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# Bharath K. Samanthula

Associate Professor  
Department of Computer Science  
College of Science and Mathematics  
Montclair State University

<http://cs.montclair.edu/~samanthulab/>  
Email: samanthulab@montclair.edu  
Phone: (973) 655-5161  
Fax: (973) 655-4164

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## RESEARCH INTERESTS

My primary research interests lie at the crossroads of Applied Cryptography, Personal Privacy, Information Security, Data Mining, and Big Data. My current work centers around the development of privacy-enhanced techniques for various distributed data management and analysis tasks in the fields of Online Social Networks, Cloud Computing, Wireless Sensor Networks and Smart Grids. Additionally, I am investigating novel approaches to improve STEM education in schools via computational thinking tools. I am particularly interested in developing cloud-based web platforms to advance student problem solving skills via interactive simulations. Another focus area is to develop exciting methodologies to train a diversified set of undergraduate students on Cybersecurity education and research.

## EDUCATION

**Missouri University of Science and Technology**

*Rolla, Missouri, USA*

- Ph.D., Computer Science, December 2013
- Dissertation: Privacy-Preserving Friend Recommendations in Online Social Networks
- Advisor: Prof. Wei Jiang
- Cumulative GPA: 3.9/4.0

**International Institute of Information Technology**

*Hyderabad, AP, India*

- B.Tech., Computer Science and Engineering, May 2008

## PROFESSIONAL EXPERIENCE

**September 2022 - Present Day**

- Tenured Associate Professor, Department of Computer Science, Montclair State University, Montclair, NJ, USA

**September 2021 - August 2022**

- Tenured Assistant Professor, Department of Computer Science, Montclair State University, Montclair, NJ, USA

**September 2015 - August 2021**

- Tenure-Track Assistant Professor, Department of Computer Science, Montclair State University, Montclair, NJ, USA

**November 2018 - Present Day**

- Graduate Program Coordinator, MS Program in Cybersecurity, Department of Computer Science, Montclair State University, Montclair, NJ, USA

**August 2014 - August 2015**

- Visiting Assistant Professor, Department of Computer Science, Purdue University, West Lafayette, IN, USA

### January 2014 - May 2015

- Postdoctoral Research Associate, Cyber Center, Discovery Park, Purdue University, West Lafayette, IN, USA

### August 2013 - December 2013

- Grader for Cryptography Course, Department of Computer Science, Missouri S&T
- Grader for Introduction to Computer Security Course, Department of Computer Science, Missouri S&T

### June 2 - June 6, 2013

- Participated in the trusted infrastructure workshop, a premier educational meeting for graduate students, at the Pennsylvania State University with a focus on computer systems security and research that builds on trusted computing foundations

### January 2009 - December 2013

- Graduate Research Assistant, Department of Computer Science, Missouri S&T

### August 2012 - December 2012

- Grader for Introduction to Computer Security Course, Department of Computer Science, Missouri S&T
- Grader for Privacy-Preserving Data Integration and Analysis Course, Department of Computer Science, Missouri S&T

### May 2010 - August 2010

- Summer Research Internship, Oak Ridge National Laboratory, Tennessee

## PEER-REVIEWED PUBLICATIONS

### Journal Articles

1. Anitha Kumari K., Senthilprabha R., Kamatchi TP., and **Bharath K. Samanthula**, “Hyperelliptic Curve Diffie-Hellman based Two-Server Password-Only Authenticated Key Exchange Protocol for Edge Computing Systems”, IETE Journal of Research, July 25, 2021.
2. **Bharath K. Samanthula**, Divya Karthikeyan, Boxiang Dong, Anitha Kumari K, “ESPADE: An Efficient and Semantically Secure Shortest Path Discovery for Outsourced Location-Based Services”, MDPI Cryptography, vol. 4(4), 29, October 2020.
3. Allen Yang, Boxiang Dong, Dawei Li, Weifeng Sun and **Bharath K. Samanthula**, “DeepICU: Imbalanced Classification by using Deep Neural Networks for Network Intrusion Detection”, International Journal of Big Data Intelligence, vol. 7 (3), pp.137 - 147, May 2020.
4. Debasmita Basu, Nicole Panorkou, Michelle Zhu, Pankaj Lal and **Bharath K. Samanthula**, “Exploring the Mathematics of Gravity”, The Mathematics Teacher, National Council of Teachers of Mathematics, vol. 113 (1), pp. 39 - 46, January 2020.
5. **Bharath K. Samanthula**, Lei Cen, Wei Jiang and Luo Si, “Privacy-Preserving and Efficient Friend Recommendation in Online Social Networks”, Transactions on Data Privacy (TDP), June 2015.
6. **Bharath K. Samanthula** and Wei Jiang, “Secure Multiset Intersection Cardinality and its Application to Jaccard Coefficient”, IEEE Transactions on Dependable and Secure Computing (TDSC), March 23, 2015.
7. **Bharath K. Samanthula**, Yousef Elmehdwi and Wei Jiang, “k-Nearest Neighbor Classification

