

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

Research 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
 - “Anomaly Detection using Scalable Machine-Learning in Network Traffic”
 - “Robustness of Science - Understanding Factors of Reproducibility in Science”
 - “Text Searching using Machine-Learning on Large-Scale MicroBlogs - Twitter”
 - “Machine-Learning and Graph Analytics for Publication Data”
- 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 coordinate 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 Severe 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

- 2016–Present **Assistant Professor**, *Department of Computer Science*, University of North Carolina - Greensboro.
- CSC 390 - Programming Languages
 - CSC 490 - Senior Capstone
 - CSC 495/663 - Network Security
- 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] Lindsey Peterson Ph D, Kentse Radebe, and **Mohanty D., Somya**. “Democracy, Education, and Free Speech: The Importance of #FeesMustFall for Transnational Activism”. In: *Societies Without Borders* 11.1 (2016), p. 10.
- [2] **Mohanty, Somya D**, 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).
- [3] Mahalingam Ramkumar and **Somya D Mohanty**. “Reliable Assurance Protocols for Information Systems”. In: *International Conference on the Evolving Internet*. Oct. 2015.
- [4] **Somya D Mohanty** and Mahalingam Ramkumar. “Assuring a Cloud Storage Service”. In: *International Journal of Information Sciences and Computer Engineering*. Feb. 2015.
- [5] 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.
- [6] 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).
- [7] Mahalingam Ramkumar and **Somya D Mohanty**. “A Trustworthy Assurance-as-a-Service Architecture”. In: *ICH – Workshop on Cryptography and Information Security* (June 2014).
- [8] **Somya D Mohanty**, Vinay Totakura, and Mahalingam Ramkumar. “An Efficient Trusted Computing Base for MANET Security”. In: *Journal of Information Security*. June 2014.
- [9] **Somya D Mohanty**, Arun Velagapalli, and Mahalingam Ramkumar. “An Efficient TCB for a Generic Content Distribution System”. In: *2012 International Conference on Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC)*. IEEE. 2012, pp. 5–12.
- [10] 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.
- [11] **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

- [12] 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.

Magazine, Article, and Blogs

- [1] 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.
- [2] Innovative Data Laboratory. *Network Analysis of Twitter During Hurricane Sandy*. <http://blog.idl.ssrc.msstate.edu/?p=42>. Social Science Research Center, 2013.
- [3] 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.
- [4] 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] John F. Edwards, **Somya D. Mohanty**, Partick Fitzpatrickm, and David Martin. *Assessment of Social Media Usage during Hurricane Sandy and the Development of a Twitter-based, Web Application for Real-time Communication of Storm-related Information*. 32nd Conference on Environmental Information Processing Technologies, New Orleans, Louisiana. Jan. 2016.
- [2] **Somya D Mohanty**. *Anomaly/Event Prediction in High-Velocity Streaming Data*. International Conference on Advances in Interdisciplinary Statistics and Combinatorics. Oct. 2016.
- [3] Arthur G. Cosby and **Somya D Mohanty**. *What do Tweets tell us?* Federal Communication Commission - Connect2Health. Feb. 2015.
- [4] **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.
- [5] **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.
- [6] 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.
- [7] Arthur G. Cosby and **Somya D Mohanty**. *Social Media Tracking and Analysis System*. Mississippi Association of Grantmakers. Jan. 2014.
- [8] 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.
- [9] **Somya D Mohanty**. *Mining Twitter*. Big Data Week, Mississippi State University. Oct. 2014.
- [10] Arthur G. Cosby and **Somya D Mohanty**. *Social Media Tracking and Analysis System*. Brandeis University. Feb. 2013.

- [11] Arthur G. Cosby and **Somya D Mohanty**. *Social Media Tracking and Analysis System - Applicability in Public Health*. Harvard School of Public Health. Feb. 2013.
- [12] Arthur G. Cosby and **Somya D Mohanty**. *Social Media Tracking and Analysis System - Privacy Issues*. Harvard Law School. Feb. 2013.
- [13] 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.
- [14] 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.
- [15] **Somya D Mohanty**. *Social Media and Tracking Analysis System (SMTAS)*. Thompson Congressional Staff Visit, SSRC. Sept. 2013.
- [16] **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.
- [17] **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] **Somya D Mohanty** (PI) and Ramkumar Mahalingam. *Anomaly/Event Detection in High Velocity Streaming Data*. Idaho Bailiff Project - DASI/PNNL, \$419,960. May 2015.
- [2] Colleen Sinclair, Rebecca M. Goldberg, Megan Stubbs-Richardson, **Somya D Mohanty** (Co-PI), David May, and Tawny McLeon. *When does rejection trigger aggression? A multi-method examination of a multi-motive model*. National Institute of Justice, \$1,619,644. June 2015.
- [3] **Somya D Mohanty** (PI). *MAFES - DUI Progress Tracker*. Social Science Research Center - Mississippi State University, \$87,782. Dec. 2014.
- [4] **Somya D Mohanty** (PI). *Pathfinders Data System*. Mississippi State University, \$5,000. July 2014.
- [5] **Somya D Mohanty** (PI). *Tobacco Reporting and Progress System*. Mississippi Tobacco Control - Mississippi Department of Health, \$150,000. July 2014.
- [6] 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.
- [7] **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

- [8] Arthur Cosby, **Somya D Mohanty** (Co-PI), and Gina Rico Mendez. *The Dynamics of Employment Opportunities From Volunteerism*. George Mason University, \$313,486. July 2015.
- [9] **Somya D Mohanty** (PI). *Enhancing Community Resilience with Social Media*. Restore Act - Mississippi, \$450,000. Dec. 2014.

