

## Worakit Sangjan | ORISE Postdoctoral Research Fellow

US Department of Agriculture (USDA)-Agricultural Research Service (ARS), Prosser, Washington, USA

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Profiles: [Google Scholar](#) | [ORCID](#) | [GitHub](#) | [LinkedIn](#)

### Education

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- 2019–2023      **Ph.D. Biological and Agricultural Engineering**, Washington State University (WSU), USA.  
Dissertation: *Integration of Multiscale Sensing Data for Phenomics Applications*
- 2013–2015      **ME Agricultural Systems and Engineering**, Asian Institute of Technology (AIT), Thailand  
Thesis: *Modeling Soil-Rotavator Blade Interaction Using Computational Fluid Dynamics*
- 2009–2012      **MBA Finance-Operations Management**, National Institute of Development Administration (NIDA), Thailand  
Independent Study: *Business Model Analysis of Siam KUBOTA Company*
- 2003–2007      **BE Agricultural Engineering** (A Second Class Honor), Khon Kaen University, Thailand  
Project: *Business Model Analysis of Using Combine Harvesters for a Rice Harvesting Contractor Business*

### Professional Experiences

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- Mar 2025–Present      **ORISE Postdoctoral Research Fellow**, USDA-ARS, Prosser, WA, USA  
(Oak Ridge Institute for Science and Education fellowship appointment)
- Conduct vineyard research on grapevine microclimate and cold hardiness using temperature sensors and data analysis
  - Develop computer vision and deep learning methods for vineyard weed detection and plant phenotyping
  - Build segmentation models for plant leaf tissue analysis from synchrotron X-ray microCT images
  - Conduct synchrotron microCT experiments and analyze plant and soil imaging data at national laboratory facilities
- Mar 2024–Feb 2025      **ORISE Postdoctoral Research Fellow**, USDA-ARS, Columbia, MO, USA
- Developed MatchPlant, an open-source UAV phenotyping pipeline for single-plant detection and geospatial trait extraction
  - Investigated AI-supported data integration for plant breeding across phenotypic, genomic, and environmental data
- Sep 2023–Feb 2024      **Postdoctoral Research Associate**, Washington State University, WA, USA
- Refined AGIcam, an IoT-based system for automated field phenotyping and yield prediction in wheat breeding trials
- Aug 2018–Aug 2023      **Graduate Research Assistant**, Washington State University, WA, USA
- Conducted high-throughput field phenotyping using satellite, UAV, proximal sensing, IoT, and machine learning for crop breeding research
  - Developed sensing and data analysis methods for crop traits, including biomass, forage quality, yield, and plant architecture
  - Performed VOC analysis for crop disease detection and managed sensing and laboratory systems
- Jun 2022–Aug 2022      **Applied Agricultural Technology Intern**, Corteva Agriscience, IA, USA
- Contributed to developing and deploying an affordable automated soil trace gas collection system in corn fields
  - Developed a pipeline to process gas analyzer data, calculate gas fluxes, analyze time series, and interpret emission patterns
- Jan 2017–Apr 2018      **Territory Aftermarket Manager**, John Deere (Thailand) Limited, Thailand
- Managed aftermarket service operations and technical support for agricultural equipment across the assigned territory
  - Advised dealers on aftersales service strategy, customer support, and service process improvement
- Oct 2015–Dec 2016      **Sales and Application Engineer**, Munters (Thailand) Co., Ltd., Thailand
- Managed technical sales and application support for agricultural and horticultural climate-control systems in Southeast Asia
  - Provided technical product support and training to distributors and end users
- Jan 2009–Jul 2013      **Technical Service Engineer**, Siam Kubota Corporation Co., Ltd., Thailand
- Provided technical service and field support for agricultural machinery, including troubleshooting and maintenance
  - Developed and managed after-sales service projects, including preventive maintenance programs and a nationwide customer service hotline/CRM system.
- Apr 2007–Dec 2008      **Mechanical Engineer**, Sony Device Technology (Thailand) Co., Ltd., Thailand
- Maintained, troubleshot, and set up production machinery to support reliable manufacturing operations
  - Improved production processes and workflow efficiency on the manufacturing line

