DEBZANI DEB

RJ Reynolds Endowed Professor of Computer Science
Founding Director, Center for Applied Data Science (CADS)
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RESEARCH INTERESTS

Applied Data Science; Large Language Models and Generative AI; AI Evaluation and Trustworthy AI; Machine Learning for Earth and Space Science Applications; Computer Science and AI Education.

EDUCATION

Ph.D. in Computer Science, Montana State University, Bozeman, Montana, USA.

Thesis: Achieving Self-managed Deployment in a Distributed Environment via Utility Functions.

Master's of Computer Science, University of Adelaide, Adelaide, South Australia, Australia.

Thesis: A Study of Consistency Protocols for Distributed Shared Memory Systems.

M.Sc. in Electronics and Computer Science, Shahjalal University of Science and Technology, Bangladesh.

B.Sc. in Electronics and Computer Science, Shahjalal University of Science and Technology, Bangladesh.

ACADEMIC APPOINTMENTS

2023 to now: RJ Reynolds Endowed Professor of Computer Science, Winston-Salem State University, USA.

Summer 2026: Visiting Researcher, Laboratory for Analytic Sciences (LAS), North Carolina State University, USA.

2020 to now: Founding Director, Center for Applied Data Science (CADS), Winston-Salem State University, USA.

2022 to 2023: Professor, Department of Computer Science, Winston-Salem State University, USA.

Summer 2018: Visiting Scientist, Department of Computer Science, Duke University, USA.

2017 to 2022: Associate Professor, Department of Computer Science, Winston-Salem State University, USA.

2011 to 2017: Assistant Professor, Department of Computer Science, Winston-Salem State University, USA.

2009 to 2011: Assistant Professor, Department of Computer Science, Indiana University of Pennsylvania, USA.

CURRICULUM INNOVATION AND EDUCATIONAL LEADERSHIP

Each initiative below was conceived, designed, and led by me at Winston-Salem State University; several were supported by external funding I secured as Principal Investigator.

- **AI Security Modules for the Public Sector Workforce (2026 to 2029):** Principal Investigator on NSF Award 2622950, CyberAICorps Scholarship for Service Innovation Track, designing four self contained AI security teaching units for existing Healthcare Management, Education, and Computer Science courses, offered in person or online so working professionals can participate. Units address how AI systems fail or are attacked, how to evaluate an AI tool before adoption, how to respond to harm or a data breach under HIPAA and FERPA, and what legal and ethical duties govern public sector AI use. Content is developed jointly with a local school district, regional hospital systems, and a county government agency, validated by Cisco Systems, and released through faculty workshops and an open repository so other institutions can adopt it without a formal partnership.
- **AI Literacy for All Course (2025 to present):** Conceived and designed CSC 1317 AI Literacy for All, a new undergraduate course making foundational AI knowledge accessible to students of every major; launched Fall 2026 with two sections, expanding to four in Spring 2027; I coordinate all sections. Curated content

from Cisco Networking Academy, UNC GenAI, AWS MLU, and IBM SkillsBuild, mapping all five U.S. Department of Labor AI Literacy Framework content areas across eight modules, among the first university courses to operationalize the full framework as a replicable model for other institutions.

