# Somya D. Mohanty, PhD.

*Curriculum Vitae*

## Education

2013 **Doctor of Philosophy in Computer Science**, *Mississippi State University*, *GPA – 4.0.*

2009 **Master of Science in Computer Science**, *Florida State University*, *GPA – 3.5* .

2006 **Bachelor of Science in Computer Science and Engineering**, *Biju Patnaik University*, *Percentage – 78.60 (First Class with Honors).*

## Doctoral Dissertation

Title Ordered Merkle Tree – A Versatile Data-structure for Security Kernels

Description A minimal Trusted Computing Base utilizing a novel data-structure called Ordered Merkle Trees to provide trustworthy assurances for information systems.

## Research Interests

- Big Data
- Data Science
- Computer/Information Security
- Machine-learning
- Distributed Computing and Storage
- Assured Analytics
- Trustworthy Computing

## Professional Experience

2016–Present **Assistant Professor**, *Department of Computer Science*, University of North Carolina - Greensboro.

Working as Assistant Professor at Department of Computer Science (UNCG). Primary research areas include — Big-Data, Machine Learning, Data Science, Cyber-Security, Trustworthy Computing.

**Research Projects**

- Sequence Modeling via Deep Neural networks
- Explainable AI
- Health Infromatics using Big Data Analytics
- Machine-Learning on Large-Scale MicroBlogs Analysis - Twitter
- Machine-Learning and Graph Analytics for Scientific Publication Data
- Anomaly Detection using Scalable Machine-Learning in Network Traffic
- Minimal Trusted Computing Base for Distributed Systems

2013–2016 **Assistant Research Professor**, *Social Science Research Center*, Mississippi State University.

Worked as Assistant Research Professor at Social Science Research Center (Mississippi State University). The primary area of research is the design and development of the Social Media Tracking and Analysis System (SMTAS). SMTAS is designed as a cloud based researcher tool for aggregating and analyzing data from the social media networks such as Twitter. I also coordinated the efforts of personnel involved in the Innovative Data Laboratory.

**Projects**

- Principal Investigator - "Event/Anomaly Detection in High Velocity Streaming Data.", Distributed Analytics and Security Institute - Pacific Northwest National Laboratory
- Co-Principal Investigator - "Assessment of Social Media Usage During Sever Weather Events and the Development of a Twitter-based Model for Improved Communication of Storm-related Information", Coastal Storm Awareness Program, NOAA
- Principal Investigator - "Social Media Tracking and Analysis System (SMTAS)", Mississippi Agricultural and Forestry Experiment Station, Mississippi State University
- Principal Investigator - "Tobacco Control Reporting and Analysis System", Mississippi Tobacco Control Unit, NIH
- Research Lead - "Social Geo-Sensors", Social Science Research Center, Mississippi State University
- Research Lead - "Networks of Research", Social Science Research Center, Mississippi State University

2012–2013 **Graduate Research Assistant**, *Social Science Research Center*, Mississippi State University.

Worked as the lead programmer for the Social Science Research Center in developing Social Media Tracking and Analysis Software (SMTAS). SMTAS is used for large-scale social media (Twitter, Facebook) tracking and analysis on attributes such as data-flow, sentiment analysis, geo-location mapping, data-mining for keywords/phrases related to an event.

**Projects**

- Twitter Data Mining
- Cloud Based Distributed Computing and Web-Frameworks
- Natural Language Processing

2009–2011 **Research Assistant**, *Computer Science and Engineering*, Mississippi State University.

Worked with Dr. Mahalingam Ramkumar to design architecture and algorithms for trustworthy platforms for various distributed applications.

**Projects**

- Securing Cloud File Storage using Minimal Trusted Computing Base
- Minimal TCB for Distributed Systems
- Minimal TCB for MANET Systems

2008–2009 **Research Assistant**, *Computer Science*, Florida State University.

Worked with Dr. Andy Wang on file redundancy research in Operating Systems.

2006–2008 **Web Developer**, *Computer Science*, Florida State University.

Worked for two years developing online systems, web-applications and maintaining databases for the department.

## Teaching Experience

**Courses Developed/Taught**.

Spring - '22 **CSC 495/693 - TinyML**, *course covers topics in the domain of machine learning on edge devices. We will learn about how to develop classical and deep learning approaches to be deployed on small microcontrollers which can sense the world around you. You will learn about model development, compression techniques, efficient memory and CPU management, and long range connectivity via LoRA-WAN. The course is hands-on with embedded devices that are provided for every student to develop their experiments.*, Under-Graduate/Graduate, ***New course developed*** .

Fall - '21 **CSC 105 - Data, Computing, and Quantitative Reasoning**, *Problem-based introduction to quantitative reasoning, including computational methods; formulation of quantitative arguments; algorithmic understanding, selection, and utilization; data modeling, interpretation, and summarization of results, on real world datasets.*, Under-Graduate, ***New course developed*** .

Fall - '16,'17,'18 **CSC 339 - Concepts of Programming Languages**, *Concepts of block-structured, object-oriented, functional, logic, and concurrent programming languages. Comparative study of syntactic and semantic features of these languages and writing programs using them.*, Under-Graduate.

Fall and Spring - '17, '18, '19, '20, '21, '22 **CSC 405/605 - Data Science**, *Problem-based learning introduction to Data Science, including programming with data; data mining, munging, and wrangling; statistics, analytics, visualization; and applied machine learning, directed towards scientific, social, and environmental challenges.*, Under-Graduate and Graduate, ***New course developed***.

Fall - '21 **CSC 411/611 - Advanced Data Science**, *Experiential learning towards advanced concepts of Data Science, including efficient and parallel programming with large scale datasets, advanced data organization and storage, applied machine learning and inferencing, towards real-world challenges.*, Under-Graduate, ***New course developed***.

Fall - '19 **IAF 603 - Preparing Data for Analytics**, *Students are exposed to current approaches, techniques and best practices for collecting, cleaning and normalizing data, processing, storing, managing, securing and preparing structured and unstructured big data sets for analytics.*, Graduate, ***New course developed***.