## Research Interests & Technology Expertise

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AI-enabled sensing, automation, and data integration for agricultural and biological systems. My research integrates computer vision, deep learning, geospatial analysis, and high-performance computing with multiscale sensing technologies, including X-ray microCT, field-based IoT sensors, UAVs, and satellite imagery. Applications include crop monitoring, plant phenotyping, weed detection, soil health assessment, resource-efficient production, and agricultural decision support.

## Peer-Reviewed Publications

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16. Sangjan, W., Gillispie, E. C., Schrader, M. J., Moyer, M. M., Shaw, M., & Rippner, D. A. (2026). Grow tube material selection influences thermal microenvironments and cold hardiness risk in dormant grapevines. *American Journal of Enology and Viticulture*, 77(2), 0770018. <https://doi.org/10.5344/ajev.2026.25051>
15. Sangjan, W., Pandey, P., Best, N. B., & Washburn, J. D. (2026). MatchPlant: An open-source pipeline for UAV-based single-plant detection from undistorted images with orthomosaic projection. *Smart Agricultural Technology*, 15, 102421. <https://doi.org/10.1016/j.atech.2026.102421> (W. Sangjan as corresponding author)
14. Sangjan, W., Pukrongta, N., Buchanan, T., Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2026). AGIcam: An open-source Internet of Things-based camera system for automated in-field phenotyping and yield prediction. *The Plant Phenome Journal*, 9(1), e70088. <https://doi.org/10.1002/ppj2.70088>
13. Paiboonvorachat, C., Rajagopalan, K., Pumphrey, M. O., Carter, A. H., Zhang, C., Sangjan, W., & Sankaran, S. (2026). Variability in crop responses as a function of environment effects the NDVI relationship with grain yield in wheat. *Plant Phenomics*, 100237. <https://doi.org/10.1016/j.plaphe.2026.100237>
12. Hoyos-Villegas, V., Jackson, M., Vargas-Cedeño, M., Farmer, E. E., Hanneman, M., Mazis, A., Singh, K. D., Sangjan, W., McNair, M., Sankaran, S., Tirado Tolosa, S., Gore, M. A., & Rife, T. W. (2025). Affordable phenomics: Expanding access to enhancing genetic gain in plant breeding. *The Plant Phenome Journal*, 8(1), e70034. <https://doi.org/10.1002/ppj2.70034>
11. Sangjan, W., Kick, D. R., & Washburn, J. D. (2025). Improving plant breeding through AI-supported data integration. *Theoretical and Applied Genetics*, 138(6), 1–22. <https://doi.org/10.1007/s00122-025-04910-2>
10. Suwanlee, S. R., Keawsomsee, S., Sangjan, W., Som-ard, J., Siripattanachotikul, K., Ninsawat, S., & Nudthawud, H. (2025). Spatio-temporal drought monitoring in the Chi River basin from 2001–2020 using MODIS time series data and Google Earth Engine. *International Journal of Geoinformatics*, 21(1), 43–55. <https://doi.org/10.52939/ijg.v21i1.3789>
9. Sangjan, W., Carter, A. H., Pumphrey, M. O., Hagemeyer, K., Jitkov, V., & Sankaran, S. (2024). Effect of high-resolution satellite and UAV imagery plot pixel resolution in wheat crop yield prediction. *International Journal of Remote Sensing*, 45(5), 1678–1698. <https://doi.org/10.1080/01431161.2024.2313997>
8. Sangjan, W., McGee, R. J., & Sankaran, S. (2023). Evaluation of forage quality in a pea breeding program using hyperspectral sensing system. *Computers and Electronics in Agriculture*, 212, 108052. <https://doi.org/10.1016/j.compag.2023.108052>
7. Zhang, C., Serra, S., Quirós-Vargas, J., Sangjan, W., Musacchi, S., & Sankaran, S. (2023). Non-invasive sensing techniques to phenotype multiple apple tree architectures. *Information Processing in Agriculture*, 10(1), 136–147. <https://doi.org/10.1016/j.inpa.2021.02.001>
6. Sangjan, W., Carpenter-Boggs, L. A., Hudson, T. D., & Sankaran, S. (2022). Pasture productivity assessment under mob grazing and fertility management using satellite and UAS imagery. *Drones*, 6(9), 232. <https://doi.org/10.3390/drones6090232>
5. Sangjan, W., McGee, R. J., & Sankaran, S. (2022). Optimization of UAV-based imaging and image processing orthomosaic and point cloud approaches for estimating biomass in a forage crop. *Remote Sensing*, 14(10), 2396. <https://doi.org/10.3390/rs14102396>
4. Sangjan, W., Marzougui, A., Mattinson, D. S., Schroeder, B. K., Bates, A. A., Khot, L. R., & Sankaran, S. (2022). Identification of volatile biomarkers for high-throughput sensing of soft rot and Pythium leak diseases in stored potatoes. *Food Chemistry*, 370, 130910. <https://doi.org/10.1016/j.foodchem.2021.130910>
3. Ortiz, M. V., Sangjan, W., Selvaraj, M. G., McGee, R. J., & Sankaran, S. (2021). Effect of the solar zenith angles at different latitudes on estimated crop vegetation indices. *Drones*, 5(3), 80. <https://doi.org/10.3390/drones5030080>
2. Sangjan, W., Carter, A. H., Pumphrey, M. O., Jitkov, V., & Sankaran, S. (2021). Development of a Raspberry Pi-based sensor system for automated in-field monitoring to support crop breeding. *Inventions*, 6(2), 42. <https://doi.org/10.3390/inventions6020042>
1. Sangjan, W., & Sankaran, S. (2021). Phenotyping architecture traits of tree species using remote sensing techniques. *Transactions of the ASABE*, 64(5), 1611–1624. <https://doi.org/10.13031/trans.14419>

