Jae-Ho Choi

Doctoral Student, Dept. of EE, POSTECH

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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

[J1] **J.-H. Choi**, J.-E. Kim, K.-T. Kim, "Radar-Based People Counting under Heterogeneous Clutter Environments," *IEEE Internet Things J. (IoTJ)*, Submitted.

[J2] 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.*, Submitted.

[J3] 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.

[J4] **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)

[J5] **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)

[J6] 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)

[J7] 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)

[J8] **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)

[J9] 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)

Selected International Conference

[C1] **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.

[C2] **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.

[C3] 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.

[C4] **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 pended; 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

Prof. Min Seok Kang, Assistant professor, Kong-Ju University
Relationship: Collaborator
E-mail: mskang@kongju.ac.kr