Sneha Jha

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RESEARCH INTERESTS

Design of field experiments, Precision agriculture, Internet of Things, agricultural Cyber-Physical Systems, and decision support systems.

EDUCATION

Ph.D. | *Purdue University* **West lafayette,IN.**
2025

The Use of High-Resolution Geospatial Data for Decision Support Systems Required in Large Area Distributed Systems

Advisor: Dr. J.V. Krogmeier

M.S. | *Indian Institute of Technology* **Kharagpur, India**
2017

Embedded GPS-integrated Variable Rate Fertilizer Applicator

Advisor: Dr. V.K. Tewari

B.Tech | *College of Engineering and Management* **Kolaghat, India**
2013

Determination of Wind Energy Density in India Using the Weibull distribution

Advisor: Dr. S. Pradhan

AWARDS

- Estus H. and Vashti L. Magoon Research Excellence Award 2025
- Bilsland Dissertation Fellowship 2025
- Graduate Student Best Poster Award at the 100th CRWAD, 2019

RESEARCH EXPERIENCE

Collaboration with Dr. D. M. Bullock, **2019-2020**
Generating Dynamic Prescription Maps for Winter Road Treatment via Sun-Shadow Simulation.

Collaboration with Dr. A. Ruple **2018-2020**
Establishing an AMR surveillance system in the USA to analyze the E. coli resistome across the One Health spectrum.

Collaboration with Dr. M.D. Ward **2017-18**
Big Data solutions in Agricultural decision support applications using Twitter data.

M.S. Project **2014-2017**
Designed an on-the-go embedded variable rate fertilizer applicator for variable nitrogen fertilizer application.

B.Tech Project **2009-2013**
Identify the city for the establishment of wind energy plants in the four main windy regions of India using the Weibull distribution in MATLAB.

Undergrad Internship- IIT Kharagpur **2012**
Optimization of the design-to-cost ratio of buck-boost converters in the Texas Instrument webtool.

RESEARCH ACHIEVEMENTS

Publications

Journal

Bailey, J., Rubio, F. C., Balmos, A. D., Pai, A., Loo, L., **Jha, S.**, M. S. Basir, Buckmaster, D. R., Krogmeier, J. V., Zhang, Y. & Kaur, U. (2025). Leveraging Generative AI for Data Analysis in Farm Management. Applied Engineering in Agriculture, 41(5), 505-519.

Jha S., Krogmeier J. V., Buckmaster D. R., & Balmos A. D. (2024). "Python Programming in Digital Agriculture." In Case Studies and Modules for Data Science Instruction (pp. 7-24). American Society of Agricultural and Biological Engineers.

Jha S., Zhang Y., Park B., Cho S., Krogmeier J. V., Bagchi T., & Haddock J. E. (2023). "Data-Driven Web-Based Patching Management Tool Using Multi-Sensor Pavement Structure Measurements." Transportation Research Record, 2677(12), 83-98. doi: 10.1177/03611981231167161

Technical report

Jha S., Balmos, A., Zhang, Y., Park, B., Cho, S., Krogmeier, J. V., Bagchi, T., & Haddock, J. E. (2024). Comprehensive pavement patching tools and web-based software for pavement condition assessment and visualization. Joint Transportation Research Program Publication, Purdue University, West Lafayette, IN. (under review)

Mahlberg, J., Zhang, Y., **Jha S.**, Mathew, J. K., Li, H., Desai, J., Kim, W., McGuffey, J., Wells, T., Krogmeier, J. V., & Bullock, D. M. (2021). Development of an intelligent snowplow truck that integrates telematics technology, roadway sensors, and connected vehicle (Joint Transportation Research Program Publication No. FHWA/IN/JTRP-2021/27). West Lafayette, IN: Purdue University, doi:10.5703/1288284317355.

Conference

Jha S. and Krogmeier J. V.. Advancing Meter Resolution Crop Simulation Model as a Testbed for Precision Agricultural Applications. Conference on Agrifood and Electronics (CAFE 2025), Montevideo, Uruguay. DOI: 10.36227/techrxiv.175612861.18484359/v1

2500667. Jha, S., Krogmeier, J. V., and Zhang, Y. (2025). Leveraging high-resolution geospatial data for systematic blocking in precision agricultural experiments. Presented at ASABE Annual International Meeting, 13-16th July, Toronto, Canada.

Balmos A. D., **Jha S.**, Krogmeier J. V., Buckmaster D. R., Love D. J., Grant R. H., Crawford M., Brinton C., Wang C., & Cappelleri D. (2024). Design of an autonomous ag platform capable of field-scale data collection in support of artificial intelligence. Proceedings of the 16th International Conference on Precision Agriculture (ICPA).

Castiblanco F. A., Lee B., Arun A. N., Balmos A., **Jha S.**, Krogmeier J. V., & Buckmaster D.R. (2024). OATSMobile: A Data Hub for Underground Sensor Communications and Rural IoT.

