


# ANH TUNG HO

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## Education

### Stony Brook University

Ph.D. in Mechanical Engineering, GPA: 4.0/4.0

Sep 2024 – Present

Stony Brook, New York, USA

### Korea Advanced Institute of Science and Technology (KAIST)

B.Sc. in Mechanical Engineering, Cum Laude Degree, GPA: 3.7/4.0

Mar 2020 – Feb 2024

Daejeon, South Korea

Thesis: [Utilizing Multiple Point Cloud Scenes for Precise Robotic Bin-Picking Tasks](#)


## Experience

### The Soft Flyers Laboratory

Research Assistant | Advisor: Prof. William Stewart

Sep 2024 – Present

Stony Brook, NY, USA

- Utilized Machine Learning for hardware design optimization of fixed-wing UAVs to enhance safety in human-UAV collisions. The new design reduced the injury by 28% compared to the original. ( [Result](#))
- Developed software to automate Finite Element Analysis (FEA) crash simulation, enabling end-to-end loop for design optimization and validation process.

### LG Electronics

Robotics Engineer

Apr 2024 – Aug 2024

Gyeonggi, South Korea

- Led team (6 people) to develop an AI-driven manipulation system for automating OLED screen defect inspections.
- Designed digital twin model for system including XY gantry, 7-DOF robot arm, ESD gun and 3D vision systems.
- Trained YOLO model to categorize defections and types of ESD test with 97% accuracy.
- Developed a vision-based motion planning algorithm with MoveIt 2 based on object detection results.

### Luxolis AI

Robotics Engineer

Feb 2024 – Aug 2024

Gyeonggi, South Korea



- Completed the initial prototype of low-cost portable RGB-D camera for real-time 3D scene reconstruction.
- Optimized Visual-Inertial SLAM pipeline, reducing data storage by 5x and improving render speed by 10x.

### Smart Manufacturing Systems Laboratory

Research Assistant | Advisor: Prof. Huitaek Yun

Jun 2023 – Feb 2024

Daejeon, South Korea


- Developed an autonomous bin-picking system with Doosan 7-DOF manipulator, pneumatic gripper system and RGB-D camera with integration of deep learning vision model for object detection. ( [Video](#),  [Code](#))
- Proposed a multi-view matching algorithm to improve the precise of object pose estimation with a single low-cost RGB-D camera by 70% compared to tradition methods and ensure the error within 2mm.

### Robotic and Simulation Laboratory

Research Intern | Advisor: Prof. Doo Yong Lee

Sep 2022 – Dec 2022

Daejeon, South Korea

- Researched nonlinear control theory in teleoperated surgical robots interacting with uncertain environments.
- Designed mock surgical experiment with Kuka 7-DOF manipulator, F/T sensor and Omega haptic device.
- Developed an adaptive model-mediated controller that ensures stability even the presence of communication delay and increases fidelity in rendering feedback force by 50% compared to previous publication. ( [Report](#))

### Delta X Robotics

Robotics Engineer Intern

Jun 2022 – Sep 2022

Danang, Vietnam

- Designed Simulink models to analyze dynamics for high-speed parallel delta robots and quadrupedal robots. ( [Video](#))

### Innovation Design Optimization Laboratory

Research Intern | Advisor: Prof. Ik Jin Lee

Dec 2021 – Mar 2022

Daejeon, South Korea

- Conducted research on applying Bayesian models to optimize the hardware design in uncertain conditions.
- Utilized Kriging-Gaussian interpolation to create surrogate model which optimizes the design for crashworthiness test of vehicle side impact. The design minimizes the deformation due to side impact while maintaining the required weight.

## Publication

"Utilizing Multiple Point Cloud Scenes for Precise Robotic Bin-Picking Tasks", Anh Tung Ho, Pung Kyu Lee, Huitaek Yun, *The Korean Society of Mechanical Engineers Spring and Autumn Conference, 2024.*

## Selected Projects (📁 Full Portfolio)

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- SpaceX Rocket Booster Landing Simulation** (📺 Video, 📄 Code) 2024
- Created a physics engine for 3D rigid body dynamics with GUI to simulate SpaceX booster landing process.
  - Designed feedback Linear Quadratic Regulator (LQR) and Model Predictive Controller (MPC) for whole body control.
  - Leverage Reinforcement Learning method Soft Actor Critic of Baselines3 to train policy for autonomous navigation.
- Capstone Design for Autonomous Hovercraft** (📺 Video, 📄 Code) 2023
- Led team (5 people) to design an autonomous Lidar-based hovercraft controlled by cushion-air mechanism.
  - Developed a feedback LQR controller with data from sensor fusion algorithm to optimize thrust and lifting force generated from BLDC motors, ensuring seamless motion on low-resistance air.
  - Developed Lidar-Inertia SLAM ensuring accurate pose estimation with low-sampling equipment.
- AI-Driven Autonomous Racing Car Tournament** (📺 Video, 📄 Code) 2022
- Led a team of six to build an autonomous racing car controlled by a Jetson Nano, achieving first place in contest.
  - Optimized the Stanley lateral motion controller for smooth turning on curve and rapid off-road recovery.
  - Developed Lidar-Visual path planning algorithm for obstacle avoidance, achieving 30Hz real-time computational rate.

## Honors and Awards

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- Outstanding Academic Achievement Award in Spring Semester 2022
- Third Prize in Vietnamese National Physics Olympiad 2018
- Honor Prize in Vietnamese National Physics Olympiad 2017

## Relevant Courses

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Advanced Dynamics, Modeling and Control System, Automatic Control, Robotics System Programming, Kinematics and Dynamics in Robotics, Ariel Robotics, Mobile Robotics, Computer Vision, Signal and Image Processing, Basics of AI and Deep Learning, Introduction to Reinforcement Learning, Mechanical Component Design, Smart Factory for Human-Machine Collaboration, Circuit Theory

## Skills

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**Programming:** C/C++, Python, MATLAB

**Frameworks:** ROS/ROS 2, MoveIt, Gazebo/Simulink/PyBullet, LS-DYNA, SolidWorks/Fusion, Pytorch, OpenCV, Open3D/PCL, Git, Linux, Rasberry Pi/Jetson Nano/Arduino, AWS

## Referees

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### Prof. William Stewart

Assistant Professor

Director of The Soft Flyers Group Laboratory

Department of Mechanical Engineering, Stony Brook University, NY, USA

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### Prof. Huitaek Yun

Assistant Professor

Director of Smart Manufacturing System Laboratory

Department of Mechanical Engineering, KAIST, Daejeon, South Korea

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### Mr. Junbeom Koo

Principal Researcher

LGE TV Laboratory

LG Electronics, Gyeonggi, South Korea

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