over Semantically Secure Encrypted Relational Data”, IEEE Transactions on Knowledge and Data Engineering (TKDE), October 19, 2014.

8. **Bharath K. Samanthula** and Wei Jiang, “A Randomized Approach for Structural and Message based Private Friend Recommendation in Online Social Networks”, State of the Art Applications of Social Network Analysis, Lecture Notes in Social Networks, Springer, May 15, 2014.
9. **Bharath K. Samanthula**, Hu Chun, Wei Jiang and Bruce M. McMillin, “Secure and Threshold-based Power Usage Control in Smart Grid Environments”, International Journal of Parallel, Emergent and Distributed Systems, Taylor & Francis, November 6, 2013.
10. **Bharath K. Samanthula** and Wei Jiang, “Interest-Driven Private Friend Recommendation”, Knowledge and Information Systems (KAIS), Springer, October 15, 2013.
11. **Bharath K. Samanthula**, Yousef Elmehdwi, Gerry Howser and Sanjay Madria, “A Secure Data Sharing and Query Processing Framework via Federation of Cloud Computing”, Information Systems, an Elsevier Journal, August 31, 2013.

### Refereed Conference Papers

12. Andy Zhou, Kazi Zakia Sultana, and **Bharath K. Samanthula**, “Investigating the Changes in Software Metrics after Vulnerability is Fixed”, National Symposium for NSF REU Research in Data Science, Systems, and Security, IEEE BigData, December 15-18, 2021.
13. Louay Ahmad, Boxiang Dong, **Bharath K. Samanthula**, Ryan Wang and Bill li, “Towards Trustworthy Outsourced Deep Neural Networks”, IEEE Cloud Summit, Oct 21-22, 2021.
14. Michelle Zhu, Matt Johnson, Aditya Dutta, Nicole Panorkou, **Bharath K. Samanthula**, Pankaj Lal, and Weitian Wang, “Educational Simulation Design to Transform Learning in Earth and Environmental Sciences”, 50th IEEE Frontiers in Education (FIE) conference, Uppsala, Sweden, October 21-24, 2020.
15. Vaibhav Anu, Kazi Zakia Sultana and **Bharath K. Samanthula**, “A Human Error based Approach to Understanding Programmer-Induced Software Vulnerabilities”, in the IEEE 31st International Symposium on Software Reliability Engineering (ISSRE 2020), Coimbra, Portugal, October 12-15, 2020.
16. **Bharath K. Samanthula**, Mirza Mehran, Michelle Zhu, Nicole Panorkou and Pankaj Lal, “Experiences Toward An Interactive Cloud-Based Learning System for STEM Education”, In the 10th IEEE Integrated STEM Education Conference (ISEC), Princeton, NJ, USA, August 1, 2020.
17. Boxiang Dong, Wendy Hui Wang, Aparna S. Varde, Dawei Li, **Bharath K. Samanthula**, Weifeng Sun and Liang Zhao, “Cyber Intrusion Detection by Using Deep Neural Networks with Attack-sharing Loss”, In the IEEE International Conference on Big Data Intelligence and Computing (IEEE DataCom), Kaohsiung, Taiwan, November 18-21, 2019.
18. **Bharath K. Samanthula**, Salha Albehairi and Boxiang Dong, “A Privacy-Preserving Framework for Collaborative Association Rule Mining in Cloud”, In the IEEE International Conference on Cloud and Fog Computing Technologies and Applications (IEEE Cloud Summit), Washington D.C., USA, August 8-10, 2019.
19. Mona Alkanhal and **Bharath K. Samanthula**, “A Privacy-Aware Framework for Friend Recommendations in Online Social Networks”, In the 22nd IEEE International Conference on Computational Science and Engineering (IEEE CSE), New York, USA, August 1-3, 2019.
20. Michelle Zhu, Nicole Panorkou, Sowmith Etikyala, Debasmita Basu, Taheeda Street-Conaway, Pricilla Iranah, Daniel Mazol, Corey Hannum, Ryan Marshall, Pankaj Lal and **Bharath**

