

Jae-Ho Choi

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RESEARCH INTEREST

- **Wireless Sensing**

- Radar Signal Processing
- RF-Based Indoor Localization
- RF-Based Crowd Counting
- RF-Based Health Monitoring
- SAR Image Detection / Classification

- Machine/Deep Learning for RF Data

- Radio-Centric Network, Learning scheme
- Clutter-Invariant Learning
- Data-Efficient Learning
- Domain Adaptation

- **Sensor Fusion**

- Multi-Modal Learning
- Sensor Calibration

* RF: Radio Frequency, SAR: Synthetic Aperture Radar

EDUCATION

Ph.D., Dept. of Electrical Eng., POSTECH, Pohang, Korea

Feb. 2019 – present

GPA: 3.95/4.3

Advisors: Prof. Kyung Tae Kim

M.S., Dept. of Electrical Eng., POSTECH, Pohang, Korea

Feb. 2017 – Feb. 2019

GPA: 3.73/4.3

Advisor: Prof. Kyung Tae Kim

B.E., Dept. of Computer Sci., Korea Univ., Seoul, Korea

Mar. 2011 – Feb. 2017

GPA: 4.12/4.5, Major GPA 4.29/4.5

Advisor: Prof. Seong Deok Cha

PROFESSIONAL EXPERIENCE

Research Assistant, POSTECH

Feb. 2017 – present

Intelligent Radar Signal Processing Lab.

Internship, Samsung Electronics

Jun. 2016 – Aug. 2016

Memory Division, Flash Circuit Design Team

HONOR & AWARD

- Feb, 2022. **Excellence Prize**, *POSTECH-EE Outstanding Research Award*.
- Oct, 2021. **Encouragement Prize**, *KAI Aerospace Paper Award*.
- Nov, 2020. **Silver Prize**, *Electromagnetic Paper Award Sponsored by Korean Institute of Electromagnetic Engineering and Science/Korea Communication Agency*.
- Nov, 2019. **Grand Prize**, *Electromagnetic Paper Award Sponsored by Korean Institute of Electromagnetic Engineering and Science/Korea Communication Agency*.
- Aug, 2018. **Best Paper Award (IEEE Seoul Chapter)**, *2018 KIEES Summer Conference*.

PUBLICATION (INTERNATIONAL ONLY)

International Journal & Conference

- [1] **J.-H. Choi**, K.-B. Kang, K.-T. Kim, "Fusion-rPPG: Video-RF Fusion Transformer for Advanced Remote Physiology Measurement," *AAAI Conf. Artif. Intell. (AAAI)*, Submitted.
- [2] **J.-H. Choi**, J.-E. Kim, K.-T. Kim, "Radar-Based People Counting under Heterogeneous Clutter Environments," *IEEE Internet Things J. (IoTJ)*, Submitted.
- [3] N.-H. Jeong, M. Kim, **J.-H. Choi**, K.-T. Kim, "Beam Scheduling of Maritime Multifunctional Radar Based on Binary Integration," *IEEE Sensors J. (SensJ)*, Submitted.
- [4] **J.-H. Choi**, K.-B. Kang, K.-T. Kim, "Remote Respiration Monitoring of Moving Person Using Radio Signals," *Proc. Eur. Conf. Comput. Vis. (ECCV)*, Oct. 2022.
- [5] N.-H. Jeong, **J.-H. Choi**, G. Lee, J.-H. Park, K.-T. Kim, "Feature Selection for SAR Target Discrimination and Efficient Two-Stage Detection Method," *Remote Sens.*, Aug. 2022. (2021 IF: 5.349)
- [6] **J.-H. Choi**, J.-E. Kim, K.-T. Kim, "Deep Learning Approach for Radar-Based People Counting," *IEEE Internet Things J. (IoTJ)*, May. 2022. (2021 IF: 10.238)
- [7] **J.-H. Choi**, M.-J. Lee, N.-H. Jeong, G. Lee, K.-T. Kim, "Fusion of Target and Shadow Regions for Improved SAR ATR," *IEEE Trans. on Geosci. Remote Sens. (TGRS)*, Apr. 2022. (2021 IF: 8.125)
- [8] K.-B. Kang, **J.-H. Choi**, B.-L. Cho, J.-S. Lee, K.-T. Kim, "Analysis of Micro-Doppler Signatures of Small UAVs Based on Doppler Spectrum," *IEEE Trans. Aerosp. Electron. Syst. (TAES)*, Oct. 2021. (2021 IF: 3.491)
- [9] I.-O. Choi, M. Kim, **J.-H. Choi**, J.-K. Park, S.-H. Park, K.-T. Kim, "Robust Cardiac Rate Estimation of an Individual," *IEEE Sensors J. (SensJ)*, Jul. 2021. (2021 IF: 4.325)
- [10] M.-J. Lee, N.-H. Jeong, **J.-H. Choi**, G. Lee, K.-T. Kim, "A Study on the Synthesis of MSTAR SAR Images for Change Detection Experiments," *Int. Symp. Remote Sens.*, May. 2021.
- [11] **J.-H. Choi**, J.-E. Kim, K.-T. Kim, "People Counting Using IR-UWB Radar Sensor in a Wide Area," *IEEE Internet Things J. (IoTJ)*, Apr. 2021. (2021 IF: 10.238)
- [12] J.-E. Kim, **J.-H. Choi**, K.-T. Kim, "Robust Detection of Presence of Individuals in an Indoor Environment using IR-UWB Radar," *IEEE Access*, Jun. 2020. (2021 IF: 3.476)
- [13] **J.-H. Choi**, J.-E. Kim, N.-H. Jeong, S.-H. Jin, K.-T. Kim, "Accurate People Counting Based on Radar: Deep Learning Approach," *IEEE Radar Conf. (RadarConf)*, Sep. 2020.

