

# In Kyu Lee

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## Education

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### Ph.D. University of California, San Diego, CA

Sept 2024 - Present

- Major: Mechanical Engineering
- Advisor: Claire Acevedo, PhD

### M.S. University of Kansas, Lawrence, KS

July 2022

- Major: Bioengineering – Computational Bioengineering | *with Honors*
  - GPA: 3.86/4.0
- Advisor: Jiwoong Choi, PhD

### B.S. University of Minnesota-Twin Cities, Minneapolis, MN

May 2020

- Major: Aerospace Engineering and Mechanics
  - GPA: 3.70 /4.0
- Minor: Computer Science
- Advisor: Hyun Soo Park, PhD

## Experience

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### Graduate Research Assistant [UCSD: F2 lab]

August 2024 – Present

- Developed a segmentation and quantification pipeline for analyzing microCT
- Analyzed how chronic lymphocytic leukemia affects bone using synchrotron microCT

### Research Scientist [Medipixel]

August 2022 – August 2024

- Developed a local refinement module for lesion and bifurcation
- Led the MICCAI ARCADE Challenge 2023 for stenosis and artery segmentation
- Developed a video based coronary complication detection model
- Automated a CFD pipeline using ANSYS Fluent (Pyfluent)

### Graduate Research Assistant [University of Kansas Medical Center]

August 2020 – July 2022

- Built a quantitative CT (QCT) pipeline for analysis
  - Deep learning airway and lung segmentation
  - Image registration
  - Machine learning and statistical analysis

### Research Assistant [Seoul National University Hospital]

Summer 2019, Summer 2020

- Advisor: Chang Hyun Lee, MD
- Participated in Korea Environmental Industry & Technology Institute project “CT image matching technology development for structural and functional assessment of environmentally induced lung disease” funded by Korea Ministry of Environment
  - PCA and K-means clustering of air pollution exposure in adults with asthma, COPD, IPF, or no known lung disease
  - Statistical analysis to find associations between QCT variables and PM exposure

### Undergraduate Research Assistant [Computer Vision]

January 2019 – March 2020

- Human Multiview Behavior Imaging Dataset (HUMBI) Processing
  - Reconstructed 3D mesh of human body from 2D camera images

### Undergraduate Teaching Assistant

Spring 2019

- AEM 3031 [Deformable Body Mechanics]

- Tutored undergraduate science & calculus courses

- Worked as an ammunition specialist

## Publication

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### Thesis

**Lee IK.** Extended Quantitative Computed Tomography Analysis of Lung Structure and Function. MS thesis, The University of Kansas, **2022**.

### Paper

**Lee IK,** Obata Y, Pmictier A, Williams J, Kikani B, Jensen C, Sborov D, Stephens D, Acevedoe C. Disruption of marrow microenvironments in chronic lymphocytic leukemia by High-resolution synchrotron micro-computed tomography. **bioRxiv** (preprint) **2025**.

Seo S, **Lee IK,** Kim H-W, Min J, Jung C-H. Diffusion-Based User-Guided Data Augmentation for Coronary Stenosis Detection. *International Conference on Medical Image Computing And Computer Assisted Intervention (MICCAI)* **2025**.

**Lee IK,** Ku J, Choi Y. Gray's anatomy for Segmenting Anything Model: Optimizing Grayscale Medical Images for Fast and Lightweight Segmentation. *CVPR workshop MedSAMonLaptop* **2024**.

**Lee IK,** Shin J, Lee Y-H, Ku JH, Kim H-W. SASS: Semi-Supervised Approach for Stenosis Segmentation. *Automatic Region-based Coronary Artery Disease diagnostics using x-ray angiography image challenge (ARCADE). MICCAI Challenge 2023*. | [arXiv:2311.10281](https://arxiv.org/abs/2311.10281)

Ku JH, Lee Y-H, Shin J, **Lee IK,** Kim H-W. MPSeg: Multi-Phase strategy for coronary artery Segmentation. *Automatic Region-based Coronary Artery Disease diagnostics using x-ray angiography image challenge (ARCADE). MICCAI Challenge 2023*. | [arXiv:2311.10306](https://arxiv.org/abs/2311.10306)

Yu Z, Yoon JS, **Lee IK,** Venkatesh P, Park J, Yu J, Park HS. HUMBI: A Large Multiview Dataset of Human Body Expressions. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, virtual, June 16 - June 18, **2020**.