- K. Samanthula**, “Steerable Environmental Simulations for Exploratory Learning”, World Conference on E-Learning, Las Vegas, Nevada, October 15-18, 2018.
21. **Bharath K. Samanthula**, James Liporace and Martin Issiov, “A Privacy-Aware and User-Centric Approach for Query Processing in Cloud”, IEEE International Conference on Smart Cloud, New York, USA, September 21-23, 2018.
  22. Sam Forman and **Bharath K. Samanthula**, “Secure Similar Document Detection: Optimized Computation Using the Jaccard Coefficient”, In the 4th IEEE International Conference on Big Data Security on Cloud (BigDataSecurity), Omaha, NE, USA, May 3-5, 2018.
  23. Michelle Zhu, Nicole Panorkou, Pankaj Lal, Sowmith Etikyala, Erell Feb Germia, Pricilla Iranah, **Bharath K. Samanthula** and Debasmita Basu, “Integrating Interactive Computer Simulations into K-12 Earth and Environmental Science”, In the 8th IEEE Integrated STEM Education Conference (ISEC), Princeton, NJ, USA, March 10, 2018.
  24. **Bharath K. Samanthula**, “Privacy-preserving outsourced collaborative frequent itemset mining in the cloud”, In the IEEE International Conference on Big Data, Boston, MA, USA, December 11-14, 2017.
  25. Martin Issiov and **Bharath K. Samanthula**, “Efficient Secure Comparison Over Encrypted Integers and Its Application to Privacy-Preserving Range Query in Cloud”, In the IEEE MIT Undergraduate Research Technology Conference (URTC), Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, November 3-5, 2017.
  26. Scott Thompson and **Bharath K. Samanthula**, “Optimized Secure Data Aggregation in Wireless Sensor Networks”, In the 15th International Conference on Privacy, Security and Trust (PST), Calgary, Alberta, Canada, August 28-30, 2017.
  27. Fang-Yu Rao, **Bharath K. Samanthula**, Elisa Bertino, Xun Yi and Dongxi Liu, “Privacy-Preserving and Outsourced Multi-User k-Means Clustering”, In the IEEE International Conference on Collaboration and Internet Computing (CIC), Hangzhou, China, October 27-30, 2015 (**Best Paper Award**).
  28. **Bharath K. Samanthula**, Fang-Yu Rao, Elisa Bertino and Xun Yi, “Privacy-Preserving Protocols for Shortest Path Discovery over Outsourced Encrypted Graph Data”, In the 16th IEEE International Conference on Information Reuse and Integration (IRI), San Francisco, California, USA, August 13-15, 2015.
  29. Elisa Bertino and **Bharath K. Samanthula**, “Security with Privacy - A Research Agenda”, in the 10th IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom), Miami, Florida, USA, October 22-25, 2014.
  30. **Bharath K. Samanthula**, Wei Jiang and Elisa Bertino, “Privacy-Preserving Complex Query Evaluation over Semantically Secure Encrypted Data”, In the 19th European Symposium on Research in Computer Security (ESORICS), Poland, September 7-11, 2014.
  31. Yousef Elmehdwi, **Bharath K. Samanthula** and Wei Jiang, “Secure  $k$ -Nearest Neighbor Query over Encrypted Data in Outsourced Environments”, In the IEEE 30th International Conference on Data Engineering (ICDE), Chicago, IL, USA, March 31-April 4, 2014.
  32. **Bharath K. Samanthula** and Wei Jiang, “Efficient Privacy-Preserving Range Queries over Encrypted Data in Cloud Computing”, In the IEEE 6th International Conference on Cloud Computing (CLOUD), Santa Clara Marriott, CA, USA, June 27-July 2, 2013.
  33. **Bharath K. Samanthula**, Wei Jiang and Sanjay Madria, “A Probabilistic Encryption based Min/Max Computation in Wireless Sensor Networks”, In the 14th IEEE International Conference on Mobile Data Management (MDM), Milan, Italy, June 3-6, 2013.
  34. **Bharath K. Samanthula**, Chun Hu and Wei Jiang, “An Efficient and Probabilistic Secure