- **Data Fluency GE SLO (2024 to 2026):** Led the institutionalization of Data Fluency as a university wide general education outcome, making WSSU an early national adopter in requiring data competency of every undergraduate. Chaired the committee that defined the outcome, created the assessment rubric, trained faculty with exemplars, and reviewed and approved 30 interdisciplinary courses against it.
- **DATA Certificate (2023 to now):** Principal Investigator for WSSU on NSF IUSE Award 2245959, collaborating with NCCU, FSU, and Cynosure Consulting to create the DATA Certificate, a stackable micro-credential pathway bringing data analytics to non-computing majors. Designed five courses spanning exploratory data analysis, Python, machine learning, responsible data science, and a capstone; 25+ WSSU students progressing, with the model disseminated nationally through peer reviewed publications.
- **AI Ethics Course Modules (2023 to 2024):** Conceived and directed the integration of responsible AI modules across interdisciplinary courses, funded by a Mozilla Foundation Responsible Computing Challenge award secured as PI. Introduced approximately 150 students from Arts, Humanities, Science, and Social Science to AI ethics in Spring 2024 alone, years ahead of most institutions; all modules curated in an open access repository for worldwide adoption.
- **Data Science Minor (2020 to 2021; revised 2026):** Conceived and led WSSU's first interdisciplinary Data Science Minor (18 credit hours, launched Fall 2021), personally developing both core courses, CSC 1315 and CSC 2315. More than 30 students have completed the minor and advanced to renowned graduate programs or data careers, with 60+ currently enrolled, establishing a durable pipeline where none existed. Revised in 2026 to add a sport analytics pathway with three Sport Management courses as approved electives.
- **Integrating Data Science into the Urban Studies and Sustainability Curriculum (2019 to 2022):** As co-PI on NSF Award 1912214, designed three hands-on data science modules embedded into IDS 2301, GEO 4342, and GEO 4345, reaching 100+ students and demonstrating a discipline embedded model for data science instruction outside computing.
- **Certificate in Data Analytics (2019 to 2021):** Key committee member developing WSSU's graduate level online Certificate in Data Analytics, a reskilling credential for working professionals from any undergraduate background, extending data science capacity building to the adult workforce.
- **Curriculum Guidelines on Parallel and Distributed Computing (2018 to 2022):** Contributing author to the NSF/IEEE-TCPP Curriculum Initiative on Parallel and Distributed Computing, the national guideline shaping undergraduate PDC instruction, funded by NSF Award 2002649 (guideline linked under Accreditation and Program Assessment).
- **Faculty Adopter Awards (2017 to 2020):** Designed and implemented an original faculty capacity building program equipping instructors across disciplines to integrate data analytics into existing courses, sustained across NSF Award 1600864 and the UNC ROI grant. Supported 13 faculty in creating 13 publicly available modules reaching approximately 275 students across eight departments, multiplying instructional capacity beyond any single course.

ACCREDITATION AND PROGRAM ASSESSMENT

- **ABET Self Study, Computer Science (2012, 2018, 2024):** Coauthor of the departmental self study report with lead responsibility for Criterion 3 Student Outcomes, Criterion 4 Continuous Improvement, and Criterion 6 Faculty. Analyzed multi year outcomes data, documented limitations and program improvement recommendations where objectives were not met, and closed the assessment loop. The program received continued accreditation in all three cycles and remains ABET accredited.
- **Accreditation Criteria Development, Parallel and Distributed Computing (2016 to 2018):** As contributing author to the NSF/IEEE-TCPP Curriculum Initiative through the CDER center, participated in meetings with the central ABET committee to pursue inclusion of parallel and distributed computing in the guiding computing accreditation criteria. Named contributor on Version II-beta of the curriculum guideline. Senior Personnel, CDER Center.

- **Comprehensive Program Review, M.S. in Computer Science and Information Technology (MCST) and Certificate in Data Analytics:** Sole author and analyst for program review in the Department of Computer Science: collect and analyze multi year program data, prepare the reports submitted through the university evaluation system, and provide recommendations for continuous improvement. Chair of the assessment committees for both programs (2024 to present).
- **Learning Outcomes Assessment:** Designed the assessment rubric for the Data Science minor and the university wide Data Fluency general education outcome rubric, and conduct regular course level evaluation of data science courses for SACSCOC institutional effectiveness reporting.
- **ABET Program Evaluator Candidacy (2026):** Applied to serve as an ABET Program Evaluator; application received and entered into the ABET data system and referred to the member society for review toward Program Evaluator Candidate Training.

RESEARCH GRANTS AND AWARDS (EXTERNAL)

More than $4.4 million in external research funding secured, including more than $3.3 million as Principal Investigator, from NSF, NASA, the Mozilla Foundation, the UNC System, and industry partners.

