

# Dongrak Choi

## PROFILE

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- Ph.D. Student
- Department of Electrical and Computer Engineering, Seoul National University
- Ubiquitous Network Laboratory (NETLAB)
- Address: 304, BLDG 132, 1, Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea
- Mobile: +82-10-2205-8260
- Office: +82-2-880-8434
- Fax: +82-2-880-8414
- Email: drchoi@netlab.snu.ac.kr

## EDUCATION

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**Seoul National University**, Seoul, Republic of Korea Mar. 2023 – Present

- Ph.D. Student in Department of Electrical and Computer Engineering  
Advisor: **Prof. Saewoong Bahk**

**Yonsei University**, Seoul, Republic of Korea Mar. 2017 – Feb. 2023

- B.S. from Department of Electrical & Electronics Engineering; GPA 4.14/4.3

**Hana Academy Seoul**, Seoul, Republic of Korea Mar. 2014 – Feb. 2017

## RESEARCH INTERESTS

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- UAV-based network measurement
- Power line communication (PLC)
- Internet of Things (IoT)
- mmWave FMCW radar based application

## PUBLICATIONS

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### International Journals

- **Dongrak Choi**, Yubin Choi, Yonghoon Jeong, Jeongyeup Paek, and Saewoong Bahk, "D<sup>2</sup>-PLC: Holistic Design and Implementation of High-Datarate Duplex DC Power Line Communication Network", *IEEE Internet of Things Journal*, vol. 12, no. 21, pp. 45325-45340, 2025.
- Yongjae Yoo, Jihwan Suh, **Dongrak Choi**, Jeongyeup Paek, and Saewoong Bahk, "ASCEND: Altitude Selection for High-quality Cellular Connectivity on Drones", to appear in *IEEE Transactions on Vehicular Technology*, 2025.

### International Conferences

- **Dongrak Choi** and Saewoong Bahk, "Experimental Study on mmWave FMCW Radar for Detecting Objects beyond Transparent Barriers ", International Conference on ICT Convergence (*ICTC*), Jeju Island, Korea, Oct. 14-17, 2025.
- **Dongrak Choi**, Yonghoon Jeong, Yubin Choi, and Saewoong Bahk, "Demo: A Programmable High-Throughput Duplex DC-PLC Testbed for Power and Data Integration", The 33rd IEEE International Conference on Network Protocols (*demo*), Seoul, Korea, Oct. 19-22, 2025.

### Domestic Conferences

- **Dongrak Choi** and Saewoong Bahk, " A Study on Relay UAV Placement Algorithm for Cellular Shadow Area Connection", *The Summer Conference of the Korea Institute of Communications and Information Sciences (KICS)*, Jeju Island, Korea, Jun. 18 - 21, 2025.

- **Dongrak Choi** and Saewoong Bahk, "A Review of Research Trends and Future Directions in Power Line Communication Technology", *The Summer Conference of the Korea Institute of Communications and Information Sciences (KICS)*, Jeju Island, Korea, Jun. 19-22, 2024.
- **Dongrak Choi**, Yongjae Yoo, and Saewoong Bahk, "A Study on UAV-based Measurement and Analysis of Communication Performance in the Vicinity of Signal Shadow Areas", *The Winter Conference of the Korea Institute of Communications and Information Sciences (KICS)*, Pyeongchang, Korea, Jan.31-Feb.02, 2024.

## PATENT

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- Saewoong Bahk, Jihwan Suh, Yongjae Yoo, and **Dongrak Choi**, "Unmanned Aerial Vehicle for Estimating Cell Tower Location", Korean Patent 10-2025-01047306, Apr. 2025.
- Saewoong Bahk, Yongjae Yoo, **Dongrak Choi**, and Seungmin Choi, "High Speed Aerial Communication Device with Self Rotating Polarization Alignment", Korean Patent 10-2025-01047305, Apr. 2025.
- Saewoong Bahk, Jeongyeup Paek, Yongjae Yoo, **Dongrak Choi**, and Yubin Choi, "Drone Relay Deployment Device for High-Quality Data Transmission in Cellular Shadow Areas", Korean Patent 10-2024-0195602, Dec. 2025.
- Saewoong Bahk, Jeongyeup Paek, Jihwan Suh, Yongjae Yoo, and **Dongrak Choi**, "High Quality Cellular Connection Maintenance Device for Drones through Altitude Selection", Korean Patent 10-2024-0195601, Dec. 2025.

## RESEARCH PROJECTS

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**Research on Ultra Reliable Aerial Network framework Supporting High-density Urban Air Mobility** supported by the MSIT(Ministry of Science and ICT), Korea, under the ITRC(Information Technology Research Center) support program, supervised by the IITP(Institute of Information & Communications Technology Planning & Evaluation), Oct. 2023 – Present.

### Open LAN Human Resources Training Program

supported by Institute of Information & communications Technology Planning & Evaluation (IITP) under Open RAN Education and Training Program grant funded by the Korea government(MSIT)

## EXPERIENCES

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### Teaching Experience

Department of Electrical and Computer Engineering, Seoul National University

*Teaching Assistant*

- 430.469, Design of Network Protocols with Experiments, Seoul National University, Fall 2025.
- 400.018, Creative Engineering Design, Seoul National University, Fall 2024.
- 400.018, Creative Engineering Design, Seoul National University, Fall 2023.

### Startup Company "e.ut", Seoul, Korea

Aug. 2019 – Dec. 2022.

*Founding Member & Management Support Team*

- An universal fashion brand to remove barriers in clothing life

### Military Service, Korea

Mar. 2018 – Feb. 2020

*Social Service Personnel*

## HONORS AND AWARD

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### University Honors

- Honors, Yonsei University July. 2017
- Highest Honors, Yonsei University Feb. 2018
- Highest Honors, Yonsei University July. 2020

- Honors, Yonsei University

Feb. 2021

**The 8<sup>th</sup> Samsung Engineering Company Energy · Environment Research Competition** Nov. 2019

- Excellence Award

## **SKILLS**

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### **Language**

- Korean: Native
- English: Fluent
- German (Goethe Zertifikat B1)
- Chinese (HSK Level 4)

### **Computer Programming**

- C/C++, Python, Matlab

### **License**

- Pilot of Ultra Light Vehicle (Unmanned Multicopter/3<sup>rd</sup>), Korea Transportation Safety Authority