Hyungjoo Cho

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EDUCATION

Seoul National University — Seoul, South Korea
Ph.D. Candidate in Biomedical Radiation Science — *Sep. 2018 – Aug. 2021.*

Dongguk University — Seoul, South Korea
Bachelor of Electronic Engineering — *Mar. 2004 – Feb. 2012*

EXPERIENCE

Tomocube — Seoul, South Korea
Research Engineer — *Jul 2018 - Present.*

- **Image quality enhancement**: Create a model to enhance the image quality.
- **Complete Blood Count**: Develop a blood cell classifier for complete blood count using holotomography.
- **Image Domain Translation**: Develop algorithms for image domain translation such as holotomography to fluorescent or stained image.
- **Cell Segmentation with AutoML**: Develop an AutoML algorithm for automatic 3D cell segmentation.
- **Model Serialization Pipleline**: Develop a pipeline for serving a trained model under the C++ environment.

Interpark — Seoul, South Korea
Research Engineer — *Oct 2017 - Jun 2018*

- **Epileptiform discharge detection**: Created a epileptiform discharge detection method for computer aided diagnosis with Electro-encephalography using spatio-temporal CNNs.
- **Medical Image Processing Framework**: Designed a framework for handling medical image which consists of preprocessing, analyzing, postprocessing, and evaluating modules.

Deepbio — Seoul, South Korea
Research Engineer — *Mar 2017 - Jul 2017*

- **Stain style transfer**: Created a stain color standardization method for computer aided diagnosis with histopathological image using deep generative model(accepted in SASHIMI 2017).
- **Histopathological Image Analysis**: Built a system for automatic scoring tumor severity using histopathological whole slide images.

Seoul City Gas — Seoul, South Korea
Research Engineer — *Oct 2016 - Mar 2017*

- **Gas Meter Recognition**: Created a gas meter recognition model for automatic billing system.
- **Automatic pipeline network design system**: Built a system for designing pipeline network automatically using conditional-GAN(generative adversarial networks).

LG Electronics — Seoul, South Korea
Research Engineer — *Mar 2011 - Oct 2016*

- **Gesture recognition with in-vehicle condition using heterogeneous sensors**: Created a spatio-temporal model(Tensorflow), data acquisition system(atmega-128 with 4 step motors), tuning & driving application(MFC) and demo system(QTPY).
- **Proximity sensing detection using IR and capacitive sensor**: Developed sensing application with 16/32bit microcontroller (including signal processing, regression, calibration and feedback control, etc).
- **Printer F/W (Mach-Jet, Pocket-Photo)**: Designed and tuned the digital filters and developed firmware on ThreadX.
- **Monitor Error Auto Detection Tool**: Developed an application for abnormal detection under the external disturbances from fluorescent lamps using camera.

- **Journal**

  Data-driven multiplexed microtomography of endogenous subcellular dynamics
  YJ Jo*, *HJ Cho*, WS Park* *et. al.*
  Nature Cell Biology, 2021.

  Prediction of coronary stent underexpansion by pre-procedural intravascular ultrasound–based deep learning
  HS Min*, DM Ryu, SJ Kang, JG Lee, JH Yoo, *HJ Cho et. al.*
  Cardiovascular Interventions, 2021. (Link)

  Intravascular ultrasound-based deep learning for plaque characterization in coronary artery disease
  HJ Cho, SJ Kang, HS Min *et. al.*
  Atherosclerosis, 2021. (Link)

  DeepRegularizer: rapid resolution enhancement of tomographic imaging using deep learning
  DH Ryu*, DM Ryu*, YS Baek, *HJ Cho*, HS Min *et. al.*
  IEEE Transactions on Medical Imaging, 2021. (Link)

  Compton Background Elimination for in Vivo X-Ray Fluorescence Imaging of Gold Nanoparticles Using Convolutional Neural Network
  S Jung*, J Lee*, *HJ Cho*, T Kim and S Ye
  IEEE Transactions on Nuclear Science, 2020.

  Automatic Tumor and Multi-Organ Segmentation Technique in CT Based on Deep Learning for Radiation Therapy After Breast-Conserving Surgery
  J Lee*, *HJ Cho*, S Ye, D Choi, W Park and W Cho
  MEDICAL PHYSICS, 2020.