1. NSF, PI, "CyberAI Innovation: Modular AI Security Education for the Public Sector Workforce," CyberAICorps Scholarship for Service (CyberAI SFS), Innovation Track, Award #2622950, $496,376.00, 2026 to 2029.
2. NSF, PI, "A data analytics certificate for non-computing majors," NSF IUSE CUE, Award #2245959, $409,799.00, 2023 to 2027.
3. NASA, PI, "Institute for Multi-agent Perception through Advanced Cyber-Physical Technologies (IMPACT)," NASA MUREP/DEAP, Award No. 80NSSC23M0054, $403,074.00, 2023 to 2027.
4. Mozilla Foundation, PI, "Integrating AI Ethics Modules into interdisciplinary courses at an HBCU," Responsible Computing Challenge, $149,743.00, 2023 to 2024.
5. NSF, PI, "Capacity Building for Research at Minority-Serving Institutions: Infrastructure Research Readiness (CyBR-MSI: IRR)," ASEE/NSF, $3,000.00, 2023.
6. NSF, Co-PI, "CISE-MSI: RCBP-RF: SCH: Mining Mobile Crowdsensing to Optimize Community Health Clinic Management," Award #2131100, $299,695.00, 2021 to 2025.
7. HanesBrands, PI, "Research Award to CADS," $50,000.00, 2021 to 2025.
8. UNC Research Opportunities Initiative (ROI) Award, PI, "Winston-Salem State University Center for Applied Data Science (CADS)," $1,549,796.00, 2020 to 2024. *Largest single award; founding investment behind CADS.*
9. Google Cloud Research Grant, PI, $5,000.00, 2020 to 2021.
10. NSF, Co-PI, "Collaborative Research: Excellence in Research: Computational Framework and Data Science for Identification," Award #1900087, $299,962.00, 2019 to 2024.
11. NSF, Co-PI, "Targeted Infusion Project: Integrating Data Science into the Urban Studies and Sustainability Program," Award #1912214, $249,825.00, 2019 to 2022.
12. NSF, PI, "Improving Research and Education of Big Data and Cloud Computing at Winston-Salem State University," Award #1600864, $307,802.00, 2016 to 2022.
13. NSF, Co-PI, "Targeted Infusion Project: Use of Mobile Application to Improve Active Learning and Student Participation in the Computer Science Classroom," Award #1332531, $235,091.00, 2013 to 2017.

LEADERSHIP AND ADMINISTRATIVE ROLES

Founding Director, Center for Applied Data Science (CADS), WSSU (2020 to present)

Conceived, established, and direct WSSU's institution-wide data science center, founded through a $1,549,796 UNC ROI award secured as PI. Hold full budgetary authority, managing $3.35 million in total external funding attracted to the center under my direction. Supported 6 faculty research fellows, 13 faculty curriculum adopters, 4 research associates, and 27 graduate and undergraduate research assistants, whose work produced 13 peer reviewed publications, 4 master's theses, and 53 student presentations; introduced 256 students to data analytics and trained 40 faculty through hands-on workshops with Data Carpentry. Built industry, academic, and

community partnerships (NASA, North Carolina Central University, Fayetteville State University, HanesBrands, Lincoln Financial, South Big Data Innovation Hub, Community Care Clinic of Forsyth County, and Piedmont Triad Regional Council, among others) facilitating more than 20 student internship and job placements; maintained an 11-member Advisory Board (2020 to 2024). CADS became a founding member of the Academic Data Science Alliance and hosted a site visit by UNC System President Peter Hans; organized annual symposia (100+ registrants per year, keynotes including an NSF Program Director), Responsible AI Day 2024 (150 registrants), and a two-day high school data science workshop.

Co-Chair, Research Doctoral Programs Steering Committee, WSSU (October 2026 to present): cochair the university committee convened by the Provost to develop new research doctoral programs; leading exploration of a proposed PhD in AI enabled Health Sciences, including program concept, curricular structure, and faculty capacity.

Team Lead, AAC&U Institute on AI, Pedagogy, and the Curriculum (2025 to 2026)

Led WSSU's team through the yearlong American Association of Colleges and Universities national institute and developed the institutional AI action plan; submitted the final report (April 2026) and presented outcomes to the WSSU General Faculty. The Provost is now implementing the plan as the roadmap for WSSU's AI work: it led to the University AI Task Force, the CSC 1317 AI Literacy for All course, institutional AI guidelines, faculty support for integrating AI into their courses, and planning for a potential AI minor and an AI track within a proposed research PhD program.

Chair, University AI Task Force, Curriculum and Academic Pathways (CAP) Team, WSSU (2026 to present)

Lead university-wide AI curriculum strategy; presented progress to the Chancellor's Cabinet, May 2026. Developed the design and content of the university's public AI website (wssu.edu/academics/ai-at-wssu), 2026.

Chair, General Education Data Fluency SLO Committee, WSSU (2024 to 2026)

Led creation and institutionalization of the university-wide Data Fluency outcome (detailed under Curriculum Innovation).

Department Leadership, Computer Science: Chair, MCST graduate curriculum review committee, leading a three-member committee through a complete curriculum revision (2024 to 2025); Chair, Faculty Post Tenure Review Committee (2025); revised Master's thesis guidelines and rubric (2025).

University Governance: Member, Provost's Council (2022 to present); Graduate Council (2024 to present); Faculty Research Advisory Board (2025 to present); Faculty Senate (2019 to present); University Scholarship Application Review Committee (2025 to present, approximately 30 applications annually); Post Tenure Review Committee, Department of Mathematics (2026 to 2027).

PUBLICATIONS

An asterisk (*) denotes a student coauthor mentored by me.

