# CHUNG, GI SU

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## EDUCATION

Mar. 2019~ Present **DONGGUK UNIVERSITY** **Seoul, Korea**
Department of Electrical & Electronic Engineering
- M.S candidate in Image Processing and Computer Vision (Expected graduate date: Feb. 2021)
- Advisor: Cheesun Won (Digital Image Processing Lab)
- Related Course: Machine Learning, Digital Video Processing, Neural Network Theory (GPA: 4.36/4.5)

Mar. 2013~ Feb. 2019 **DONGGUK UNIVERSITY** **Seoul, Korea**
Department of Electrical & Electronic Engineering
- Bachelor of Science in Electrical & Electronic Engineering
- Related Course: Digital Signal Processing, Random Signal Theory, Image Processing (GPA: 3.2/4.5, Related Course GPA: 3.83/4.5)

## PUBLICATIONS

1. **Gisu Chung**, Cheesun Won, "Filter pruning by image channel reduction in pre-trained convolutional neural networks" *Multimedia Tools and Applications (MTAP) : 1-10.* (2020) [IF 2.6]
2. **Gisu Chung**, Seungjae Park, Chul Kwon Chung, "Deep learning based model for detecting sewer pipe defects", *KSCE* (2020) - oral
3. Jongyoung Kim, **Gisu Chung**, Cheesun Won, "SIFT-NonSIFT Classification of Image Patches using CNN", *KIBME* (2018) - poster

## PATENTS

1. Cheesun Won, **Gisu Chung**, "Apparatus and method for reducing number of channels in input images to compress deep neural networks" (Korea – Registration No. 10-2120681)
2. **Gisu Chung**, Euichul Shin, Yangseob Kim, "Apparatus and method for detection defect of sewer pipe based on deep learning" (Korea – Registraion No. 10-2008973)

## WORK EXPERIENCES

Jan. 2020~ Feb. 2020 **Haemoon Development Co., Ltd.** **Seoul, Korea**
- Researched up-to-date papers about image processing technique for detecting defects in sewer pipe
- Introduced deep learning technology for detection of defects and developed a detect classification CNN with 93.4% accuracy by using cutout augmentation and pyramidal-architecture (PyTorch); granted a patent for the method from KIPO

## RESEARCH PROJECTS

Apr. 2019~ Sep. 2020 **Optimal Video Restructuring and its applications to Neural Networks and Cloudlets**
***National Research Fundamental Scientific Research Program (NRF)***
- Studied and tested the effect of gray images on the CNN recognition performance, identified that certain domain-specific problems including FER and OCR are relatively insensitive to the color components
- Improved CNN compression efficiency by reducing the channel of input images and pruning (PyTorch); parameter reduced by 50% while degradation of performance is less than 1%
- Granted a patent for the method from KIPO, published a paper on MTAP

Mar. 2019~ Apr. 2019 **Preprocessing for feature preserving image compressions**
***National Research Fundamental Scientific Research Program (NRF)***
- Added function expecting the orientation value of SIFT feature patches in 88.9% accuracy on the self-developed CNN that sorts out SIFT features (MATLAB)
- Improved FER system accuracy 2.1% higher by adopting the auto-augmentation through attention mask that memorizing facial action units (PyTorch)

Mar. 2018~ Jun. 2018 **Signal Reception Using Drone**
***Enterprise and society tailored capstone design project with LIG Nex1 Co., Ltd***
- Designed a software program that inverts the azimuth angle from the phase difference to detect RF signals radiated in the space (C++); won the award of excellence

## SKILLS AND OTHER INFORMATION

Languages • Native in Korean, Advanced in English (TOIEC SPEAKING: Level 6)
Computer skills • Proficient in Python, C++, MATLAB, and Expert in PyTorch library
Military Service • Republic of Korea Army, 9th infantry division headquarter, education-training department