Fall - '19 **IAF 604 - Machine Learning and Predictive Analytics**, *This course is an introduction to machine learning and predictive analytics for Big Data. Some key components include deep learning, supervised, unsupervised models, regression, inductive learning, and time series analysis.*, Graduate, ***New course developed***.

Spring - '17, '19, '20, '21 **CSC 462/662 - Principles of Operating Systems**, *Techniques and strategies used in operating system design and implementation: managing processes, input/output, memory, scheduling, file systems, and protection.*, Under-Graduate and Graduate.

Spring - '17,'18 **CSC 490 - Senior Capstone**, *Application of classroom knowledge and skills in computer science to solve real-world problems and to develop research and development skills.*, Under-Graduate.

Spring - '17 **CSC 487/687 - Network Security**, *The course explores the network security concepts of communication protocols; security in routing; remote authentication; access policies; web security; network vulnerabilities; intrusion detection and prevention; and network traffic analysis.*, Under-Graduate and Graduate, ***New course developed***.

**Program Concentrations**.

Spring - '20 **Concentration in Computational Analytics (IAC) - Informatics and Analytics**, *The goal of the Concentration in Computational Analytics Concentration is to provide graduate students (in Informatics and Analytics) knowledge depth in the areas of Big Data and Data science. The concentration allows students from the Informatics and Analytics program a pathway to participate in computer science courses, and also explore capstone project development in the domain.*, Graduate, ***New concentration developed***.

Fall - '18 **Data Science and Big Data - Computer Science**, *The goal of the Data Science and Big Data Concentration is to provide graduate students (in Computer Science) key knowledge of appropriate theories, algorithms, and technologies, towards development of analytical systems/models for disparate, complex, and small/large scale datasets. The learning objectives of the program will enable students to tackle a wide variety of data-focused scientific, social, and environmental challenges.*, Under-Graduate and Graduate, ***New concentration developed***.

2015–2016 **Adjunct Faculty**, *Computer Science and Engineering*, Mississippi State University.
Teaching **CSE 4990/6990: Big Data and Data Science** course in the Department of Computer Science and Engineering in Fall' 15. The course focuses on theories, techniques, and the tools necessary to gain insights from Big Data.
The core topics addressed by the course are:

- Big-Data and its applications
- Data-Mining and its methods on large data-sets
- Machine-Learning and its applicability on real world data-sets

2011–2012 **Graduate Teaching Assistant**, *Computer Science and Engineering*, Mississippi State University.
Taught undergraduate programming courses to freshmen and sophomore students
**Courses**

- CSE1284: Introduction to Programming Languages - Python
- CSE1384: Intermediate Computer Programming - Python and C++

## Manuscripts

### Published


[1] Somya D Mohanty, Deborah Lekan, Thomas P McCoy, Marjorie Jenkins, and Prashanti Manda. "Machine learning for predicting readmission risk among the frail: Explainable AI for healthcare". In: *Patterns* 3.1 (2022). DOI: 10.1016/j.patter.2021.100395.

[2] Evan B Goldstein, Daniel Buscombe, Eli D Lazarus, Somya D Mohanty, Shah Nafis Rafique, Katherine A Anarde, Andrew D Ashton, Tomas Beuzen, Katherine A Castagno, Nicholas Cohn, et al. "Labeling poststorm coastal imagery for machine learning: Measurement of interrater agreement". In: *Earth and Space Science* 8.9 (2021). DOI: 10.1029/2021EA001896.

[3] Deborah Lekan, Thomas P McCoy, Marjorie Jenkins, Somya Mohanty, and Prashanti Manda. "Frailty and In-Hospital Mortality Risk Using EHR Nursing Data". In: *Biological research for nursing* (2021). DOI: 10.1177/10998004211060541.

[4] Deborah A Lekan, Marjorie Jenkins, Thomas P McCoy, Somya Mohanty, Prashanti Manda, and Reham Yasin. "Hospital Readmission Outcomes by Frailty Risk in Adults in Behavioral Health Acute Care". In: *Journal of Psychosocial Nursing and Mental Health Services* 59.10 (2021), pp. 27–39.

[5] Deborah A Lekan, Thomas P McCoy, Marjorie Jenkins, **Somya D. Mohanty**, Prashanti Manda, and Reham Yasin. "Comparison of a Frailty Risk Score and Comorbidity Indices for Hospital Readmission Using Electronic Health Record Data". In: *Research in Gerontological Nursing* 14.2 (2021), pp. 91–103.

[6] Deborah A Lekan, Thomas P McCoy, Marjorie Jenkins, **Somya D. Mohanty**, Prashanti Manda, and Reham Yasin. "Hospital readmission outcomes by frailty risk in behavioral health adults". In: *Journal of Psychosocial and Mental Health Nursing* In Press (2021).

[7] Gina Rico Mendez, Megan Stubbs Richardson, **Somya D. Mohanty**, and Arthur G Cosby. "Implications of Social Media on Disaster Response: Commentary on the Flint Twitterverse". In: *Managing Challenges for the Flint Water Crisis*. Ed. by T. Thornton Neaves, A. D. Williams, K. M. Simon, and J. F. Sklarew. Westphalia Press, 2021, pp. 1–17.

[8] **Somya D. Mohanty**, Brown Biggers, Saed Sayedahmed, Nastaran Pourebrahim, Evan B Goldstein, Rick Bunch, Guangqing Chi, Fereidoon Sadri, Tom P McCoy, and Arthur Cosby. "A multi-modal approach towards mining social media data during natural disasters-a case study of Hurricane Irma". In: *International Journal of Disaster Risk Reduction* 10.14 (2021).

[9] Evan B Goldstein, **Somya D. Mohanty**, Shah Nafis Rafique, and Jamison Valentine. "An Active Learning Pipeline to Detect Hurricane Washover in Post-Storm Aerial Images". In: *Workshop on AI in Earth Science, 2020 Conference on Neural Information Processing Systems (NEurIPS)* (2020).

[10] Prashanti Manda, Saed SayedAhmed, and **Somya D. Mohanty**. "Automated ontology-based annotation of scientific literature using deep learning". In: *Proceedings of The International Workshop on Semantic Big Data*. 2020, pp. 1–6.