Selected Peer Reviewed Journal, Books, and Series Publications

Journal impact factor (IF) added for selected journals

1. R. Saidi, H. Burn, B. Baumer, J. Black, D. Deb, and Z. Drozda, "Building Ramps and Pathways to Data Science in K-12, Minority-Serving Institutions, and Two-Year Colleges," Scatterplot, vol. 1, no. 1, 2024. doi: 10.1080/29932955.2024.2395091.
2. R. M. Smith, D. Deb, Z. Blizard, and R. Midgett*, "A Planner's Quest for Identifying Spatial (In)Justice in Local Communities: A Case Study of Urban Census Tracts in North Carolina, USA," Applied Geography, vol. 158, 2023. doi: 10.1016/j.apgeog.2023.103030. (IF: 5.4)
3. C. F. Mickle* and D. Deb, "Early Prediction of Patient Discharge Disposition in Acute Neurological Care Using Machine Learning," BMC Health Services Research, vol. 22, no. 1281, 2022. doi: 10.1186/s12913-022-08615-w. (IF: 3.0)
4. B.-J. Panlaqui*, M. Fuad, D. Deb, and C. Mickle*, "Path Forming of Healthcare Practitioners in an Indoor Space Using Mobile Crowdsensing," Sensors, vol. 22, no. 19, p. 7546, 2022. doi: 10.3390/s22197546. (IF: 3.5)

5. D. Deb and R. M. Smith, "Application of Random Forest and SHAP Tree Explainer in Exploring Spatial (In)Justice to Aid Urban Planning," ISPRS International Journal of Geo-Information, vol. 10, no. 9, p. 629, 2021. doi: 10.3390/ijgi10090629. (IF: 2.8)
6. D. Deb and M. Fuad, "Integrating Big Data and Cloud Computing Topics into the Computing Curricula: A Modular Approach," Journal of Parallel and Distributed Computing, vol. 157, pp. 303 to 315, 2021. doi: 10.1016/j.jpdc.2021.07.012. (IF: 4.0)
7. G. Taylor and D. Deb, "Teaching AI Ethics in a Flipped Classroom," Journal of Computing Sciences in Colleges, vol. 36, no. 5, pp. 67 to 76, 2021.
8. S. K. Prasad et al., including D. Deb, NSF/IEEE-TCPP Curriculum Initiative on Parallel and Distributed Computing, Core Topics for Undergraduates, Version II-beta, 2020, 53 pp. http://tcpp.cs.gsu.edu/curriculum/
9. M. Fuad, D. Deb, J. Etim, and C. Gloster, "Mobile Response System: A Novel Approach to Interactive and Hands-On Activity in the Classroom," Educational Technology Research and Development, vol. 66, no. 2, pp. 493 to 514, 2018. doi: 10.1007/s11423-018-9570-5. (IF: 4.2)
10. D. Deb, M. Fuad, and M. J. Oudshoorn, "Achieving Self-Managed Deployment in a Distributed Environment," Journal of Computational Methods in Science and Engineering, vol. 11, no. 3, suppl. 1, pp. 115 to 125, 2011.

