Soomin Chung

MS Student · SNU BMI Lab

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Education

Carnegie Mellon University — *Pittsburgh, USA*

Visiting Scholar, School of Computer Science, Software and Societal Systems — *Aug 2024 – Feb 2025*

Seoul National University — *Seoul, Republic of Korea*

M.S., Interdisciplinary Program of Bioengineering — *Sep 2022 – Feb 2025*

- Advisor: Prof. Kwangsoo Kim
- GPA: 4.27/4.5

EWHA Womans University — *Seoul, Republic of Korea*

B.S., Mechanical and Biomedical Engineering; Minor in Computer Engineering — *Mar 2018 – Aug 2022*

- GPA: 4.22/4.5

Publications

Hail Song*, Wonsik Shin*, Naeun Lee, **Soomin Chung**, Nojun Kwak+, Woontack Woo+ (2025)

S3D: Sketch-Driven 3D Model Generation, GMCV Workshop at CVPR'25, CVPRW 2025 [paper]

Soomin Chung (2025)

Longitudinal ECG Analysis with Deep Learning for Improved Detection of Reduced Left Ventricular Ejection Fraction, M.S. Thesis, Seoul National University

(co-first) Sehoon Park*, **Soomin Chung***, Yisak Kim, Sun-Ah Yang, Soie Kwon, Jeong Min Cho, Min Jae Lee, Eunbyeol Cho, Jiwon Ryu, Sejoong Kim, Jeonghwan Lee, Hyung Jin Yoon, Edward Choi, Kwangsoo Kim+, Hajeong Lee+ (2025)

A deep-learning algorithm using real-time collected intraoperative vital sign signals for predicting acute kidney injury after major non-cardiac surgeries: A modelling study, PLOS Medicine (SCIE, IF=10.5, JCR 2023 top 3.5%)

(co-first) Soonil Kwon*, **Soomin Chung***, So-Ryoung Lee+, Kwangsoo Kim+, Junmo Kim, Dahyeon Baek, Hyun-Lim Yang, Eue-Keun Choi, Seil Oh (2025)

Prediction of reduced left ventricular ejection fraction using atrial fibrillation or flutter electrocardiograms: A machine-learning study, Digital Health (SCIE, IF=2.9)

(co-first) Hong Yeul Lee*, **Soomin Chung***, Dongwoo Hyeon, Hyun-Lim Yang, Hyung-Chul Lee, Ho Geol Ryu+, Hyeonhoon Lee+ (2024)

Reinforcement learning model for optimizing dexmedetomidine dosing to prevent delirium in critically ill patients, npj Digital Medicine (SCIE, IF=15.2, JCR 2023 top 0.9%)

Hyeonhoon Lee, **Soomin Chung**, Hong Yeul Lee (2023)

Method and Apparatus for Drug Adjustment for Delirium Prevention, Korean Patent Application 10-2023-0138995

(co-first) Sua Kim*, Yebin Lee*, **Soomin Chung***, Miso Choi*, Hyebin Choi* (2022)

Integrated Counseling System for child, KCSE 2022

Na Min An, Hyeonhee Roh, **Soomin Jung**, Eun Ju Kim, Maesoon Im+ (2021)

Machine Learning Approaches as An Alternative to Human Psychophysical Tests of Prosthetic Vision, IEEE EMBC 2021

Hyeonhee Roh, Eunju Kim, **Soo Min Chung**, Joon Ho Kang, Taegon Kim, Maesoon Im+ (2021)

Neural information of artificial vision varies depending on the level of spiking heterogeneity across retinal ganglion cells, ARVO 2021

Research Experience

Bio–Medical Informatics (BMI) Lab, Seoul National University *Seoul, Korea*

Advisor: Kwangsoo Kim *Jan 2022 – Feb 2025*

- Applied deep learning and reinforcement learning to clinical decision support across diverse applications, including drug dosing optimization, acute kidney injury prediction, heart failure risk assessment from ECG, neuromuscular disease diagnosis from EMG, and longitudinal ECG analysis.

Im Vision Lab, Brain Science Institute, Korea Institute of Science and Technology *Seoul, Korea*

Advisor: Maesoon Im *Sep 2020 – Feb 2021*

- Machine learning approaches as alternatives to human psychophysical testing for artificial vision evaluation
- Effects of retinal ganglion cell firing diversity on neural information processing in artificial vision

Projects

Autonomous Targeting AI Cannon *Pittsburgh, USA*

Advisor: Vijay Sai Vadlamudi (CMU) *Nov 2024 – Feb 2025*

- Developed an autonomous targeting AI Cannon system based on NVIDIA Jetson Nano and YOLO v11s

Medical Visual Question Answering (VQA) *Pittsburgh, USA*

Course project at CMU *Sep 2024 – Nov 2024*

- Enhanced a Medical VQA model by replacing the M3AE classification head with a T5-based generative layer

AI Speaker–Counseling System for Youth *Seoul, Korea*

Advisor: Taehoon Shin (Ewha Univ.) *Mar 2021 – Jun 2021*

- Developed an AI speaker–psychological counseling integrated system for youth

Work Experience

KCWI Inc., Driving Safety Evaluation Division *Seoul, Korea*

Feb 2021 – Feb 2022

- Statistical analysis of operational data for Korea Railroad Corporation type approval, resulting in over 20 certifications

Awards & Fellowships

Aug 2024	**Carnegie Mellon University AI Intensive Training Program Fellowship**, Institute of Information & Communications Technology Planning & Evaluation (IITP) *Selected as one of 30 fellows nationwide; full support of tuition and living expenses*	*45,000 USD*
May 2024	**2nd Place, SNU x Upstage LLM Project Hackathon**, Seoul National University	
Sep 2022	**Academic Excellence Scholarship**, Seoul National University	
Jan 2021	**8th Cohort Scholar**, Woonhae Scholarship Foundation	*3,800 USD per semester*
Dec 2021	**Silver Award, Engineering Capstone Design Contest**, EWHA Womans University	
Feb 2021	**Academic Excellence Scholarship (Top 6%)**, EWHA Womans University	
Aug 2020	**Academic Excellence Scholarship (Top 2%)**, EWHA Womans University	
Feb 2020	**Academic Excellence Scholarship (Top 6%)**, EWHA Womans University	

Leadership & Service

Mar 2024 – Apr 2024 **Organizing Committee Data Lead,** CDM AI Challenge: Predicting Hypoxemia, Seoul National University Hospital,
Organized challenge with 200+ participants

Jan 2021 – Dec 2021 **Vice President,** Young Engineers Honor Society (YEHS), National Academy of Engineering of Korea,
1 of 7 executive board members leading 1,600+ young engineering professionals and students nationwide

Aug 2019 – Present **Young Engineers Honor Society (YEHS),** National Academy of Engineering of Korea,
Selected as one of 3 distinguished EWHA Univ. students

Research Interests

- Medical AI (AI for Health), Multi-modal learning, Reinforcement Learning

Skills

- Programming: Python, R, MATLAB (proficient); C++, C, Java (basic)
- Tools & Frameworks: PyTorch, scikit-learn, Scientific Python (NumPy, Pandas, Matplotlib), Git, Docker