

Zach (Jaehyeon) Park

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Education

The Cooper Union for the Advancement of Science and Art

Bachelor of Engineering in Mechanical Engineering / Minor in Computer Science

Cumulative GPA: 3.83/4.00

Expected Graduation: May 2026

- **Honors:** President's Half Scholarship (Full Year), Dean's List (Full Year), Member of Tau Beta Pi
- **Relevant Coursework:** Robotics & Automation, Feedback & Process Control, Thermodynamics, Fluid Mechanics

Professional Experience

Technische Universität Dresden

Collaborated with Fraunhofer Institute for Machine Tools and Forming Technology (IWU)

Dresden, Germany

May 2024 – Aug. 2024

- Researched AISI 1010 steel plate deforming in electromagnetic forming (EMF) tool using LS-DYNA for FEA
- Utilized deep learning (Temporal Fusion Transformer models) to predict deformation depth and assess thermal effects
- Used transfer learning techniques to enhance model accuracy by 13% and visualized results using MATLAB & Python

Cooper Union

Bio-Inspired Robotic Design Lab Research Assistant

New York, NY

Aug. 2023 – Present

- Conduct FEA simulations using LS-DYNA to analyze actuation behavior of soft robots with varying shapes
- Modeled molds and tested pneumatic actuators, conducting airflow analysis to optimize performance and durability
- Investigate integration of soft actuators into robotic arm for precision grasping applications

Republic of Korea Army

General Outpost (GOP) Squad Leader

Gangwon, South Korea

Oct. 2021 – Apr. 2023

- Led frontline team conducting Demilitarized Zone (DMZ) surveillance, mine detection, and nighttime operations
- Operated and maintained PRC-999K communication equipment, barbed-wire fences, and thermal imaging devices

Seoul National University

Interactive and Networked Lab Research Assistant

Seoul, South Korea

Jun. 2021 – Aug. 2021

- Designed modular automated guiding vehicles (AGV) capable of swarm-based operation for flexible task execution
- Developed multi-point connection mechanism for AGV modularity using ROS & 3D parametric modeling techniques
- Visualized AGV's collaborative functionality and connection sequence in Blender with dynamic motion analysis

Projects and Extracurricular Activities

Pfizer Inaugural Digital Hackathon 2024 (2nd Place Winner)

Team Leader

New York, NY

Aug. 2024 – Sep. 2024

- Developed NLP-driven mental health app with emotional tracking to address mental health equity for NYC students
- Implemented mood classification algorithms to deliver personalized interventions and optimize wellness support

Drone Control with Motion Tracking

Dynamics and Control Lab Project Leader

New York, NY

Aug. 2023 – Present

- Develop PID waypoint tolerance for stable navigation and integrate hand gesture control for real-time manipulation
- Simulate solar system dynamics and pendulum-like damping with drones responding to real-time trajectory changes

Cooperloop

Stability Team Leader

New York, NY

Aug. 2023 – Present

- Engineer better mechanical strength design of hyperloop in preparation of International Hyperloop Competition
- Lead team of 10 to optimize pod wheel suspension for minimized vibration and enhanced fluid damping performance

Augmented Reality (AR) Game Design Project (1st Place Winner)

Fobisia Creative Coding Challenge 2019

Seogwipo, South Korea

Jan. 2019 – Mar. 2019

- Built AR game in which player dodges meteorites coming out from dark hole using Swift and 3D modeling kit
- Led team and assigned responsibility for game design, 3D modeling, and conflict resolution between teammates

Technical Skills

Coding Languages: Python, C++, React, SQL, Arduino, Java, Swift, JavaScript, CSS, and HTML5

Software: LS-DYNA, PyTorch, TensorFlow, AutoCAD, SOLIDWORKS, Blender, MATLAB, Git, and Microsoft Office