Selected Peer Reviewed Conference Publications

1. K. Mannino*, D. Deb, and K. An, "Predicting Wildfire Burn Severity from Pre-Fire SAR Signatures: A Deep Learning Approach," in Proc. 2026 Int. Conf. on Advances in Artificial Intelligence and Machine Learning (AAIML), 2026. Best Oral Presentation. doi: 10.1109/AAIML67890.2026.11498153
2. Z. Shejuti*, M. Fuad, and D. Deb, "Indoor Mobility Path Formation of Healthcare Practitioners from Sparse Bluetooth RSSI Data," in Proc. 2026 7th Int. Conf. on Communications, Signal Processing, and their Applications (ICCSPA), IEEE, 2026, pp. 1 to 6.
3. Z. Shejuti*, D. Deb, and E. Dunkel, "From Answer to Origin: Page Number Grounding in Document-Level Question Answering," in Proc. 24th IEEE Int. Conf. on Machine Learning and Applications (ICMLA), 2025, pp. 508 to 514. doi: 10.1109/ICMLA66185.2025.00075
4. M. Fuad, N. Smith, D. Deb, T. N. Adams, A. Smith, T. Hill, and M. G. Moree, "Automating Healthcare Practitioner's Indoor Mobility Detection Using a Mobile Application," in Proc. 2025 Int. Wireless Communications and Mobile Computing Conf. (IWCMC), 2025, pp. 239 to 245. doi: 10.1109/IWCMC65282.2025.11059565
5. D. Deb, G. Taylor, S. Betz, B. A. T. Maddux, C. E. Ebert, F. W. Richardson, J. L. S. Couto, M. S. Jarrett, and Z. Madjd-Sadjadi, "Enhancing University Curricula with Integrated AI Ethics Education: A Comprehensive Approach," in Proc. 56th ACM Tech. Symp. on Computer Science Education (SIGCSE), 2025, pp. 248 to 254. doi: 10.1145/3641554.3701953.
6. D. Deb, S. Betz, and M. Fuad, "Broadening Data Science Education: An Experience Report," in Proc. 27th Australasian Computing Education Conf. (ACE), 2025, pp. 1 to 7. doi: 10.1145/3716640.3716641.
7. M. Fuad, D. Deb, B.-J. G. Panlaqui*, and C. F. Mickle*, "Using RSSI to Form Path in an Indoor Space," in Proc. Int. Conf. on Computer Communications and Networks (ICCCN), 2022, pp. 1 to 2. doi: 10.1109/ICCCN54977.2022.9868912.
8. C. F. Mickle* and D. Deb, "Predicting Patient Discharge Disposition in Acute Neurological Care," in Proc. IEEE Symp. Series on Computational Intelligence (SSCI), 2021, pp. 1 to 8. doi: 10.1109/SSCI50451.2021.9659904.
9. M. Fuad and D. Deb, "Using Real-World Problems to Explore and Improve Students' Understanding of Parallelism Concepts," in Proc. IEEE Global Engineering Education Conf. (EDUCON), 2021, pp. 57 to 62. doi: 10.1109/EDUCON46332.2021.9453912.
10. D. Deb and M. Guirguis*, "Use of Auxiliary Classifier Generative Adversarial Network in Touchstroke Authentication," in Proc. 19th IEEE Int. Conf. on Machine Learning and Applications (ICMLA), 2020, pp. 252 to 257. doi: 10.1109/ICMLA51294.2020.00049.
11. D. Deb and R. M. Smith, "Use of Machine Learning in Exploring Spatial (In)Justices," in Proc. 19th IEEE Int. Conf. on Machine Learning and Applications (ICMLA), 2020, pp. 1211 to 1217. doi: 10.1109/ICMLA51294.2020.00191.

12. D. Deb, M. Fuad, and K. Irwin, "A Module-Based Approach to Teaching Big Data and Cloud Computing Topics at CS Undergraduate Level," in Proc. 50th ACM Tech. Symp. on Computer Science Education (SIGCSE), 2019, pp. 2 to 8. doi: 10.1145/3287324.3287494.
13. D. Deb, S. Cousins*, and M. Fuad, "Teaching Big Data and Cloud Computing: A Modular Approach," in Proc. IEEE Int. Parallel and Distributed Processing Symp. Workshops (IPDPSW), 2018, pp. 377 to 383. doi: 10.1109/IPDPSW.2018.00070.
14. D. Deb, M. Fuad, J. Etim, and C. Gloster, "MRS: Automated Assessment of Interactive Classroom Exercises," in Proc. 49th ACM Tech. Symp. on Computer Science Education (SIGCSE), 2018, pp. 290 to 295. doi: 10.1145/3159450.3159607.
15. D. Deb, M. Fuad, and M. Kannan*, "Creating Engaging Exercises with Mobile Response System (MRS)," in Proc. 48th ACM Tech. Symp. on Computer Science Education (SIGCSE), 2017, pp. 147 to 152. doi: 10.1145/3017680.3017793.
16. M. Fuad, D. Deb, J. Etim, and C. Gloster, "Using Interactive Exercise in Mobile Devices to Support Evidence-Based Teaching and Learning," in Proc. 21st ACM Conf. on Innovation and Technology in Computer Science Education (ITiCSE), 2016, pp. 17 to 22. doi: 10.1145/2899415.2899467.
17. D. Deb, L. Gonzales*, and M. Geda, "Software Engineering Projects with Social Significance: An Experience Report at a Minority University," in Proc. 26th IEEE Int. Conf. on Software Engineering Education and Training (CSEE&T), 2013.
18. D. Deb, M. J. Oudshoorn, and J. Paxton, "Self-Managed Deployment in a Distributed Environment via Utility Functions," in Proc. 20th Int. Conf. on Software Engineering and Knowledge Engineering (SEKE), 2008, pp. 808 to 813.
19. D. Deb and R. Angryk, "Distributed Document Clustering Using Word-Clusters," in Proc. IEEE Symp. on Computational Intelligence and Data Mining (CIDM), 2007, pp. 376 to 383. doi: 10.1109/CIDM.2007.368899