## ***Publications Under Review and Preprint***

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2. **Sangjan, W.**, Clark, E. G., Parkinson, D. Y., Momayyezi, M., Williams, T., Borsuk, A. M., Gomez, J., Fletcher, L. R., Furze, M. E., et al. From CNNs to vision Transformers: A harmonized framework for cross-species plant leaf microCT tissue segmentation. (**Under internal review**)
1. Som-ard, J., **Sangjan, W.**, Ratanopad Suwanlee, S., Keawsomsee, S., Kasa, K., Veerachit, V., Heawchaiyaphum, P., Ninsawat, S., Immitzer, M., & Atzberger, C. Synergistic integration of SAR and optical remote sensing with machine learning for nitrogen prediction in sugarcane fields. (**Under internal review; W. Sangjan as corresponding author**)

## ***Conference Proceedings***

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3. **Sangjan, W.**, McGee, R. J., & Sankaran, S. (2023). Evaluation of forage quality in a pea breeding program using a hyperspectral sensing system. *Proceedings of the 2023 ASABE Annual International Meeting (AIM)*, Omaha, NE, USA.
2. **Sangjan, W.**, Pukrongta, N., Carter, A. H., Pumphrey, M., & Sankaran, S. (2022). Development of an IoT-based camera system for automated in-field monitoring to support breeding programs. *Proceedings of the 2023 North American Plant Phenotyping Network (NAPPN) Annual Conference*, St. Louis, MO, USA.
1. **Sangjan, W.**, Carter, A. H., Pumphrey, M., & Sankaran, S. (2021). Development of a sensor system for IoT-based automated in-field monitoring to support crop improvement programs. *Proceedings of the 2021 ASABE AIM*. (Virtual)

