

LIYIKE JI

Applied Scientist · ML & Computer Vision | Ph.D. Candidate, University of Florida | Gainesville, FL

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SUMMARY

Applied-ML researcher and Ph.D. candidate at the University of Florida with 4+ years building computer-vision and multimodal machine-learning systems for large-scale, real-world imagery. Author of 8 peer-reviewed and conference works. Strengths span foundation models (SAM, Depth Anything), distributed PyTorch training on NVIDIA A100 GPUs, rigorous benchmarking, and reproducible research infrastructure. Seeking Applied Scientist and ML research roles.

TECHNICAL SKILLS

Programming: Python, R, SQL, Bash; C++

Machine Learning: PyTorch, CUDA, DistributedDataParallel, mixed precision, TensorFlow, scikit-learn, XGBoost; CNNs, YOLO, SAM / Depth Anything, multimodal fusion, LSTM / TCN / Transformers, XAI

Computer Vision: OpenCV, object detection, instance / semantic segmentation, photogrammetry, point clouds; RGB, multispectral, thermal, and hyperspectral imaging

Geospatial & Data: Metashape, QGIS / PyQGIS, rasterio, GDAL, GeoPandas, pandas, NumPy; orthomosaic, DEM, shapefile, mask, and time-series processing

Systems: NVIDIA A100, UF HiPerGator, SLURM / sbatch, Linux, Git, Docker, checkpoints, logging, and reproducible command-line workflows

UAV Systems: FAA-certificated Remote Pilot (Part 107); multirotor platforms, payload integration, mission planning, field operations, and multi-sensor data processing

RESEARCH & ENGINEERING EXPERIENCE

Graduate Research Assistant — UF Phenomics Lab, IFAS GCREC

2023 – Present

- **Engineered a scalable benchmarking framework for multimodal prediction** using computer vision, tabular learning, and time-series modeling. Standardized data preparation, grouped cross-validation, fold-specific preprocessing, and out-of-fold evaluation across seven ML/DL architectures (PLSR, RF, CNN, LSTM, TCN, Transformer), enabling leakage-free comparison; learned visual representations consistently outperformed handcrafted spectral and structural features across two seasons.
- **Trained full-resolution temporal models on NVIDIA A100 GPUs** with PyTorch, CUDA mixed precision, and multi-GPU DistributedDataParallel on UF HiPerGator. Built reproducible SLURM workflows for cross-validation folds, checkpointing, and logging, and re-architected the data-loading and process layout to remove host-memory bottlenecks in long image-sequence training.
- **Developed and maintained an automated UAV phenotyping pipeline that transforms raw drone imagery into analysis-ready datasets** across repeated field collections. The modular workflow integrates photogrammetry, orthomosaic and DEM generation, vegetation segmentation, plot- or plant-level extraction, spatial ID alignment, trait computation, and standardized export for downstream research analyses; adopted by multiple teams.
- **Designed a published RGB, multispectral, and thermal UAV platform** and applied computer-vision methods across imaging platforms. Co-authored a CVPR Workshops 2026 paper on a zero-shot video segmentation and tracking pipeline built on Depth Anything and SAM, reaching over 98.8% counting accuracy across differing scenes and sensors without task-specific training.

SELECTED PUBLICATIONS

8 peer-reviewed / conference works (* = first author).

- * **A Multi-Sensor UAV Platform: Design, Testing & Application for High-Throughput Plant Phenotyping** — Drones (2026).
- **A Field-based Plant Video Segmentation Pipeline (FPVSP) for Off-line Plant Tracking through Zero-shot Segmentation and Motion Features** — CVPR Workshops (2026).
- * **AI-Driven Multimodal Framework for Predicting Strawberry Performance and Insights** — ASABE AIM (2025).
- **Deep Learning for Strawberry Runner Detection Integrating Ground & Aerial Imaging** — Smart Agricultural Technology (2025).

EDUCATION

Ph.D. Candidate, Agricultural & Biological Engineering — University of Florida

2023 – Dec. 2026 (expected)

Focus: machine learning, computer vision, remote sensing, multimodal learning, and AI systems.

M.S., Industrial & Systems Management — University of Southern California

2021 – 2022

Focus: machine learning, optimization, statistics, data analytics, decision making, engineering economics, and technology management.

B.S., Controlled Environment Agriculture — Northwest A&F University

2016 – 2020

Focus: automation, sensing, environmental control, process optimization, and data monitoring.