Selected Peer Reviewed Workshop/Poster Abstracts

1. K. Mannino*, D. Deb, and K. An, "Pre-Ignition Wildfire Burn Severity Modeling with Polarimetric UAVSAR Data and Machine Learning," in Proc. IEEE SoutheastCon, 2025, pp. 1070 to 1071. doi: 10.1109/SoutheastCon56624.2025.10971599.
2. Z. T. Shejuti*, D. Deb, and E. R. Dunkel, "Enhancing Accessibility to MODTRAN Documentation: A Chatbot Framework Using Retrieval-Augmented Generation (RAG)," in Proc. IEEE SoutheastCon, 2025, pp. 1314 to 1315. doi: 10.1109/SoutheastCon56624.2025.10971575.
3. S. P. Timsina*, J. Lockart, S. Amar, M. I. Shortt, D. Deb, and E. R. Dunkel, "Simplifying Accessibility to NASA's Planetary Data System Using LLMs and Retrieval-Augmented Generation Techniques," in Proc. IEEE SoutheastCon, 2025, pp. 1322 to 1323. doi: 10.1109/SoutheastCon56624.2025.10971470.
4. S. Bhattacharya, R. Uma, and D. Deb, "Integrating Data Science for Social Justice: A Tutorial on Developing Non-Traditional Pathways for Non-CS Majors," in Proc. 56th ACM Tech. Symp. on Computer Science Education (SIGCSE V.2), 2025, p. 1767. doi: 10.1145/3641555.3704754.
5. A. Linder* and D. Deb, "Firefighting: Applying Deep Learning Algorithms for Real-Time Fire Detection," in Proc. IEEE Int. Conf. on Big Data (BigData), 2024, pp. 8754 to 8756. doi: 10.1109/BigData62323.2024.10825579.
6. J. Paul and D. Deb, "Minority Serving Institutions and SIGCSE," in Proc. 54th ACM Tech. Symp. on Computer Science Education (SIGCSE), 2023. doi: 10.1145/3545947.3573349.
7. D. Deb and E. Jones, "University-Wide Adoption of Data Science," in Proc. 51st ACM Tech. Symp. on Computer Science Education (SIGCSE), 2020. doi: 10.1145/3328778.3372657.
8. D. Deb, R. M. Smith, and M. Fuad, "Infusing Data Science Across Disciplines," in Proc. ACM Conf. on Innovation and Technology in Computer Science Education (ITiCSE), 2019. doi: 10.1145/3304221.3325579.

Accepted, Submitted, and Under Review

- Special Session #1063 (with R. Uma and S. Bhattacharya), "Designing and Implementing a Cross-Institutional, Cross-Disciplinary Data Science Curriculum: Challenges and Solutions," accepted for the 58th ACM Technical Symposium on Computer Science Education (SIGCSE TS 2027), to be presented February 2027.

- D. Deb et al., “From Concept to Practice: Building a Cross-Institutional Data Science Pathway for Non-Computing Majors,” submitted to Scatterplot (Taylor & Francis), May 2026, under review.
- D. Deb, “SilentDays: A Benchmark for Silence-Aware, Question-Level Change Detection in News Streams,” submitted to the 49th European Conference on Information Retrieval (ECIR 2027), Resource Papers track, under review.
- E. Bennett, J. M. Conroy, D. Deb, and E. Sheriff, “IDACCS at TREC 2026 Change Detection: A Lightweight LLM Approach,” notebook paper submitted to the Text REtrieval Conference (TREC 2026), under review.
- E. Bennett, J. M. Conroy, D. Deb, and E. Sheriff, “NCSU-LAS at TREC 2026: Change Detection,” notebook paper submitted to the Text REtrieval Conference (TREC 2026), under review.

MENTORING AND RESEARCH SUPERVISION

Postdoctoral and Research Staff, CADS

Supervised two postdoctoral research associates (Dr. Kiayia Propst, 2021 to 2023; Dr. William Nick, 2021) and four research associates (Brixx-John Panlaqui, Charles Mickle, Peter Yuan, 2021 to 2023; Kris Mannino, January to May 2026).

