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Dong-Hwan Jang

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Education

Carnegie Mellon University — **Pittsburgh, U.S.** — **2022 Fall – Present**
- 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

- **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
- **Dataset Distillation into Prototype for Continual Learning:** *(in progress)* Develop a novel continual learning method that distills a large dataset into a small prototype coreset
  - Sampled prototypes are updated to contain rich information that can represent all samples for a specific class.
  - The objective of constraining the gradient update inspired by an adversarial attack is to keep both the distilled knowledge and the original information in a single prototype.
- **Robust Adversarial Attack based on Wavelet Transform:** *(in progress)* Generate adversarial examples using wavelet transform that only attack the region with high wavelet coefficients in all subbands
  - 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.
- **Deblurring Implicit Feature Function:** 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)*
- **DepthFinder:** Adaptively find the appropriate depth of a residual blocks in a neural network for a universal image restoration task
  - Model can adaptively change the number of the residual blocks according to the severity and distortion type of the input in the universal image restoration task.

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