

# Jihwan Bang

## AI Researcher @ Qualcomm AI Research

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## Education

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**M. S., School of Electrical Engineering**    📅 Mar 2017 - Feb 2019  
Korea Advanced Institute of Science and Technology (KAIST)    📍 Daejeon, South Korea

**B. S., School of Electrical Engineering and Math Science (Dual Degree)**    📅 Mar 2012 - Feb 2017  
Korea Advanced Institute of Science and Technology (KAIST)    📍 Daejeon, South Korea

## Research Interests

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**Data AI:** Continual Learning, Active Learning, Semi-Supervised Learning, Robust Learning from Noisy Data

**Vision AI:** Face Recognition, Face Anti-Spoofing, Portrait Segmentation, Zero-Shot Object Detection

**Language AI:** Parameter Efficient Fine-tuning, On-device Language Model

## Work Experience

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**Qualcomm AI Research**    📅 Apr 2023 - present  
*Senior AI Researcher*    📍 Seoul, South Korea

**Naver Clova AI**    📅 Mar 2019 - Apr 2023  
*AI Researcher*    📍 Seongnam, South Korea

## Publications

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### Conferences Published

- C1. **Jihwan Bang**, Sumyeong Ahn and Jae-Gil Lee, “*Active Prompt Learning in Vision Language Models*”, CVPR 2024.
- C2. **Jihwan Bang**, Hyunseo Koh, Seulki Park, Hwanjun Song, Jung-Woo Ha and Jonghyun Choi, “*Online Continual Learning on a Contaminated Data Stream with Blurry Task Boundaries*”, CVPR 2022.
- C3. **Jihwan Bang\***, Heesu Kim\*, YoungJoon Yoo, Jung-Woo Ha and Jonghyun Choi, “*Rainbow Memory: Continual Learning with a Memory of Diverse Samples*”, CVPR 2021.
- C4. Doyoung Kim, Dongmin Park, Yooju Shin, **Jihwan Bang**, Hwanjun Song and Jae-Gil Lee, “*Adaptive Shortcut Debiasing for Online Continual Learning*”, AAAI 2024.
- C5. Dahuin Jung, Dongyoon Han, **Jihwan Bang** and Hwanjun Song, “*Generating Instance-level Prompts for Rehearsal-free Continual Learning*”, ICCV 2023 (Oral paper).
- C6. Dong Bok Lee, Seanie Lee, Kenji Kawaguchi, Yunji Kim, **Jihwan Bang**, Jung-Woo Ha and Sung Ju Hwang, “*Self-Supervised Set Representation Learning for Unsupervised Meta-Learning*”, ICLR 2023.
- C7. Hyunseo Koh, Minhyuk Seo, **Jihwan Bang**, Hwanjun Song, Deokki Hong, Seulki Park, Jung-Woo Ha and Jonghyun Choi, “*Online Boundary-Free Continual Learning by Scheduled Data Prior*”, ICLR 2023.
- C8. Dongmin Park, Yooju Shin, **Jihwan Bang**, Youngjun Lee, Hwanjun Song, Jae-Gil Lee “*Meta-Query-Net: Resolving Purity-Informativeness Dilemma in Open-set Active Learning*”, NeurIPS 2022
- C9. Hyojin Park, Lars Sjosund, YoungJoon Yoo, Nicolas Monet, **Jihwan Bang** and Nojun Kwak, “*Sinet: Extreme lightweight portrait segmentation networks with spatial squeeze module and information blocking decoder*”, WACV 2020.

- C10. Hoyong Choi, **Jihwan Bang**, Namjo Ahn, Jinhwan Jung, Jungwook Choi, Soobum Park and Yung Yi, “CH-MAC: A Cluster-based, Hybrid TDMA MAC Protocol over Wireless Ad-hoc Networks”, MILCOM 2020.
- C11. Hyojung Lee, **Jihwan Bang** and Yung Yi, “Incentivizing hosts via multilateral cooperation in user-provided networks: A fluid shapley value approach”, Mobihoc 2018.