## ***Conference Presentations and Abstracts***

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22. **Sangjan, W.**, et al. (2026, August). Leaf-CT: An open-source deep learning framework for plant leaf microCT tissue segmentation. SYNAPS-I Automated Segmentation Workshop, Advanced Light Source (ALS), Lawrence Berkeley National Laboratory, Berkeley, CA, USA. **Lightning Talk**
21. **Sangjan, W.** (2025, February). *AI and multi-scale sensing for scalable plant phenotyping*. 2025 NAPPN Annual Conference, St. Louis, MO, USA. **Invited Speaker**
20. **Sangjan, W.**, Pandey, P., Norman, N. B., & Washburn, J. D. (2025, February). *MatchPlant: An open-source pipeline for UAV-based single plant detection and data extraction*. 2025 NAPPN Annual Conference, St. Louis, MO, USA. **Poster**
19. **Sangjan, W.**, Buchanan, T., Pukrongta, N., Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2024, October). *Time-series analysis of multispectral data captured using the IoT-based sensor system to evaluate dynamic crop responses of winter and spring wheat germplasms*. 8th International Plant Phenotyping Symposium, Lincoln, NE, USA. **Poster**
18. **Sangjan, W.**, Buchanan, T., Pukrongta, N., Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2024, July). *IoT-based time-series multispectral imagery analysis using machine learning techniques for yield prediction in winter and spring wheat breeding programs*. 2024 ASABE AIM, Anaheim, CA, USA. Paper No. 2401344
17. **Sangjan, W.**, Carter, A. H., Pumphrey, M. O., Hagemeyer, K., Jitkov, V., & Sankaran, S. (2024, July). *Analysis of UAV-based temporal data to predict wheat grain yield*. 2024 ASABE AIM, Anaheim, CA, USA. Paper No. 2401342
16. **Sangjan, W.**, Pukrongta, N., Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2023, July). *AGIcam: IoT-based multispectral sensor system for real-time and automated in-field crop monitoring*. 2023 ASABE AIM, Omaha, NE, USA. Paper No. 2301064
15. **Sangjan, W.**, Carter, A. H., Pumphrey, M. O., Hagemeyer, K., Jitkov, V., & Sankaran, S. (2023, July). *Effect of UAV and high-resolution satellite imagery plot pixel resolution on assessment of crop performance in spring and winter wheat breeding Programs*. 2023 ASABE AIM, Omaha, NE, USA. Paper No. 2301067
14. **Sangjan, W.**, McGee, R. J., & Sankaran, S. (2023, July). *Evaluation of forage quality in a pea breeding program using hyperspectral sensing system*. 2023 ASABE AIM, Omaha, NE, USA. Paper No. 2301065
13. **Sangjan, W.**, Pukrongta, N., Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2023, June). *Development of IoT-based sensor system for automated in-field monitoring in Washington state*. International Plant Phenotyping Network – Affordable Phenotyping Workshop (Virtual)
12. **Sangjan, W.**, Pukrongta, N., Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2023, February). *Development of IoT-based camera system for automated in-field monitoring to support breeding programs*. 2023 NAPPN, St. Louis, MO, USA
11. Sankaran, S., **Sangjan, W.**, Pumphrey, M. O., Carter, A. H., Jitkov, V., & Hagemeyer, K. E. (2022, November). *Multi-scale multispectral imaging for crop phenotyping applications*. The Asian Federation for Information Technology in Agriculture / The World Congress on Computers in Agriculture, Hanoi, Vietnam (Virtual)
10. Sankaran, S., Kothawade, G. S., **Sangjan, W.**, Bates, A., Schroeder, B., & Khot, L. R. (2022, August). *Postharvest disease detection in stored potatoes using rapid volatile sensing techniques*. International Horticultural Congress, Angers, France

