

EDUCATION

Chosun University

B.S. in Electrical Engineering

S. Korea

Mar. 2022 – Present

- Relevant Coursework
Control Engineering, Digital Electronics, Programming Languages and Practice, Calculus, Engineering Mathematics 1,2, Electrical Machines 1,2, Circuit Theory, Basic Circuit Laboratory, Basic Electronic Circuits, Advanced Electronic Devices and Circuits, Statics, Manufacturing Process

PROJECT EXPERIENCE

Chosun University Student Automobile Research Association

Chosun University

BLDC Three-Phase Drivetrain Transition & Control Verification

Oct. 2025 – Present

- Led the transition from brushed DC drivetrain to BLDC + three-phase inverter system.
- Analyzed inverter architecture, switching devices, current control loops, startup behavior, and protection strategies.
- Built test setups to analyze BLDC dynamic responses such as startup torque overshoot, current-limited operation, and sensor delays.
- Reconfigured battery–inverter–motor interfaces to ensure proper commutation and sensing consistency.

EV Powertrain Throttle Response Control & Nonlinear Input Compensation

Aug. 2025 – Oct. 2025

- Investigated nonlinearities in throttle-to-torque behavior, including pedal-sensor dead-zone, sensor nonlinearity and drivetrain compliance.
- Optimized control parameters, specifically limiting the throttle slew rate (dl/dt) to mitigate torque ripple and prevent current spikes during rapid acceleration.
- Reconstructed the throttle-torque mapping to suppress torque spikes and stabilize acceleration profiles under strict competition constraints (power overshoot disqualification rule).
- Eliminated throttle dead-zone and stabilized initial sensitivity through electronic calibration and mechanical adjustments, including pedal end-stop alignment and return-spring preload tuning.
- Conducted integrated control-sensing-mechanical calibration to reproduce driver-intended motion reliably under real-world uncertainties.

Custom Measurement System Development (Sensing, PCB, Data Acquisition)

Aug. 2025 – Oct. 2025

- Designed and revised current/voltage measurement PCBs using EasyEDA; performed component-level debugging, soldering, and hardware repair.
- Constructed a measurement platform for transient dynamics analysis including ripple, current peaks, and torque response.
- Developed Arduino-based speed/RPM module for early prototyping and integrated the module with vehicle dynamic testing.
- Produced standardized wiring diagrams and sensing layouts (AutoCAD), enabling consistent experimental conditions for motion analysis.

High-Voltage System Redesign & Dynamic Response Optimization

Jul. 2025 – Oct. 2025

- Mitigated PWM-induced switching noise by relocating the reference ground point (M- à B-), reducing voltage ripple from $\pm 20V$ to $\pm 0.3V$ and enhancing sensor accuracy.
- Improved torque estimation accuracy and power-limit adherence by correcting sensing-induced dynamic errors.
- Analyzed converter behavior such as current loop delay, voltage ripple propagation, and torque rise-time (dl/dt) under different controller parameter sets.
- Conducted over 30 iterative driving sessions to validate dynamic response and optimize real-world motion consistency.

RESEARCH EXPERIENCE

Advanced Energy Electrical Materials Lab
Research in Battery Materials & Electrochemical Systems

Chosun University
Mar. 2023 – Feb. 2024

- Fabricated laboratory-scale 2032 coin cells, including slurry formulation, electrode coating, calendaring, punch cutting, and cell stacking/assembly.
- Prepared anode slurry using: artificial graphite (AM), Super P (conductive agent), CMC/SBR dual binder system, DI water solvent — tuned viscosity, mixing order, and solid ratio.
- Studied electrochemical fundamentals, ranging from general chemistry to electrochemistry, and reviewed Li-ion reaction mechanisms, SEI formation, and degradation.
- Summarized multiple battery research papers; presented weekly summaries and exchanged technical feedback with graduate researchers.

LEADERSHIP & PROJECT MANAGEMENT EXPERIENCE

Chosun University Student Automobile Research Association

Chosun University
Sep. 2023 – Oct. 2025

Electric Vehicle & Baja Powertrain Team Leader

- Recruited and trained new wiring-team members.
- Developed a standardized wiring manual for team members.
- Strengthened team cohesion through organizing regular team-building activities and retreats to foster a collaborative environment.

Electric Vehicle Team Leader

Jan. 2024 – Dec. 2024

- Assigned tasks based on skill level and training in tool usage.
- Initiated and negotiated international motor procurement, achieving ~50% cost reduction and managing all documents, quotations, and customs processes independently.
- Secured and managed a 1,000,000 KRW technical project fund, overseeing vendor communication, quotations, purchasing, and full documentation.

CERTIFICATES

- Engineer Electricity
- ADsP (Advanced Data Analytics Semi-Professional)

AWARDS

- Bronze Award, KSAE (Korea Society of Automotive Engineers) Baja Competition (2024)
- Bronze Award, KFGP (Korea Formula Grand Prix) Baja Competition (2024)
- Gold Award & Silver Award, KFGP Baja Competition (2023)
- Bronze Award, KFGP EV Competition (2023)
- Encouragement Award, KSAE e-Mobility Competition (2022)
- Silver Award, KSAE Baja Competition (2022)
- Grand Prize, GICON (Gwangju Information & Culture Industry Promotion Agency) IndieStars 7th (2022)
- Silver Award, Chosun University Software Idea Competition (2022)

ADDITIONAL SKILLS

Language	Korean (Native), English (Basic conversational)
IT Skills	Control & Simulation: MATLAB, Simulink (Intermediate) Programming: C, Python (Basic) Mechanical: AutoCAD (Proficient), Inventor (Basic) Electronics/PCB: EasyEDA General Tools: Word, PowerPoint (Intermediate), Excel (Basic)