M.Sc. Thesis and Project Supervision (Chair), eleven students

Atithi Bhattarai (wildfire exposure and public health predictive modeling, in progress), Antoni Olesik (“vis” Python visualization library, 2026), Kris Mannino (wildfire burn severity with UAVSAR and machine learning, 2025), Suresh Timsina (NASA Planetary Data System access using LLMs and RAG, 2025), Aaron Linder (real-time fire detection with deep learning, 2024), Kel Lee (behavioral biometrics authentication, 2023), Brixx-John Panlaqui (indoor path forming via mobile crowdsensing, 2022), Mina Guirguis (continuous authentication, 2022), Charles Mickle (ML for neurological care discharge prediction, 2021), John Milton (2021), Michaelangelo Fields (2020).

Thesis and Dissertation Committee Member

Doctoral: Alireza Pasha Nouri, University of Texas at El Paso (PhD completed, 2024). Master’s (WSSU): Joycelyn Rouse (2026), Zarin Shejuti (2025), Megh Poudyel (2023), Anthony Smith (2023), Jossuan Garcia Gamez (2022), James Coe (2021), Tony Gwyn (2020).

Faculty Mentoring

Mentor to a junior Computer Science faculty colleague, WSSU (2025 to present). Research mentor, NIH MARC U*STAR scholars (2016).

Selected Mentee Outcomes

- Kris Mannino: NASA Jet Propulsion Laboratory summer internship (2025); first-author publications at AAIML 2026 (Best Oral Presentation) and IEEE SoutheastCon 2025; UNC system research poster (2025), travel supported through my NASA grant.
- Zarin Shejuti: first-author regular paper at IEEE ICMLA 2025 and paper at IEEE ICCSPA 2026; supervised research on RAG based MODTRAN documentation access with a NASA JPL collaborator (2024 to 2025).
- Charles Mickle: first-author journal publication, BMC Health Services Research (2022).
- Brixx-John Panlaqui: first-author journal publication, Sensors (2022).
- Graduate mentees have presented at the NSF AAAS ERN Conference and ADMI across multiple years.

Undergraduate Research (selected from 20 projects mentored since 2013)

- Rachel Midgett: coauthor, Applied Geography journal publication (2023).
- Sebastian Cousins: coauthor, IEEE IPDPSW 2018; First Prize, Undergraduate CS Research, 2018 NSF AAAS ERN Conference.
- Mallek Kannan: coauthor, ACM SIGCSE 2017.
- Luel Gonzales: coauthor, IEEE CSEE&T 2013.
- Melinda Combs and Joy Harris: NASA Mars rover image classification, presented at NC Academy of Science (2024).

Academic Advising

Advise ~15 Computer Science and Information Technology majors and Data Science minor students annually; guide graduate advisees through research design, publication, and career placement.

SELECTED INVITED TALKS AND COLLOQUIA

- **Keynote Speaker,** IEEE International Conference on Information Technology Research (ICITR 2025), Sri Lanka, December 2025. "Multimodal Large Language Models for Deep Research in Scientific Image Archives and Technical Documents."
- **Invited Speaker,** RENCI Connects, Renaissance Computing Institute, Chapel Hill, NC, April 2026. "Democratizing AI: Making Powerful Systems Accessible and Accountable." https://www.youtube.com/watch?v=IT2TGSX7YXs&t=470s
- **Presenter,** AI in Action, Winston-Salem State University, April 2026. "From Data to Discovery: How AI is Changing Science."
- **Panelist,** CITI Panel: Let's Talk About AI at WSSU and the UNC System, December 2025.
- **Webinar Speaker,** Association of Deans and Directors (AD&D), "Student Outcomes in an AI-Saturated World," October 2025.
- **Interviewee,** "How Generative AI Is Changing the Classroom," The Chronicle of Higher Education, 2024.
- **Invited Speaker,** "The Faculty Adopter Approach to Broadening Participation in Data Science," South Big Data Innovation Hub Speaker Series, 2023.
- **Research Colloquium Speaker,** College of Computing and Digital Media, DePaul University, 2022. https://www.youtube.com/watch?v=OHwagDS90-k&t=21s
- **Research Colloquium Speaker,** Department of Computer Science, Wake Forest University, 2022.
- **Panelist,** Data Science Conversations, Academic Data Science Alliance (ADSA), 2022.
- **Seminar Speaker,** HBCU Data Science Consortium Salon Speaker Series, 2021.

