

# Jongwoo Kim

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Daejeon, Republic of Korea

## RESEARCH AREA

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1) Multimodal Large Language Models (vision/language/graph): unified reasoning across visual, textual, and graph-structured inputs. 2) JEPA and World Models: predictive representation learning and latent dynamics for improved abstraction and generalization. 3) Graph Prior Fitted Networks (Graph PFN): scalable predictive function learning on relational and graph-structured domains.

## EDUCATION

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- **Korea Advanced Institute of Science and Technology (KAIST)** Aug. 2022 – Present  
*Ph.D. in Industrial and Systems Engineering; M.S. in Data Science* Daejeon, South Korea
  - **Ph.D. in Industrial and Systems Engineering** (Aug. 2024 – Present)
    - \* Advisor: Prof. Mun Yong Yi
  - **M.S. in Data Science** (Sep. 2022 – Aug. 2024)
    - \* Thesis: *MicroMIL: Spatially Enhanced Multiple Instance Learning for Advanced Cancer Diagnosis in Microscopy*
    - \* Advisor: Prof. Mun Yong Yi
- **Seoul National University of Science and Technology** Feb. 2016 – Aug. 2022  
*B.S. in Industrial and Systems Engineering (Summa Cum Laude)* Seoul, South Korea
  - Thesis: *How to succeed in the market? Predicting startup success using a machine learning approach*
  - Advisor: Prof. Youngjung Geum

## CONFERENCE AND JOURNAL

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C=CONFERENCE, J=JOURNAL

† Equal contribution.

- [C.13] Jeongwhan Choi<sup>†</sup>, **Jongwoo Kim<sup>†</sup>**, Woosung Kang, Noseong Park. **Learning Posterior Predictive Distributions for Node Classification from Synthetic Graph Priors.** In *ICLR*, 2026.
- [C.12] Bryan Wong<sup>†</sup>, **Jongwoo Kim<sup>†</sup>**, Huazhu Fu, Mun Yi. **Few-Shot Learning from Gigapixel Images via Hierarchical Vision-Language Alignment and Modeling.** In *NeurIPS*, 2025.
- [C.11] **Jongwoo Kim<sup>†</sup>**, Seongyeub Chu<sup>†</sup>, Bryan Wong, Mun Yi. **Not All Options Are Created Equal: Textual Option Weighting for Token-Efficient LLM-Based Knowledge Tracing.** In *EMNLP Findings*, 2025.
- [C.10] **Jongwoo Kim**, Seongyeub Chu, Hyeongmin Park, Bryan Wong, Keejun Han, Mun Yi. **Leveraging Multi-facet Paths for Heterogeneous Graph Representation Learning.** In *CIKM*, 2025.
- [C.9] ChanJae Song<sup>†</sup>, Seongyeub Chu<sup>†</sup>, **Jongwoo Kim<sup>†</sup>**, Mun Yi. **A Novel Evaluation Framework for 15-Minute City Using Satellite Imagery.** In *ACM SIGSPATIAL*, 2025.
- [C.8] **Jongwoo Kim<sup>†</sup>**, Bryan Wong<sup>†</sup>, Huazhu Fu, Willmer Rafell Quiñones Robles, Mun Yi. **MicroMIL: Graph-Based Multiple Instance Learning for Context-Aware Diagnosis with Microscopic Images.** In *MICCAI*, 2025.
- [C.7] Seongyeub Chu<sup>†</sup>, **Jongwoo Kim<sup>†</sup>**, Bryan Wong, Mun Yi. **Rationale Behind Essay Scores: Enhancing S-LLM's Multi-Trait Essay Scoring with Rationale Generated by LLMs.** In *NAACL Findings*, 2025.
- [C.6] Seongyeub Chu<sup>†</sup>, **Jongwoo Kim<sup>†</sup>**, Mun Yi. **Think Together and Work Better: Combining Humans' and LLMs' Think-Aloud Outcomes for Effective Text Evaluation.** In *CHI, Oral*, 2025.
- [C.5] Hyeongmin Park, Sungrae Hong, Chanjae Song, **Jongwoo Kim**, Mun Yi. **Uncertainty-based Data-wise Label Smoothing for Calibrating Multiple Instance Learning in Histopathology Image.** In *WACV, Oral*, 2025.
- [C.4] **Jongwoo Kim**, Minkyu Jeong, Hyeongmin Park, Mun Yi. **Leveraging Spatial Relationships in Microscope for Patient Cancer Diagnosis.** In *ISBI*, 2024.
- [C.3] Seongyeub Chu, **Jongwoo Kim**, SeungTai Yoo, Mun Yi. **Option-Knowledge Concept Aware Knowledge Tracing: modeling student proficiency with process-oriented assessment in education.** In *Korea Computer Congress (KCC)*, 2024.
- [J.1] **Jongwoo Kim**, Hongil Kim, Youngjung Geum. **How to succeed in the market? Predicting startup success using a machine learning approach.** *Technological Forecasting & Social Change (TFSC)*, 2023. (IF=13.3)
- [C.2] Sungrae Hong, Taemi Kim, Sol Lee, **Jongwoo Kim**, Mun Yi. **MATE: the Multimodal model using Audio and Text for Emotion recognition.** In *Korea Computer Congress (KCC)*, 2022.
- [C.1] Mingyu Park, Byeongmin Jeon, **Jongwoo Kim**, Youngjung. **Exploring Potential Application Industry for Fintech Technology by Expanding its Terminology: Network Analysis and Topic Modelling Approach.** In *The Journal of Society for e-Business Studies*, 2021.

