

Dong Heon Han

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EDUCATION

Georgia Institute of Technology, Atlanta, GA	August 2021
Bachelor of Science, Mechanical Engineering	GPA: 3.51/4
Atlanta Metropolitan State College, Atlanta, GA	December 2018
Associate of Science, Physics	GPA: 3.95/4

WORK EXPERIENCE

Visiting Research Assistant	Aug 2021 – Dec 2021
<i>Seoul National University, Seoul, South Korea</i>	
<ul style="list-style-type: none">Worked as a project leader in ORED lab developing an algorithm for a tractor's autonomous path tracking algorithm.Assisted a week-long tractor system's noise/vibration test by using Simcenter Testlab's digital signal processing.	
Heat Transfer Tutor	May 2021 - Aug 2021
<i>Georgia Institute of Technology, Atlanta, GA</i>	
<ul style="list-style-type: none">Taught Georgia Tech undergraduates in a tutoring program sponsored by Shell Oil Company and Air Products Corporation.	
Undergraduate Researcher , Project leader of VIP (Vertically Integrated Projects)	Sep 2019 – Aug 2021
<i>Georgia Institute of Technology, Atlanta, GA</i>	
<ul style="list-style-type: none">Led a team in the LIDAR lab controlling, designing, and optimizing a humanoid robot's neck.Integrated the robot's neck with its upper body and completed a kinematic simulation using MATLAB and Drake.Explored the robot's high-fidelity motion and control for a contact-rich manipulation task using linear actuators.	
Research Intern	May 2018 - Aug 2018
<i>KIMM (Korea Institute of Machinery and Materials), Daejeon, South Korea</i>	
<ul style="list-style-type: none">Involved in developing a new technology using GPS, IMU, LiDAR, and cameras which let agricultural and construction machines perform path planning, particularly in the open field.Used C++ programming and Simulink to manage signals from environmental recognition sensors.	
Physics I Undergraduate Teaching Assistant	Jan 2018 - May 2018
<i>Atlanta Metropolitan State College, Atlanta, GA</i>	
<ul style="list-style-type: none">Assisted students in labs and classrooms with coursework and the professor with grading assignments.	

PROJECTS

Artificial Intelligence Project for an Autonomous Agricultural Vehicle	Aug 2021 – Dec 2021
<i>"Development and Implementation of a Tractor's Path Tracking Algorithm Based on Dynamic Target Control"</i>	
<ul style="list-style-type: none">Developed a high-level autonomous path tracking algorithm for a self-driving tractor.Simplified tractor's model based on the bicycle driving model and developed steering control algorithm.Used PID control to decrease the error of the tractor's head angle and the distance from the desired path.Used Object-oriented programming in both C++ and MATLAB to implement the path tracking algorithm.Applied machine learning method to optimize the tractor's path tracking feedback and to increase target accuracy.	
ME 4056 – Capstone Design	May 2021 – Aug 2021
<i>"Blower Tip's Variable Nozzle Design Sponsored by TTI (Techtronic Industries)"</i>	
<ul style="list-style-type: none">Creatively designed a variable nozzle for a DIY homeowner that reduced the cross-sectional area of the nozzle's tip.Conducted the CFD to find out what effect the nozzle prototypes' head loss had on the velocity of the wind and the CFM flow rate.Checked whether the variable nozzle could withstand 5000 cycles of opening and closing, using S-N diagram and the max stress found by the FEA.	

Undergraduate Research Project

Jan 2021 - May 2021

"Computer-Aided Manufacturing and Dynamic Analysis of a Six Degree of Freedom Stewart Platform Manipulator"

- Conducted an inverse and forward kinematics of a six degrees of freedom Stewart Platform manipulator.
- Performed PID tuning through the Simulink's system ID and controlled the duty cycle of the linear actuators that were used for the humanoid robot's neck.
- Designed a circuit for the Stewart platform with an Arduino MEGA, P16 actuators, and motor drivers.
- Produced a simulation program using MATLAB based on the kinematic analysis and developed controlling algorithm in Arduino that synchronized 6 manipulators and.

ME 4042 – Interactive CAD & CAE

Aug 2020 - Dec 2020

"Structural Analysis of Horizontal-axis Wind Turbine base on CFD and FEA"

- Modeled the complex design of the wind turbine's blade using S809 airfoil on Siemens NX.
- Obtained the lift and drag coefficients that change according to the velocity of wind by conducting CFD.
- Found the blade's maximum stress and deformation that vary depending on the blade's web design and materials and calculated the factor of safety.

SKILLS

Programming: Java (advanced), Arduino (advanced), C++ (advanced), Python

Software: MATLAB (advanced), SolidWorks (advanced), Siemens NX (advanced), Ansys, LabView

Technical Skills: FEA, CFD, Circuit Design, Machine Learning

AWARDS

President's Undergraduate Research Awards (PURA)

Jan 2021

- Received a \$1,500 stipend as an undergraduate student who is conducting research with a Georgia Tech faculty member or a Georgia Tech Research Institute scientist.

Georgia Korean American Grocers Association (GA KAGRO) Scholarship Award

Dec 2016

- Was awarded scholarship for academic excellence and community leadership.

LEADERSHIP

Drone Club, President

Aug 2018 - Dec 2018

Atlanta Metropolitan State College, Atlanta, GA

- Established the drone club and led the group as the president.
- Designed and built an Arduino-controlled quadcopter drone, while also developing a code that controls the 4 motors stabilizing the drone.

PRESENTATIONS

Dong Heon Han.; Seo Jung Byeon.; Kyeong-Dae Kim.; Gyu Ha Han.; Moo Hyun Cha.; Young-Jun Park. Development of Path Tracking Control Algorithm for Tractor Autonomous Driving. Presented at the 47th Korean Society for Agricultural Machinery meeting, Jeju, South Korea, October 27th – 30th, 2021