9. **Sangjan, W.**, Carter, A. H., Pumphrey, M. O., Jitkov, V., & Sankaran, S. (2022, July). *Effect of plot pixel resolution on crop performance assessment using features extracted from UAV and high-resolution satellite imagery*. 2022 ASABE AIM, Houston, TX, USA. Paper No. 2201235
8. **Sangjan, W.**, McGee, R. J., & Sankaran, S. (2022, July). *Evaluation of forage quality in a pea breeding program using hyperspectral sensing system*. 2022 ASABE AIM, Houston, TX, USA. Paper No. 2200657
7. **Sangjan, W.**, McGee, R. J., & Sankaran, S. (2022, July). *Optimization of UAV-based imaging and image processing (orthomosaic and point cloud) approaches for estimating biomass in forage crop*. 2022 ASABE AIM, Houston, TX, USA. **Finalist: Boyd-Scott Graduate Research Award**
6. **Sangjan, W.**, Carpenter-Boggs, L., Hudson, T. D., & Sankaran, S. (2021, July). *Pasture productivity assessment under mob grazing and fertility management using remote sensing techniques*. 2021 ASABE AIM (Virtual). Paper No. 2100695
5. **Sangjan, W.**, Carter, A. H., Pumphrey, M. O., Jitkov, V., & Sankaran, S. (2021, July). *Development of sensor system for the Internet of Things (IoT)-based automated in-field monitoring to support crop improvement programs*. 2021 ASABE AIM (Virtual). Paper No. 2100696. **Poster**
4. **Sangjan, W.**, Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2021, February). *Internet of things-based sensor system for automated in-field monitoring to support crop improvement program*. 13<sup>th</sup> Samaggi Academic Conference and Careers Fair, UK. (Virtual)
3. **Sangjan, W.**, Carter, A. H., Pumphrey, M. O., & Sankaran, S. (2021, February). *IoT-based camera system for field phenotyping applications*. 2021 NAPPN Annual Conference (Virtual). **Poster**
2. **Sangjan, W.**, McGee, R. J., Zhang, C., & Sankaran, S. (2020, July). *Biomass estimation using remote sensing techniques in forage and pasture crops*. 2020 ASABE AIM (Virtual). Paper No. 2000758
1. **Sangjan, W.**, Sankaran, S., Khot, L. R., Schroeder, B. K., & Marzougui, A. (2019, July). *Biomarker detection for high-throughput sensing of soft rot disease in stored potatoes*. 2020 ASABE AIM, Boston, MA, USA. Paper No. 1901406

## Open-Source Tool Development

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- **AGIcam**: An open-source IoT-based camera system for automated in-field phenotyping and yield prediction
  - *Software and Manual*: [GitHub repository link](#) | *Data*: [Zenodo link](#)
- **MatchPlant**: An open-source pipeline for UAV-based single-plant detection and data extraction.
  - *Web Application*: [Landing page](#)
  - *Software and Manual*: [GitHub repository link](#) | *Data*: [Zenodo link](#)
- **Leaf-CT-Segmentation**: Open-source tools for automatic segmentation of leaf microCT images using deep learning models.
  - *Web Application*: Website and Manual: [Hugging Face link](#)
  - *Database*: Website: <https://leafcthub.github.io/>
  - *Training Pipeline*: [GitHub repository link](#)
- **Plant Point Cloud Segmentation**: An automated segmentation and volumetric analysis of plants from 3D point clouds
  - *Software and Manual*: [GitHub repository link](#)
- **Grow tube material selection** influences thermal microenvironments and cold hardiness risk in dormant grapevines
  - *Software and Manual*: [GitHub repository link](#) | *Data*: [Ag Data Commons link](#)

