

Hanvit Cho

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SUMMARY

As a Master's student specializing in robotics at Stanford University, I have developed a solid foundation in **designing, controlling, and integrating** various robotic systems—including manipulators, drones, and swarm robots. My expertise is further enhanced by hands-on experience in **imitation learning** and **PID controller implementation** for a drone project during my undergraduate studies. With a strong background in **mechanical design** and validating **electrical components and system functionalities**, I am well-prepared to contribute to the **optimization and reliability** of complex sub-systems within autonomous platforms.

EDUCATION

Stanford University Stanford, California	September 2023 – June 2025 (Expected)
- MS in Mechanical Engineering.	
University at Buffalo - State University of New York (SUNY) Buffalo, New York	August 2021 – May 2023
- BS in Mechanical Engineering. GPA: 4.0/4.0	

Work Experience

Robotics Internship	Centrillion Technology
<i>Full-time intern</i>	June 2024 – September 2024
- Developed and optimized robotic solutions using C++ and Python by integrating Trossen Robotics' Mobile ALOHA through advanced imitation learning techniques, improving manufacturing automation in real-world situations.	
- Implemented control algorithms and developed test setups to enhance diagnostic capabilities, ensuring efficient and reliable robotic operations with real-world robotic applications .	
Sun-Signs Engineering Internship	University at Buffalo
<i>Unpaid part-time intern</i>	February 2022 – June 2022
- Designed and assembled a solar-powered navigation device using SOLIDWORKS and utilized 3D printing to create a prototype.	
- Conducted performance testing and failure analysis to refine prototype designs .	
- Evaluated the device's functionality in various environmental conditions to assess durability and reliability, using data-driven approaches to optimize performance.	

RESEARCH EXPERIENCE

Stanford Vision and Learning Lab	Stanford University
<i>Graduate researcher</i>	June 2024 – Present
- Developing an advanced brain-robot interface leveraging EEG signals to control robots, enhancing system intelligence for complex pick-place-pack tasks.	
- Specialized in applying machine learning for vision system accuracy and efficiency, crucial for semi-structured robotic tasks in logistics.	
- Implemented control algorithms and developed test setups to enhance diagnostic capabilities, ensuring efficient and reliable robotic operations with real-world robotic applications .	
Collaborative Haptics and Robotics in Medicine Lab	Stanford University
<i>Graduate researcher</i>	March 2024 – June 2024
- Redesigned a vine-like robot with a focus on mechanical sealing mechanisms and pressure control.	
- Utilized GD&T in design specifications to ensure precise fabrication and assembly.	
- Developed automated test equipment for actuator performance validation, applying FEA to optimize design and enhance reliability under various load conditions.	

Salisbury Robotics Lab

Graduate researcher

- Contributed to developing robotic Emergency Medical Technician (rEMT) using Kinova Gen 3 arm, Bota force sensor, and Haply Inverse-3 haptic device for precise medical palpation and diagnostics.
- Developed and tested **motion control algorithms** and **haptic perception systems** to enhance robotic responsiveness and sensitivity, enabling accurate diagnostics and therapeutic applications.
- Led the **testing phase**, which involved rigorous trials to evaluate the performance aspects of the rEMT, ensuring the system's reliability and safety.

Stanford University

March 2024 – June 2024

Stanford Biomechatronics Lab

Graduate researcher

- Focused on the development of exoskeleton technology to assess and enhance human walking balance.
- Tested human-subjected gait data based on several balanced metrics and determined how to declare which gait is balanced.
- Utilized **MATLAB** and **Python** to refine algorithms that assess balance and gait symmetry

Stanford University

September 2023 – May 2024

Adaptive Design Algorithms, Models & Systems Lab

Undergraduate researcher

- Programmed ground robots (e-puck2) and aerial robots (crazy-fly) using C++ and **Python**, with a focus on real-time control algorithms for dynamic systems.
- Leveraged **ROS 2 frameworks** to conduct closed-loop control experiments using Vicon motion capture, optimizing coordination among swarm robots for precision object manipulation and automated collaboration.
- Enhanced system performance by integrating **real-time feedback and data acquisition systems** to improve response times and control accuracy

University at Buffalo

February 2022 – May 2023

HONORS AND AWARDS

Dean’s List | University at Buffalo

Spring 2021 – Spring 2023

International Scholarship | University at Buffalo

Fall 2020 – Spring 2023

Citation of the Commander | Defense Security Support Command

April 2019

- \$3,500 per semester in a row
- Developed a C# and MySQL DB management program to detect computer security threats.

PUBLICATIONS

NOIR 2.0: Neural Signal Operated Intelligent Robots for Everyday Activities

CoRoboLearn 2024

Kim, T., Wang, Y., Cho, H., Hodges, A.

Fast Decision Support for Air Traffic Management at Urban Air Mobility Vertiports Using Graph Learn

IROS 2023

KrishnaKumar, P., Witter, J., Paul, S., Cho, H., Dantu, K., Chowdhury, S.

Framework for Analyzing Human Cognition in Operationally-Relevant Human Swarm Interaction

ASME 2023

Distefano, J., Cho, H., KrishnaKumar, P., Esfahani, E., Chowdhury, S.

LAB SKILL

Motion Capture Lab (Vicon Tracker):

calibrating, creating an object in the environment, tracking multiple objects, and accessing real-time Vicon data to control the objects.

EEG Brain Signal Acquisition (NetStation):

Configuring hardware and software to record EEG data, performing data preprocessing and analysis, and leveraging brain signals for real-time control applications.

COMPUTATIONAL SKILLS

Languages:

C (Expert), C++ (Expert), Python (Expert), Java (Intermediate), JavaScript (Intermediate)

Applications:

ROS (Expert), MATLAB (Expert), SOLIDWORKS (Expert), Adobe Inventor (Expert)

Engineering Skills:

Manual Machining, GD&T, FEA, CAD Fixture Design, Motion Capture