

Heeseung Choi

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Education

Yonsei University, Seoul, South Korea 03/2020 - 02/2026
Bachelor of Engineering in Electrical and Electronic Engineering
GPA: 4.07/4.30

University of Georgia, GA, United States 08/2024 - 12/2024
Exchange Program
GPA: 4.00/4.00

Research Experience

Undergraduate Researcher Seoul, South Korea
Yonsei University — Advisor: Prof. Byung-Wook Min 01/2025 – Present

- Led an undergraduate capstone on a 1-bit Phase Shifting Switch Module for Reconfigurable Intelligent Surface, optimizing transistor sizing and matching networks to achieve low insertion loss and a stable 180° phase shift over a wide bandwidth.
- Awarded the IEEE AP-S Undergraduate Research Scholarship; presented at KIEES (2025).
- Now advancing to 1.5-/2-bit switch modules to cut quantization loss and improve beam control.

Conference

- [1] **Heeseung Choi and Byung-Wook Min**, “1-bit Phase Shifting Switch Module for Reconfigurable Intelligent Surface,” *The Korean Institute of Electromagnetic Engineering and Science (KIEES) Summer Conference*, Pyeongchang, South Korea, Aug. 2025. (Poster Presentation)

Awards & Scholarships

IEEE AP-S Undergraduate Summer Research Scholarship
IEEE Antennas and Propagation Society 06/2025 - 12/2025

- Selected among 102 applicants and awarded \$3,000.
- Research topic: BLANK

Korea-U.S. Technology Fields Exchange Program Scholarship
Korea Institute for Advancement of Technology 03/2024 - 12/2024

- Awarded to 90 selected engineering students; \$9,000 per semester.

Yonsei University Semiconductor Track Program Seoul, South Korea
Yonsei University

- Merit scholarship for top semiconductor students; ~\$1,000 per semester.

High Honors : Spring 2020, Spring & Fall 2023, Spring 2024, Spring 2025 Seoul, South Korea
Yonsei University

- Awarded to top 3% students each semester for outstanding achievement.

Skills

- **Tools:** Keysight ADS, HFSS, MATLAB, PSPICE/LTSPICE, VIVADO
- **Relevant Coursework:**
 - **Electromagnetism Track:** Electricity & Magnetism I/II, Microwave Engineering, Microwave Experiment, Antenna Engineering
 - **Communication Track:** Communication Theory, Communication Systems, Digital Signal Processing, Signals & Systems
 - **Microelectronics Track:** Electronic Circuits I/II, Physical Electronics

Project Experience

Infrared Sensor PCB Design

Seoul, Korea

PCB Design

- Designed and fabricated an infrared sensor using Eagle CAD.
- Created custom libraries and layouts, completed schematic and board design, and assembled the prototype after generating Gerber files.

Audio Equalizer Design

Seoul, Korea

Analog Circuit Design

- Built an audio equalizer using LPF, BPF, HPF, a summing amplifier, and a push-pull stage, simulating performance in PSpice beforehand.
- Implemented the design on a breadboard and added a volume controller for gain tuning.

FPGA-Based Barnsley Fern Visualization

Seoul, Korea

Digital System Design

- Implemented Barnsley Fern fractals on an LCD using the Pynq-Z2 and Verilog.
- Used FSM to adjust iteration count via buttons and rendered RGB pixel data by storing it in BRAM.

Patch Antenna Design

Seoul, Korea

Antenna & RF Matching

- Designed a 10 GHz microstrip patch antenna with an open-stub matching network.
- Performed CST EM modeling and Eagle CAD layout generation.

Digital Sequential Circuit Design: Vending Machine & 3-Way Traffic Controller

Seoul, Korea

Digital Logic / FSM

- Implemented a Moore-FSM vending machine that returns change first and then dispenses the product, synthesized from K-maps to a PLA/D-FF design.
- Built a T-junction traffic-light controller using a counter-based phase sequence with load/count gating; both designs validated in simulation.

Samsung Shining Star Program

Suwon, South Korea

Project Link — *Team Leader*

- Participated in the Samsung Shining Star Program, gaining knowledge of semiconductor technology through lectures and site visits.
- Led the team through tasks and interacted with professionals at Samsung Electronics.

Work Experience

Republic of Korea Army

Sacheon, South Korea

Sergeant

05/2021 - 11/2022

- Served as a military driver and awarded Outstanding Driver.

Extracurricular Activities

Yonsei Yacht Research Association - Yonsei Sailing Team

Seoul, South Korea

Administrative Officer

07/2023 - Present

- Collaborated with team members through sailing and training and managed club operations as Administrative Officer in the second year.