## Arxiv

- A1. Hwanjun Song\*, **Jihwan Bang**\*, “Prompt-Guided Transformers for End-to-End Open-Vocabulary Object Detection”, arXiv 2023.
- A2. **Jihwan Bang**\*, Heesu Kim\*, YoungJoon Yoo and Jung-Woo Ha, “Boosting Active Learning for Speech Recognition with Noisy Pseudo-labeled Samples”, arXiv 2020.
- A3. Hyojin Park, Lars Lowe Sjösund, YoungJoon Yoo, **Jihwan Bang** and Nojun Kwak, “ExtremeC3Net: Extreme Lightweight Portrait Segmentation Networks using Advanced C3-modules”, arXiv 2019.

## MISC: Domestic publications

- M1. Kyung-hwan Son, David Hostallero, Daewoo Kim, **Jihwan Bang**, Wan Ju Kang, Se-eun Yoon, Yoon-pyo Koo, Hyun-ho Yeo, Jae-hyeong Ha, Nansol Seo, Dongsu Han and Yung Yi, “On the Efficiency of Running Machine Learning Tasks for Drone-Based Target Tracking : Cloud-Based vs. Drone-Based”, The Journal of Korean Institute of Communications and Information Sciences 2018.
- M2. Daewoo Kim, Wan Ju Kang, Yoon-pyo Koo, **Jihwan Bang**, Kyung-hwan Son, David Hostallero, Se-eun Yoon, Hyun-ho Yeo, Jae-hyeong Ha, Nansol Seo, Dongsu Han and Yung Yi, “AI-Based Drone Object Tracking System: Design and Implementation”, The Journal of Korean Institute of Communications and Information Sciences 2017.
- M3. Yoonpyo Koo, **Jihwan Bang**, Kyung-hwan Son, Suho Shin, Sumyeong Ahn, Yung Yi, Junghoon Yoo and Jaeshin Kim, “An Implementation of Multi-hop Voice Communication System Using Drones”, The Conference of Korean Institute of Communications and Information Sciences 2017.

## Academic Services

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**Reviewer:** CVPR 2021-2024, ICML 2022-2023, ECCV 2022, ICCV 2023, NeurIPS 2022-2023, CoLLAs 2023

### Talks

- “Online Continual Learning on a Contaminated Data Stream with Blurry Task Boundaries”, Korean Artificial Intelligence Association 2022.
- “Low Price, High Quality: Improve Model Performance with Small Labelling Cost”, Naver Deview 2020.

## Project Experiences

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- Jan. 2022 - Apr. 2023 **Hawkeye:** Open-Vocabulary/Zero-Shot Object Detector, Naver Corporation, South Korea
- Research on open-vocabulary or zero-shot object detectors
  - Design API to use deployed zero-shot object detectors
- Jul. 2020 - Dec. 2021 **FaceSign:** Identity Authentication System using Face without Any Cards, Naver Corporation, South Korea
- Design the pipeline to get the best performance in FaceSign
  - Design spoofing detection model to prevent recognizing fake faces
- Mar. 2019 - Jun. 2020 **Delphi:** Efficient and Automated ML Pipeline for selecting data and finetuning model, Naver Corporation, South Korea
- Design Delphi structure and build up each component in the pipeline using *AirFlow*
  - Apply active learning to ML pipeline for selecting informative data from the incoming streams
- Apr. 2017 **Observer:** Drone-based Object Tracking System,

- Dec. 2017 KAIST, South Korea
  - Design AI platform for fog computing and build up the cloud-based AI platform
  - Implement deep reinforcement learning algorithm for autonomous drone control

## Awards

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### CLOVA WOW(Innovative) Project: FaceSign

Naver Corporation

📅 Dec 2021

### National Science Technology Scholarship

Korean Scholarship Foundation

📅 Mar 2012 - Dec 2015

## Patents

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- P1. **Jihwan Bang**, Sungho Kim, "Face Recognition System and Method for Controlling the Same," *Korea, Patent Application Number: 10-2021-0183218*, Dec, 2021.
- P2. **Jihwan Bang\***, Heesu Kim\*, Yeongjoon Yoo and Jung-Woo Ha, "Method and system for training speech recognition models using augmented consistency regularization," *Korea, Patent Application Number: 10-2020-0111929*, Sep, 2020.

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