

# Soomin Chung

MEDICAL AI (AI FOR HEALTH), MULTI-MODAL LEARNING, REINFORCEMENT LEARNING

Seoul National University, Seoul, Republic of Korea

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## Education

### Seoul National University

Seoul, Republic of Korea

M.S., INTERDISCIPLINARY PROGRAM OF BIOENGINEERING

Sep 2022 – Feb 2025

- GPA: 4.27/4.5 (3.95/4.0)
- TOEFL: 102/120 (R 28/30, L 28/30, S 23/30, W 23/30)
- Advisor: Kwangsoo Kim
- Thesis: Longitudinal ECG Analysis with Deep Learning for Improved Detection of Reduced Left Ventricular Ejection Fraction

### 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 (3.83/4.0)
- Advisor: Taehoon Shin
- Thesis: AI Speaker-Based Integrated Psychological Counseling System for Children and Adolescents

## Publications

Reinforcement learning model for optimizing dexmedetomidine dosing to prevent delirium in critically ill patients, [npj Digital Medicine](#) (SCIE, IF=15.1, JCR 2024 top 0.3%)

Hong Yeul Lee (MD)\*, **Soomin Chung (MS)\***, et al., Ho Geol Ryu+, Hyeonhoon Lee+ (2024)

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=9.9, JCR 2024 top 3.8%)

Sehoon Park (MD)\*, **Soomin Chung (MS)\***, et al., Kwangsoo Kim+, Hajeong Lee+ (2025)

S3D: Sketch-Driven 3D Model Generation, GMCV Workshop at CVPR'25 (CVPRW 2025)

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

Prediction of reduced left ventricular ejection fraction using atrial fibrillation or flutter electrocardiograms: A machine-learning study, [Digital Health](#) (SCIE, IF=3.3)

Soonil Kwon (MD)\*, **Soomin Chung (MS)\***, et al., So-Ryoung Lee+, Kwangsoo Kim+ (2025)

Integrated Counseling System for child, KCSE 2022

Sua Kim\*, Yebin Lee\*, **Soomin Chung\***, et al., Taehoon Shin+ (2022)

Machine Learning Approaches as An Alternative to Human Psychophysical Tests of Prosthetic Vision, [IEEE EMBC 2021](#)

Na Min An, Hyeonhee Roh, **Soomin Jung**, et al., Maesoon Im+ (2021)

Neural information of artificial vision varies depending on the level of spiking heterogeneity across retinal ganglion cells, [ARVO 2021](#)

Hyeonhee Roh, Eunju Kim, **Soo Min Chung**, et al., Maesoon Im+ (2021)

\*: co-first authors, +: corresponding authors

## Patents

Method and Apparatus for Drug Adjustment for Delirium Prevention, [Korean Patent Application](#) 10-2023-0138995

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

## Research Experience

- Carnegie Mellon University**  
VISITING SCHOLAR, SCHOOL OF COMPUTER SCIENCE

Pittsburgh, USA  
Aug 2024 – Feb 2025

  - Developed S3D, a framework for generating high-fidelity 3D models from simple sketches
  - Autonomous Targeting AI Cannon: Developed an autonomous targeting system using NVIDIA Jetson Nano and YOLO v11s
  - Enhanced a Medical Visual Question Answering model by replacing the classification head with a generative layer
- Bio-Medical Informatics (BMI) Lab, Seoul National University**

Seoul, Korea  
Jan 2022 – Feb 2025

ADVISOR: KWANGSOO KIM

  - 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  
Sep 2020 – Feb 2021

ADVISOR: MAESOON IM

  - Developed machine learning approaches as alternatives to human psychophysical testing for artificial vision evaluation
  - Investigated the impact of retinal ganglion cell firing diversity on neural information processing in artificial vision

## Work Experience

- Driving Safety Evaluation Division, KCWI Inc.**

Seoul, Korea  
Feb 2021 – Feb 2022

FREELANCE DATA ANALYST

  - Statistical analysis of railway vehicle 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

**Woonhae Scholarship Foundation,** 8th Cohort

3,800 USD per semester
- Dec 2021

**Silver Award, Engineering Capstone Design Contest,** EWha Womans University
- Feb 2020

**Academic Excellence Scholarship (Top 2%: 2020-1, Top 6%: 2019-2, 2020-2),**  
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*

## Skills

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