

Donggeon (David) Oh

Email: do9948@princeton.edu
Website / LinkedIn / Google Scholar

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: 3.84/4.00

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

- [C7] **Synthesis and Deployment of Maximal Robust Control Barrier Functions through Adversarial Reinforcement Learning**
D. D. Oh, D. P. Nguyen, H. Hu, J. F. Fisac
65th IEEE Conference on Decision and Control (CDC), 2026 (to appear)
- [C6] **Handbook on Safety Certificates: Techniques from Hamilton–Jacobi Reachability Analysis and Control Barrier Functions**
H. Wang, M. Cohen, Z. Feng, **D. D. Oh**, O. So, S. Zhang, J. Borquez, C. Fan, J. F. Fisac, H. Hu, S. Bansal, J. J. Choi
65th IEEE Conference on Decision and Control (CDC), 2026 (Tutorial Paper; to appear)
- [C5] **Provably Optimal Reinforcement Learning under Safety Filtering**
D. D. Oh*, D. P. Nguyen*, H. Hu, J. F. Fisac
International Association for Safe & Ethical AI Conference (IASEAI), 2026
- [C4] **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
- [C2] **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
- [C1] **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.

TEACHING

- Intelligent Robotic Systems** Spring 2026
- Head Teaching Assistant; Instructed by Prof. Jaime F. Fisac at Princeton University.

ACADEMIC SERVICES

Reviewer Service

- IEEE Robotics and Automation Letters (RA-L)
- IEEE Conference on Decision and Control (CDC)
- International Association for Safe & Ethical AI (IASAI)
- International Conference on Neuro-symbolic Systems (NeuS)

- ICRA Workshop on Public Trust in Autonomous Systems (PTAS)

Advising and Mentorship

- Elle Lazarski (Ph.D. student at University of California, Berkeley)

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 Professor of Computer Science, Johns Hopkins University