  Expert-level segmentation using deep learning for volumetry of polycystic kidney and liver
  TY Shin*, HS Kim, JH Lee, JS Choi, HS Min, *HJ Cho et. al.*
  Investigative and clinical urology, 2020. (Link)

  Detection of optical coherence tomography-defined thin-cap fibroatheroma in the coronary artery using deep learning
  HS Min*, JH Yoo, SJ Kang, JG Lee, *HJ Cho et. al.*
  EuroIntervention, 2020. (Link)

  Prediction of coronary thin-cap fibroatheroma by intravascular ultrasound-based machine learning
  Y Bae*, SJ Kang, G Kim, JG Lee, HS Min, *HJ Cho et. al.*
  Atherosclerosis, 2019. (Link)

  Angiography-Based Machine Learning for Predicting Fractional Flow Reserve in Intermediate Coronary Artery Lesions
  HJ Cho, JG Lee*, and SJ Kang, HS Min *et. al.*
  JAHA:Journal of the American Heart Association, 2019. (Link)

  Deep-learning-based 4D cell nucleus segmentation in optical diffraction tomography : from refractive index to biochemical identity
  JM Lee*, HJ Kim, *HJ Cho*, YJ Jo, YJ Song, DW Ahn, KW Lee, YG Park and SJ Ye
  IEEE Access, 2019 (Link)

  Machine learning assessment of myocardial ischemia using angiography: Development and retrospective validation
  HY Hae*, SJ Kang*, WJ Kim, SY Choi, JG Lee, YH Bae, *HJ Cho*, DH Yang, *et. al.*
  PLOS Medicine, 2018 (Link)

  Learning-based screening of hematologic disorders using quantitative phase imaging of individual red blood cells

G Kim*, YJ Jo*, *HJ Cho*, HS Min and YG Park
Biosensors and Bioelectronics, 2018 (Link)

Quantitative Phase Imaging and Artificial Intelligence: A Review
YJ Jo*, *HJ Cho**, SY Lee, GH Choi, G Kim, HS Min and YK Park
IEEE Journal of Selected Topics in Quantum Electronics 25 (1), 1-14, 2018 (Link)

- **Conference**

Neural Bootstrapper
MS Shin*, *HJ Cho**, HS Min and SB Lim
Thirty-Fifth Conference on Neural Information Processing Systems, 2021.

Deep Learning-based Metal Artifact and Noise Reduction in the Lumbar Spine CT
HI Choi*, J Lee, HD Choi, C Ahn, *HJ Cho et. al.*
Radiological Society of North America, 2021.

Neural Plaque Angular Characterizer
*HJ Cho**, HS Min, DM Choi and HY Kim
STACOM2021, 2021.

3D cell instance segmentation via point proposals using cellular components
JH Choi*, JW Park *HJ Cho*, HS Min, SB Lim and JG Choo
Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XIX, 2021. (Link)

Deep Learning-based Breast and Organs-at-risk Segmentation in CT with Uncertainty Quantification for Radiation Therapy after Breast-Conserving Surgery
J Lee*, *HJ Cho**, SJ Ye, HD Choi, W Park, H Kim, W Cho and HJ Kim
Radiological Society of North America, 2020.

Deep Learning-based CT Metal Artifact Reduction in the Lumbar Spine
HD Chae*, JM Lee*, *HJ Cho*, SH Hong, JY Choi, HJ Yoo and SJ Ye
Radiological Society of North America, 2020.

Deep Learning-based Metal Artifact Reduction in CT for Total Knee Arthroplasty
J Lee*, HD Chae*, *HJ Cho*, SH Hong, JY Choi, HJ Yoo and SJ Ye
Radiological Society of North America, 2019.

Scalable Neural Architecture Search for 3D Medical Image Segmentation
SW Kim*, ID Kim*, SB Lim*, CH Kim, WH Baek *HJ Cho*, BG Yoon and TS Kim, *et. al.*
MICCAI2019, 2019.

Automated Identification of Bacteria using Three-Dimensional Holographic Imaging and Convolutional Neural Network
G Kim*, YJ Jo, *HJ Cho*, HS Min *et. al.*
2018 IEEE Photonics Conference (IPC), 2018.

Neural Stain-Style Transfer Learning using GAN for Histopathological Images
*HJ Cho**, SB Lim*, GH Choi and HS Min
Arxiv, 2017.(https://arxiv.org/abs/1710.08543)

PRESENTATION

- Uncertainty Quantification, AI Friends, Aug 2020 (Video link)

- Introduction to Pytorch 1.0, Pytorch KR 2nd Meetup, Jan 2019 (Video link)

- GAN Introduction, AI Society, March 2018 (Slide link)

- Memory Efficient Pytorch, Pytorch KR 1st Meetup, Jan 2018 (Slide link)

- Samsung TechTonic - Generative Adversarial Networks, Samsung SDS, Jan 2018

- Neural Stain-Style Transfer Learning using GAN for Histopathological Images, ACML 2017, Nov 2017

- Deep Generative Models, Fast Campus, Spring 2017 (Slide link)

- Gas pipeline networks design using cGAN, Tensorflow KR 2nd Meetup, Winter 2016

- High-level API in Tensorflow, Google Developer Group, Winter 2016 (Slide link)

Open source contribution

- Pytorch - Allowed pathlib.Path object to the torch.load as an input argument.(History link)