

# Xuechen Li

+1-763-516-7524 | li003487@umn.edu | [dbcopper.github.io](https://github.com/dbcopper)

 Xuechen Li |  Xuechen Li

St Paul, Minnesota - 55108, United States

## EDUCATION

- |   |  |
|---|--|
| <b>• University of Minnesota Twin Cities</b><br><i>PhD student, Agriculture engineering</i> | <i>Jan 2024 - Present</i><br>Saint Paul, USA |
| <b>• Guangxi University</b><br><i>Msc, Computer Science</i>                                 | <i>Sep 2021 - Jan 2024</i><br>Nanning, China |
| <b>• Beijing Forestry University</b><br><i>BEng, Mechanical Engineering</i>                 | <i>Sep 2016 - Jun 2020</i><br>Beijing, China |

## INTERNSHIP EXPERIENCE

- Large Language Model Intern, Ant Group Co., Ltd.** *Sep 2023 - Dec 2023*
  - Contributed to RLHF fine-tuning of a text-to-image generation model, focusing on Reward Model design and optimization
  - Developed a reward model to align image generation outputs with human aesthetic preferences
  - Built reward signals using human preference data, CLIP-based scoring, and learning-to-rank approaches
  - Improved generation quality with noticeably higher aesthetic appeal, validated by human evaluations
  - Collaborated closely with cross-modal and model training teams to iterate on reward signal strategies and deployment
- AIGC Intern – Virtual Try-On, Turing Flash Innovations Co., Ltd.** *April 2023 - July 2023*
  - Built a virtual try-on system using Stable Diffusion, ControlNet, and LoRA for personalized outfit generation
  - Extracted human pose and segmentation maps via OpenCV to guide image generation through ControlNet
  - Designed prompt engineering strategies to control clothing type, texture, and style with high consistency
  - Fine-tuned LoRA models to preserve facial identity and generate user-specific outfit variations
  - Developed a full pipeline integrating image preprocessing, diffusion-based generation, and post-processing (edge enhancement, background blending)
  - Achieved significantly improved realism and structural alignment compared to baseline generation methods

## FIRST AUTHOR PUBLICATIONS

- [1] Li, X., Li, X., Zhang, S., Zhang, G., Zhang, M., & Shang, H. (2023). SLViT: Shuffle-convolution-based lightweight Vision Transformer for effective diagnosis of sugarcane leaf diseases. *Journal of King Saud University-Computer and Information Sciences*, 35(6), 101401.
- [2] Li, X., Li, X., Zhang, M., Dong, Q., Zhang, G., Wang, Z., & Wei, P. (2024). SugarcaneGAN: A novel dataset generating approach for sugarcane leaf diseases based on lightweight hybrid CNN-Transformer network. *Computers and Electronics in Agriculture*, 219, 108762.
- [3] Li, X., Sanaeifar, A., Padilla, N., Stover, C., Kowalewski, A., Watkins, E., Runck, B., & Yang, C. (2025). Winter Damage Diagnostic Modeling Based On Synthetic Vegetation Indices From UAV-Based Multispectral Imaging. *Computers and Electronics in Agriculture*, Submitted
- [4] Li, X., Yang, C., Qiao, L., & Zhou, J. (2025). Dynamic Multimodal Few-Shot Pest Recognition Across Growth Stages with Prior Knowledge. *Expert Systems with Applications*, In preparation
- [5] Li, X., Wei, P., Li, X., Wu, T., Li, M., & Shang, H. (2025). Extraction method of physical phenotypic parameters of banana plant based on 3D point cloud. *Plant Phenomics*, In preparation
- [6] Li, X., Qiao, L., Yang, C. (2025). ChatBug: A Knowledge graph-Driven Entomology Agent, *Computers and Electronics in Agriculture*, In preparation

## RESEARCH EXPERIENCE

---

- **Graduate Researcher, University of Minnesota Twin Cities** *Jan 2024 - Present*
  - Developed a segmentation model to achieve accurate winter damage detection in turfgrass.
  - Collected drone multispectral imagery field measurement data in winter 2024
  - Developed an entomology agent system based on the Large Language Model and local knowledge base.
  - Developed a few-shot learning model for agricultural insect detection.
- **Journal Reviewer** *Jan 2025 - Present*
  - Reviewed research papers for several academic journals and conferences: Expert Systems with Applications, IJCNN, CVPRW, Crop Protection, European Journal of Agronomy.
- **Graduate Researcher, Guangxi University** *Sep 2021 - Jan 2024*
  - Developed a crop disease diagnosis system achieving an 85% accuracy rate in real-world agricultural scenarios.
  - Implemented GAN-based image generation technology, enhancing disease image variety and dataset quality.
  - Conducted analysis on high-resolution 3-dimensional point cloud data of banana crops, identifying critical structural features for accurate plant phenotype extraction.
- **Poster presenter in ASABE North Central Regional Section Meeting, South Dakota State University** *April 2024*
  - Made a poster presentation on the research of "Winter Damage Detection on Golf Courses through Drone-Based Multispectral Imaging".
- **Poster presenter in Chinese Society of Agricultural Engineering Academic Annual Meeting, China** *August 2023*
  - Made a poster presentation on the research of "A lightweight diagnostic model for sugarcane leaf diseases in field environments".

## PROJECTS

---

- **ChatBug: A Knowledge graph-Driven Entomology Agent** *Jan 2025 - Present*
  - Independently developed a full-stack knowledge graph query system using FastAPI and React, implementing a modern microservices architecture
  - Backend: Developed RESTful APIs with FastAPI, integrated PyTorch for image recognition, and optimized data storage and query performance using MongoDB
  - Frontend: Built a responsive and modern UI using React and Tailwind CSS, implementing real-time search, data visualization, and image upload features
  - Implemented a GNN-based knowledge graph reasoning system combined with few-shot image detection for intelligent pest identification and relationship inference

## ADDITIONAL EXPERIENCE

---

- **Teaching Assistant, University of Minnesota Twin Cities** *Jan 2024 - Present*
  - Worked as teaching assistant for BBE 4023W Process Control and Instrumentation; BBE 3033 (001) Material and Energy Balances in Biological Systems
  - Advised a total of 50 students on course material, and field experiment.
  - Assisted faculty with administrative tasks and curriculum development.

## SKILLS

---

- **Languages:** Mandarin (native), English.
- **Programming Languages:** Python, Java, JavaScript, R, Matlab
- **Professional:** Pytorch, React
- **Interests:** Photograph, City biking, Road trip, and video games.