donghwanjang.github.io

# Dong-Hwan Jang

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## Education

**Carnegie Mellon University** — **Pittsburgh, U.S.** — **2022 Fall**
- Visiting Scholar. AI related project-focused intensive program *fully funded by Korean Government*

**Seoul National University** — **Seoul, Korea** — **2020 Fall – Present**
- M.S. in Department of Electrical and Computer Engineering, Advisor: Bohyung Han

**Seoul National University** — **Seoul, Korea** — **2013 – 2019**
- Department of Liberal Studies **Summa Cum Laude (1st out of 35)**
  - B.S. in Department of Electrical and Computer Engineering
  - B.S. in Technology Management

**Korea Science Academy of KAIST** — **Busan, Korea** — **2010 – 2012**

## Publications

- Taehoon Kim, **Dong-Hwan Jang**, and Bohyung Han. "Bound and Average: Leveraging Weights as Knowledge for Class Incremental Learning," *Under Review*.
- **Dong-Hwan Jang**, Sanghyeok Chu, Joonhyuk Kim, and Bohyung Han. "Pooling Revisited: Your Receptive Field is Suboptimal," *CVPR* 2022.
- Jimi Kim*, Seojin Jang*, Woncheol Lee*, Joong Kun Lee*, and **Dong-Hwan Jang***. "DS4C Patient Policy Province Dataset: a Comprehensive COVID-19 Dataset for Causal and Epidemiological Analysis," *NeurIPS Workshop* 2020. (* indicates equal contributions)

## Technical Experiences

**Academic Projects**
- **Robust Fine-tuning of Zero-Shot Models based on Weight Averaging and Hard Negative Sampling** mitigates the simplicity bias that causes models to depend on simple and spurious features for the target domain *(in progress)*.
  - We leverage the fine decision boundaries of zero-shot model obtained from contrastive loss based on linear mode connectivity and hard negative sampling.
- **Robust Adversarial Attack based on Wavelet Transform** generates adversarial examples using wavelet transform that only attack the region with high wavelet coefficients in all subbands *(in progress)*.
  - The attack is proved to be more and imperceptible by avoiding high-frequency artifacts in the low-frequency regions.
  - Also, the low-frequency adversarial noises make examples more robust to the defense methods such as resizing, blurring, and JPEG compression.
- **Implicit Neural Representation for Motion Deblur** employs spatially-variant motion deblur based on the Implicit Neural Representation
  - A spatially-variant deblurring network takes deformed features and their offsets as inputs.
  - It shows superior performance to the state-of-the-art methods on the restoration of downsampled and motion-blurred images.
  - *U.S. Patent Application Number: 17/973,809 (in progress)*

**Personal Project**
- **Dataset for COVID-19 (DS4C):** Created the world's 3rd most impactful COVID-19 dataset with fine-grained patient-level data and policy-level data [Kaggle]
  - The dataset is used by researchers from all over the world to study the impact of policies on COVID-19 spread..
  - Interview article about NeurIPS workshop paper with AITimes [Korean] [English (auto-translated)]

## Invited Talks

**Korean Conference on Computer Vision** — **Seoul, Korea** — **2022**
- 20 minutes oral presentation (top 23.5% among published papers) on CVPR paper "Pooling Revisited: Your Receptive Field is Suboptimal" presented by prof. Bohyung Han

**Databricks Invited Talk** — **San Francisco, U.S. (remote)** — **2020**
- 1 hour talk on "The Complexities around COVID-19 Data" invited as DS4C team [link]

## Scholarships & Award

**Government Scholarship for Overseas Study** — **Korea Government** — **2023 – 2024 (expected)**
- Covers *USD 40,000* support per year. Only 64 students are selected in all fields in Korea.

**OnDream Global Scholarship Award** — **Hyundai Chung Mong-Koo Foundation** — **2022**
- Award Prize - around *USD 2,350*
- For the paper "Pooling Revisited: Your Receptive Field is Suboptimal" at CVPR 2022

**OnDream Future Technology Scholarship** — **Hyundai Chung Mong-Koo Foundation** — **2021 – 2022**
- Covers full tuition & financial support.

**National Scholarship for Science and Engineering** — **Korea Student Aid Foundation** — **2015 – 2016**
- Covers full tuition.

## Employment

**Research Scientist** — **Mind's Lab, Korea** — **2019**
- Low-level vision research including followings:
  - Weakly-supervised segmentation based on inpainting
  - Colorization of grayscale images using spatially-adaptive denormalization
- Business trip to Alberta machine intelligence institute (Amii), Canada for a month (May 2019)
- *Fulfills South Korean military service duty*

**Software Engineer** — **TNC Technology, Korea** — **2017–2018**
- Developed a java-based payment gateway server for the company's clients
- *Fulfills South Korean military service duty*

## Teaching Experiences

- Teaching Assistant for *430.329: Introduction to Algorithms* at Seoul National University (Fall 2020)
- Teaching Assistant for *Samsung AI Expert Course* at Seoul National University (July 2019)
- Teaching Assistant for *Hyundai Motors AI Expert Course* at Seoul National University (Jan 2019)

## Extracurricular Activities

- NeurIPS 2022, 2023 reviewer, CVPR 2023 reviewer
- Deepest: Seoul National University's AI club (2019 – 2020)