


Juseong Jin

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 Homepage

Introduction

I am Juseong Jin, an AI research engineer who discovers problems within data and connects the dots through technology. I contribute to accelerating AI-driven digital transformation and look forward to joining you on this journey.

Research Interests

- **Multi-modality AI:** Vision-Language model, Constrative learning
- **Risk Assessment:** Survival analysis, Ranking objective
- **AI agent:** Multi-Agent system optimization

Engineering Skill Sets

- **AI Tools:** Pytorch, Langchain
- **Data Engineering:** Python, SQL, Airflow
- **MLOps:** Docker, FastAPI, MLflow, Google cloud

Work Experiences

Research Engineer

Mar 2024 – Present

Seoul National University Hospital

Seoul, Korea

- **Medical AI Research Project**
 - Research on multi-agent collaborative reasoning optimization.
 - Research on a surgical domain-specific vision-language model.
 - Research on an AI model for risk assessment of renal cancer patients.
- **Data Construction Project**
 - Built data pipelines for data QC and automated collection.
 - Developed and operated dashboards for key metric analysis.

Education

Seoul National University

Mar 2022 – Feb 2024

M.S in Interdisciplinary Program in Bio-engineering (Advisor: Prof. C.W. Jeong)

Seoul, Korea

Inha University

Mar 2015 – Feb 2022

B.S in Mechanical Engineering and Software Engineering

Incheon, Korea

Projects

- **MedARC: Multi-Agent Cooperative Reasoning Processes Optimization**
 - To address the complex decision-making and excessive API calls inherent in multi-agent architectures, we developed a visual prompt and game theory-based optimization framework.
 - Compared to existing multi-agent architectures, we achieved an 11% increase in inference accuracy and a 60% improvement in call efficiency.

- **Surgical-LLaVA: Surgical scenario understanding via large language and vision assistant**
 - To develop a surgical domain-specific VLM, we leveraged GPT-3.5 to build an instruction dataset of surgical video captions in the format instruction:correct answer. - Instruction-tuning improved VQA accuracy by 4% and video reasoning performance (GPT score) by 14% compared to existing models.
- **Urology Data Construction Project**
 - Automated data collection and implemented QC logic by building an Airflow-based data ETL pipeline.
 - Developed and operated a full-scale dashboard for analyzing key indicators.
 - Builded an LLM-based navigation chatbot for exploring dashboard features.
- **Multi-modal Survival Risk Assessment of Renal Cancer Patients**
 - To distinguish subtle prognostic differences in cancer patients, a cross-attention architecture was designed to guide image feature interpretation using clinical information. - Compared to a single modality, the C-index performance improved by 7%, IBS was reduced by 16%, and subgroup survival rates differed ($p < 0.01$).
- **Self-supervised domain adaptation in 6DoF pose estimation**
 - This industry-academia project with ETRI aims to synthesize 6-DOF data in a virtual environment and improve performance degradation caused by the virtual-real domain gap.
 - A self-supervised domain adaptation method for pose estimation improves ADD by 7% and ADD-S by 14%.

Publications

- [1] **J. Jin**, C.W. Jeong, “MedARC: A Reinforcement-Learned Multi-Agent Collaboration System for Expert-Level Medical Visual Reasoning“, 2025, *MICCAI CLINICAI* ***Oral Presentation**
- [2] J. Kim, A. Jeong, **J. Jin**, S. Lee, D.Y. Kim, S. Kim. “Temporal Relationship Between Internet Search Volumes for Diarrhea Synonyms Using ChatGPT and Emergency Department Visits for Diarrhea-Related Symptoms in South Korea“, 2025, *Journal of Medical Internet Research (JMIR)*
- [3] **J. Jin**, C.W. Jeong. “Surgical-LLaVA: Toward Surgical Scenario Understanding via Large Language and Vision Models“, *NeurIPS 2024 AIM-FM*
- [4] **J. Jin***, E. Jeong*, J. Cho, Y.G Kim, “Self-supervised Domain Adaptation for 6DoF Pose Estimations“, 2024, *IEEE ACCESS*
- [5] **J. Jin**, J.H. Han, K.C. Moon, S.S. Moon, Y.G Kim, C.W. Jeong “Development and Validation of Multi-modal Survival Prediction Model Using Clinical Information and Pathology Images in Renal Cell Carcinoma Patients“, 2024, *Korean Society of Medical Informatics (KOSMI)*
- [6] **J. Jin***, E. Jeong*, J. Cho, J.H. Park, Y.G. Kim. “DAPO: Self-supervised Domain Adaptation for 6DoF Pose Estimation,” *NeurIPS 2023 SSLTheoryPractice*.
- [7] **J. Jin**, Y.J. Kim, Y. Shin, C.H. Koo, S.B. Lee, H.S. Kim and Y.G. Kim. “Deep Learning Models and Index Predicting Postoperative Desaturation using Spirometry Signal,” 2023, *Korean Society of Medical Informatics (KOSMI)*. ***Best Oral Presentation**
- [8] Y. Shin, Y.J. Kim, **J. Jin**, C.H. Koo, S.B. Lee, H.S. Kim and Y.G. Kim. “Machine Learning Model for Predicting Immediate Postoperative Desaturation Using Spirometryr Signal Data,” 2023, *Scientific Reports*.
- [9] **J. Jin**, J.H. Han, K.C. Moon, S.S. Byun, Y.G. Kim, C.W. Jeong. “Development of Large-scale digital pathology images-based Deep Learning model for Fuhrman Nuclear Grading Aid in Clear cell Renal Cell Carcinoma,” 2023, *Korean Urological Association (KUA)*.

Patents

"Method and apparatus for self-supervised 6D object pose estimation", Y. G. Kim, E. J. Jeong, **J. S. Jin**, J. H. Park, J. M. Cho, US Patent, 2024.04.25, US 18491051

"Real-time hypoxemia prediction system using spirometry signal during surgery", H. S. Kim, Y. G. Kim, Y. M. Shin, Y. J. Kim, **J. S. Jin**, S. B. Lee, KR Patent, 2023.03.03, KR 10-2023-0028285