Application to Fixed-Wing UAV
[D. D. Oh*](#), D. Lee*, H. J. Kim
62nd IEEE Conference on Decision and Control (CDC), 2023

[C4] Stable Contact Guaranteeing Motion/Force Control for an Aerial Manipulator on an Arbitrarily Tilted Surface
J. Byun, B. Kim, C. Kim, [D. D. Oh](#), H. J. Kim
IEEE International Conference on Robotics and Automation (ICRA), 2023

[C5] Real-Time Trajectory Generation of a Quadrotor UAV with Load Suspended from a Pulley
[D. D. Oh](#), J. Byun, D. Lee
International Conference on Control, Automation and Systems (ICCAS), 2022

SCHOLARSHIPS & AWARDS

First Year Fellowship in Natural Sciences and Engineering	Sept. 2024–May 2025
The Presidential Science Scholarship	Mar. 2017–Sept. 2022
• National scholarship recognizing 120 top STEM students; conferred by the President of Korea.	

Talent Award of Korea	Nov. 2016
• National cross-disciplinary honor recognizing 100 outstanding Koreans across arts, entrepreneurship, STEM, etc.; conferred by the Deputy Prime Minister & Minister of Education of Korea.	

SKILLS & CERTIFICATION

Learning & Simulation	
• PyTorch, MuJoCo, Safety Gymnasium, Assetto Corsa (high-fidelity car racing simulator).	
Programming	
• Python, MATLAB/Simulink, C/C++, Linux, Git.	
Hardware	
• FANATEC sim-racing wheelbase and pedals; custom Linux force-feedback torque driver.	
Human Subjects Research	
• Certified by the CITI Program (IRB — Social & Behavioral Research Investigators, completed Nov. 2024).	
• Authored the IRB protocol and study materials and coordinated submission to the Princeton University IRB; ran an in-lab user study (N=83) on human–safety filter interaction in Assetto Corsa.	

ACADEMIC SERVICES

Reviewer Service	
• IEEE Robotics and Automation Letters (RA-L)	2025
• International Conference on Neuro-symbolic Systems (NeuS)	2025
• ICRA Workshop on Public Trust in Autonomous Systems (PTAS)	2025
Advising and Mentorship	
• Elle Lazaraki (undergraduate student, Princeton University)	Sept. 2024–Current

REFERENCES

Jaime Fernández Fisac	jfisac@princeton.edu
• Assistant Professor of Electrical and Computer Engineering, Princeton University	
Naomi Ehrich Leonard	naomi@princeton.edu
• Chair and Edwin S. Wilsey Professor of Mechanical and Aerospace Engineering, Princeton University	
Haimin Hu	haimin@cs.jhu.edu
• Assistant Research Professor of Computer Science, Johns Hopkins University	
Guy Rosman	guy.rosman@tri.global
• Manager of the Human Aware Interaction & Learning Team, Toyota Research Institute (TRI)	
Zixu Zhang	zhangzix@tesla.com
• Senior Autopilot Machine Learning Scientist, Tesla	