

Jiyoon Pyo

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Research Interest

Geospatial AI, Multimodal reasoning, Spatial understanding, Human-centered AI applications

Education

University of Minnesota - Twin Cities <i>Ph.D. in Computer Science</i>	<i>Sept 2023 – Present</i>
○ Advisor: Prof. Yao-Yi Chiang	
University of Minnesota - Twin Cities <i>M.Sc. in Computer Science</i>	<i>Sept 2023 – May 2025</i>
The Cooper Union <i>M.Eng. in Electrical Engineering</i>	<i>Aug 2019 – May 2023</i>
○ Advisor: Prof. Carl Sable	
○ Thesis: Detection and Replacement of Neologisms for Translation (ProQuest ↗)	
The Cooper Union <i>B.Eng. in Electrical Engineering (Computer Engineering)</i>	<i>Aug 2019 – May 2023</i>
○ Minor: Computer Science	

Publications

FRIEDA: Benchmarking Multi-Step Cartographic Reasoning in Vision-Language Models <i>Jiyoon Pyo, Yuankun Jiao, Dongwon Jung, Zekun Li, Leeje Jang, Sofia Kirsanova, Jina Kim, Yijun Lin, Qin Liu, Junyi Xie, Hadi Askari, Nan Xu, Muhan Chen, Yao-Yi Chiang</i> Preprint , Accepted to ICLR2026 ↗	<i>Oct 2025</i>
Augmenting Human-Centered Racial Covenant Detection and Georeferencing with Plug-and-Play NLP Pipelines <i>Jiyoon Pyo, Yuankun Jiao, Yao-Yi Chiang, Michael Corey</i> 10.1145/3764917.3771333 ↗	<i>Sept 2025</i>
Exploiting LLMs and Semantic Technologies to Build a Knowledge Graph of Historical Mining Data <i>Craig A. Knoblock, Binh Vu, Basel Shbita, Yao-Yi Chiang, Pothula Punith Krishna, Xiao Lin, Goran Muric, Jiyoon Pyo, Adriana Trejo-Sheu, Meng Ye</i> 10.1007/978-3-032-09530-5_26 ↗	<i>July 2025</i>
Leveraging Large Language Models for Generating Labeled Mineral Site Record Linkage Data <i>Jiyoon Pyo, Yao-Yi Chiang</i> 10.1145/3687123.3698298 ↗	<i>July 2024</i>

Research Experience

Graduate Research Assistant <i>University of Minnesota - Knowledge Computing Lab</i>	<i>University of Minnesota</i> <i>Fall 2023 - Present</i>
Research Intern <i>Reykjavik University - Language and Voice Lab</i>	<i>Reykjavik, Iceland</i> <i>May 2022 - Aug 2022</i>

- Contributed to the Icelandic Language Technology 2018-2022 project by researching natural language processing (NLP) techniques for Icelandic
- Collaborated with IcelandAir to develop a [multilingual customer survey sentiment analysis tool](#)
- Evaluated the performance of IceBERT against RoBERTa and XLNet for analyzing customer feedback across different languages

Selected Projects

FARON (*GeoAI / VLM*)

Ongoing

- Building a synthetic spatial reasoning dataset to improve vision-language models' general-purpose spatial grounding
- Designed an end-to-end generation pipeline (Blender + Shapely + PostGIS) producing multi-view scenes and programmatic reasoning traces
- Fine-tuning Qwen3-VL with LoRA adapters.

FRIEDA (*GeoAI / VLM*)

Released

- Introduced a benchmark to test whether vision-language models can read and reason over real-world maps (legends, scales, compass directions, multi-step spatial relations)
- Led dataset/benchmark development: question design, multi-step annotation + verification workflow, and evaluation pipeline for multi-map alignment and cartographic skills
- Public dataset release on Hugging Face: [knowledge-computing/FRIEDA](#)

Teaching & Mentoring

- Graduate TA, *CSCI5541: Natural Language Processing* (Spring/2026)
- Graduate TA, *CSCI4541: Introduction to Natural Language Processing* (Fall/2025)
- Graduate TA, *CSCI5523: Introduction to Data Mining* (Spring/2025)
- Head TA, *CSCI1913: Introduction to Algorithms, Data Structures, and Programming* (Fall/2023)
- Undergraduate TA, *ECE303: Communication Networks* (Spring/2023)
- Undergraduate TA, *ECE302: Probability Models and Stochastic Processes* (Spring/2023)
- Undergraduate TA, *ECE300: Communication Theory* (Fall/2022)
- Undergraduate TA, *ECE240: Circuit Analysis* (Fall/2022)
- Head TA, *PH291: Physics Lab* (Fall/2021)

Academic & Community Service

- Reviewer, *The 8th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery* (2025)

Awards & Fellowships

- Jesse Sherman Book Award, *The Cooper Union* (2023)
- Norman Perry Internship Award, *The Cooper Union* (2023)
- Half-Tuition Merit Scholarship, *The Cooper Union* (2019-2023)
- Innovator Merit Award, *The Cooper Union* (2019-2023)

Technologies

Languages: Python, C++, C, Java, JavaScript

ML/NLP/Vision: PyTorch, Hugging Face Transformers, scikit-learn

Database/Big Data: MySQL, PostgreSQL, Spark, MongoDB