

Hah Min Lew

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CAREER OBJECTIVE

My interest is to solve data-driven valuable real-world problems through AI / ML systems, currently based on computer vision and ML engineering. I'm a curious and challenging spirit, and proactively seeking opportunities to grow and share my knowledge.

EDUCATION

Mar. 2019 - Aug. 2021 M.S. in Electrical Engineering & Computer Science at **DGIST** (GPA: 4.06/4.3)
 Mar. 2014 - Feb. 2019 Bachelor of Engineering at **DGIST** (Best Project Award)

EXPERIENCE

Klleon, AI Researcher Aug. 2022 - present

- Worked on [digital human projects](#).
- Face & Head Swapping, Neural Talking Head Synthesis, Explicit Controllable 3D Parameterized Modeling.

MBIS Lab, Graduate Researcher, Advisor: Prof. Jae Youn Hwang Mar. 2019 - Aug. 2022

- [6 SCIE publications](#), 7 international conferences, 9 projects, 6 patents, and [2 awards](#).
- ML-based anomaly detection for various biomedical applications under multimodal, class-imbalance, and multitask problems.
- Frequency-domain translation for substantial and informative data creation through generative models.
- Developed a novel 1-D time-series signal processing algorithm for the biomedical monitoring system.
- 3D Physical computing for real-world interactable design in medical applications.
- Collaborative research experiences with medical doctors from SNUH, SNUHD, Yonsei Severance, etc.

LANTERN, Co-founder Nov. 2016 - July 2017

- Founded a data-driven customized tutor matching service company. Co-working with **Class101**.

SELECTED PROJECTS

Construction of a facial action coding system June 2023 - present

- Photo-realistic facial rendering via explicit controllable 3D parameterized model engineering.
- Used skills: Python, PyTorch, Docker

Development of a state-of-the-art ML-based head swapping framework Aug. 2022 - June 2023

- Implementing and reproducing baseline from scratch.
- Full cycle experience from the problem statement, data collection and preprocessing, ML model design, training and evaluation, result serving and improvement.
- Used skills: Python, PyTorch, Git

Frequency-domain image translation for high-resolution in-depth imaging Feb. 2021. - Aug. 2022

- Data-centric research and fine-tuning approach for high fidelity ultrasound image translation using generative models.
- Used skills: Python, Pytorch, MATLAB, LabView

SKILLS

Programming [Python](#), [PyTorch](#), [TensorFlow](#), [MATLAB](#) | [Docker](#), [Git](#)
 Languages Korean (native), English (professional working proficiency)

SELECTED PUBLICATIONS

Hah Min Lew*, J. S. kim*, et al., “Deep Learning-based Synthetic High-Resolution In-Depth Imaging Using an Attachable Dual-element Endoscopic Ultrasound Probe”, Arxiv Preprint 2023. [\[Paper\]](#)

Hah Min Lew, et al., “Towards High-Fidelity Head Swapping with Chroma Keying” [\[Project Page\]](#)

K. Lee, **Hah Min Lew**, et al., “CSS-Net: Classification and Substitution for Segmentation of Rotator Cuff Tear”, In **ACCV 2022**. [\[Paper\]](#)

- Developed a multitask network for detection of class-imbalanced regions.
- Employed DFT-based frequency translation for substitution of positive and negative regions.

M. H. Lee, **Hah Min Lew**, et al., “Deep learning-based framework for fast and accurate acoustic hologram generation”, IEEE TUFFC (IF: 3.267, [Frontal Cover Paper](#)), 2022. [\[Paper\]](#)

- Design autoencoder architecture for unsupervised learning, loss functions for both accuracy and energy efficiency, and physical constraints layers for acoustic hologram generation.

T. C. Cavalcanti, **Hah Min Lew**, et al., “Intelligent Smartphone-based Multimode Imaging Otoscope for the Mobile Diagnosis of Otitis Media”, Biomedical Optics Express (IF: 3.562, [Spotlight on Optics](#)), 2021. [\[Paper\]](#)

- Diagnosis via ML models (*Multilayer perceptron, Random forest, Logistic regression, Decision trees, Naïve Bayes*) for multimodal human data from clinical trials using standard metrics.

Hah Min Lew, et al., “Ultrasonic Blood Flowmeter with a Novel Xero Algorithm for a Mechanical Circulatory Support System”, Ultrasonics (IF: 4.062), 2021. [\[Paper\]](#)

- Developed a novel signal processing algorithm that complements for conventional flow monitoring methods.

J. Kim, **Hah Min Lew**, et al., “Forward-looking Multimodal Endoscopic System based on Optical Multispectral and High-frequency Ultrasound Imaging Techniques for Tumor Detection”, **IEEE TMI (IF: 11.037)**, 2020. [\[Paper\]](#)

- Data collection from proposed multimodal imaging of human colon tissues including tumors ex vivo.
- Conducted quantitative analysis of multimode data for tumor characterization.

AWARDS

Outstanding Poster Award Aug. 2021

- 2021 Student Conference, DGIST

Outstanding Paper Award May. 2021

- 2021 Spring Conference, The Korean Society of Medical & Biological Engineering (KOSOMBE)

Best Project Award Mar. 2017

- 2016 Undergraduate Group Research Project (UGRP) Program, DGIST

SCHOLARSHIPS

Full Government Scholarships Mar. 2019 - Aug. 2022

- Full tuition exemptions and stipend for 7 semesters

Full Government Scholarships Mar. 2014 - Feb. 2019

- Full tuition exemptions and school expenses supports for 8 semesters