Jyothi Swaroop Bommidi

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Professional Summary

I'm a data scientist with roots in agriculture who shifted from behavioral research to hands-on analytics development. With a PhD from the University of Florida and a Masters in Advanced Data Analytics from UNT, I bring together research rigor and technical implementation. At Ionxs.ai, I built a chromatogram image analysis platform using computer vision and machine learning to process reports. My work includes healthcare analytics, financial modeling, and customer behavior analysis, while I have also published seven research papers and taught 32 graduate student teams through their capstone projects. I apply quantitative analysis to solve problems, whether that's designing surveys for behavioral research, building ML models for classification, or mentoring students through the full analytics lifecycle.

Education

Masters, Advanced Data Analytics **Dec** 2024

University of North Texas, Denton, Texas

Doctor of Philosophy, Extension Education **Dec** 2022

University of Florida (UF), Gainesville, Florida
Dissertation Title: Understanding National Resilience

Masters, Agricultural Extension **May** 2015

SHUATS, Allahabad, India

Bachelor of Agricultural Sciences **Aug** 2013

ANGRAU, Hyderabad, India

Technical Skills

Research methods	Quantitative, Qualitative, and Mixed Methods
Data Analysis & Visualization	Python, R, OpenRefine, SAS Enterprise Miner, NVivo, Tableau, SPSS
Cloud & DevOps Tools	GCP, AWS, Docker, Redis/Valkey, Git

Research Experience

Data Scientist **May** 2024 – Present

Ionxs.ai

- Led the development of a chromatogram report analysis platform to process PDFs containing chromatographic image data.
- Implemented multi-stage image extraction pipeline using Python/OpenCV to segment chromatograms from PDFs, using morphological operations and connected component analysis.
- Developed text extraction system using Tesseract with preprocessing techniques (CLAHE enhancement and noise reduction) to detect and extract metadata from document headers.
- Built computer vision algorithms for graph axis calibration and coordinate extraction by combining edge detection and thresholding to digitize graphs, transforming pixel coordinates to measurement units.
- Implemented Peak/Noise classification systems using machine learning and neural networks for peak detection, validated through statistical analysis, RT analysis, and linked ion group detection.
- Architected a distributed PDF processing framework using Valkey Streams and asynchronous Python workers.

Data Consultant **Aug** 2021 **– May** 2022

Virginia Tech, Remote

- Designed and implemented statistical analysis for the 'STEM-it Up' project, and co-authored the methodology, results, and conclusion sections of a peer-reviewed publication.
- Collaborated with research team to develop project proposals on 'STEM-it Up' and mentored peers in statistical analysis.

Graduate Research Assistant **Aug** 2016 **– May** 2021

University of Florida, Gainesville, Florida

- Led quantitative and qualitative research on public perceptions, producing six peer-reviewed publications
- Analyzed complex datasets using SPSS, Python, R, and Tableau
- Designed and implemented survey methodologies and data collection protocols for PIE center projects
- Conducted literature reviews and developed theoretical frameworks for agricultural education research.

Teaching Experience

Graduate Teaching Assistant **Aug** 2023 **– Dec** 2024

University of North Texas, Denton, Texas

- Guided 32 student teams through the selection of research methodologies and data analysis techniques for capstone projects.
- Supervised the development and implementation of capstone project analytics, providing personalized feedback to student teams.
- Mentored students in data manipulation and the application of statistical analysis in the course ADTA 5230: Data Analytics I.
- Instructed students on creating data visualizations using both Tableau and Python.
- Supported students throughout the machine learning model lifecycle, from design and development to evaluation in the course ADTA 5410: Deployment of Advanced Analytics.

Graduate Teaching Assistant **Aug** 2018 **– Dec** 2020

University of Florida, Gainesville, Florida

- Assisted with AEC3033c Research and Business Writing instruction.
- Evaluated student assignments and maintained grade records in Canvas.
- Coached students on academic writing and scientific communication.

Refereed Journal Articles

Ferand, N., **Bommidi, J. S.**, Somers, R., DiBenedetto, C., & Myers, B. (2024). Agriscience Teachers' Perceptions of Integrating Science Within School-Based Plant Science Curricula. *NACTA Journal, 68(*1). https://doi.org/10.56103/nactaj.v68i1.173

Lamm, K., Lamm, A., Davis, K., Powell, A., & **Bommidi, J.** (2021). Effective organizational functioning capacity needs of rural advisory service networks: A Delphi study. *Journal of International Agricultural and Extension Education, 28*(3), 104–119. https://doi.org/10.5191/jiaee.2021.283104

Lamm, K. W., Lamm, A. J., Davis, K., **Swaroop, B. J.**, & Edgar, L. D. (2020). Identifying capacities needed for professionalization of extension networks. *Journal of International Agricultural and Extension Education*. https://doi.org/10.5191/jiaee.2020.27291

Lamm, K., Lamm, A., Davis, K., **Bommidi, J. S.,** & Edgar, L. (2019). Identifying information and communication technology use capacity needs of extension networks. *Journal of International Agricultural and Extension Education*, *26*(3), 58–71. https://doi.org/10.5191/jiaee.2019.26304

Lamm, A. J., Warner, L. A., Lundy, L. K., **Bommidi, J. S**., & Beattie, P. N. (2018). Informing water-saving communication in the United States using the situational theory of problem solving. *Landscape and Urban Planning*, *180*, 217-222.

