Kyuwon Weon

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EDUCATION

Northwestern University | Evanston, IL — Expected December 2026
Master of Science in Robotics

- Relevant Coursework: Embedded Systems, Robotic Manipulation, Machine Dynamics, Intro to Mechatronics, SLAM

Carnegie Mellon University (CMU) | Pittsburgh, PA — Graduated May 2022
Bachelor of Science in Mechanical and Biomedical Engineering. Graduated with University Honors

SKILLS

Robotics & Control: ROS2, MoveIt, TF2, State-Space Modeling, Lagrangian Dynamics, PID Control, Forward/Inverse Kinematics, SLAM, Motion Planning & Control
Software & Vision: C++, Python, OpenCV, Linux (Ubuntu), Git, Unit Testing, MATLAB
Simulation & Engineering: Gazebo, CoppeliaSim, RViz, FEA (ANSYS, COMSOL), SolidWorks, PTC Creo, Rapid Prototyping, Six Sigma Green Belt(DFSS) Certified from Alcon, 3D Printing, Machining, Injection Molding, Design for Manufacturing (DFM)

PROJECTS

PenPal – Vision Guided Q&A Manipulator | Evanston, IL — Nov 2025 - Present
Embedded Systems Final Project

- Engineered a Franka Emika robot to perceive queries and write answers on a dynamic, human-held whiteboard
- Implemented constrained motion planning using MoveIt to generate pen gripping and writing trajectories, while optimizing force/torque safety thresholds to permit contact-rich tasks without triggering emergency stops
- Integrated real-time perception for whiteboard detection with AprilTags using an Intel RealSense 3D camera to dynamically update motion targets, allowing robot to compensate for human-induced board movements

Pen Grabber | Evanston, IL — Sep 2025 - Sep 2025
Robotics Hackathon

- Programmed a PincherX-100 arm to autonomously detect, track, and grasp a pen using an Intel RealSense 3D camera

Medtronic-Sponsored : Anterior Cervical Plate Development | Pittsburgh, PA — Sep 2021 - May 2022
Senior Capstone Project

- Developed a low-profile anterior cervical plate design prototype with Solidworks and reduced plate mass by 20% without compromising structural integrity by leveraging ANSYS for FEA and topology optimization

CMU Biothermal Technology Lab | Pittsburgh, PA — Jan 2021 - May 2021
Undergraduate Researcher

- Conducted thermo-mechanical modeling in COMSOL to simulate organ freezing dynamics to minimize tissue fracture, utilizing parametric sweeps to validate simulation fidelity against experimental data

CMU Computational Bio-Modeling Lab | Pittsburgh, PA — Sep 2020 - Dec 2020
Undergraduate Researcher

- Accelerated simulation of reaction-diffusion systems by 300x using a 4-layer Convolutional Neural Network (CNN) in Python, demonstrating data-driven optimization of physics models

PROFESSIONAL EXPERIENCE

Alcon | Fort Worth, TX — Jul 2022 - Jul 2025
Medical Device Design Engineer

- Designed and validated a novel automated intraocular lens injector mechanism that eliminated manual handling variability during cataract surgery, securing 95% positive feedback and elevating the project to a strategic priority
- Engineered parametric CAD architectures for the next-generation product family, establishing a scalable design framework that streamlined configuration for over 500 variants

Alcon | Belmont, CA — Jun 2021 - Aug 2021
R&D Intern

- Validated simulation fidelity by correlating FEA models with real-world sensor data, reducing the sim-to-real gap in deformation and optical response analysis