- Bit-Decomposition”, In the 8th ACM Symposium on Information, Computer and Communications Security (ASIACCS), Hangzhou, China, May 8-10, 2013.
35. **Bharath K. Samanthula**, Gerry Howser, Yousef Elmehdwi and Sanjay Madria, “An Efficient and Secure Data Sharing Framework using Homomorphic Encryption in the Cloud”, ACM International Workshop on Cloud Intelligence (Cloud-I 2012) in conjunction with VLDB 2012, Istanbul, Turkey, August 31, 2012 (**Among Two Best Papers**).
  36. **Bharath K. Samanthula** and Wei Jiang, “Structural and Message based Private Friend Recommendation”, In Proceedings of IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2012), Kadir Has University, Istanbul, Turkey, August 26 - 29, 2012.
  37. Wei Jiang and **Bharath K. Samanthula**, “A Secure and Distributed Framework to Identify and Share Needed Information”, In the 3rd IEEE International Conference on Privacy, Security, Risk and Trust (PASSAT 2011), MIT, Boston, USA, October 9-11, 2011.
  38. Wei Jiang and **Bharath K. Samanthula**, “N-Gram Based Secure Similar Document Detection”, In the 25th Annual WG 11.3 Conference on Data and Applications Security (DBSEC 2011), Richmond, Virginia, July 11-13, 2011.

### Manuscripts Under Review

- Archana Prasad, Pankaj Lal, Bernabas Wolde, Michelle Zhu, Nicole Panorkou, **Bharath K. Samanthula**, “Examining the impact of a field trip in nature on students environmental perceptions and feelings of empowerment: a case study from the ACMES STEM Summer Camp”, Journal of STEM Education: Innovations and Research (**second round review**).
- Archana Prasad, Pankaj Lal, B. Wolde, M Smith, Michelle Zhu, **Bharath K. Samanthula** and Nicole Panorkou, “Exploring the human-nature connection and the perceived risk of nature in children”, Journal of Applied Environmental Education & Communication.

### Manuscripts in Preparation

- **Bharath K. Samanthula**, Gowri Pandian Sundarapandi, and Salma Bokhary, “Secure KNN Search with Verifiable Computation in Cloud”
- **Bharath K. Samanthula**, “Towards a Privacy-Enhanced Power Usage Control in Smart Grids”
- **Bharath K. Samanthula** and German Guzman, “Secure Retrieval of Encrypted Similar Documents using Bloom Filters”
- Mehran Mirza, **Bharath K. Samanthula** and Meherin Khoda, “ACMES: A cloud platform to empower teacher professional development and enhance student learning”
- Jay Singh, Pankaj Lal, Archana Prasad, Bernabas Wolde, Pricila Iranah, Michelle Zhu, Nicole Panorkou and **Bharath K. Samanthula**, “Student attitude towards environmental issues following Science, Technology, Engineering, and Mathematics (STEM) educational intervention activities: evidence from a student survey”

## CURRENT GRANTS

- **Bharath K. Samanthula (PI)** and Boxiang Dong, “Enhancing Undergraduate Research Experiences in Cybersecurity and Privacy-Enhanced Technologies”, Research Experiences for Undergraduates (REU) Program, Computer and Information Science and Engineering, National Science Foundation (NSF), 3/15/2021 - 2/29/2024, \$395,470.
- **Bharath K. Samanthula (Senior Personnel)**, Jiayin Wang (PI) and other researchers at

MSU, “MRI: Acquisition of a High Performance GPU Computing System for Research and Education”, National Science Foundation, Award #2018575, 10/2020 - 09/2023, \$300,079.

