Minhyuk Park
Contact: sqmemory13@gmail.com | +1 (737) 388 9109
Location: San Marcos, Texas | LinkedIn: www.linkedin.com/in/minhyukrobotics

PROFESSIONAL SUMMARY

Ph.D. student researcher in computer science specializing in autonomous robotics and multi-agent systems with a focus on AI-driven task and motion planning (TAMP). Proven record of innovation includes a first-author publication at the premier ICRA conference (2024), top-tier awards in autonomous drone competitions (IROS, Airbus), and a granted patent. Expert in bridging the gap between theoretical AI and real-world robot hardware implementation to create robust, high-performance autonomous systems.

EDUCATION

Doctor of Philosophy, Computer Science, *(Aug 2024 - now)*
Texas State University, San Marcos, Texas, United States
Master of Science, Computer Science, *(Mar 2022 - Aug 2024)*
Ulsan National University of Science and Technology, Ulsan, South Korea
Dissertation: Wind Field Modeling for Formation Planning in Multi-Drone Systems
Bachelor of Engineering (Dual), Mechanical and Aerospace Eng, *(Mar 2015-Feb 2022)*
Bachelor of Engineering (Dual), Computer Science and Engineering,
Ulsan National University of Science and Technology, Ulsan, South Korea

PUBLICATIONS

1. **Minhyuk Park**, Aloysius K. Mok, Tsz-Chiu Au, Robust Evacuation for Multi-Drone Failure in Drone Light Shows, AAAI 2026 Bridge Program: Making Embodied AI Reliable with Testing and Formal Verification
2. **Minhyuk Park**, Tsz-Chiu Au, Wind Field Modeling for Formation Planning in Multi-Drone Systems, IEEE International Conference on Robotics and Automation (ICRA), Yokohama 2024. *Citation count: 1*
3. **Minhyuk Park**, Tsz-Chiu Au, Challenges in Using Drone Swarms as Video Game Platforms, Workshop on Human-Multi Agent Interaction, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Detroit 2023
4. Moon, H., Martinez-Carranza, J, Titus Cielwski, Matthias Faessler, Davide Falanga, Alessandro Simovic, Davide Scaramuzza, Shuo Li, Michae Ozo, Christophe De Wagter, Guido de Croon, Sunyou Hwang, Sunggoo Jung, Hynchul Sim, Haeryang Kim, **MinHyuk Park**, Tsz-Chiu Au, Si Jung Kim, Challenges and implemented technologies used in autonomous drone racing. Intel Serv Robotics 12, 137–148 (2019) *Citation count 141*
5. *Under Review: **Minhyuk Park**, Tsz-Chiu Au, RRT-based drone evacuation for Multi-Drone Failure in Drone Light Shows IEEE International Conference on Robotics and Automation (ICRA), Vienna 2026*

INVITED TALK / PRESENTATION

"Challenges in Using Drone Swarms as Video Game Platforms" in Workshop on Human-Multi Agent Interaction, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Detroit 2023

RESEARCH POSTERS / PRESENTATION

1. **Minhyuk Park**, Jaebak Hwang, Hong-Tack Kim, Young Min Park, Kwon Hee Hong, Nam Il Her, Dohee Lee, Motion Planning Algorithm of An Articulated Robotic Arm for Inspecting Double Null Divertor in Fusion Experimental Device, *2024 IEEE International Conference on Robotics and Automation (ICRA) Workshop Robotics for Nuclear Environments*
2. Dohee Lee, **Minhyuk Park**, Sangwoo Ha, Jaebak Hwang, Hong-Tack Kim, Young Min Park, Kwon Hee Hong, Nam Il Her. Study of a Task-Motion Planning for Maintenance Tasks of Multi-Purpose Deployer in In-Vessel of Fusion Experimental Device, *2024 IEEE International Conference on Robotics and Automation (ICRA) Workshop Robotics for Nuclear Environments*

PATENT

Minhyuk Park, Byung Soo Kim, Kim Nam Hoon, AI-based real-time FDM 3D printing defect detection and automation process, South Korea, No 1020230023102, 2023

HONORS AND AWARDS

1. Final Rounds, DNA+ Outdoors **Autonomous drone** survey Flight Competition, September 2021
2. 4th place, IROS 2018 Award for **Autonomous Drone Racing**, October 2018
3. 2nd Place, Airbus **Autonomous Drone Racing**, Seoul Adex August 2017

SCHOLARSHIPS

1. *2025* - TXST Graduate College Scholarship - Science and Engineering
2. *2024* - TXST Graduate Merit Fellowship
3. *2017-2018* - National Science & Technology Scholarship, South Korea
4. *2015-2016* - Merit Scholarship, Ulsan National Institute of Science and Technology, South Korea

PROJECT EXPERIENCE

1. Course Development for Advanced Robotics | Doctoral Instructor Assistant | *Aug 2025 - Dec 2025*

- Developed coursework with a real robot, Turtlebot 3 with Open Manipulator Arm, for students to learn robot programming in a simulation-to-hardware workflow.

