Chenchen Kang, Ph.D.

Assistant Professor, Department of Agricultural Science and Engineering

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Education

Ph.D. *in Biological and Agricultural Engineering, Washington State University*	Aug 2018 – May 2023
M.S. *in Agricultural Mechanization Engineering, China Agricultural University*	Sep 2016 – June 2018
B.S. *in Agricultural Engineering, China Agricultural University*	Sep 2012 – June 2016

Professional Experience

Assistant Professor, Tennessee State University	Aug 2025 – Present
Postdoctoral Researcher, The Pennsylvania State University	May 2023 – Aug 2025
Research Assistant, Washington State University	Aug 2018 – May 2023
Research Assistant, China Agricultural University	Sep 2016 – June 2018

Research Interests and Expertise

General Area: Agricultural automation and mechanization

Particular Focus: Sensing, modeling, and control technologies for automated agricultural systems

Recent Publications

1. **Kang, C.,** Krishna Kumar, S., & He, L. (2025). Integrated approach to green fruit thinning: Combining computer vision and precision sprayers for effective chemical thinning. ***Precision Agriculture***. (Accepted)
2. **Kang, C.,** Mu, X., Seffrin, A. N., Di Gioia, F., & He, L. (2025). A recursive segmentation model for Bok Choy growth monitoring with Internet of Things (IoT) technology in controlled environment agriculture. ***Computers and Electronics in Agriculture****, 230*, 109866. https://doi.org/10.1016/j.compag.2024.109866
3. **Kang, C.,** Diverres, G., Karkee, M., Zhang, Q., & Keller, M. (2024). Assessing grapevine water status through fusion of hyperspectral imaging and 3D point clouds. ***Computers and Electronics in Agriculture****, 226*, 109488. https://doi.org/10.1016/j.compag.2024.109488
4. **Kang, C.,** He, L., & Zhu, H. (2024). Assessment of spray patterns and efficiency of unmanned sprayers used in planar growing systems. ***Precision Agriculture***, 1–21. https://doi.org/10.1007/s11119-024-10166-5
5. **Kang, C.,** Diverres, G., Paudel, A., Karkee, M., Zhang, Q., & Keller, M. (2023). Estimating soil and grapevine water status using ground-based hyperspectral imaging under diffused lighting conditions: Addressing the effect of lighting variability in vineyards. ***Computers and Electronics in Agriculture****, 212*, 108175. https://doi.org/10.1016/j.compag.2023.108175
6. **Kang, C.,** Diverres, G., Karkee, M., Zhang, Q., & Keller, M. (2023). Decision-support system for precision regulated deficit irrigation management for wine grapes. ***Computers and Electronics in Agriculture****, 208*, 107777. https://doi.org/10.1016/j.compag.2023.107777

Research Grants and Proposals

1. Multi-functional and low-cost sensor station for orchard management. 2025. *State Horticultural Association of Pennsylvania*. (Co-PI, $9,981)
2. A low-cost microclimate monitoring system for orchard disease management. 2024. *State Horticultural Association of Pennsylvania*. (Co-PI, $10,983)
3. AgShred: Affordable grape selective harvesting via robotic elimination of defectives. 2023. *USDA Agricultural Marketing Service*. (Contributed to proposal developmentg)

4. Precision crop load management with targeted chemical blossom thinning for apples. 2023. *USDA AFRI*. (Contributed to proposal development, $601,250)
5. Advancing Pest Management for Grapes and Berries with Robotic Spraying System. 2023. *USDA NIFA CARE*. (Contributed to proposal development, $300,000)

Teaching & Mentorship

PSU HORT 432 Deciduous Tree Fruits	Guest Lecture	Fall 2024
PSU ABE 590 Colloquium	Guest Lecture	Fall 2024
PSU ABE Capstone Project	Co-mentor	Fall 2023
PSU HORT 433 Vegetable Crops	Guest Lecture	Fall 2023
WSU AFS 102 Professional Development in Agriculture	Mentor	Spring 2022
WSU BSYSE 551 Electrohydraulic Systems Control	Teaching Assistant	Fall 2020

Extension Activities

- Presentation at Mid-Atlantic Fruit and Vegetable Convention (2024-2025)
- Participating (presentation and demonstration) regional grower field days (2023-2025)
- Participating (presentation and demonstration) Penn State's Ag Progress Days (2024)
- Publication (extension article) on Penn State Extension

Honors and Awards

Dissertation nominated for "2024 Pellizzi Prize", Club of Bologna	2024
Arnie & Marta Kegel Endowed Fellowship, Washington State University	2022
BSE Outstanding Graduate Student Award, Washington State University	2022
Biological Systems Engineering Travel Award, Washington State University	2022

Services and Memberships

- American Society of Agricultural and Biological Engineers (ASABE) (member since 2019)
- The International Society of Precision Agriculture (ISPA) (member since 2022)
- External reviewer for over more than 10 international journals
- External reviewer for PhD Research Proposal, School of Graduate Research, Central Queensland University

Media Releases and Features

1. "Spectrum smart vineyard irrigation," by Kate Prengaman, *Good Fruit Grower Magazine*, August 19, 2021.
2. "New computer vision system can guide specialty crops monitoring," by Jeff Mulhollem, *The Pennsylvania State University*, February 27, 2025.
    - Reprinted by: *HortiDaily*, February 28, 2025.
    - Reprinted by: *ScienceDaily*, March 4, 2025.
3. "Machine vision system monitors greenhouse-grown specialty crop," by Linda Wilson, *Vision Systems Design Magazine*, March 21, 2025.
4. "Variable-rate spraying shows promise in orchards," by Philip Gruber, *Lancaster Farming*, June 26, 2025.
5. "Penn State researchers programmed AI models and trained computer vision system to track plant growth," by Timothy Bueno, *Fertilizer Daily*, March 3, 2025.
6. "Challenges of developing field sensors," by Patricia A. Skinkis, *HiRes Vineyard Nutrition Podcast*, November 2023.