

Hyeongmeen Baik

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RESEARCH INTEREST

Electric drives, Motor control, Machine design, Power electronics, Power systems, Modeling, Optimization, Machine learning

EDUCATION

Mar 2017 — Feb 2023 (expected) **Yonsei University** Seoul, Korea
B.S., Electrical & Electronic Engineering
Cumulative GPA of 4.09 / 4.3 (Class rank: 8 / 333)
Thesis: Short-term Photovoltaic Power Forecasting Model Based on Artificial Neural Network and Meteorological Factors
Adviser: Jung-wook Park

HONORS AND AWARDS

Scholarship for Academic Excellence (Full-tuition), Yonsei University	Fall-2022, Spring-2021
Scholarship for Academic Excellence (Half-tuition), Yonsei University	Spring-2022, Fall-2021
Highest Honors (Top 1% of department), Yonsei University	Spring-2022, Fall-2020
High Honors (Top 3% of department), Yonsei University	Spring-2021, Fall-2020
Honors (Top 10% of department), Yonsei University	Fall-2021

RESEARCH EXPERIENCE

Apr 2022 — Sep 2022 **Design & Control Laboratory, KoreaTech** Cheonan, Korea
Research Intern (Adviser: Professor Ye gu Kang)

- Led project on measurement system of rotary and x-y displacement position using direct-quadrature-zero transformation based on linear Hall-effect sensors and applied for patent.
- Developed prototypes for estimation of x-y and rotary position, using FEMM for finite element analysis of optimized rotor geometry, EagleCAD for printed circuit board design, Fusion360 for rotor and stator design, and Code Composer studio to set up microcontroller (Hercules RM57Lx) for analog-to-digital converters and post-processing.
- Researched linear Hall sensor-based rotation angle measurement system economically replacing magnetic resolver while maintaining peripheral circuits of existing magnetic resolver, and designed optimal rotor geometry of interior permanent magnet motor using differential evolution algorithm.
- Evaluated performance of machine design capable of operating both as generator and as motor on ship.
- Participated in the undergraduate project, reverse engineering of switching mode power supply, as teaching assistant and covered basic power electronics, LTspice simulation, and 3D CAD design.

Jan 2022 — Mar 2022 **Communication Signal Processing Laboratory, Yonsei University** Seoul, Korea
Research Intern (Adviser: Professor Chungyong Lee)

- Evaluated performances of communication system replaced by single Deep Learning network.
- Reviewed modulation schemes for communication and bit error rate performance of Orthogonal Frequency Division Multiplexing on multi or single path.

PATENTS

Hyeongmeen Baik, Ye gu Kang, "Hall Sensor Based Rotor Position Estimation System and Method", Korean Patent Application No. 10-2022-0060038 (2022)

TECHNICAL SKILLS**Advanced**

Matlab & Simulink, Verilog, PSpice, LTspice, EagleCAD

Intermediate

FEMM, Code Composer Studio, Python, C, C++, Fusion 360, EMTP-ATP

Beginner

Microchip studio

LANGUAGES**Highly proficient**

English (TOEFL iBT: 106/120)

Native speaker

Korean

MILITARY SERVICE

May 2018 — Jan 2020

Republic of Korea Army

Hwacheon, Korea

Served and discharged from ROK Army

as Chemical, Biological, Radiological, and Nuclear (CBRN), Sergeant.

REFERENCES**Ye gu Kang**

Assistant Professor

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Korea University of Technology & Education (KoreaTech)

<https://sites.google.com/view/design-and-control/>

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