Zhang Y., **Jha S.**, Bullock D. M., and Krogmeier J. V., "Generating Dynamic Prescription Maps for Winter Road Treatment via Sun-Shadow Simulation," 2021 IEEE International Intelligent Transportation Systems Conference (ITSC), Indianapolis, IN, USA, 2021, pp. 3387-3392, doi: 10.1109/ITSC48978.2021.9565055.

Jha S., Saraswat D., and Ward M.D. "Trends in Big Data solutions in Agricultural decision support systems using Twitter data."(2018). 14th International Conference on Precision Agriculture. [Conference proceedings]

Conference Presentations and Posters

Jha S., Buckmaster D.R. and Krogmeier J.V. (2024, May 13-16), "A methodology to minimize error from pedogeomorphic variation in agricultural field experiments". Conference on Applied Statistics in Agriculture and Natural Resources, Iowa State University, Ames, IA.

Jha S., Zhang Y., Buckmaster D.R. and Krogmeier J.V. (2023, May 8-12), "A Web-Based Application Leveraging Geospatial Information to Automate on Farm Trial Design", ASABE Annual International Meeting, Omaha, Nebraska.

Jha S., Zhang Y., Buckmaster D.R. and Krogmeier J.V. (2023, May 15-17), "A Framework to Automate the Statistical Design of Field Experiments for Modern Farm Management Practices". 2023 Conference on Applied Statistics in Agriculture and Natural Resources, Purdue University, West Lafayette, IN.

Jha S., Zhang Y., Park B., Cho S., Krogmeier J. V., Bagchi T. and Haddock, J.E. (2023, January 8-12). "Data-Driven Web-Based Patching Management Tool Using Multi-Sensor Pavement Structure Measurements." 102nd Transportation Research Board Annual Meeting, Washington, D.C.

Jha S., Zhang Y., Park B., Cho S., Krogmeier J. V., Bagchi T. and Haddock J.E. (2022, October 24-27). "Web-Based Patching Management Tool using Multi-Sensor Pavement Condition Measurements." 31st Annual FWD Users Group Meeting, Reno, USA.

Jha S., Zhang Y., Park B., Cho S., Krogmeier J. V., Bagchi T. and Haddock J.E. (2022, October 24-27). "Comprehensive Tools for Automated Creation of Patching Tables." 2022 Joint Transportation Research Program (JTRP) Poster Session. Indiana Government Center South Atrium, Indianapolis, USA.

Jha S., Zhang Y., Park B., Cho S., Krogmeier J. V., Bagchi T. and Haddock J.E. (2022, March 16th). "Comprehensive Tools for Automated Creation of Patching Tables." 108th Purdue Road School Transportation Conference & Expo, Purdue University, USA.

Jha S., Ault A.C., Krogmeier J. V., Ekakoro J. and Ruple A. (2020). "Establishing an AMR surveillance system in the USA to analyze the E. coli resistome across the One Health spectrum." 101st CRWAD, online.

Jha S., Ault A.C., Krogmeier J. V., Ekakoro J. and Ruple A. (2019). "Creating an integrated framework for the analysis of AMR data to establish a One Health surveillance system." 100th CRWAD, Chicago, USA.

Jha S., Ault A.C., Krogmeier J. V., Ekakoro J. and Ruple A. (2019). "Analysis and inference of initial data used to establish a One Health AMR surveillance system." 100th CRWAD, Chicago, USA

Jha S., Ekakoro J., Krogmeier J.V. and Ruple A. (2021). "Examination of open-source antimicrobial resistance data isolated from E. coli as a source for one health surveillance." Indiana branch of the American Society of Microbiology biannual meeting in 2021. [Oral and poster presentation]

Jha S., Ekakoro J., Krogmeier J. V., and Ruple A. (2020). "Establishing an AMR surveillance system in the USA to analyze the E. coli resistome across the One Health spectrum" 101st CRWAD, Chicago, USA. Oral and poster presentation

Jha S., Saraswat D. and Ward M. D. (2018). "Analyzing trends for agricultural decision support system using Twitter data." ASABE Annual International Meeting, Michigan, USA

Jha S., Saraswat D and Ward M. D. (2018). "Analyzing trends for agricultural decision support system using Twitter data." 14th International Conference on Precision Agriculture, Montreal, Canada.

Jha S., Tewari V.K. and Bhattacharyya T.K. (2016). Design and Development of an Embedded System-based Variable Rate Fertilizer Applicator. International Conference on Emerging Technologies in Agricultural and Food Engineering, IIT Kharagpur, India.

TEACHING

- Python programming under the NSF HEC grant in 2022 and 2023.
- Python programming under the SURF and REU students in 2021, 2022, 2023.

SERVICES

Innovations and Ecosystems Liaison for IoT4Ag Student and Post-doc Leadership Council, 2024. IoT4Ag is an NSF-funded ERC including Purdue University, University of Pennsylvania, University of Florida, and University of California, Merced.

REU mentor for IoT4Ag mentored REU and SURF students in 2021, 2022, and 2023.

Professional Development Chair of ABE Graduate Student Association (GSA) in 2019

Planning committee head of the ABE GSA symposium in 2019, organized the ABE GSA symposium.