[11] Matthew C Moretz, Daniel Foster, John Weber, Rinty Chowdhury, Shah Nafis Rafique, Evan B Goldstein, and **Somya D. Mohanty**. "psi-collect: A Python module for post-storm image collection and cataloging". In: *Journal of Open Source Software* 5.47 (2020), p. 2075.

[12] **Mohanty, Somya D.**, Thomas P McCoy, Prashanti Manda, Deborah Lekan, and Marjorie Jenkins. "A multi-modal machine learning approach towards predicting patient readmission". In: *2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. IEEE. 2020, pp. 2027–2035.

[13] An Dinh, Stacey Miertschin, Amber Young, and **Somya D. Mohanty**. "A Data-driven Approach to Predicting Diabetes and Cardiovascular Disease with Machine Learning". In: *BioMed Central (BMC) - Medical Informatics and Decision Making*. Vol. 19. 1. Springer, Nov. 2019, p. 211.

[14] Deborah A Lekan, Thomas P McCoy, Marjorie Jenkins, **Somya D. Mohanty**, and Prashanti Manda. "Comparision of a Frailty Risk Score and Co-Morbidity for Early Re-hospitalization using Electronic Health Record Data". In: *Innovation in Aging* 3.Supplement_1 (2019), S906–S906.

[15] Nastaran Pourebrahim, Selima Sultana, John F. Edwards, Amanda Gochanour, and **Somya D. Mohanty**. "Understanding Twitter Use during Natural Disasters: A Case Study of Hurricane Sandy". In: *International Journal of Disaster Risk Reduction*. May 2019.

[16] Bin Luo, Qi Zhang, and **Somya D. Mohanty**. "Data-Driven Exploration of Factors Affecting Federal Student Loan Repayment". In: *Proceedings of the 2018 International Conference on Data Science ICDATA'18, 2018 World Congress in Computer Science, Computer Engineering, & Applied Computing* (June 2018).

[17] Prashanti Manda, Lucas Beasley, and **Somya D. Mohanty**. "Taking a Dive: Experiments in Deep Learning for Automatic Ontology-based Annotation of Scientific Literature". In: *International Conference on Biological Ontology 2018* (Aug. 2018).

[18] Nastaran Pourebrahim, Selima Sultana, Jean-Claude Thill, and **Somya D. Mohanty**. "Enhancing Trip Distribution Prediction with Twitter Data: Comparison of Gravity and Neural Networks". In: *26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems - ACM SIGSPATIAL 2018* (Sept. 2018).

[19] Gina Rico Mendez, Arthur G Cosby, and **Somya D. Mohanty**. "Obamacare On Twitter: Online Political Participation And Its Effects On Polarization". In: *TEORIJA IN PRAKSA* 55.2 (May 2018), pp. 419–444.

[20] Logan Rohde, **Somya D. Mohanty**, Jing Deng, and Fereidoon Sadri. "The Propagation of Counteracting Information in Online Social Networks: A Case Study". In: *2018 IEEE International Conference on Data Mining Workshops, ICDM Workshops, Singapore, Singapore, November 17-20, 2018*. Nov. 2018, pp. 1173–1177. DOI: 10.1109/ICDMW.2018.00168. URL: https://doi.org/10.1109/ICDMW.2018.00168.

[21] David Santana, Shan Suthaharan, and **Somya D. Mohanty**. "What we learn from learning-Understanding capabilities and limitations of machine learning in botnet attacks". In: *Proceedings of the 2018 International Conference on Security & Management - SAM'18, 2018 World Congress in Computer Science, Computer Engineering, & Applied Computing* (June 2018).

[22] Alex Haan, **Somya D. Mohanty**, and Prashanti Manda. "What's hot and what's not? - Exploring trends in bioinformatics literature using topic modeling and keyword analysis". In: *The International Symposium on Bioinformatics Research and Applications - 2017*. Feb. 2017.

[23] Lindsey Peterson, Kentse Radebe, and **Somya D. Mohanty**. "Democracy, Education, and Free Speech: The Importance of# FeesMustFall for Transnational Activism". In: *Societies Without Borders* 11.1 (2016), p. 10.

[24] **Somya D. Mohanty**, Mahalingam Ramkumar, and Naresh Adhikari. "OMT: A Dynamic Authenticated Data Structure for Security Kernels". In: *International Journal of Computer Networks & Communications* 8.4 (July 2016).

[25] Mahalingam Ramkumar and **Somya D. Mohanty**. "Reliable Assurance Protocols for Information Systems". In: *International Conference on the Evolving Internet*. Oct. 2015.

[26] **Somya D. Mohanty** and Mahalingam Ramkumar. "Assuring a Cloud Storage Service". In: *International Journal of Information Sciences and Computer Engineering*. Feb. 2015.

[27] Staci Zavattaro, Eddie French, and **Somya D. Mohanty**. "A Sentiment Analysis of U.S. Local Government Tweets: The Connection Between Tone and Citizen Participation". In: *Government Information Quarterly*. 2015.

[28] Robert C. McMillen, **Somya D. Mohanty**, and John F. Edwards. "Applying the Social Media Tracking and Analysis System to Social Science Research". In: *Annual Conference - World Association for Public Opinion Research* (Sept. 2014).

[29] Mahalingam Ramkumar and **Somya D. Mohanty**. "A Trustworthy Assurance-as-a-Service Architecture". In: *ICH – Workshop on Cryptography and Information Security* (June 2014).

[30] **Somya D. Mohanty**, Vinay Totakura, and Mahalingam Ramkumar. "An Efficient Trusted Computing Base for MANET Security". In: *Journal of Information Security*. June 2014.

[31] **Somya D. Mohanty**, Arun Velagapalli, and Mahalingam Ramkumar. "An Efficient TCB for a Generic Content Distribution System". In: *Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC), 2012 International Conference on*. IEEE. 2012, pp. 5–12.

[32] Arun Velagapalli, **Somya D. Mohanty**, and Mahalingam Ramkumar. "An Efficient TCB for a Generic Data Dissemination System". In: *IEEE International conference on Communications in China, Communication Theory and Security Symposium*. IEEE. 2012, pp. 5–12.