- **Bharath K. Samanthula (Co-PI)** with Michelle M. Zhu, Pankaj Lal and Nicole Panorkou, “ACMES: Assimilating Computational and Mathematical Thinking into Earth and Environmental Science”, DRL - STEM+Computing (STEM+C), National Science Foundation (NSF), Award # 1742125, 9/15/2017 - 8/31/2022, \$1,147,085.

## AWARDS AND HONORS

- **Review Editor**, Cybersecurity and Privacy Track, Frontiers Journal in Big Data (2018-C).
- Member of **Cybersecurity Working Group**, New Jersey Economic Development Authority (NJEDA), 2020.
- **External Evaluator** for a grant proposal, Alfred P. Sloan Foundation, 2019.
- **Expert Reviewer** for a grant proposal, Research Foundation - Flanders, Belgium, 2018.
- **Faculty Mentor and Judge**, Third Annual High School Hackathon, Morris County School of Technology, Denville, NJ, Dec 9-10, 2017.
- **Academic Reviewer** of the textbook Introduction to Modern Cryptography, Second Edition by Jonathan Katz & Yehuda Lindell, Taylor & Francis.
- Faculty Mentor, **Intel Computer Science Award**, The Nokia Bell Labs North Jersey Regional Science Fair, Rutgers University, New Brunswick, March 10-11, 2017.
- Faculty Mentor, **Rutgers Student Award**, The Nokia Bell Labs North Jersey Regional Science Fair, Rutgers University, New Brunswick, March 10-11, 2017.
- Faculty Mentor, **Computing Award (Second Place)**, The Nokia Bell Labs North Jersey Regional Science Fair, Rutgers University, New Brunswick, March 10-11, 2017.
- Faculty Mentor, **Best Poster Award (First Prize)**, The Nokia Bell Labs North Jersey Regional Science Fair, Rutgers University, New Brunswick, March 10-11, 2017.
- Faculty Mentor, **Best Student Poster Award (1st Prize)** for “Secure Data Aggregation in Wireless Sensor Networks” at the 6th Annual Cyber Security Conference, New York Institute of Technology, September 22, 2016.
- **IEEE Best Paper Award** for “Privacy- Preserving and Outsourced Multi-User k-Means Clustering In the IEEE International Conference on Collaboration and Internet Computing (CIC), Hangzhou, China, October 27-30, 2015.
- **Outstanding IEEE Computer Society Student Branch Award**, Missouri S&T, 2013.
- An Efficient and Secure Data Sharing Framework using Homomorphic Encryption in the Cloud is **in the best two papers** in I-Cloud workshop with VLDB 2012.
- Graduate Research Assistantship for PhD studies at Missouri University of Science and Technology, Rolla, MO (2009 - 2013).
- Academic Achievement Award for Fall 2008, Department of Computer Science, Missouri S&T, Rolla, MO.
- Four Academic Excellence Pratibha Scholarship Awards, Government of Andhra Pradesh, India (2004 - 2007).

## TEACHING

Montclair State University

*Spring 2022*

- CSIT 567 - Cryptography
- CSIT 565 - Information Security Management

*Fall 2021*

- CSIT 561 - Computer Security
- CSIT 111 - Fundamentals of Programming

*Summer 2021*

- CSIT 560 - Network Security
- CSIT 504 - Discrete Mathematics
- CSIT 495/595 - Special Topics in Computer Science, Introduction to Cloud Computing

*Spring 2021*

- CSIT 566 - Computer Forensics
- CSIT 567 - Cryptography

*Fall 2020*

- CSIT 561 - Computer Security
- CSIT 460 - Computer Security (Sections 01 and 02)

*Summer 2020*

- CSIT 561 - Computer Security
- CSIT 560 - Network Security

*Spring 2020*

- CSIT 567 - Cryptography
- CSIT 491 - COOP Education (Section 06)
- CSIT 460 - Computer Security (Sections 01 and 02)