## Research Grants and Proposals

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- 2026, *AI-Enabled Segmentation of Soil Organic Matter in X-Ray Microcomputed Tomography Scans of Soil Aggregates*  
Lead: Dr. Devin Rippner | Role: Proposal contributor | Advanced Light Source, Lawrence Berkeley National Laboratory (Submitting)
- 2022, *Development of a Raspberry Pi-Based Sensor System for Automated In-Field Monitoring to Support Crop Breeding*  
PI: Dr. Sindhuja Sankaran | Role: Proposal contributor and lead researcher | Funded by GPSA Dissertation Grant, WSU
- 2021, *IoT-Based Real-Time Sensor System for Early Disease Detection*  
PI: Dr. Sindhuja Sankaran | Role: Proposal contributor | Submitted to Bayer Crop Science under the “Digital Tools for Collecting, Transmitting, and Analyzing Agronomic Data” scheme (Submitted; not funded)

## ***Technical Skills***

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### **• Programming and Data Tools**

- *Languages & Tools*: Python, R, MATLAB, HTML, GitHub, Hugging Face
  - *Machine Learning & Computer Vision*: Scikit-learn, Keras, TensorFlow, PyTorch
  - *Statistical*: NumPy, Pandas, SciPy, dplyr, ggplot2, lme4
- *Image Processing and Computer Vision Tools*: OpenCV, Roboflow
- *Geospatial Processing*: GDAL, Rasterio, PyQGIS
- *Geographic Information Systems (GIS)*: QGIS, Google Earth Engine, PIX4D, OpenDroneMap
- *High-Performance Computing (HPC)*:
  - SciNet Cluster (USDA-ARS)
  - National Energy Research Scientific Computing Center (NERSC, U.S. Department of Energy)
- *Cloud & Visualization*: Microsoft Azure, Grafana

### **• Sensing System**

- *X-ray Imaging*: Laboratory and synchrotron X-ray microcomputed tomography
  - APS at Argonne National Laboratory, US
  - ALS at Lawrence Berkeley National Laboratory, US
- *Proximal Sensors*: SVC HR-1024i hyperspectral spectroradiometer
- *Internet of Things System*
  - *Boards*: Raspberry Pi, Arduino
  - *Sensors*: Weather station (METER Group), Campbell Scientific dataloggers, Intel RealSense 3D cameras, HOBO
  - *Data Transfer*: Node-RED
- *Robotic Platforms*: EarthSense field robot; Bonsai Amiga platform
- *UAV Platforms*
  - *UAV*: DJI, ATI AgBot, Freefly Systems
  - *Sensors*: MicaSense, Sentra, FLIR, Headwall NanoHP-Hyperspec, Ouster (3D-LiDAR)
  - *Software*: Pix4D, OpenDroneMap, Mission Planner, CloudCompare
- *Satellite Imaging*: PlanetScope, WorldView, Sentinel-1 & 2, Landsat-8 & 9

### **• Volatile Organic Compounds Detection**

- *Stationary*: Gas chromatography-mass spectrometry and flame ionization detector
- *Mobility*: Field asymmetric ion mobility spectrometry
- *Greenhouse Gas Analyzer*: LGR off-axis integrated cavity output spectroscopy

### **• 3D Printing**

- *3D Design*: TinkerCAD, 3D Builder, SolidWorks
- *3D Printer*: Ultimaker, Prusa

### **• Agricultural Systems**

- *Machinery*: Tractor, Rice Transplanter, Combine Harvester, Sugarcane Harvester
- *Horticulture Building*: Climate control system in poultry, swine, dairy, and greenhouse environments

## ***Professional Membership and Certification***

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- American Society of Agronomy, 2025–Present
- American Society of Agricultural and Biological Engineers, 2019–Present
- North American Plant Phenotyping Network, 2021–Present
- Remote pilot license (UAV) from the Federal Aviation Administration

