Injae Jun

Seoul, Korea | jij0529@snu.ac.kr | Homepage | LinkedIn

Education

BS **Seoul National University (SNU)**, Mechanical Engineering — Mar 2020 – Present *(Expected Aug. 2026)*

- GPA: 3.77/4.0
- **Coursework:** Mechatronics (A+), Mechanical Product Design (A+)
- 2 years of absence due to military service

Research Interests

- Soft Robotics (Novel Actuation Mechanisms, Modeling & Control)
- Wearable Robotics & Exoskeletons (Assistive Devices, Prosthetics, Rehabilitation)
- Mechanism Design & Optimization (Bio-inspired Mechanisms, Compliant Mechanisms)

Research Experience

SOFT ROBOTICS & BIONICS LAB (SRBL) — Jul 2024 – Present
Research Intern – *Advisor: Prof. Yong-Lae Park* — Research Link

- Developed a compact **thumb opposition wearable** for patients with thenar muscle dysfunction, integrating tendon-driven and rack–pinion actuators with ergonomic hardware design.
- Fabricated and integrated EGaIn-based stretchable sensors for motion sensing.

Healthcare Robotics Lab (HeRo Lab) — Jan 2025 – Present
Research Intern – *Advisor: Prof. Amy Kyungwon Han*

- Researched twisted string actuators and designed a **novel bistable transmission mechanism** to enhance their force and speed output.
- Investigated human hand musculature and grasping biomechanics, applying findings to the design and prototyping of a prosthetic hand system.

Projects

Auto Balancing Case — Project Link

- Prototyped a self-balancing luggage system that reduces wrist load using load-cell sensing, differential actuation, and reinforcement learning control.
- Validated robustness through PhysX-based simulation and Sim2Real transfer to hardware.
- Tools Used: Fusion 360, Arduino, IsaacSim, RSL-RL (PPO), Python

Auxetic Structure Optimization for Crash Box — Project Link

- Modeled auxetic unit cells and optimized their geometry using Grid Search, CMA-ES, and FEA to maximize crash energy absorption.
- Conducted compression and impact tests on 3D-printed TPU prototypes, achieving up to 26.5% improvement in energy absorption.
- Tools Used: MATLAB, Python, Finite Element Analysis, CMA-ES, 3D Printing

Reverse Engineering and Improvement of the FCX24 Lemur — Project Link

- Analyzed chassis strength with ANSYS, drivetrain/transmission gear ratios, and suspension dynamics of an RC car model.

- Improved design by shifting COM and tuning suspension damping; fabricated a custom damper and experimentally measured damping coefficient.
- Tools Used: ANSYS, Fusion 360, MATLAB, Zaber, Force Gauge

Multivariate Time Series Forecasting using XGBoost & Neural Networks Project Link

- Predicted next-day oil temperature on the ETT dataset by redefining the target as daily difference, achieving top 1% accuracy among 200 participants.
- Tools Used: Python, XGBoost, PyTorch, Scikit-learn, Pandas, NumPy

Leadership / Extracurricular activities

SNU Computer Study Club (SCSC) Mar 2020 – Aug 2020

- Participated in Python and C programming study groups; developed a Minesweeper game project in C.

Run to You – SNU Baja/Formula 1 Team Apr 2020 – Oct 2021
Team Leader – *Baja Chassis Team*

- Led the team in designing and manufacturing an optimized chassis for vehicle performance, and participated in a national student automobile competition(KSAE).

Republic of Korea Army Mar 2022 – Sep 2023
Squad Leader – *Sergeant, 21st Aviation Brigade*

- Led a 7-soldier squad while supporting maintenance and operation of utility helicopters, ensuring unit readiness and participation in multiple field training exercises.

DB Business Management Competition Jan 2024
1st Prize – *Business Performance*

- Gained experience in corporate management (inventory, HR, finance) and achieved top performance in a business simulation competition.

Scholarships

Merit-based Scholarship **Spring 2025**
Department of Mechanical Engineering *Seoul National University*

Skills

Programming: Python, Matlab, C/C++, PyTorch

Software & Hardware: CAD (SolidWorks, Blender), ANSYS, Arduino, Raspberry Pi, 3D Printing, Laser Cutting

Languages: Korean (Native), English (Fluent, TOEFL 107)