Leeje Jang

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SUMMARY

PhD student in Computer Science at the University of Minnesota, specializing in **computer vision, natural language processing,** and **multimodal learning** (e.g., Vision-Language Model)

EDUCATION

Ph.D. in Computer Science — University of Minnesota, United States | 2022–Present

B.S. in Computer Science & Engineering — Ewha Womans University, Korea | 2018-2022

RESEARCH EXPERIENCE

Graduate Research Assistant — Knowledge Computing Lab, University of Minnesota | 2022 – Present

Advisor: Prof. Yao-Yi Chiang

Scene Text Spotting with PLMs (Project Lead)

- Develop an end-to-end scene text spotting framework integrating pretrained language models, achieving state-of-the-art performance on three benchmarks

VLM Framework for Dental Diagnosis (Project Lead) - *Collaborated with the School of Dentistry, University of Minnesota*

- Build VLM-based framework for tooth-level diagnostic analysis; design structured reasoning mechanisms to enhance interpretability in clinical decision support

Human-Centered VLM for Neighborhood Assessment - *Collaborated with Family Social Science Department, University of Minnesota*

- Build Vision-LLM agents for neighborhood assessment using street view imagery

Critical-MAAS: Automatically Extracting Critical Minerals from Maps - *Supported/Funded by USGS and DARPA*

- Extract mineral point features from geologic maps using computer vision methods (e.g., object detection)

Pipeline for Extracting and Linking Text from Historical Maps - *Supported by David Rumsey Historical Map Collections*

- Extract multilingual text (e.g., Chinese, Russian, Arabic) from historical maps using advanced text spotting models

Undergraduate Research Assistant Intern — HCIL Lab, Ewha Womans University | 2020 –2021

Advisor: Prof. Uran Oh

- Contributed to a **VR accessibility project** using Vive Pro to provide spatial cues for visually impaired participants

PUBLICATIONS

Jang, L., Lin, Y., Chiang, Y.-Y., Weinman, J. (2026). **TiCLS: Tightly Coupled Language Text Spotting**. Proceedings of the IEEE/CVF

Winter Conference on Applications of Computer Vision (WACV)

- **Jang, L**., Chiang, Y.-Y., Hastings, A. M., Pungchanchaikul, P., Lucas, M. B., Schultz, E. C., Louie, J. P., Estai, M., Wang, W.-C., Ip, R. H. L., Huang, B. (2026). **OMNI-Dent: Towards an Accessible and Explainable AI Framework for Automated Dental Diagnosis**. Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 415-424. (Workshop)

- Pyo, J., Jiao, Y., Jung, D., Li, Z., **Jang, L.,** Kirsanova, S., Kim, J., Lin, Y., Liu, Q., Xie, J., Askari, H., Xu, N., Chen, M., Chiang, Y.-Y. (2026). F**RIEDA: Benchmarking Multi-Step Cartographic Reasoning in Vision-Language Models**. Proceedings of the International Conference on Learning Representations (ICLR)

- Kim, J., **Jang, L.,** Chiang, Y.-Y., Wang, G., Pasco, M. C. (2025). **StreetLens: Enabling Human-Centered AI Agents for Neighborhood Assessment from Street View Imagery**. Proceedings of the 1st ACM SIGSPATIAL International Workshop on Human-Centered Geospatial Computing (GeoHCC), 15-19.

- Duan, W., Chiang, Y.-Y., Chen, T., Gerlek, M. P., **Jang, L.**, Kirsanova, S., Knoblock, C. A., Lin, F., Lin, Y., Li, Z., Minton, S. N. (2025). **DIGMAPPER: A Modular System for Automated Geologic Map Digitization**. Proceedings of the 33rd ACM International Conference on Advances in Geographic Information Systems, 717–728.