- Introduced innovative and first-of-its-kind robotics course with hands-on robot integration with the latest Artificial Intelligence technologies, including cutting-edge **Large Language Models, YOLO object detectors, and with the latest edge computers such as Hailo NPU and Jetson**.

2. Multi-agent Aerial Systems | Graduate Researcher | *Feb 2023 - May 2024*

- Implemented novel makespan-optimized motion planning algorithms taking inter-swarm aerodynamic interference into account and other collision avoidance algorithms (APF, BVC, Stop and Go) on the Crazyflie microdrone platform, and demonstrated about 40 percent reduction in makespan on real drone systems.
- **Publications** include "Wind Field Modeling for Formation Planning in Multi-Drone Systems" in a **respected international robotics conference, ICRA**.

3. Robotic Arm for Nuclear Environment | Graduate Researcher | *Nov 2023 - May 2024*

- Served as Lead Programmer, implementing a simulated environment, 3D models, and core algorithms.
- Utilized Blender 3D modeling, MoveIt library, and Gazebo to implement motion planning for a virtual robotic arm based on real nuclear reactor specifications.
- **Presented research posters** on improving efficiency for robotic arm double null divertor inspection during the **International ICRA Nuclear Workshop Conference**.

4. Service Robot Development | Graduate Researcher | *Feb 2023 - Nov 2023*

- Participated in the Research Collaboration with the UNIST Design Department
- Designed and built ‘Modle’ AI Companion Service Robot. Implemented AI such as voice recognition and human skeleton detection based on OpenPose and Jetson NX.
- Improved human interactivity and user friendliness of companion robots from human interaction research, and presented at the UNIST Design Show.

5. Smart 3D Printer Farm Development | Project Leader | *Feb 2022 - Nov 2022*

- Served as a Project Leader responsible for system design and programming during the UNIST AI Challengers Program.
- Used Generative AI (Variational AutoEncoder) and Object Detection (Darknet YOLO) for automated 3D printer diagnostics for known and unknown defects.
- Submitted and approved **South Korean Patent** and presented in the AI Challengers Program, 2022.

6. DNA+ Autonomous Survey Drone Competition | Team Leader | Feb 2021 - Nov 2021

- Led the UNIST Fly By Intelligence team in building custom hardware and software for the Autonomous Survey Drone competition, work including control code integration and custom dataset training.
- Constructed a custom drone with Nvidia Jetson NX, Pixhawk 4, and RTK GPS.
- Passed preliminary rounds and participated in a final outdoor field competition.

7. Autonomous Drone Racing | Team Leader | *Feb 2017 - Nov 2018*

- Led the UNIST Dronebot team in building custom hardware and software for the ADR competition, work including control code integration and custom dataset training.
- Constructed custom drones with carbon fiber and 3D-printed parts, and integrated the drone with ROS1, Optitrack, ZED Stereo Cameras, and Jetson TX2.
- Completed a real obstacle course in **fourth place** in the IROS international competition, authored our team's section on the end-to-end UNIST approach in a collaborative journal paper.

TECHNICAL SKILLS

- **Programming Languages**: Python, C++, Robot Operating System 1/2
- **AI & Vision**: Large Language Models, Computer Vision, Data-based Trajectory Prediction, Reinforcement Learning.
- **AI framework**: Pytorch, Tensorflow, CUDA, Nvidia TensorRT, Hailo SDK, Greenwave GAP8 SDK
- **Simulators**: Gazebo, AirSim.
- **Embedded Systems**: Jetson Xavier NX, Raspberry Pi, Pixhawk, Arduino, Hailo 8 NPU.
- **Robot Platforms**: Mission customized robots, including ArduPilot drones, Crazyflies, Turtlebot 3/4, Kuka Youbot, Husky A200, and many more.
- **Sensor Integration**: Motion Capture Systems, RTK GPS, Marvelmind Ultrasound Indoor GPS, UWB localization, Lidar.

PROFESSIONAL MEMBERSHIPS

- Student Member, Institute of Electrical and Electronics Engineers (IEEE)
- Student Member, IEEE Robotics and Automation Society Membership (RAS)

OTHER QUALIFICATIONS

- Korean 1st class Unmanned Multicopter pilot's license
- Proficient in English and a native Korean speaker, with basic conversational skills in Japanese (N3, 2020) and Chinese
- Certificate of Completion - Program requirements of Unmanned Aircraft Systems, for commitment and performance in UNIST aerospace-related subjects, September 16th, 2021, no 2021-5