PATENT (DOMESTIC)

- RADAR-BASED DETECTION SYSTEM USING DOMAIN ADAPTATION, {KR Patent pending; 1020200182698}.
- PEOPLE COUNTING APPARATUS BASED ON RADAR USING DEEP LEARNING, {KR Patent granted; 1022801900000}.

PARTICIPATED PROJECT

RF-Based Indoor Localization

Jun. 2020 – present

Sponsored by POSTECH, Korea

- Collecting indoor human data based on Camera-RF calibrated system
- Developing indoor localization platform for smart campus using RF-based IoT technology

Sensor Fusion

Apr. 2020 – Mar. 2022

Sponsored by Agency for Defense Development, Korea

- Collecting multi-sensory (EO-IR-SAR) dataset for drone-borne classification/detection
- Developing sensor fusion algorithm for complementary fusion among multi-modal inputs

RF Sensing in Challenging Scenarios

Jul. 2019 – present

Sponsored by National Research Foundation, Korea

- Developing RF sensing solutions from heterogeneous clutter conditions
- Developing contactless health monitoring systems from moving individuals

RF-Based Crowd Counting

Jul. 2017 – Aug. 2018

Sponsored by Samsung Electronics, Korea

- Developing RF-based crowd counting system based on machine/deep learning framework

ACADEMIC SERVICE

Journal Reviewer

IEEE Internet of Things Journal (**IoTJ**)
IEEE Sensors Journal (**SensJ**)
IEEE Transactions on Aerospace and Electronic Systems (**TAES**)
IEEE Access
Remote Sensing

Conference Reviewer

European Conference on Computer Vision (**ECCV**)

TEACHING

Teaching Assistant, POSTECH

Fall 2021

AI-Based Energy Engineering (Grad. course)

Teaching Assistant, POSTECH

Spring 2017

Micro-processor (Undergrad. course)

REFERENCE

Prof. Kyung Tae Kim, Full professor, POSTECH

Relationship: MS & Ph.D. advisor

E-mail: kkt@postech.ac.kr

Prof. Sung Ho Kim, Full professor, Yeong-Nam University

Relationship: Collaborator

E-mail: sunghokim@yu.ac.kr

Prof. In Oh Choi, Assistant professor, Korea Maritime University

Relationship: Collaborator

E-mail: inohchoi@kmou.ac.kr