[33] **Somya D. Mohanty** and Mahalingam Ramkumar. "Securing File Storage in an Untrusted Server-Using a Minimal Trusted Computing Base." In: *CLOSER*. 2011, pp. 460–470.

### In Review

[1] Nastaran Pourebrahim, Selima Sultana, and **Somya D. Mohanty**. "The Whole Truth of Social Media Analysis in Disaster Management." In: *Cities, The International Journal of Urban Policy and Planning*. Nov. 2021.

[2] Franklin Wei, Mahalingam Ramkumar, Stephen R. Tate, and **Somya D. Mohanty**. "A Scalable, Trustworthy Infrastructure for Collaborative Container Repositories". In: *ACM Distributed Ledger Technologies*. Apr. 2021.

[3] Amulya Yadgani, Basudeba Behera, Vijay B. Semwal, and **Somya D. Mohanty**. "Human Walking Activity Recognition and Pattern Analysis using Compressed Deep Neural Networks." In: Aug. 2021.

### In Preparation

[1] **Somya D. Mohanty**, Aaron Beveridge, Rakhi Singh, and John Stufken. "Data Science Course Eco-System Mapping". In: Jan. 2022.

[2] Brown Biggers and **Somya D. Mohanty**. "Deep Semantic Matching Approach Towards Dynamic Text Filtering in Micro-Blog Messages". In: Dec. 2021.

[3] Saed Sayedahmed and **Somya D. Mohanty**. "Predicting Network Anomalies with Deep Sequence Analysis." In: Nov. 2021.

## Magazine, Article, and Blogs

[1] Research NC. *Research NC: Big data boom*. `https://businessnc.com/research-nc-big-data-boom/`. Business North Carolina, 2019.

[2] Mark Tosczak. *Real Big Data*. `https://researchmagazine.uncg.edu/spring-2019/real-big-data/`. UNCG Research Magazine, 2019.

[3] Coastal Processes and Hazards ? News. *Tweeting in the Tempest: What We're Learning From #Sandy*. `http://www.seagrant.sunysb.edu/articles/t/tweeting-in-the-tempest-what-we-re-learning-from-sandy-coastal-processes-hazards-news`. Coastal Storm Awareness Program - NOAA, 2014.

[4] Innovative Data Laboratory. *Network Analysis of Twitter During Hurricane Sandy*. `http://blog.idl.ssrc.msstate.edu/?p=42`. Social Science Research Center, 2013.

[5] Pointe Innovation Magazine. *Going beyond the trend on social media*. `http://innovatems.uberflip.com/i/229713-point-innovation-magazine-winter-2013/31`. Innovate Mississippi, 2013.

[6] NWS Climate Services Seminar Series. *Utilizing Social Media to Understand Human Interaction with Extreme Media Events: The Superstorm Sandy Beta Test*. `http://www.nws.noaa.gov/om/csd/index.php?section=seminar&page=semserContent&speaker=semser_20130716_cosby_mohanty`. National Weather Service, 2013.

## Invited Presentations

[1] Evan Goldstein, **Somya D. Mohanty**, Shah Rafique, and Jamision Valentine. *An Active Learning Pipeline to Detect Hurricane Washover in Post-Storm Aerial Images*. NeurIPS AI for Earth Sciences Workshop, Conference on Neural Information Processing Systems (NeurIPS). Dec. 2020.

[2] **Somya D. Mohanty**. *A Data Science Approach for Curriculum Mapping.* UNCG - RENCI Collaboration. Sept. 2020.

[3] **Somya D. Mohanty**. *Data Science Course Ecosystem Mapping.* The Institute for Data, Evaluation, and Analytics (IDEA), UNCG. Mar. 2020.

[4] **Somya D. Mohanty**, Aaron Beveridge, Kim Littlefield, and Noel Mazade. *A Data Science Approach for Curriculum Mapping.* NC Research Alliance Meeting. Nov. 2020.

[5] **Somya D. Mohanty**, Aaron Beveridge, Kim Littlefield, and Noel Mazade. *A Data Science Approach for Curriculum Mapping.* 2020 Bridging the Gap - NC Stem Conference, North Carolina Association for Biomedical Research. Oct. 2020.

[6] **Somya D. Mohanty**, Deborah Lekan, Thomas McCoy, Marjorie Jenkins, and Prashanti Manda. *A multi-modal machine learning approach towards predicting patient readmission.* IEEE International Conference on Bioinformatics and Biomedicine (BIBM). Nov. 2020.

[7] **Somya D. Mohanty**, Prashanti Manda, and Saed Sayedahmed. *Automated ontology-based annotation of scientific literature using deep learning.* ACM Special Interest Group on Management of Data (SIGMOD) 2020. June 2020.

[8] Brown Biggers and **Somya D. Mohanty**. *Dynamic Context Interpretation in Twitter.* UNCG 3-Minuite Thesis (*People's Choice Award*). Nov. 2019.

[9] Evan Goldstein, Saed Sayedahmed, and **Somya D. Mohanty**. *Using the Twitter Record from Hurricane Irma to Investigate Coastal Storm Impacts.* The American Geophysical Union. Dec. 2019.

[10] Deborah Lekan, Thomas McCoy, **Somya D. Mohanty**, Prashanti Manda, Rohit Gulia, and Marjorie Jenkins. *Comparison of a frailty risk score and comorbidity for early rehospitalization using electronic health record data.* Annual Scientific Meetings of the Gerontological Society of America. Nov. 2019.

[11] Deborah Lekan, Thomas McCoy, **Somya D. Mohanty**, Prashanti Manda, Rohit Gulia, and Marjorie Jenkins. *Comparison of two comorbidity indices and a hospital risk score in prediction of early and late rehospitalization.* Cone Health Nursing Research and Evidence-based Practice Symposium. Nov. 2019.

[12] Deborah Lekan, Thomas McCoy, **Somya D. Mohanty**, Prashanti Manda, Rohit Gulia, and Marjorie Jenkins. *Using administrative and laboratory data from the electronic health record to examine frailty indicators for hospital readmission.* International Conference on Frailty and Sarcopenia. Feb. 2019.

