# XIANGYU LU


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## OBJECTIVE

Enhance and process UAV images using deep-learning and photogrammetry techniques, towards the automatic and intelligent data analyzing and better understanding of Ag & Env system.

## EDUCATION

**University of Toronto | Visiting Ph.D. student** Jul. 2024 - Jul. 2025
Research Topic: Forest tree sensing with UAV hyperspectral and LiDAR data. Toronto, Canada

**Zhejiang University | Ph.D., Agricultural Electrification and Automation** Sep. 2020 - Jul. 2025
Research Field: Agricultural information technology Hangzhou, China

**China Agricultural University | Exchange Student** Sep. 2018 - Jul. 2019
Courses Beijing, China

**Northwest A&F University | B.S., Agricultural Mechanization and Automation** Sep. 2016 - Jul. 2020
Final GPA: 3.71 (rank: 2/75) Yangling, China

## SKILLS

Skilled in: Python Programming, CNN & Transformer Networks, Diffusion Models, UAV Sensing & GIS.
Interested in: Contrastive Learning, Generative Model, Few-Shot Learning, Large Area Ag & Env Sensing.

## RESEARCH PROJECTS

**Aerial Image Super-Resolution with Diffusion Model and Variance Attention** Jan. 2023 - Oct.2023

- Propose a variance-based attention (VASA) that enhanced various super-resolution models
- Constructed a VASA-enhanced Diffusion Model for effective aerial image super-resolution

**Automated Rice Phenology Mapping using UAV Images and Deep Learning** Jul. 2022 - Dec. 2022

- Improve the bilateral segmentation model for canopy extraction and phenology detection
- Propose direct geo-locating and incremental sparse sampling for traits mapping

**Grape Leaf Disease and Pest Diagnose Using Transformer Networks** Jul. 2021 - Dec. 2021

- Design a method of multi-model integration using prediction confidence
- Propose a Transformer hybrid model achieving 98.51% mAcc on 11 categories

**Wheat Field Weed Sensing System using UAV (Provincial Project: 5k funds)** Mar. 2018 - Apr. 2019

- Good Ending Reward | As team leader and algorithm implementation coder
- Construct a real-time 4-classes weeds detection system with UAV image sequence

## AWARDS & HONORS

- Award of Honor for Graduate 2020-2022 (top 15%, 2-times) Dec. 2022
- Special Award of Agricultural Equipment Innovation - ZOOMLION Cup 2020 Jun. 2020
- President Scholarship 2017-2018 (top 5%) Dec. 2018

## PUBLICATIONS


- **Lu X,** Zhang J, Yang R, et al. 2024. Effective variance attention-enhanced diffusion model for crop field aerial image super resolution. *ISPRS Journal of Photogrammetry and Remote Sensing*. 218: 50–68. https://doi.org/10.1016/j.isprsjprs.2024.08.017
- **Lu X,** Zhou J, Yang R, et al. 2023. Automated Rice Phenology Stage Mapping Using UAV Images and Deep Learning. *Drones*. 7(2):83. https://doi.org/10.3390/drones7020083
- **Lu, X.**, Yang, R., Zhou, J., et al., 2022. A hybrid model of ghost-convolution enlightened transformer for effective diagnosis of grape leaf disease and pest. *Journal of King Saud University - Computer and Information Sciences*. 34(5):1755-1767. https://doi.org/10.1016/j.jksuci.2022.03.006