## ***Professional Services***

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- **Invited Member**, NAPPN Awards Committee, *North American Plant Phenotyping Network*, 2026
- **Grant/Proposal Reviewer**
  - Specialty Crop Block Grant Program, *Washington State Department of Agriculture*, 2026
  - CORE Program, *Luxembourg National Research Fund (FNR)*, 2026
- **Journal Peer Reviewer**, 61 reviews across 17 journals:
  - American Journal of Potato Research (1)
  - Applied Engineering in Agriculture (8)
  - Artificial Intelligence Review (1)
  - Biosystems Engineering (1)
  - Computers and Electronics in Agriculture (14)
  - Food Analytical Methods (1)
  - International Journal of Applied Earth Observation and Geoinformation (2)
  - International Journal of Remote Sensing (1)
  - Journal of Biosystems Engineering (5)
  - New Forests (1)
  - Plant Methods (2)
  - Plant Phenome Journal (2)
  - Precision Agriculture (1)
  - Scientia Horticulturae (1)
  - Scientific Reports (9)
  - Smart Agricultural Technology (8)
  - Transactions of the ASABE (3)
- **Guest Editor**, Special Issue-Advanced Sensing and AI for Crop Nutrient Management and Stress Detection, *Agronomy*, 2026  
<https://www.mdpi.com/si/260916>
- **Moderator**, Spectroscopy and AI-Driven Analysis for Agrifood Systems: Lightning Session, 2023 ASABE AIM, Omaha, NE

## ***Professional Development***

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- Automated Segmentation Workshop, Advanced Light Source (ALS), Lawrence Berkeley National Laboratory, US, 2026
- Synchrotron X-ray  $\mu$ CT On-the-Job Training, Advanced Photon Source (APS), Argonne National Laboratory, US, 2026
- NVIDIA Academy: *AI for All - From Basics to GenAI Practice*, December 2024
- Geosystems Research Institute, Mississippi State University: *Python: Learn by Doing*, 13–15 May 2024
- Agricultural Genome to Phenome Initiative (AG2PI) Workshop: *Scientific Computing & Data Analytics - A Comprehensive Toolkit for Research*, 10–12 April 2024
- AG2PI Workshop: *Enhancing Discoverability and Accessibility of UAV-Based Forage Phenotyping Hyperspectral Data on CyVerse: A Tutorial*, 20 June 2023
- AG2PI Workshop: *Train Your Network: Simplifying Computer Vision Application Development*, 9 December 2022
- National Association of Plant Breeders - Graduate Student Working Group Webinar: *Role of High Throughput Phenotyping in Plant Breeding*, 15 November 2022
- Corteva Agricultural Sciences Symposium 2021: The University of Guelph, 19 November 2021
- AG2PI Workshop: *Developing Enabling Robotic Systems for Plant Phenotyping*, 12 November 2021
- NVIDIA Webinar: *AI on the Edge for Robotics and Automation in Agriculture*, 23 September 2021
- NVIDIA Webinar: *AI-Driven Innovation in Agriculture*, 16 September 2021

## ***Leadership Experiences***

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- 2021–2023, Safety Committee of the BSE department at WSU
- 2021–2024, Administrator for WSU Thai Student Society
- 2021, Treasurer, American Society of Agricultural and Biological Engineers Club at WSU
- 2020, Treasurer, Agricultural Automation and Engineering Club at WSU
- 2005–2006, Vice President, Agricultural Engineering Club at Khon Kaen University
- 2003–2015, Basketball Athlete and Club Leader, multiple institutions:
  - Vice President, University Basketball Club, Khon Kaen University (2005–2006)
  - Athlete, Khon Kaen University, NIDA, and AIT

## Honors and Awards

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### Selected Awards

- 2025, **Outstanding Reviewer Award**, ASABE peer-reviewed journals, *2025 ASABE AIM*, Toronto, Canada
- 2024, **Graduate Student Award**, *2024 NAPPN Annual Conference*, West Lafayette, Indiana
- 2022, **3<sup>rd</sup> place: Boyd-Scott Graduate Research Award** (Ph.D. category), *2022 ASABE AIM*, Houston, Texas
- 2021, **Best Presentation Award**, Engineering and Technology category, *Samaggi Abstract Competition*, England (Virtual)
- 2021, **BSE Scholarship Award**, Biological Systems Engineering Department, WSU
- 2020, **Honorable Mention Award** in *DIGITAL AGathon 2020* hosted by Microsoft and WSU
- 2013, **Royal Thai Government Fellowship**, Asian Institute of Technology, Thailand
- 2004 and 2005, **Scholarship and Good Academic Performance Award**, Khon Kaen University, Thailand