[13] Nastaran Pourebrahim, Brown Biggers, Saed Sayedahmed, **Somya D. Mohanty**, Rick Bunch, Evan Goldstein, Freidoon Sadri, and Jo Klien. *Assessing relevance of tweets in natural disaster using a multi-model approach.* UNCG Graduate Expo. Apr. 2019.

[14] An Dinh, Stacey Miertschin, and Amber Young **Somya D. Mohanty**. *A Data-driven Approach to Predicting Diabetes and Cardiovascular Disease with Machine Learning.* American Statistical Association Research Education for Undergraduates - University of North Carolina - Greensboro. July 2018.

[15] Darpan Jhawar, Prashanti Manda, and **Somya D. Mohanty**. *Big Data Analysis of Scientific Publications.* International Conference on Advances in Interdisciplinary Statistics and Combinatorics - 2018, Greensboro. Oct. 2018.

[16] Deborah Lekan, Thomas McCoy, Prashanti Manda, **Somya D. Mohanty**, Rohit Gulia, and Marjorie Jenkins. *Using Data from the EHR to Examine Frailty for Early Readmission among Hospitalized Older Adults*. International Conference on Advances in Interdisciplinary Statistics and Combinatorics - 2018, Greensboro. Oct. 2018.

[17] Bin Luo, Qi Zhang, and **Somya D. Mohanty**. *Data-Driven Exploration of Factors Affecting Federal Student Loan Repayment*. 14th International Conference on Data Science (ICDATA - 18), Las Vegas. Aug. 2018.

[18] Prashanti Manda, Lucas Beasley, and **Somya D. Mohanty**. *Taking a Dive: Experiments in Deep Learning for Automatic Ontology-based Annotation of Scientific Literature*. International Conference on Biological Ontology 2018, Corvallis, Oregon, USA. Aug. 2018.

[19] **Somya D. Mohanty**, Rohit Gulia, Deborah Lekan, Prashanti Manda, Thomas McCoy, and Marjorie Jenkins. *A Data-Driven Analysis of Patient Re-hospitalization*. International Conference on Advances in Interdisciplinary Statistics and Combinatorics - 2018, Greensboro. Oct. 2018.

[20] **Somya D. Mohanty**. *Big $(Data)^2$ Science*. The Institute for Data, Evaluation, and Analytics - University of North Carolina - Greensboro. May 2017.

[21] **Somya D. Mohanty**. *Using Humans as Sensors - Twitter and Hurricane Sandy*. Triad Developers Conference, Wake Forest, Winston Salem. Mar. 2017.

[22] **Somya D. Mohanty**. *Anomaly/Event Prediction in High-Velocity Streaming Data*. International Conference on Advances in Interdisciplinary Statistics and Combinatorics. Oct. 2016.

[23] Arthur G. Cosby and **Somya D. Mohanty**. *What do Tweets tell us?* Federal Communication Commission - Connect2Health. Feb. 2015.

[24] **Somya D. Mohanty**. *A Primer on the Use of the Social Media Tracking and Analysis System (SMTAS)*. Big Data Seminar for the Social and Policy Sciences at the Centre for Advanced Academic Studies, University of Zagreb, Dubrovnik, Croatia. July 2015.

[25] **Somya D. Mohanty**. *Emerging Analytics in Big Data Research*. Big Data Seminar for the Social and Policy Sciences at the Centre for Advanced Academic Studies, University of Zagreb, Dubrovnik, Croatia. July 2015.

[26] Arthur G. Cosby and **Somya D. Mohanty**. *Big Data and Disaster Response - The Superstorm Sandy Case Study*. Centers on the Public Service, George Mason University. Oct. 2014.

[27] Arthur G. Cosby and **Somya D. Mohanty**. *Social Media Tracking and Analysis System*. Mississippi Association of Grantmakers. Jan. 2014.

[28] John F. Edwards, John Horton, and **Somya D. Mohanty**. *Assessment of Social Media Usage during Severe Weather Events and the Development of a Twitter-based Model for Improved Communication of Storm-related Information*. Coastal Storm Awareness Program. Feb. 2014.

[29] **Somya D. Mohanty**. *Mining Twitter*. Big Data Week, Mississippi State University. Oct. 2014.

[30] Arthur G. Cosby and **Somya D. Mohanty**. *Social Media Tracking and Analysis System*. Brandeis University. Feb. 2013.

[31] Arthur G. Cosby and **Somya D. Mohanty**. *Social Media Tracking and Analysis System - Applicability in Public Health*. Harvard School of Public Health. Feb. 2013.

[32] Arthur G. Cosby and **Somya D. Mohanty**. *Social Media Tracking and Analysis System - Privacy Issues*. Harvard Law School. Feb. 2013.

[33] Arthur G. Cosby and **Somya D. Mohanty**. *Social Media Tracking and Analysis System: The Superstorm Sandy Beta Test*. Lowder Lecture Series, University of Alabama. Apr. 2013.

[34] Arthur G. Cosby and **Somya D. Mohanty**. *Utilizing Social Media to Understand Human Interaction with Extreme Media Events: The Superstorm Sandy Beta Test*. National Weather Service Climate Services Seminar Series. July 2013.

[35] **Somya D. Mohanty**. *Social Media and Tracking Analysis System (SMTAS)*. Thompson Congressional Staff Visit, SSRC. Sept. 2013.

[36] **Somya D. Mohanty**. *Social media and Understanding its Impact in Current Communication Technologies*. Guest Lecture: Information and Communication Technologies in Globalization Process, Mississippi State. Nov. 2013.

[37] **Somya D. Mohanty** and John F. Edwards. *Social Media and Tracking Analysis System (SMTAS)*. Institutional Review Board, Mississippi State University. July 2013.

## Grant Activity

### Awarded

[1] Evan Goldstein and **Somya D. Mohanty** (Co-PI). *Machine Learning and Earth Sciences - Cooperative Agreement between the United States Geological Survey and The University of North Carolina Greensboro,* United States Geological Survey (USGS), $334,998.95. Dec. 2020.

[2] Evan Goldstein and **Somya D. Mohanty** (Co-PI). *Track II: The Coastal Processes & Machine Learning Advanced Studies Institute*. NSF IRES, $163,600. May 2020.

