Dongrak Choi

PROFILE

- 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
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EDUCATION

Seoul National University, Seoul, Republic of Korea   Mar. 2023 – Present
- Ph.D. Student in Department of Electrical and Computer Engineering
- Advisor: **Prof. Saewoong Bahk**
- GPA: 4.09/4.30

Yonsei University, Seoul, Republic of Korea   Mar. 2017 – Feb. 2023
- B.S. from Department of Electrical & Electronics Engineering
- GPA 4.14/4.30

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

RESEARCH INTERSTS

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

PUBLICATIONS

International Journals
- **Dongrak Choi**, Yubin Choi, Yonghoon Jeong, Jeongyeup Paek, and Saewoong Bahk, "D²-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
- Youngmin Kim, **Dongrak Choi**, and Saewoong Bahk,   "An Advanced DC-PLC Architecture for Smart Display Systems" *IEEE ICCE 2026*, Dubai, UAE, Feb 3-5, 2026.
- Sunkee Baik, **Dongrak Choi**, and Saewoong Bahk, "Towards Accurate Wi-Fi 6E-based Liquid Sensing in a Static Environment ", International Conference on ICT Convergence (*ICTC*), Jeju Island, Korea, Oct. 14-17, 2025.
- **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

- 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.

EXPERIENCES

3GPP Standardization Delegate   Jan. 2026 – Present
Seoul National University, Republic of Korea

Startup Company "e.ut", Seoul, Republic of Korea   Aug. 2019 – Dec. 2022
Founding Member & Management Support Team
- An universal fashion brand to remove barriers in clothing life

Military Service, Seoul, Republic of Korea   Mar. 2018 – Feb. 2020
Social Service Personnel

RESEARCH PROJECTS

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 RAN 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), Sep. 2024 – Present.

TEACHING ASSISTANT

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

PROFESSIONAL ACTIVITIES

Paper Reviewer
IEEE GLOBECOM, IEEE ICC, IEEE INFOCOM

HONORS AND AWARD

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 8th Samsung Engineering Company Energy · Environment Research Competition   Nov. 2019
- Excellence Award

SKILLS

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 (Unmmaned Multicopter/3rd), Korea Transportation Safety Authority