### Teaching, Training, and Invited Lectures

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| <b>2026/March</b>  | • Invited Speaker, Online Training Session: “Drone Multispectral Data Analysis,” ICAR–Central Institute of Agricultural Engineering (CIAE), Bhopal, India – Delivered training on UAV multispectral data collection, Pix4D/QGIS processing, VI-based yield estimation, disease detection, and crop phenotyping |
| <b>2023/Fall</b>   | • Mentor in <i>Senior Design Project</i> (Computer Science/Undergrad), WSU<br>• Guest lecture in <i>BSYSE 551 Sensors in Phenomics</i> on UAV image processing topic at WSU                                                                                                                                    |
| <b>2023/Summer</b> | • Trainer in <i>Research Experience for Undergraduates on Phenomics Big Data Management</i> at WSU<br>• Trainer of IoT operation (on-the-job training) for laboratory members and researchers at WSU                                                                                                           |
| <b>2023/Spring</b> | • Mentor in Senior Design Project (Computer Science/Undergrad), WSU.<br>• Guest lecture in <i>BSYSE 541 Instrumentation and Measurements</i> on the weather sensors topic at WSU<br>• Teaching assistant in <i>BSYSE 541 Instrumentation and Measurements</i> – Laboratory Section at WSU                      |
| <b>2022/Fall</b>   | • Mentor in <i>Senior Design Project</i> (Computer Science/Undergrad), WSU<br>• Guest lecture in <i>BSYSE 551 Sensors in Phenomics</i> on UAV image processing topic at WSU                                                                                                                                    |
| <b>2022/Summer</b> | • Trainer for UAV and IoT operation (on-the-job training) for laboratory members and researchers at WSU                                                                                                                                                                                                        |
| <b>2021/Fall</b>   | • Guest lecture in <i>BSYSE 541 Instrumentation and Measurements</i> on the weather sensors topic at WSU<br>• Teaching assistant in <i>BSYSE 541 Instrumentation and Measurements</i> – Laboratory Section at WSU                                                                                              |
| <b>2021/Summer</b> | • Trainer for UAV operation (on-the-job training) for laboratory members and researchers at WSU<br>• Trainer in <i>Research Experience for Undergraduates on Phenomics Big Data Management</i> at WSU                                                                                                          |

### Extension and Outreach Activities

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- Laboratory presenter in 2022, *Louis Stokes Alliance for Minority Participation Team Mentoring Program and Office of Undergraduate Research, Research Opportunities In-Person and Virtual*, Pullman, WA, 21–22 October 2021
- Laboratory presenter for visiting students and researchers from national and international institutes, 2019–2021
- UAV pilot supporting plant science and industry research projects, 2019–2021
  - “Dissecting microbiome-mediated crop rotational value of pulses and oilseeds in dryland wheat systems,” 2021
  - “Wheat varieties identification using UAV and satellite imagery,” 2019 and 2020
  - “High-throughput screening of forage crops for environmentally sustainable crop production,” 2019 and 2020
- Laboratory presenter on pathogen sensing in potato storage facilities, *Agricultural Technology Day – Automation in Specialty Crops*, Prosser, WA, 22 August 2019 (Poster)
- Volunteer, *2019 ASABE Annual International Meeting*, Boston, MA, 7–10 July 2019
- Presenter in *Partners for Better Spuds: WSU’s 2019 Othello Field Day*, Othello, WA, 27 June 2019
- Presenter (hands-on STEM activities for K-12 students) in *Engineering Our Sensors* Family Science Saturday, Palouse Discovery Science Center, Pullman, WA, May 2019
- Lead in “Novel sensing for potato postharvest quality and loss management in a bulk storage environment,” 2018–2020