PROFESSIONAL SERVICE

Funder Review and Advisory Boards

- Panelist and Reviewer, NSF Solicitation 26-503: Artificial Intelligence and Cybersecurity Education Innovation and Scholarship for Service, CyberAICorps Scholarship for Service (CyberAI SFS), Directorate for STEM Education, October 8 to 9, 2026 (six proposals).
- Member, Mozilla Foundation Responsible Computing Challenge Alumni Council (2025 to 2027); reviewed six grant proposals for RCC cohort three (2026).
- Member, External Advisory Board, NIH Research Education Program, Creative Applied Learning in Biomedical Informatics Research (CALIBIR), Wake Forest University AI Institute (May 2026 to present).
- Panelist and Reviewer, NSF Solicitation: Expanding AI Innovation through Capacity Building and Partnerships (ExpandAI), 2024 (six proposals).
- Panelist and Reviewer, NSF Solicitation: Broadening Participation in Computing program, 2022 (eleven proposals).

Conference Organization and Program Committees

- Minority Serving Institution Chair, ACM SIGCSE organizing committee, 2023 to 2025.
- Supercomputing (SC) Conference Planning Committee, 2022 to 2023.
- Program Chair and Organizer, EduHPC Workshop on Education for High-Performance Computing, 2018 to 2020.
- Program Committee Member, ACM SIGCSE Technical Symposium, 2020 to 2025 and 2027; IEEE International Conference on Tools with Artificial Intelligence (ICTAI) 2026; EduHPC 2025 and 2026 (co-located with Supercomputing), EduPar (co-located with IEEE IPDPS), 2016 to 2025; ADSA Data Science Leadership Summit, 2023 and 2025.

Reviewing and External Evaluation

- Reviewer: JPDC (2017 to 2025); ACM SIGCSE (2017 to 2027); ACM ITiCSE (2017, 2022); IEEE Transactions on Education (2023); BMC Medical Informatics and Decision-Making (2023); Remote Sensing (2022); Physical Therapy Reviews (2026).
- External Reviewer, Faculty Tenure and Promotion: DePaul University (2024); United States Military Academy, West Point (2023).

TEACHING (LAST 5 YEARS)

Graduate: CST 6320 Data Visualization*, CST 5320 Design and Analysis of Algorithms, CST 6302 Programming Languages, CSC 5322 Parallel Computing, CSC 5310 Big Data and Cloud Computing*.

Undergraduate: CSC 3331 Analysis of Algorithms, CSC 4350 Software Engineering, CSC 4322 Parallel Computing, CSC 4310 Big Data and Cloud Computing*, CSC 2315 Applied Data Science*, CSC 2316 Responsible Data Science*, CSC 1316 Exploratory Data Analysis of Social Justice Issues*, CIT 4391, CSC 1305.

** Courses proposed, developed, and taught at WSSU. See also Curriculum Innovation section for CSC 1317 AI Literacy for All (launched Fall 2026).*

SELECTED HONORS AND AWARDS

- Best Oral Presentation, 2026 International Conference on Advances in Artificial Intelligence and Machine Learning (AAIML), 2026; coauthored paper, first author Kris Mannino, M.Sc. mentee.
- Google HBCU TensorFlow Outreach Award, $10,000 each, 2021, 2022, and 2023.
- Fellow, Convergence Research (CORE) Institute, tackling climate-induced challenges with AI, San Diego Supercomputer Center, 2023.
- Wilveria B. Atkinson Distinguished Research Award, WSSU, 2021.
- Red Jacket Distinguished Award, WSSU, 2021.
- Benjamin Ph.D. Fellowship, College of Engineering, Montana State University, 2004 to 2005.
- Australian Government Full Scholarship, M.S. study at University of Adelaide, 2000 to 2001.
- "Woman of the Year," Shahjalal University of Science and Technology, Bangladesh, 1996.

PROFESSIONAL MEMBERSHIPS

ACM (member since 2010); IEEE (member since 2022); ACM SIGCSE; ACM SIGITE; ACM SIGHPC; Academic Data Science Alliance (ADSA); North Carolina Data Science Education Working Group.

SELECTED MEDIA COVERAGE

- WXII 12 News, "WSSU launching AI safety curriculum for future educators and healthcare workers with $500,000 grant," October 2026.
- ABC45 News, "Winston-Salem State educating students how to use AI responsibly," April 2024.
- Mozilla News, "Mozilla Announces 15 New Responsible Computing Challenge Awardees in the U.S.," October 2023.
- WSSU News, "NASA awards $1.3M to WSSU and two other NC HBCUs for data science and AI research," September 2023.
- Winston-Salem Journal, "Transforming the Triad with data science," invited column, March 2021.
- WSSU News, "WSSU awarded $1.5M grant to establish new Center for Applied Data Science," September 2020.
- UNC System News, "UNC System Awards Three ROI Grants for 2021-2023," July 2020.