### Conference Abstract and Presentation

**Lee IK,** Obata Y, Pmictier A, Williams J, Kikani B, Jensen C, Sborov D, Acevedoe C, Stephens D. Disruption of marrow microenvironments in chronic lymphocytic leukemia by High-resolution synchrotron micro-computed tomography. *Society of Engineering Science*. Atlanta, GA, Oct 12-15, **2025**. (oral)

**Lee IK,** Choi J, Castro M, Kim T, Kang HR, Lee CH. Quantitative CT and CFD Explain Bronchodilator-induced Regional Ventilation Improvement in Asthma. *International Collaborative Asthma Network (ICAN)*, San Francisco, CA, May 12-13, **2022**. (oral)

**Lee IK,** Choi J, Park EK, Tutkun E, Hoffman EA, Castro M, Lee CH. Toward extended quantitative CT imaging application with deep transfer learning. *American Thoracic Society International Conference*, San Diego, CA (virtual), May 14-19, **2021**. Am J Respir Crit Care Med 2021;203:A4591 (poster)

## Honors & Awards

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<b>American Society of Hematology (ASH) Abstract Achievement Award</b>	October 2025
<b>MICCAI 2023: ARCADE challenge</b> <ul style="list-style-type: none"><li>● Stenosis segmentation: 1<sup>st</sup> place</li><li>● Coronary artery segmentation: 2<sup>nd</sup> place</li></ul>	October 2023
<b>2023 Social Issues Data &amp; AI Analysis Competition</b> <ul style="list-style-type: none"><li>● 2<sup>nd</sup> place (\$1,600) Awarded by President of National Research Council</li></ul>	October 2023
<b>The University of Kansas: Outstanding Student Researcher Award</b>	May 2023
<b>Burn Diagnosis AI Challenge - hosted by The Ministry of Science and ICT in Korea</b> <ul style="list-style-type: none"><li>● 1<sup>st</sup> place (\$2,400)</li></ul>	November 2022
<b>Lung Cancer Segmentation Competition - hosted by Ajou University Medical Center</b> <ul style="list-style-type: none"><li>● 2<sup>nd</sup> place (\$2,400)</li></ul>	December 2022
<b>Undergraduate Research Opportunity Program (UROP) Award</b>	May 2019
<b>Chester Gaskell Aeronautical Engineering Scholarship</b> <ul style="list-style-type: none"><li>● Merit-based scholarship given to top undergraduates who have outstanding academic records</li></ul>	Fall 2019
<b>University of Minnesota: Dean's List</b> <ul style="list-style-type: none"><li>● Fall 2014, Spring 2015, Fall 2017, Spring 2018, Fall 2018, Spring 2019</li></ul>	
<b>International Collaborative Asthma Network (ICAN) Travel Award</b>	March 2022

## Activities

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<b>AI Kaggle Competition Expert</b>	
<b>Appreciation Plaques – President of the Korean American Society of Greater Kansas City</b>	July 2022

## Certifications & Patents

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<b>Patent</b> <ul style="list-style-type: none"><li>● Method and apparatus for matching medical images considering phase of respiration signal</li><li>● Method and electronic device for labeling medical image</li><li>● Prediction model training method, FFR data generating method and electronic device performing the same</li></ul>	
<b>Udacity: AI for healthcare Nanodegree</b>	September 2020
<b>NVIDIA: Fundamentals of accelerated computing with CUDA python</b>	June 2021
<b>College Reading &amp; Learning Association (CRLA) Certification   Certified Tutor</b> <ul style="list-style-type: none"><li>● Level III Master Tutor</li></ul>	October 2018 May 2019

## Skill

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<b>Languages</b> <ul style="list-style-type: none"><li>● English, Chinese, Korean</li></ul>
<b>Programming Languages</b> <ul style="list-style-type: none"><li>● MATLAB, Python, Fortran</li></ul>