



# Sungrae Hong 홍성래

April 2026



**[Address]** Daejeon, Republic of Korea

**[Interested In]** Medical AI

**[Birth]** 19950825/YYYYMMDD

**[Email]** sun.hong@kaist.ac.kr

**[Military Service]**

• ROK III Corps 🇰🇷 / 20160816 - 20180515

**[Education]**

• Ph. D. Candidate KAIST Graduate School of Data Science (2023 ~)

• M.S. KAIST Graduate School of Data Science (2023)

• B.S. **Seoul** Nat'l Univ of Science & **Tech** Industrial Engineering (2021)

• Daejeon High School (2014)

**[Outbound Link]** [🔗 Google Scholar](#) [in linkedin](#)

## Work Experience

### Prof. Mun Yong Yi: Knowledge System Lab of ISE&GSDS, KAIST

#### **Development of a Multimodal Artificial Intelligence-Based Computer-Aided Diagnosis System for Gastrointestinal Endoscopic Biopsies (Seegene Medical Foundation)**

[Period] March 2024 - March 2026

[Experience]

- Project Manager
- Multiple Instance Learning using Multiclass and Resolution WSIs
- Priority-Aware Mistake Severity Training for WSI
- Decision Making under Uncertainty

#### **A Study on the Next Generation Medical Diagnosis System Based on AI (Seegene Medical Foundation)**

[Period] July 2021 - February 2024

[Experience]

- Histopathology Whole Slide Segmentation
- Microscopy Pathology Image Classification under Weak Label and Noise
- Microscopy Diagnosis Team Manager

### Prof. Sangheum Hwang: Data Intelligence Lab of IE, Seoultech

#### **Development of Safety Monitoring Model Based on IoT for Subminiature Sensors (IITP)**

[Period] 2020 July - 2021 July

[Experience]

- Time Series Modeling
- Anomaly Detection in Sequential Data

## Publications

[2026]

(IC) **Every Error has Its Magnitude: Asymmetric Mistake Severity Training for Multiclass Multiple Instance Learning** [\[Arxiv\]](#)

- [Sungrae Hong](#)<sup>o</sup>, Jiwon Jeong, Jisu Shin, Donghee Han, Sol Lee, Kyungeun Kim, Mun Yong Yi<sup>†</sup>

- The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2026

(IC) **DRCoD: Toward Robust Continual Learning of Diffusion Models for Tire Manufacturing Prototyping** [TBA]

- Jisu Shin, Sol Lee, Sungrae Hong<sup>◦</sup>, A Young Kim, Youngbin You, Jeongheon Park, Jungsoo Oh, Mun Yong Yi<sup>†</sup>  
- The 2nd International Workshop on Vision Intelligence for Real-world Challenges, AI4RWC, CVPR 2026

(IC) **Every Preference Has Its Strength: Injecting Ordinal Semantics into LLM-Based Recommenders** [TBA]

- Jiwon Jeong<sup>◦</sup>, Donghee Han, Sungrae Hong, Woosung Kang, Mun Yong Yi<sup>†</sup>  
- ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR) 2026

**7 papers are under review.**

[2025]

(IC) **Diagnose Like A REAL Pathologist: An Uncertainty-Focused Approach for Trustworthy Multi-Resolution Multiple Instance Learning** [Arxiv] [Proceeding]

- Sungrae Hong<sup>◦</sup>, Sol Lee, Jisu Shin, Jiwon Jeong, Mun Yong Yi<sup>†</sup>  
- IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2026

(IC/Oral) **Priority-Aware Clinical Pathology Hierarchy Training for Multiple Instance Learning** [Arxiv] [OpenReview]

- Sungrae Hong<sup>◦</sup>, Kyungeun Kim, Juhyeon Kim, Sol Lee, Jisu Shin, Chanjae Song, Mun Yong Yi<sup>†</sup>  
- The 2nd MICCAI Student Board (MSB) EMERGE Workshop, September 23-27, 2025  
- 🏆 **Best Paper Award**

(DC) **Calibrating MIL in Histopathology with Uncertainty-Aware Label Smoothing via Evidential Learning** [Proceeding]

- Juheon Kim<sup>◦\*</sup>, Sungrae Hong<sup>\*</sup>, Chanjae Song, Mun Yong Yi<sup>†</sup>  
- 2025 KIISE Proceedings of Korean Computer Science Conference

(DC) **Metadata-Aware Multimodal MIL with Reliable Calibration for Histopathology Diagnosis** [Proceeding]

- Chanjae Song<sup>◦</sup>, Sungrae Hong, Junheon Kim, Minkyu Jeong, Mun Yong Yi<sup>†</sup>  
- 2025 KIISE Proceedings of Korean Computer Science Conference  
- 🏆 **Best Presentation Award**

[2024]

(IC) **Towards Classifying Histopathological Microscope Images as Time Series Data** [Arxiv] [Proceeding]

- Sungrae Hong<sup>◦</sup>, Hyeongmin Park, Youngsin Ko, Sol Lee, Bryan Wong, Mun Yong Yi<sup>†</sup>  
- IEEE International Symposium on Biomedical Imaging (ISBI 2025), April 14-17, 2025

(IC) **Rethinking Pre-Trained Feature Extractor Selection in Multiple Instance Learning for Whole Slide Image Classification** [Proceeding]

- Bryan Wong, Sungrae Hong<sup>◦</sup>, Mun Yong Yi<sup>†</sup>  
- IEEE International Symposium on Biomedical Imaging (ISBI 2025), April 14-17, 2025

(IC) **TireDiff: A Framework for Conditional Tire Footprint Images Generation from Manufacturing Tabular Data** [Proceeding]

