Hyeonwoo Cho

Seoul, Korea

✉ chochb123@gmail.com | ⌗ https://github.com/hyeonwoocho7 | in https://www.linkedin.com/in/hyeonwoocho/ | k https://www.kaggle.com/heoynwoo

Personal Profile

I am currently developing and researching an early diagnosis service using medical images in VUNO Inc. My main job is to develop an algorithm for lesion detection automation using 3D Lung CT. In addition, I have a lot of experience in developing such as object detection, segmentation, and classification in various domains including natural images and other medical images in 2D and 3D domains. Also, I am interested in domain adaptation, semi-supervised learning, and few-shot learning for the research. I published several papers related to the research topics mentioned. Furthermore, I participate in competitions such as a Kaggle because I like to find ways to solve problems from a data perspective. I recently won a silver medal at the Kaggle competition hosted by Google.

Education

Kyushu University   *Fukuoka, Japan*
MS in Advanced Information Technology   *March 2020 - March 2022*
- GPA: 4.0/4.0
- **Courses:** Data Science, Programming for Data Science, Knowledge Representation and Reasoning, Statistical Theory and Methods, Learning Skills through Case Studies, Artificial Intelligence, Machine Learning, Statistical Learning

Kyushu University   *Fukuoka, Japan*
BS in Aerospace Engineering   *March 2016 - March 2020*
- GPA: 3.4/4.0

Daegun High School   *Daegu, Korea*
High School   *March 2014 - March 2016*

Work Experience

VUNO Inc   *Seoul, Korea*
AI Research Scientist   *March 2022 - Current*
- Collaborated with a four-person team to develop a product that detects and analyzes risk factors at an early stage through 3D lung ct.
- Developed 3D nodule detection model that find where nodule is in lung and 3D nodule classification model that classify if nodule is or not
- Significantly boosted the model performance of the product from a data perspective by analyzing learning data from various hospitals.
- **Technical Skills:** Python with PyTorch, NumPy, Matplotlib, Pandas, Scikit-learn, C++, Ubuntu Linux, Linux tools, Apt, Scripting, Git.
- **Soft Skills:** Teamwork, Time Management, Communication, Presentation skills.

University Research

Domain Adaptation for Cell Detection   *Fukuoka, Japan*
Kyushu University   *March 2020 - March 2022*
- Analyzed a video data from growing cell in different culture environments
- Developed a new domain adaptation method for cell detection by the key observation for semi-supervised learning.
- Proposed effective pseudo labeling method based uncertainty and curriculum learning
- **Research Keyword:** Domain adaptation, Pseudo labeling, Multi-task learning, Uncertainty, Curriculum learning

Semi-Supervised Cell Detection by Tracking   *Fukuoka, Japan*
Kyushu University   *March 2020 - March 2021*
- Developed a semi-supervised method for cell detection by using cell tracking.
- Proposed a pseudo labeling method based on tracking that uses the mechanism of growing cells.
- **Research Keyword:** Semi-Supervised learning, Pseudo labeling, Tracking

Domain Adaptation for Person Tracking   *Fukuoka, Japan*
Kyushu University   *June 2021 - March 2022*
- Analyzed and handled multi object tracking datasets in various domains
- Defined a domain shift on a person tracking and developed domain adaptation methods using a center point based tracking method.
- **Research Keyword:** Domain Adaptation, Object Tracking, Pseudo labeling

Skills

Programming	Python (Pandas, PyTorch, NumPy, Scikit-learn. etc.), C/C++
Miscellaneous	Linux, Shell (Bash/Zsh), LaTeX(Overleaf), Microsoft Office, Firebase, Git, Docker.
Soft Skills	Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation.

Achievements

2015	**Pass**, Korea-Japan Joint Scholarship Program	*Korea*
2021	**N1**, Japanese-Language Proficiency Test	*Japan*
2021	**850/999**, TOEIC	*Japan*
2021	**Level6**, TOEIC Speaking	*Japan*
2022	**Excellent student award**, Kyushu University graduation	*Japan*
2023	**Silver Medal, top5%, 51st/1165**, Kaggle: Google-Isolated Sign Language Recognition	*Korea*

Publications

JOURNAL ARTICLES

Effective pseudo-labeling based on heatmap for unsupervised domain adaptation in cell detection
Hyeonwoo Cho, Kazuya Nishimura, Kazuhide Watanabe, Ryoma Bise
Medical Image Analysis 79 (2022) p. 102436. Elsevier, 2022

CONFERENCE PROCEEDINGS

Cell detection in domain shift problem using pseudo-cell-position heatmap
Hyeonwoo Cho, Kazuya Nishimura, Kazuhide Watanabe, Ryoma Bise
Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part VIII 24, 2021

Semi-supervised cell detection in time-lapse images using temporal consistency
Kazuya Nishimura, Hyeonwoo Cho, Ryoma Bise
Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part VIII 24, 2021

Cell detection for various cell shapes
Cho Hyeonwoo, Kazuya Nishimura, Ryoma Bise
Record of 2020 Joint Conference of Electrical, Electronics and Information Engineers in Kyushu, 2020

Languages

English	Professional Working Proficiency
Japanese	Full Professional Proficiency

References available upon request.