- [10] Arthur Cosby and **Somya D Mohanty** (Co-PI). *Red Team Candidate Profiler*. Army Research Center, \$273,600. Dec. 2013.
- [11] **Somya D Mohanty** (PI). *Choctaw Demographic Study*. Mississippi Band of Choctaw Indians, \$50,000. Aug. 2013.
- [Submitted](#)
- [12] Arthur Cosby and **Somya D Mohanty** (Research Lead). *Social Crowd Based Visual Monitoring*. Rapid Response - National Science Foundation. Nov. 2015.
- [13] Drew Hamilton, **Somya D Mohanty** (Senior Personnel), Ramkumar Mahalingam, and Song Zang. *Big Data Volume and Velocity*. National Science Foundation MS EPSCoR Track 1, \$2,849,125. July 2015.
- [14] Ramkumar Mahalingam and **Somya D Mohanty** (Co-PI). *Assured Big Data Analytics*. Idaho Bailiff Project - DASI/PNNL, \$233,807. Jan. 2015.
- [15] **Somya D Mohanty** (PI) and John F. Edwards. *A Big-Data Approach Towards Food Safety Using the Human Geo-Sensor Project*. Mississippi Agricultural and Forestry Experiment Station - Mississippi State University, \$160,000. May 2015.
- [16] Guangqing Chi and **Somya D Mohanty** (Co-PI). *Transportation Resilience and Recovery*. National Science Foundation, \$386,745. June 2014.
- [17] Guangqing Chi and **Somya D Mohanty** (Co-PI). *Transportation Resilience and Recovery*. National Science Foundation, \$386,745. Mar. 2014.
- [18] Karen Coats, **Somya D Mohanty** (Research Scientist), and John F. Edwards. *AGEP-T Collaborative Research: Moving Forward â– The AGEM Network*. National Science Foundation, \$141,149. Feb. 2014.
- [19] Arthur Cosby, **Somya D Mohanty** (Co-PI), and John F. Edwards. *Significant Event Detection Through Twitter*. Pacific Northwest National Laboratory, \$449,823. Jan. 2014.
- [20] Colleen McKee and **Somya D Mohanty** (Co-PI). *Highway Safety Data-Center*. Mississippi Highway Safety, \$226,660. June 2014.
- [21] Robert McMillen, **Somya D Mohanty** (Co-PI), and John F. Edwards. *Using Social Media to Understand and Address Substance Use and Addiction*. National Institute of Health, \$321,745. Mar. 2014.
- [22] **Somya D Mohanty** (PI). *JDAI Detention System*. Annie E. Casey Foundation, \$17,925. Oct. 2014.
- [23] Arthur Cosby and **Somya D Mohanty** (Co-PI). *Social Media and Community Response, Resilience, and Recovery during Hurricane Sandy: Understanding and Enhancing Twitter for Emergency Response*. Assistant Secretary for Preparedness and Response Grants to Support Scientific Research Related to Recovery from Hurricane Sandy, \$499,668. May 2013.
- [24] **Somya D Mohanty** (PI) and John F. Edwards. *Using Twitter for Syndromic Surveillance of Foodborne Illnesses*. Special Research Initiative - Mississippi Agricultural and Forestry Experiment Station , \$50,000. Oct. 2013.

Awards

- 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 SCI-KIT LEARN, NUMPY, MATPLOTLIB, PLOTLY, GENSIM, NLTK, CELERY, MEMCACHE, DJANGO, FLASK, L^AT_EX

References

Dr. Guangqing Chi

Associate Professor and Faculty Director
Department of Agricultural Economics, Sociology, and Education; Geographic Information Analysis Core
Penn State, University Park
✉ guangqing@outlook.com
☎ 605-688-4901

Dr. John F. Edwards

Associate Research Professor and Director
of Survey Research Laboratory
Social Science Research Center
Mississippi State University, Starkville
✉ je@ssrc.msstate.edu
☎ 662-325-9726

Dr. Mahalingam Ramkumar

Associate Professor
Computer Science and Engineering
Mississippi State University, Starkville
✉ ramkumar@cse.msstate.edu
☎ 662-325-8435

Personal Information

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

Phone 850-241-4743

Email somya.mohanty@uncg.edu

Code github.com/somyamohanty