- [S.7] **Jongwoo Kim**, Seongyeub Chu, Jeongwhan Choi, Mun Yi. **Knowledge World Model for Learning Path Recommendation**. Preprint, 2026.
- [S.6] **Jongwoo Kim**, Jeongwhan Choi, Seongyeub Chu, Noseong Park, Mun Yi. **GraPE: Graph Prompt Tuning via Mixture of Experts Approach**. Preprint, 2026.
- [S.5] Seongyeub Chu, **Jongwoo Kim**, Mun Yi. **FeedEval: Pedagogically Aligned Evaluation of LLM-Generated Essay Feedback**. Preprint, 2026.
- [S.4] Jeongwhan Choi, Minseo Kim, **Jongwoo Kim**, Woosung Kang, Noseong Park. **Can TabPFN Compete GNNs for Node Classification Using Positional and Structural Features?** Preprint, 2025.
- [S.3] Willmer Rafell Quinones Robles, Sakonporn Noree, **Jongwoo Kim**, Bryan Wong, Mun Yi. **Spatial Context-Driven Positive Pair Sampling for Enhanced Histopathology Image Classification**. Preprint, 2025.
- [S.2] Seongyeub Chu, **Jongwoo Kim**, Mun Yi. **AMR: Aspect-Aware Mooc Recommendation in a Heterogeneous View**. Preprint, 2025.
- [S.1] **Jongwoo Kim**, Seongyeub Chu, Mun Yi. **RFMRec: Enhancing Personal Recommendation Using Public Trend Captured via RFM**. Preprint, 2025.

## PROJECTS

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- **Semiconductor Defect Detection with ETRI & Bluetile Lab (Project Manager)** *Sep. 2025 – Present*  
*Tools: Vision Transformer, Weakly Supervised Learning*  
 ◦ Developed a defect detection pipeline for semiconductor wafer images with ETRI and Bluetile Lab.
- **Large Vision-Language Model for Pathology Diagnosis with NPF (Project Manager)** *Sep. 2025 – Present*  
*Tools: Vision Language Model, Human Computer Interaction*  
 ◦ Developed a Human-Centered VLM pipeline for histopathology.
- **Personalized Problem Recommendation with Chunjae Education** *Feb. 2025 – Dec. 2025*  
*Tools: Knowledge Tracing, Graph Embedding*  
 ◦ Built a personalized problem recommendation system using **Knowledge Tracing** and **Transition Graph**.
- **Multi-view Essay Scoring with KT Corporation** *Jul. 2024 – Dec. 2024*  
*Tools: Transformers, BERTScore*  
 ◦ Designed a **multi-view essay scoring model** integrating linguistic, semantic, and stylistic features with **KT**.
- **Colon Cancer Diagnosis with Seegene Medical Foundation (Project Manager of Microscope)** *Jul. 2023 – Jul. 2024*  
*Tools: Multiple Instance Learning, GNN*  
 ◦ Developed a **graph-based MIL model** for colon cancer diagnosis using whole-slide microscopy images.
- **Seoul Real Estate Price Prediction with Tushin** *Feb. 2023 – Jul. 2023*  
*Tools: P XGBoost, LightGBM, SHAP, Geospatial Analysis*  
 ◦ Built a **real estate price prediction model** using public datasets and transaction records in collaboration with **Toojae-shin**.

## HONORS AND AWARDS

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- **Superior Academic Performance** *Aug.2020–Fed.2022*  
*Seoul National University of Science and Technology, Korea*
- **Capstone Design (2nd Place)** *Dec. 2021*  
*Seoul National University of Science and Technology, Korea*
- **ETRI Human Understanding Artificial Intelligence Paper Contest (Minister of Science and ICT Award)** *Jun. 2022*  
*ETRI, Korea*
- **Industrial and Social Issues Poster Contest (2nd Place)** *Nov. 2022*  
*KAIST, Korea*
- **Best Award of Paper** *Jun. 2024*  
*Korea Computer Congress, Korea*
- **Industrial and Social Issues Poster Contest (3rd Place)** *Nov. 2025*  
*KAIST, Korea*

## PROFESSIONAL SERVICES

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- **Conference Reviewer**
  - ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2024,2026
  - International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI) 2025
  - The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2026