

Hyeonwoo Cho

Seoul, Korea

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Hyeonwoo Cho

Bio

Hyeonwoo Cho is an AI research engineer at OSSTEM IMPLANT. He received his MS in Computer Vision from Kyushu University in 2022, where his research focused on domain adaptation and semi-supervised learning. His research interests include continual learning, test-time adaptation, noisy label learning, and 3D vision. He developed a system for early diagnosis of lung cancer and a tool for analyzing multiple diseases associated with dementia from brain MRI. He is currently developing an AI that automatically generates crowns from point cloud dental scan data.

Education

Kyushu University

Fukuoka, Japan

MS in Information Science and Electrical Engineering

March 2020 - March 2022

- GPA: 4.0/4.0
- Lab: HumanInterface
- Advisor: **Ryoma Bise**
- Research fields: Computer Vision, Bio medical image analysis, pattern recognition

Kyushu University

Fukuoka, Japan

BS in Aeronautics and Astronautics

March 2016 - March 2020

- GPA: 3.4/4.0

Work Experience

VUNO Inc

Seoul, Korea

AI Research Scientist

March 2022 - March 2024

- Developed A Early Dignosis AI system for Lung Cancer. (3D Lung CT)
- Ansysis of Frontotemporal dementia (FTD) based Brain Volumetric Information. (3D Brain MRI)

OSSTEM IMPLANT

Seoul, Korea

AI Research Engineer

March 2024 - Current

- Developed A RAG System for Answering about Dental-Related Questions. (AI chatbot)
- Developing A Crown Generation Model from 3D Mesh and Point-Cloud. (Geometric & Generation AI)

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.

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

CNG-SFDA: Clean-and-Noisy Region Guided Online-Offline Source-Free Domain Adaptation

Hyeonwoo Cho, Chanmin Park, Jinyoung Kim, Won Hwa Kim

Accepted in ACCV (2024). 2024

Automated Brain Volumetry Analysis for Differential Diagnosis of Frontotemporal Dementia Subtypes

Hyeonwoo Cho, Mina Park, Seung Hyun Lee, Wooseok Jung, Dong-Hee Kim, Jinyoung Kim, Yeha Lee

Alzheimer's Association International Conference, 2024

Comparison of intracranial volume adjustment methods to evaluate brain atrophy severity in AD continuum

Wooseok Jung, Chong Hyun Suh, Seung Hyun Lee, Jinyoung Kim, Dong-Hee Kim, Hyeonwoo Cho, Yeha Lee, Sang Joon Kim

Alzheimer's Association International Conference, 2024

Quantitative Analysis of Choroid Plexus Enlargement in Alzheimer's Dementia: A Study of Automated Volumetric Technique

Dong-Hee Kim, Chong Hyun Suh, Wooseok Jung, Seung Hyun Lee, Jinyoung Kim, Hyeonwoo Cho, Yeha Lee, Sang Joon Kim, Won-Jin Moon

Alzheimer's Association International Conference, 2024

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

UNDER REVIEW

Joint-Embedding Predictive Architecture for Self-Supervised Learning of Mask Classification Architecture

Dong-Hee Kim, Sungduk Cho, Hyeonwoo Cho, Chanmin Park, Jinyoung Kim, Won Hwa Kim

2024

Projects

Competition: Google - Isolated Sign Language Recognition

Seoul, Korea

VUNO

February 2023 - May 2023

- Achieved silver medal from this competition.
- Data: Time-Series, Tabular
- Main Approach: Self-Supervised Method (pretraining) - Masked Auto Encoder
- More details: <https://hyeonwoocho7.github.io/hwc.github.io/project/google-isolated-sign-language-recognition/>

Lung Cancer Detection

Seoul, Korea

VUNO

March 2022 - October 2023

- Development of a solution for early detection and analysis of nodules that can develop into lung cancer from lung CT scan information of patients.
- Designed two stage detection algorithm for lung CT
- More details: <https://hyeonwoocho7.github.io/hwc.github.io/project/lung-cancer-detection/>

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

Achievements

2015	Korea-Japan Joint Scholarship Program , A full funding for undergraduate studies in science and engineering departments under the government of South Korea and the government of Japan	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% , Kaggle: Google-Isolated Sign Language Recognition	Korea

Languages

English	Professional Working Proficiency
Japanese	Full Professional Proficiency

References available upon request.