Lamm, K., Lamm, A., Davis, K., & **Bommidi, J. S.** (2018). Effective advocacy for extension networks: An evaluation of critical capacities. *Journal of International Agricultural and Extension Education*, *25*(2), 43–56. https://doi.org/10.5191/jiaee.2018.25204

Lamm, K. W., Lamm, A. J., Davis, K., & **Bommidi, J. S**. (2017). Identifying knowledge management capacity needs of rural advisory service networks. *Journal of International Agricultural and Extension Education, 24*(2). DOI: 10.5191/jiaee.2017.24207.

Conference Papers and Proceedings

Beattie, P. N., Bunch, J. C., **Bommidi, J. S.,** Lamm, A. J., & Roberts, T. G. (2018, March). *Haitian faculty members perceived self-efficacy of student engagement, instructional strategies, and classroom management*. Abstract accepted for presentation at the Association for International Agricultural and Extension Education annual meeting, Merida, Mexico.

Bommidi, J. S., & Lamm, A. J. (2018, March). *Impact of gender on opinion leadership and willingness to act on water issues*. Abstract accepted for presentation at the Association for International Agricultural and Extension Education annual meeting, Merida, Mexico.

Bommidi, J. S., Lamm, A. J., & Bunch, J. C. (2018, February). *Exploring rural and urban residents' perceptions on agricultural water use*. Abstract accepted for presentation at the Southern Rural Sociological Association annual meeting, Jacksonville, FL.

Bommidi, J. S., Lamm, K. W., Lamm, A. J., & Davis, K. (2018, March). *Identifying the capacities rural advisory service networks need to support global professionalization*. Abstract accepted for presentation at the Association for International Agricultural and Extension Education annual meeting, Merida, Mexico.

Bommidi, J. S., Huang, P., & Lamm, A. J., (2017, February). *Targeting water conservation extension programming to residents governed by homeowner's associations*. Poster presented at the Agricultural and Extension Education Southern Region Meeting, Mobile, AL.

Lamm, A. J., Warner, L. A., Lundy, L. K., & Bommidi, J. S. (2017, February). *Using the situational theory of problem solving to guide national extension programming with high water users*. Paper presented at the American Association for Agricultural Education Southern Region Conference, Mobile, AL.

Data Projects

Humana-Mays Healthcare Analytics Case Competition 2024

Texas A&M University, Texas **Sep** – **Oct** 2024

- Developed two machine learning classification models to predict patient engagement with primary care physicians, achieving ROC-AUC scores of 0.7992 and 0.7683 respectively
- Advanced to the second round as one of 25 teams selected from 285 competing teams nationwide

Methodological Research: ML models for Stock Price Prediction

University of North Texas, Denton, Texas **Jan** – **May** 2024

- Conducted comprehensive predictive modeling analysis utilizing 946,889 financial observations from public market data sources
- Implemented and compared LSTM, Ridge Regression, and Convolutional LSTM architectures to forecast stock price movements, achieving optimal Test RMSE of 0.0862.

Mars PetCare Churn Analysis

University of North Texas, Denton, Texas **Sep** - **Dec** 2023

- Performed comprehensive analysis of PetCare transaction data, engineering key behavioral metrics including purchase frequency, transaction volume, and customer lifetime value

- Developed predictive models to identify customer churn patterns across multiple time horizons for Mars product portfolio optimization

Leadership and Volunteer Experience

Treasurer, AEC Graduate Student Association **Nov** 2018 **– Aug** 2019

University of Florida, Gainesville, Florida

- Managed budget and financial records for the graduate student association
- Led fundraising initiatives to support student activities and programs
- Collaborated with team members to develop funding strategies

Graduate Representative, AEC ALSCC Committee **Nov** 2017 **– Aug** 2018

University of Florida, Gainesville, Florida

- Facilitated communication between the AEC Graduate Student Association and ALSCC committee
- Coordinated committee activities and supported project execution
- Enhanced inter-organizational cooperation through effective liaison work

President, Student Association **Aug** 2014 **– April** 2015

Department of Extension Education, SHUATS, Allahabad, India

- Collaborated with faculty and students to improve course scheduling
- Organized departmental events and activities to strengthen community engagement
- Conducted student surveys to identify needs and advocate for academic improvements

Team Lead, Agriculture Experiential Learning Program **Dec** 2012 **– May** 2013

Agricultural College Naira, ANGRAU, Hyderabad, India

- Led an eight-member team in implementing a comprehensive crop cultivation project across 1.25 acres
- Developed detailed cultivation reports analyzing challenges in fertility, procurement, irrigation, and marketing
- Demonstrated project management and analytical skills through hands-on agricultural research