- Sol Lee<sup>◦</sup>, Jisu Shin, Sungrae Hong, Chanjae Song, Youngbin Yoo, Jeongheon Park, Jungsoo Oh, Mun Yong Yi<sup>†</sup>  
- 4th Annual AAAI Workshop on AI to Accelerate Science and Engineering (AI2ASE), March 3-4, 2025

(IC/Oral) **Uncertainty-based Data-wise Label Smoothing for Calibrating Multiple Instance Learning in Histopathology Image Classification** [Proceeding]

- Hyeongmin Park<sup>◦</sup>, Sungrae Hong, Chanjae Song, Jongwoo Kim, Mun Yong Yi<sup>†</sup>  
- IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2025

(DC) **Sensitivity-Aware Fine-Tuning: Enhancing Parameter Importance with Hessian Connections** [\[Proceeding\]](#)

- Nahyeon Lee<sup>◦</sup>, Sol Lee, [Sungrae Hong](#), Mun Yong Yi<sup>†</sup>
- Korean Artificial Intelligence Association Summer Conference (KAIA) 2024

(DC) **Image Augmentation Based Self-supervised Learning for Music Genre Classification** [\[Proceeding\]](#)

- Hyeongmin Park<sup>◦</sup>, [Sungrae Hong](#), Sol Lee, Taemi Kim, Mun Yong Yi<sup>†</sup>
- 2024 KIISE Proceedings of Korean Computer Science Conference

[2023]

(Arxiv Preprint) **CP-Dilatation: A Copy-and-Paste Augmentation Method for Preserving the Boundary Context Information of Histopathology Images** [\[Arxiv\]](#)

- [Sungrae Hong](#), Sol Lee, Mun Yong Yi<sup>†</sup>

[2022]

(DC/Oral) **MATE: The Multimodal Model Using Audio and Text for Emotion Recognition** [\[Proceeding\]](#)

- [Sungrae Hong](#)<sup>◦</sup>, Taemi Kim, Sol Lee, Jongwoo Kim, Mun Yong Yi<sup>†</sup>
- 2022 KIISE Proceedings of Korean Computer Science Conference
- 🏆 **MSIT Minister's Award**

(DC) **A Simple Cut Augmentation For Medical Pathology Image** [\[Proceeding\]](#)

- [Sungrae Hong](#)<sup>◦</sup>, Taemi Kim, Sol Lee, Mujin Kim, Bumho Lee, Youngsin Ko, Yumi Choi, Mun Yong Yi<sup>†</sup>
- Korean Institute of Industrial Engineers (KIIE), June 2022

(DC/Oral) **약한 지도 학습 방식의 조직 병리학 이미지 세그멘테이션** [\[Proceeding\]](#)

- Taemi Kim<sup>◦</sup>, [Sungrae Hong](#), Sol Lee, Mujin Kim, Bumho Lee, Youngsin Ko, Yumi Choi, Mun Yong Yi<sup>†</sup>
- Korean Institute of Industrial Engineers (KIIE), June 2022

†: Corresponding Author, ◦: Speaker

(IC): International Conference, (DC): Domestic Conference, (IJ): International Journal

## Awards

**2025 MICCAI STUDENT BOARD (MSB) EMERGE WORKSHOP**

- **Best Paper Award**
- **Awarded NVIDIA<sup>®</sup> DGX Spark as a Supplementary Prize** [\[Link\]](#)
- [Sungrae Hong](#)<sup>◦</sup>, Kyungeun Kim, Juhyeon Kim, Sol Lee, Jisu Shin, Chanjae Song, Mun Yong Yi<sup>‡</sup>

**2024 KAIST ISE Research Day Competition**

- **Exellent Prize**
- [Sungrae Hong](#)<sup>◦</sup>, Hyeongmin Park, Mun Yong Yi<sup>‡</sup>

**2023 Military AI Competition (MAICON)** [\[github\]](#)

- **Special Award by GenesisLab**
- Geonyoung Goh, Sihyung Park, Junseok Lee, [Sungrae Hong](#)<sup>◦</sup>  
(Same contribution, Name ascending in Korean)

**2022 ETRI Human Understanding Artificial Intelligence Paper Competition** [\[github\]](#)

- **MSIT Minister's Award (과학기술정보통신부장관상)**
- We also received **Best Prize(2nd)** from 2022 KAIST IE Research Day Competition
- [Sungrae Hong](#)<sup>◦</sup>, Taemi Kim, Sol Lee, Jongwoo Kim, Mun Yong Yi<sup>‡</sup>

**2020 Seoultech IE Capstone Competition**

- **Grand Prize**
- Jaehyun Park<sup>◦</sup>, Hyunjun Cha<sup>◦</sup>, [Sungrae Hong](#)<sup>◦</sup>, Gwangho GuK<sup>‡</sup>  
(Same contribution, Name ascending in Korean)

◦: Speaker, ‡: Adviser

## Reviewer

[2026]

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## Scholarship

[2022]

- 2022 KAIST IE Research Day Competition (Best Prize)

[2021]

- Academic Excellent Scholarship SeoulTech (GPA 4.5/4.5)

[2020]

- SeoulTech IE Capstone Competition (Grand Prize)
- Academic Excellent Scholarship SeoulTech (GPA 4.37/4.5)

[2019]

- Academic Scholarship SeoulTech (GPA 4.0/4.5)
- Academic Scholarship SeoulTech (GPA 4.11/4.5)
- Betterment in Ability Scholarship (Merit-Based)

[2015]

- Admission with Highest Distinction (Full Tuition)

## Teaching Assistant

[2023]

- HanKook Tire AI Education, KAIST IE
  - DS545 Business Intelligence(BI), KAIST GSDS
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