[3] Evan Goldstein and **Somya D. Mohanty** (Co-PI). *Urban Environmental Sensing with TensorFlow Lite and TensorFlow Lite for Microcontrollers.* Google TensorFlow Research, $16,000. May 2020.

[4] Michaeline Jensen and **Somya D. Mohanty** (Co-PI). *Digital Social Connection and Isolation in Youth Mental Health and Risk Taking*. Child and Family Research Network (CFRN) – UNCG, $5,000. Sept. 2020.

[5] Aaron Beveridge and **Somya D. Mohanty** (Co-PI). *MassMine Advancement Grant for Sustainable Data-Driven Humanities Research*. Digital Humanities Advancement Grants, National Endowment for the Humanities (NEH), $324,865. Aug. 2019.

[6] Sat Gupta, Xiaoli Gao, and **Somya D. Mohanty** (Senior-Personnel). *Complex Data Analysis*. National Science Foundation - Research Education for Undergraduates, $295,099. Oct. 2019.

[7] **Somya D. Mohanty** (PI). *A Big Data approach towards understanding the factors responsible for scientific citations*. Microsoft Data Science Fellow, $15,000. Dec. 2019.

[8] Sat Gupta, **Somya D. Mohanty** (Co-PI), and Xiaoli Gao. *Statistical and Machine Learning Approach to Complex Data Analysis*. American Statistical Association - REU, NSF - Grant No - 1560332, $38,600. Aug. 2017.

[9] Prashanti Manda, **Somya D. Mohanty** (Co-PI), Shan Suthaharan, and Sujit Ghosh. *South BD Hub: A Semantic Big Data Graph of Research - Connecting Research for Knowledge. #academicgraph*. Microsoft Azure for Research, $20,000 in Azure cloud computing credits. Oct. 2017.

[10] **Somya D. Mohanty** (PI), Fereidoon Sadri, Rick Bunch, Richard Cox, and Lynda Kellam. *Leveraging Twitter and Big Data Analytics for Natural Disaster Management and Recovery.* UNCG Giant Steps, $25,000. Nov. 2017.

[11] Stephen Sills, Kenneth Gruber, Jeremy Bray, and **Somya D. Mohanty**(Co PI). *Homeless Prevention/ Eviction Diversion Program Pilot.* Community-Engaged Pathways and Partnerships ($P^2$), University of North Carolina - Greensboro, $16,000. Nov. 2017.

[12] **Somya D. Mohanty** (PI) and Ramkumar Mahalingam. *Anomaly/Event Detection in High Velocity Streaming Data.* Idaho Bailiff Project - DASI/PNNL, $419,960. May 2015.

[13] Colleen Sinclair, Rebecca M. Goldberg, Megan Stubbs-Richardson, **Somya D. Mohanty** (Co-PI), David May, and Tawny McLeon. *When does rejection trigger aggression? A multimethod examination of a multi-motive model.* National Institute of Justice, $1,619,644. June 2015.

[14] **Somya D. Mohanty** (PI). *MAFES - DUI Progress Tracker.* Social Science Research Center - Mississippi State University, $87,782. Dec. 2014.

[15] **Somya D. Mohanty** (PI). *Pathfinders Data System.* Mississippi State University, $5,000. July 2014.

[16] **Somya D. Mohanty** (PI). *Tobacco Reporting and Progress System.* Mississippi Tobacco Control - Mississippi Department of Health, $150,000. July 2014.

[17] John F. Edwards, **Somya D. Mohanty** (Co-PI), and Patrick FitzPatrick. *Assessment of Social Media Usage During Sever Weather Events and the Development of a Twitter-based Model for Improved Communication of Storm-related Information.* Coastal Storm Awareness Program - NOAA , $150,000. Dec. 2013.

[18] **Somya D. Mohanty** (PI) and Arthur Cosby. *Social Media Tracking and Analysis System.* Mississippi Agricultural and Forestry Experiment Station - Mississippi State University, $140,000. July 2013.

### Pending

[1] Martin Anderson and **Somya D. Mohanty** (Co-PI). *PIPP Phase I: Optimizing Mitigation Strategies.* National Science Foundation (NSF), $925,111.00. Oct. 2021.

[2] Min Jeong Kim, Jing Deng, **Somya D. Mohanty** (Co-PI), and Chunjiang Zhu. *High-performance Computing Platform for AI-based Neuroscience Research.* US Department of Defense (DOD), $172,000.00. Aug. 2021.

[3] Maryanne Perrin, Jigna Dharod, and **Somya D. Mohanty** (Co-PI). *Using Machine Learning to Examine Patterns in Human Milk Composition and its Relationships with Social Determinants of Health and Other Maternal and Infant Factors.* National Institutes of Health (NIH), $3,101,573.00. Nov. 2021.

## Student Mentoring

### Masters Thesis

[1] Pratik Devakota, *"Ontological Entity Annotation - A multimodal deep learning architecture for scientific literature annotation and knowledge extraction"*, Masters Thesis Mentor, Spring '21

[2] Saed Sayedahmed, *"A Deep-Learning Based Model for Packet Based Detection of Malicious Traffic"*, Masters Thesis Mentor, Fall '19

[3] Brown Biggers, *"Using Natural Language Processing for Context Based Word Similarity Matching with Neural Networks"*, Masters Project Mentor, Spring '19

### Masters Project

[4] Siva Pandeti, *"Web Application for Massmine - Integrating Google Pages and Wikipedia"*, Masters Project Mentor, Expected Fall '22

[5] Gowthami Chinta, *"Web Application for Massmine - A social media data capture and analysis platform, Design of Analytics"*, Masters Project Mentor, Fall '21

[6] Daniel Foster, *"Identifying optimal machine learning model for election forecasting"*, Masters Project Mentor, Spring '21

[7] Raga preethi Potu, *"Using Neural Embedding for Topic Discovery and Course Description Similarity"*, Masters Project Mentor, Spring '21

[8] Sadhana Thummalapenta, *"Web Application for Massmine - A social media data capture and analysis platform, Design of Capture"*, Masters Project Mentor, Spring '21

