Kyuwon Weon

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EDUCATION

Northwestern University | Evanston, IL — December 2026 (expected)
Master of Science in Robotics

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

SKILLS

Robotics: ROS 2, MoveIt, TF2, OpenCV, Gazebo, CoppeliaSim, RViz, SLAM
Control: State-Space Modeling, Lagrangian Dynamics, PID, Forward/Inverse Kinematics, Motion Planning
Software: C++, Python, PyTorch, Linux (Ubuntu), Git, Unit Testing, MATLAB
Mechanical: SolidWorks, PTC Creo, FEA (ANSYS, COMSOL), Design for Six Sigma, DFM, Rapid Prototyping

EXPERIENCE

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

- Designed and validated a novel intraocular lens injector with Creo and rapid prototyping, eliminating manual manipulation of the lens and securing 95% positive feedback from surgeons
- Led creation of parametric CAD architectures for next-gen intraocular lenses in PTC Creo, establishing a scalable design framework for over 500 product variants

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

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

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

- Validated COMSOL thermo-mechanical models for cryopreservation against experimental data using parametric sweeps

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

- Generated synthetic training datasets using a C++ Finite Element Method (FEM) solver, converting raw simulation outputs into HDF5 format for ML integration
- Trained a 4-layer CNN in PyTorch to reproduce reaction-diffusion predictions, verifying the model's 300x acceleration over traditional methods

PROJECTS

PenPal – VLM-Guided Robot | *Motion Planner* | Evanston, IL — Nov 2025 - Present

- Co-developed a VLM-driven autonomous writing system that answers questions using ROS 2, Python, and Git for version control and code reviews
- Implemented constrained motion planning in MoveIt to generate pen gripping and writing trajectories, while optimizing force/torque safety thresholds to permit contact-rich writing on a dynamic, human-held whiteboard
- Synchronized motion execution with the team's perception stack (RealSense/AprilTags) to compensate for real-time human-induced board movements

Autonomous Pen Grabbing Manipulator | Evanston, IL — Sep 2025 - Sep 2025

- Programmed a PincherX-100 arm in Python to autonomously detect and grasp dynamic targets using OpenCV and RealSense

Anterior Cervical Plate Optimization | Pittsburgh, PA — Sep 2021 - May 2022

- Redesigned a Medtronic anterior cervical plate in SolidWorks, utilizing ANSYS topology optimization to reduce mass by 20% while maintaining structural integrity