- Lin, Y., Tual, S., Li, Z., **Jang, L.,** Chiang, Y.-Y., Weinman, J., Chazalon, J., Carlinet, E., Perret, J., Abadie, N., Duménieu, B., Chan, T.-C., Liao, H.-M., Su, W.-R., Zou, M., Dai, T., Petitpierre, R., Vaienti, B., Kaplan, F., di Lenardo, I., Baek, Y., Hentschel, M., Nakagome, Y., Shuta, I., Lee, J., Choi, C. (2025). **ICDAR 2025 Competition on Historical Map Text Detection, Recognition, and Linking.** Proceedings of the International Conference on Document Analysis and Recognition (ICDAR), 568–585. Springer Nature Switzerland

- **Jang, L**., Chiang, Y.-Y. (2024). **Enabling Semantic-Rich Location Search on Street View Imagery Using Multilingual POI Data.** Proceedings of the 3rd ACM SIGSPATIAL International Workshop on Searching and Mining Large Collections of Geospatial Data, pp 29-35.

- Kim, J., Li, Z., Lin, Y., Namgung, M., **Jang, L**., Chiang, Y.-Y. (2023). **The mapKurator System: A Complete Pipeline for Extracting and Linking Text from Historical Map**s. Proceedings of the 31st ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Article 35, pp. 1-4 (demo paper)

PROFESSIONAL SERVICE

- Teaching Assistant, Introduction to Data Mining – Teach Spark lecture and manage assignments/office hours, 2026 Spring

- Board Member, Minnesota Association for Korean Americans - Manage and maintain the website, 2025-Current

- **Vice President**, CS-ECE UMN Korean Association, 2025-Current

- Organizer, Gathering Event for the 33rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2025

- Mentor, Honor Mentor Connection Program, Wayzata High School - Guided a student research project on traffic signboard detection using object detection techniques, 2025

- Co-organizer, ICDAR 2025 Competition on Historical Map Text Detection, Recognition, and Linking, 2025

- **Workshop Organizer,** 2025 UCGIS Symposium - Capturing Human Perception of Neighborhoods using Online Data with Language and Vision Models , 2025

- **Recruitment Chair**, Spatial Women (SpatialW), 2025

- **Committee Member**, Poster Selection, 32nd ACM SIGSPATIAL, 2024

PRESENTATIONS & TALKS

- Leeje Jang and Yao-Yi Chiang, **TiCLS: Tightly Coupled Language Text Spotting,** GIS Lab - Ewha Womans University, 2026

- Leeje Jang and Yao-Yi Chiang, **OMNI-Dent: Towards an Accessible and Explainable AI Framework for Automated Dental Diagnosis**, GenAI4Sc Workshop - University of Minnesota, 2026

- Leeje Jang, Oluwadamilola Salau, Haofeng Tan, Justin Tse, Yuhang Xie, **ML-based Flood Prediction Using Multiple Geospatial and Environmental Factors**, Texas A&M Cybertraining Workshop, 2025

- Leeje Jang and Yao-Yi Chiang, **Enabling Semantic-Rich Location Search on Street View Imagery Using Multilingual POI Data,** AI Computing Platform Laboratory - Ewha Womans University, 2025

- Leeje Jang and Yao-Yi Chiang, **Multi-feature extraction across diverse documents**, CS&E Research Showcase - University of Minnesota, 2024

- Yao-Yi Chiang, Jina Kim, **Leeje Jang**, Zekun Li Yijun Lin and Min Namgung, **The mapKurator System: A Complete Pipeline for Extracting and Linking Text from Historical Map,** Machine Reading Maps Summit - Stanford University, 2024

- Leeje Jang and Yao-Yi Chiang, **Automatic language detection on historical maps**, American Association of Geographers, 2023

TECHNICAL SKILLS

- Python, C/C++, MATLAB, PyTorch, TensorFlow, Git, Docker, CUDA, UNITY

- Computer Vision, NLP, VLM, Multimodal Learning, Generative AI, Spatial Data Analysis