

work experience

Oct 2017–until now **Machine Learning Engineer** at HyperConnect

Seoul

► Virtuous Cycle of AI

- > Designed a self-improving fine-tuning and deployment cycle for image classification server task.
- > Improved recall of underrepresented classes by more than 50 % while keeping high precision.
- > Cycle is orchestrated by three separate KubeFlow pipelines.

Python, KubeFlow, BigQuery, PyTorch, Shell Script

► Large Scale Distributed Training

- > Lead for multi-node distributed training project utilizing large amounts of data (> 25 M images).
- > Prepared codebase for efficient scaling up to 64 GPUs on AWS infrastructure using p3.16xlarge instances.
- > Accelerated training up to 8x compared to single node training.
- > Implemented AWS multi-node launcher to simplify starting and orchestrating of new experiments across multiple instances.
- > Provided a new multi-class image classification model with a significant improvement over the previous model.

Python, PyTorch, Shell Script

► Face Synthesis

- > Real-time face generation and facial expression transfer on mobile device.
- > Few-shot face image generation using style attention, feature warping and landmark transformer.

Python, PyTorch, Tensorflow, CoreML, Swift

► Low-bit Neural Networks

- > Researched and implemented various binarization schemes for single and multi-task classification.
- > Implemented conversion tool from PyTorch graph to custom model format.
- > Developed and optimized inference engine for mobile devices.

Python, PyTorch, C++, SIMD, Android Java

► 8-bit Quantized Neural Networks

- > 8-bit quantized model for Image Classification and Semantic Image Segmentation in **Azar**.
- > Optimization of Tensorflow Lite for inference of Semantic Image Segmentation model.
- > Multi-label Image Classification in **Picai** - Smart AI Camera.
- > 2nd place at **Low Power Image Recognition Challenge** at 2018.

Python, C++, Tensorflow, Tensorflow Lite, SIMD, Android Java, Swift

Dec 2016–Sep 2017 **Assistant Research Engineer** at Hanyang Information & Communications Co., Ltd.

Seoul

- > Researched Object Detection networks and their application on NVIDIA Tegra (TK1, TX1 and TX2).
- > Integrated Computer Vision modules (Lane Detection, Vehicle Detection, Tracking, Object Detection and Object Distance Estimation).
- > Represented company at CeBIT 2017 exhibition.
- > Lead of annotation project for Object Detection (plan for data collection, modification of online annotation tool, work assignment).

C++, Python, Caffe, Tensorflow, OpenCV

Jul 2015–Sep 2016 **Machine Learning Engineer** at Company 100, Inc.

Seoul

- > Researched and implemented algorithms for Object Detection and Semantic Image Segmentation.
- > Improved fashion recommendation engine for incorrectly segmented parts of clothes.
- > Created prototype for detection and segmentation of clothes using Convolutional Neural Networks.
- > Created hybrid mobile application and server for communication between mobile application and recommendation engine.

Python, Caffe, C/C++, Matlab

research

Nov 2019 MarioNETte: Few-shot Face Reenactment Preserving Identity of Unseen Targets, [arxiv](#), AAAI 2020

Mar 2019 Temporal Convolution for Real-time Keyword Spotting on Mobile Devices, [arxiv](#), INTERSPEECH 2019

Oct 2018 Towards Real-Time Automatic Portrait Matting on Mobile Devices, [arxiv](#)

education

Sep 2012–Jun 2015 Master's degree from **Czech Technical University in Prague**, Knowledge Engineering

- > Thesis **Parking Assistant Using Web Cameras**