

JUNSEONG LEE

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EDUCATION

University of Illinois Urbana-Champaign

B.S. in Data Science and Finance / Computer Science Minor

Expected May 2027

GPA: 3.77 / 4.00

Relevant Coursework: Linear Algebra, Discrete Math, Data Structures, Probability and Statistics, Calculus, Machine Learning, Database Systems, AI Ethics

PUBLICATIONS

Expertise modulates automation bias and sentinel behavior in human-AI collaborative diagnosis of neonatal pneumoperitoneum

Junseong Lee (first author) et al.

npj Digital Medicine (under revision)

Beyond Explainability: A Multi-Dimensional Framework for Behavioral Acceptability and Role Separation in Medical AI

Junseong Lee (first author) et al.

npj Digital Medicine (under review)

Automated landmark detection and view positioning assessment of shoulder Grashey view radiographs using cascade deep learning: A dual-center validation study

Seung Min Ryu, Changhyun Park, Junseong Lee et al.

Medical Physics, DOI:10.1002/mp.70285

PRESENTATIONS

Demo: Preserving Evidence, Context, and Disagreement in Mechanistic Microbe-Host Graph QA

Junseong Lee et al.

NeurIPS Workshop 2026, GenAI4Health (under review)

Bounded Verification and Asymmetric Recoverability in Biomedical Knowledge-Graph Construction

Junseong Lee et al.

NeurIPS Workshop 2026, AI4Science (under review)

When a Good AUC Misleads: Quantifying Physician-AI Interaction with Optimized and Biased Models in Pediatric Radiology

Junseong Lee et al.

IPR Congress 2026, Poster Presentation (Abdomen)

Representation-Focused Batch Sampling Enhances Performance of Efficiently Adapted Foundation Model for Detecting Neonatal Pneumoperitoneum on Cross-Table Lateral Radiographs

Junseong Lee et al.

RSNA 2025, Poster Presentation (Imaging Informatics)

EXPERIENCE

Research Intern

May 2026 – Present

Massachusetts General Hospital and Harvard Medical School (PI: Synho Do)

Boston, MA

- Architecting **BiomeTrail**, a provenance-gated biomedical knowledge graph mining microbe–metabolite–receptor–disease mechanistic chains from **240K+** papers, grounding entities to standard ontologies (ChEBI, MONDO, NCBITaxon, UniProt) with per-edge PMID and verbatim-sentence provenance.
- Built a cost-optimized two-stage pipeline: a deterministic NER + entity-grounding stage (**2.5M**-surface automaton) reducing 240K papers to an **8.5M** candidate-relation pool, then targeted LLM relation extraction (AWS Bedrock) verifying each edge against its source sentence—served via Neo4j and an interactive 3D graph explorer (React).
- Enforced a type-safe ontology schema and LLM-based grounding validation under a measurement-first workflow—independent precision audits and held-out gold sets gate each pipeline stage before paid scale-up.

AI Research Engineer Intern

Feb 2025 – Feb 2026

Asan Medical Center (PI: Namkug Kim)

Seoul, South Korea

- First-authored a human-AI interaction study on neonatal pneumoperitoneum diagnosis (RAD-DINO fine-tuned with LoRA; **AUC 0.948** on multi-center external validation), designing a multi-reader crossover with an error-injected model to quantify automation bias; presented at RSNA 2025, manuscript under revision at *npj Digital Medicine*.
- First-authored a narrative review formalizing behavioral acceptability and role separation for clinical AI (under review at *npj Digital Medicine*).
- Developed and launched an open-source educational sandbox for medical students and residents to practice AI-collaborative cognitive conflicts.
- Engineered an imbalance-aware batch sampler for the vision-transformer classifier that improved learning of rare disease patterns, increasing sensitivity by **23%** at matched specificity.

- Developed a multimodal survival model for post-transplant liver cancer (HCC) under competing risks by fusing 3D CT with clinical variables (C-index **0.74**); explored tradeoff in parametric vs. non-parametric approaches and analyzed multimodal explainability.

Squad Leader and Software Engineer

Oct 2023 – Apr 2025

8th United States Army, *KATUSA*

Camp Humphreys, South Korea

- **Awarded Army Commendation Medal** for building and deploying an event-management web app (Python, Flask, OAuth2, Google API, AWS EC2, Nginx, Unicorn), processing **800+** participants across **32 events**, cutting manual reconciliation by **75%** and data-entry errors by **95%**.
- Provided network and systems support for the technology unit during field exercises; managed 12 soldiers and served as a liaison between U.S. and Korean command during joint trainings.

PROJECTS

Gaze-VQA: Multi-View Spatial Reasoning Benchmark

Dec 2025 – May 2026

MONET Lab (PI: Klara Nahrstedt)

- Designed a benchmark to probe vision-language models’ human-gaze understanding across four tasks: *Gaze Target Recognition*, *Relative Orientation Reasoning*, *Cross-View Visibility Estimation*, and *Viewpoint-Based Accessibility*.
- Generated the benchmark dataset from the MVGT dataset and built the evaluation harness, combining standard text metrics with an **LLM-as-a-Judge** to score semantic correctness beyond exact match.

4th Place: MICCAI 2025 3D-VLM Challenge — Radiology Report Generation

Jun – Sept 2025

Team ‘Pneumo-Lingo’

- Placed **4th** of 160+ international teams by adapting BIMBA (CVPR 2025) with a segmentation-mask-aware interleaving of spatiotemporal tokens for 3D CT–text fusion. (*Work later extended into an ECCV 2026 paper, [arXiv:2506.23102](#); acknowledged contributor.*)
- Conducted exploratory data analysis of the challenge dataset and constructed Llama-8B tailored instruction sets to guide fine-tuning.
- Built a LangChain pipeline (GPT-4o mini) to structure and classify 6 organ-level report inputs via chain-of-thought reasoning into clinically relevant labels.

RECOGNITIONS

Fred S. Bailey Scholarship

2026

\$3,000 for academic merit and leadership potential

YMCA / UIUC

Woojin Scholarship

2026

National recipient (\$1,500) for excellence in STEM and community service

KSEA

Army Commendation Medal

2025

For proactive efforts to streamline battalion workflow

2nd Infantry Division, 8th U.S. Army

Army Achievement Medal

2024

Outstanding performance, Freedom Shield field exercise

2nd Infantry Division, 8th U.S. Army

KEY SKILLS

Languages: Python, C++, SQL, Java, Bash, Git

AI/ML: PyTorch, CUDA, LangChain, MONAI, scikit-learn, HuggingFace, OpenCV, Ollama

Tools & Platforms: Docker, Slurm, AWS, Neo4j, Linux, Cloudflare