[9] Kaveri Takkellapati, *"Data Download and Dissemination (via Zenodo) for Coastal Image Labeller"*, Masters Project Mentor, Fall '20

[10] Unnati Khivasara, *"Machine Learning on Publication - Can we predict citations"*, Masters Project Mentor, Fall '20

[11] Amulya Yadagani, *"Tiny Machine Learning - Using accelerometer data and neural networks to predict gestures in low powered devices"*, Masters Project Mentor, Fall '20

[12] Himaja Avula, *"A Semantic Approach to Entity Disambiguation and Graph Analytics in Research Output"*, Masters Project Mentor, Fall '20

[13] Savitha Mamidiyala, *"Detecting Patient Readmission in Electronic Health Records using Natural Language Processing"*, Masters Project Mentor, Spring '19

[14] Akash Meghani, *"Machine Learning Fantasy Cricket - A data-driven approach towards creating fantasy teams in cricket"*, Masters Project Mentor, Spring '19

[15] Mouna Kalidindi, *"Machine learning towards filtering text during natural disasters"*, Masters Project Mentor, Spring '19

[16] Richard Powell, *"Big Data Analysis of Scientific Conference Publications"*, Masters Project Mentor, Fall '18

[17] Swetha Polisetty, *"Citation Normalization in Scientific Publications"*, Masters Project Mentor, Apr '18

[18] Prashant Gopi, *"Quality of Life - Guildford County Analytical Dashboard"*, Masters Project Mentor, Apr '18

[19] Dharani Sethuram, *"Twitter Analysis During Natural Disasters"*, Masters Project Mentor, Dec '17

[20] Awantika Mahar, *"Reproducibility of Science"*, Masters Project Mentor, Dec '17

[21] Duggrempudi Pavan Teja Reddy, *"Network Visualization of University Data and Implementing Search on Web-Application"*, Masters Project Mentor, Dec '17

### Graduate Research

[22] Darpan Jhawar, *"Big Data Analysis of Scientific Publications"*, Graduate Research Co-Mentor, Fall '18

[23] Rohit Gulia, *"A Data-Driven Analysis of Patient Re-hospitalization"*, Graduate Research Co-Mentor, Fall '18

[24] Shraddha Dafare, *"Machine-Learning based Text Search on Micro-Blog Big Data"*, Graduate Research Co-Mentor, Dec '17

### Masters Project Defense Committee Member

[25] James Stallings, *"Spartan Spyglass: Finding Real World Vulnerabilities in Commonly Used Ubuntu Source Packages"*, Masters Project Defense Committee Member, Spring '18

[26] Logan Rohde, *"Information Propagation in Social Networks: Efficiently Stopping Propagation of Negative Information in Twitter"*, Masters Project Defense Committee Member, Spring '18

[27] Balaram Ramala, *"Identification of Brain Tumor From MRI Scans Using Machine Learning"*, Masters Project Defense Committee Member, Fall '17

[28] Manasa Konda, *"Data Preprocessing and Class Dependence on Feature Importance using Random Forest"*, Masters Project Defense Committee Member, Spring '17

### Doctoral Committee Member

[29] Pujita Sapra, *"Randomized Response Models and Data Security"*, Ph.D. Co-Chair (with Dr. Sat Gupta), Department of Mathematics and Statistics, Expected Fall '23

[30] Badr Aloraini, *"Variance Estimation Using Randomized Response Technique"*, Ph.D. Committee Member, Department of Mathematics and Statistics, Expected Fall '21

[31] Romesh Ararchige, *"The Wavelet-Galerkin Method on Global Random Processes."*, Ph.D. Committee Member, Department of Mathematics and Statistics, Spring '21

[32] Nastaran Pourebrahim, *"Applications of Big Data in Disaster Management: A Case Study of Hurricane Sandy"*, Ph.D. Committee Member, Department of Geography, Expected Fall '19

[33] Qi Zhang, *"Mean Estimation of Sensitive Variable Under Measurement Errors and Non-response"*, Ph.D. Committee Member, Department of Mathematics and Statistics, Expected Fall '19

### Under-Graduate Research

[34] Shah Nafis Rafique, *"Coastal Image Labeler"*, Research Mentor, Spring '19 - Fall '20

[35] Jamison Valentine, *"Storm Impact Maps"*, Research Mentor, Fall '20

[36] Philip Osborn , *"Reinforcement Learning Based 16-Bit Gameplay"*, Artist in Residence Program - Llyod International Honors College - UNCG, Research Mentor, Fall '16 - Spring '18

[37] David Santana, *"Machine Learning and Network-Security - Understanding network traffic using machine learning'*, Research Mentor, Fall '16 - Spring '18

[38] Cory Sobol, *"Machine Learning and Network-Security - Understanding network traffic using machine learning"*, Research Mentor, Fall '17

[39] Lucas Beasley, *"Leveraging Big Data and Machine Learning for Predicting Child Abuse using The National Child Abuse and Neglect Data System"*, Lucas Beasley, Lloyd International Honors College Proposal, Research Mentor, Fall - 2017 - Spring - 2018

[40] Dylan Harbaugh, *"Large Scale Graph Analytics - Microsoft Academic Graph"*, Research Mentor, Fall '17 - Spring '18

[41] Alex Hahn, *"Large Scale Graph Analytics - Microsoft Academic Graph"*, Research Co-Mentor, Fall '17 - Spring '18

## Service

### Department of Computer Science - UNCG

| | |
|---|---|
| Spring '22 - Present | PhD Committee Chair |
| Fall '20 - Present | Faculty mentor UNCG Robotics Club |
| Fall '20 - Present | Graduate Committee Member |

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|---|---|
| Spring ‘19 - Present | PhD Program Planning Committee |
| Fall ‘18 - Spring ‘20 | Under Graduate Committee Member |
| Spring ’18 - Fall ‘20 | Department of Computer Science Library Liaison |
| Spring ‘18 | Faculty Search Committee Member - Department of Computer Science |
| Fall ‘17 - Fall ‘20 | Association for Computing Machinery - ACM Faculty Mentor |
| Fall ‘16 - ‘18 | Graduate Committee Member |
| Fall ‘16 - ‘18 | Educational Testing Service - ETS Exam Coordinator |

