

# KYOUNGMO KOO

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## EDUCATION

### University of Michigan, College of Engineering

Ann Arbor, MI

*Masters of Science in Electrical & Computer Engineering*

*Aug 2023 – June 2025 (Expected)*

- **Cumulative GPA:** 4.00/4.00
- **Relevant Coursework:** Power Electronics, Linear System Theory, Nonlinear System & Control

### Seoul National University, College of Engineering

Seoul, KR

*Bachelor of Science in Electrical & Computer Engineering (2 years military leave of absence)*

*Mar 2017 – June 2023*

- **Cumulative GPA:** 3.86/4.30 | **Major GPA:** 3.92/4.30
- **Relevant Coursework:** Introduction to Circuit Theory and Laboratory, Introduction to Electronic Circuits and Laboratory, Digital Integrated Circuits, Analog Integrated Circuits, Semiconductor Devices, Digital Logic Design and Lab, Signals and Systems, Introduction to Communications, Design Project for Electrical Devices & Systems, Electromechanics

## AREA OF INTERESTS

- Embedded Systems, Digital Communication, Power Electronics, and Electrical Devices / Robotics

## RESEARCH EXPERIENCES

### UMICH: Image-Guided Medical Robotics Lab

Ann Arbor, MI

*Research Intern (Advisor: Prof. Mark Draelos)*

*Aug 2023 – Present*

- Working on developing a digital interface for Galvanometer controller to enhance the quality of OCT(Optical Coherence Tomography) scan
- Established stable bidirectional communication at a 48 kHz frame frequency utilizing SPI, SAI, and UART protocols
- Evaluated and accounted for various delays to ensure precise timing alignment within the embedded system
- Employed Direct Memory Access (DMA) and callback functions for independent operation management

### SNU: Applied Superconductivity Lab

Seoul, KR

*Research Intern (Advisor: Prof. Seungyong Hahn)*

*July 2021 – July 2023*

- Designed internal circuitry of superconductivity-applied electromechanical devices using MATLAB, LTSPICE, and COMSOL Multiphysics
- Conducted simulation and experimental study of no-insulation high-temperature superconductor applied magnetohydrodynamic ship (World First 1<sup>st</sup> NI HTS MHD ship)
- Proposed the use of NI HTS applied 10kW scale wave energy converter design considering the nature of mechanical, thermal, and electromagnetic stability

## PAPER / MANUSCRIPT

[P1] Conceptual Design and Analysis of No-Insulation High- Temperature Superconductor Tubular Wave Energy Converter  
**Kyoungmo Koo**, Wonseok Jang, Jeonghwan Park, Jaemyung Cha and Seungyong Hahn  
*ArXiv*

[P2] Design, Construction, and Operation of Liquid Nitrogen Cooled MHD Miniature Ship with No-Insulation High Temperature Superconductor Magnet  
**Kyoungmo Koo**, Chaemin Im, Geonyoung Kim, Jaemin Kim, Seungyong Hahn  
*IEEE Transactions on Transportation Electrification (Under Revision)*

[P3] 100MW class large-scale green hydrogen production plant construction project through high-temperature superconducting magnet-based large-capacity wave power generation  
Wonseok Jang, **Kyoungmo Koo**, Jaeseok Bang  
*KHLA (Korea Hydropower Industry Association) thesis competition 2021, 3rd place (Non-Archival)*

## PROFESSIONAL EXPERIENCES

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### BorgWarner

Electrical Engineering Intern(Expected)

Kokokmo, IN

May 2024 – Aug 2024

### Snek

Marketing & Data Analyst Intern

Seoul, KR

Apr 2021 – June 2021

- Increased the paying user conversion rate by analyzing the spending patterns of monthly premium users using Python
- Proposed a targeted Google advertisement on interested potential customers and inactive users to create a user traffic
- Contributed to a milestone record of 160K+ total users and 100K+ MAU on the platform

### Nrise

Marketing & Data Analyst Intern, Project Manager

Seoul, KR

Jan 2021 – Feb 2021

- Optimized push message notifications by conducting user segmentation and customizing tailored messages
- Identified effective buzzwords on notifications by analyzing user click-rate using SQL and Python
- Led a group of 10+ project members and successfully communicated with the management team

### Diveroid

Marketing & Data Analyst Intern

Seoul, KR

Oct 2020 – Jan 2021

- Deployed a \$20K+ marketing account in over 50+ countries by executing targeted advertising on social media platforms
- Analyzed social media advertisements' click-through rates to find a pattern of non-organic users and assess the effectiveness of the marketing campaign
- Raised \$200K+ capital from Kickstarter by implementing a data-based growth marketing strategy

## MILITARY & EXTRA-CURRICULAR ACTIVITIES

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### Michigan Autonomous Aerial Vehicles (MAAV)

Embedded System team

Ann Arbor, MI

Aug 2023 – Oct 2023

- Students-led organization specializing in the design and manufacturing of autonomous aerial vehicles, with participation in the International Aerial Robotics Competition (IARC) to showcase achievements
- Designed PCBs integrated with microprocessors and sensors using Altium and STM32 Cube IDE
- Acquired knowledge of pin functionalities in microprocessors and developed proficiency in communication protocols used in drone circuitry.

### Republic of Korea Army (ROKA), Missile Strategic Command

Sergeant, Satellite Operation Specialist

Yang-Pyeong, KR

Aug 2018 – Mar 2020

- Connected the satellite communication systems between front-line missile battalions and ROK Joint Chiefs of Staff
- Awarded the excellence of leadership for leading 10+ squads to complete a battalion-wide combat training successfully

### SNU: Growth Hackers

Fellowship Workshop Head, Public Relations Group Head

Seoul, KR

Sept 2020 – June 2021

- Educated 20+ selected underclassmen fellows on the basics of Python and data analysis for the entire academic semester
- Marketized Growth Hackers to external organizations through the usages of Youtube and LinkedIn

### SNU: Student Venture

Proptech Industry Group Head

Seoul, KR

Mar 2020 – June 2020

- Collaborated with 20+ members and presented an analysis of startup business models during weekly meeting
- Spearheaded a partnership project with Prop Tech Forum Korea to conduct a university-wide hackathon

### SNU: Silicon Valley Entrepreneurship Fellowship Team

Fellow

Stanford, CA

June 2018 – July 2018

- Selected out of 100+ competitive SNU applicant pools to participate in a 2 month entrepreneurial fellowship program
- Presented a business model with deep-learning based automated advertisement design to Stanford University professors

## Codes

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[Github](#)

## SKILLS

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**Languages :** Korean(Native), English(Proficient), Chinese (Limited)

**Circuit Design tools :** Altium, KiCad, Verilog, LTSPICE, HSPICE, PLECS, LabVIEW

**Simulation tools :** LTSPICE, HSPICE, PLECS, Matlab, Simulink, Comsol Multiphysics

**Programing languages :** Python, C, C++, Java, MicroPython(Arduino), HTML/CSS/Javascript

**Awards & Honors:** ROKA Combat-Power Training Camp Best Trainee Award, ROKA Battalion Tactical Training Excellence Award, KSSC Oral Presentation 2022 (The Korean Society of Superconductivity and Cryogenics)