### University of North Carolina - Greensboro

| | |
|---|---|
| Fall ‘20 - Present | The Institute for Data, Evaluation, and Analytics (IDEA), Co-Director |
| 2019-Present | Faculty Member, Health Sciences and Technology Millennial Campus - Chancellor Discussion Group. |
| 2019-Present | Research Team Member, UNCG/Cone Health Research. |
| 2019-Present | Team Member - The Cloud Cyber-Infrastructure Innovation Lab (CCI Lab), UNCG |
| 2018-Present | UNCG MS Informatics Admissions Committee Member. |
| 2017-Present | UNCG Research Storage / Compute Initiative Member — Evaluating, designing, and developing data analytics related cyberinfrastructure requirements for UNCG. Lead by Dr. Dana Dunn, Donna Heath, and Dr. Terri Shelton. |
| 2017-Present | UNCG MS Informatics Program/Curriculum Design Member — Working with Dr. Kelly Burke and Dr. Sat Gupta for design and development of MS in Informatics and Analytics Program. |
| Spring 2018 | Faculty Search Committee Member - Director of MS Informatics and Analytics Program |
| Spring 2018 | Faculty Search Committee Member - Chief Data Scientist, University of North Carolina - Greensboro |
| 2017-2018 | UNCG HPC Interest Group Member — Working with UNCG, UNC-CH, and NCSU to provision HPC resources for Data Science. Lead by Gloria Thornton (Funded by UNC-System). |

### Profession

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|---|---|
| 2021 | Reviewer, ACM Distributed Ledger Technologies |
| 2021 | Reviewer, Journal of Plos-One |
| 2021 | Reviewer, Journal of Digital Forensics |
| 2021 | Reviewer, Journal of Applied Sciences |
| 2021 | Reviewer, Patterns |
| 2020 | Reviewer, Patterns |
| 2020 | Technical Committee Member, Computing Conference CompSys 2020 |
| 2020 | Technical Committee Member, IEEE Access 2020 |
| 2019 | Technical Program Committee Member - Artificial Intelligence Conference - IntelliSys 2019 |
| 2019 | Technical Program Committee Member - FTC 2019 - Future Technologies Conference |
| 2019 | Technical Program Committee Member - Computer Vision Conference 2019. |
| 2018 | Technical Program Committee Member - Computing Conference 2018 (formerly called Science and Information (SAI) Conference) |

2018 Technical Program Committee Member - Asia-Pacific Conference on Geoscience, Electronics, and Remote Sensing Technology (AGERS 2018)

2018 Technical Program Committee Member - Computer Vision Conference 2019

2018 Technical Program Committee Member - 10th International Conference on Wireless Communications and Signal Processing (WCSP)

2018 Technical Program Committee Member - THE 4th International Conference on Soft Computing in Data Science - SCDS 2018

2018 Technical Program Committee Member - The Tenth International Conference on Advances in Future Internet - AFIN 2018

2018 Reviewer - Cluster Computing - The Journal of Networks, Software Tools and Applications, Springer

2018 Technical Program Committee Member - FTC 2018 - Future Technologies Conference 2018

2018 Technical Program Committee Member - Artificial Intelligence Conference 2018 | IntelliSys 2018

2018 Organizing Committee - International Conference on Advances in Interdisciplinary Statistics and Combinatorics 2018 - Session Chair - Big Data and Machine Learning

2017 Book Editor, Springer, "Security and Privacy Issues in Big Data and IOT - A Prospective Challenges in Business Intelligence"

2017 Technical Program Committee Member - IEEE International Conference on Communications

2017 Technical Program Committee Member - Computing Conference 2018

2017 Technical Program Committee Member - Future of Information and Communication Conference (FICC) 2018

2017 Technical Program Committee Member - 3rd International Conference on Soft Computing in Data Science

2017 Technical Program Committee Member - WCSP'17 Wireless Network Security Symposium

2017 Technical Program Committee Member - IEEE GLOBECOM 2017

2017 Technical Program Committee Member - The Ninth International Conference on Advances in Future Internet, AFIN 2017

2017 Technical Program Committee Member - The Science and Information Organization

2017 Technical Program Committee Member - International Conference on Cyber Security (ICCS) 2017

2017 Technical Program Committee Member - IEEE Wireless Network Security Symposium 2017

## Community

2017 - Present MetroLab Initiative, Co-Director - MetroLab Network's cities and universities are partnering on research, development, and deployment (RD&D) projects to address challenges facing urban areas: inequality in income, health, and opportunity; environmental sustainability and resiliency; and aging infrastructure, UNCG - Guildford County, Committee Member

2017 - Present Cone Health Hospital Readmission Research, Faculty Researcher

2018 - Present Data Analytics Collaborator, City of Greenboro

2017 - Present Data Analytics Collaborator, Guilford County

Fall 2018 Guilford County Emergency Medical Services Data Analysis - EMS, Faculty Mentor

Fall 2018 Guilford County Financial Modeling, Faculty Mentor

Fall 2018 City of Greensboro Enterprise Asset Management Big Data Analysis, Faculty Mentor

Fall 2017 Guilford County Public Records Requests and Tracking, Faculty Mentor

Fall 2017 Science Olympiad for Codebusters, Event Leader

## Awards

2020 Bernard-Glickman Dean's Professors

2017 IEEE Senior Member.

2012 Information Assurance Professional Certification.

2009 Capture the Flag winner for Information Security

2005 Awarded the "Srujani" gift for creativity during summer internship at Rourkela Steel Plant for Spare Parts Management System.

## Programming Skills

Languages Python, C, C++, Perl, PHP

Databases PostgreSQL, MySQL, MongoDB

Tools TensorFlow, Sci-Kit Learn, NumPy, Matplotlib, Plotly, Gensim, NLTK, Celery, MemCache, Django, Flask, LaTeX

## Personal Information

Address 167 Petty Building, UNCG, Greensboro, NC - 27402

Phone 850-241-4743

Email somya.mohanty@uncg.edu

Code `https://github.com/somyamohanty`, `https://github.com/UNCG-CSE`, `https://github.com/UNCG-DAISY`