*Fall 2019*

- CSIT 561 - Computer Security
- CSIT 491 - COOP Education (Section 10)
- CSIT 460 - Computer Security (Sections 01 and 02)

*Summer 2019*

- CSIT 495/595 - Special Topics in Computer Science, Introduction to Cloud Computing
- CSIT 491 - COOP Education (Section 09)

*Spring 2019*

- CSIT 560 - Network Security
- CSIT 491 - COOP Education (Section 06)
- CSIT 460 - Computer Security (Sections 01 and 02)

*Fall 2018*

- CSIT 561 - Computer Security
- CSIT 460 - Computer Security (Sections 01 and 02)

#### *Summer 2018*

- CSIT 495/595 - Special Topics in Computer Science, Introduction to Cloud Computing
- CSIT 491 - COOP Education (Section 06)

#### *Spring 2018*

- CSIT 560 - Network Security
- CSIT 460 - Computer Security (Sections 01 and 02)

#### *Fall 2017*

- CSIT 495/567 - Introduction to Cryptography
- CSIT 104 - Computational Concepts (Sections 03 and 05)

#### *Summer 2017*

- CSIT 595 - Special Topics in Computer Science, Introduction to Cloud Computing
- CSIT 460 - Computer Security (Independent Study)

#### *Spring 2017*

- CSIT 460 - Computer Security (Sections 02 and 03)
- CSIT 104 - Computational Concepts

#### *Fall 2016*

- CSIT 495/595 - Special Topics in Computer Science, Introduction to Cryptography
- CSIT 104 - Computational Concepts (Sections 04 and 05)

#### *Spring 2016*

- CSIT 460 - Computer Security (Sections 01 and 02)

#### *Fall 2015*

- CSIT 495/595 - Special Topics in Computer Science, Introduction to Cryptography
- CSIT 345 - Operating Systems

#### **Purdue University**

- CS 31400, Numerical Methods, Summer 2015
- CS 54701, Information Retrieval, Spring 2015
- CS 47300, Web Information Retrieval and Management, Fall 2014

## **FACULTY-STUDENT RESEARCH COLLABORATIONS**

#### **Montclair State University**

1. Hemdari Patel, "Building Trust in IoT Smartgrids by Embedding Privacy-Enhanced Data Management", Graduate Research Assistant, December 2021 - Present
2. German Guzman, "Secure Retrieval of Encrypted Similar Documents using Bloom Filters", MS Thesis, September 2021 - Present
3. Melanie Forenza, "Privacy-Preserving Contact Tracing, MS Project, September 2021 - Present
4. Austin Witter, "Enhancing Security of Online Gaming using Blockchain", September 2021 - Present
5. Meherin Khoda, "ACMES Web Application", MS Project, May 2021 - Dec 2021
6. Reshma Sarasanapalli, Graduate Research Assistant for NSF REU Site project, May 2021



- August 2021
- 7. Giovanni George, Graduate Research Assistant for NSF REU Site project, May 2021 - August 2021
- 8. Meherin Khoda, "ACMES Web Application", Graduate Research Assistant, July 2020 - Dec 2021
- 9. Chandana Jasrai, "Towards Trustworthy AI", MS Project, August 2020 - May 2021
- 10. Raiyan Hossain, "Secure Social Recommendations in Online Social Networks", MS Thesis, August 2020 - May 2021
- 11. Gowri Sundarapandian, "Secure Verifiable Computation over Encrypted Data" MS Thesis, May 2020 - May 2021
- 12. Salma Bokhary, "Verifiable Computation of Secure KNN Search in Cloud", MS Thesis, May 2020 - Dec 2020
- 13. Murad Hasan, "Machine-Learning Approach to Intrusion Detection", MS Project, May 2020 - Dec 2020
- 14. Aderenike Adeyemo, "Adressing Vulnerabilities in Mobile Security", Undergraduate Research Assistant, May 2020 - August 2020
- 15. Himesh Demagunta, "Towards a Privacy-Enhanced Power Usage Control in Smart Grids", Graduate Research Assistant, March 2020 - August 2020
- 16. German Guzman, "Secure Retrieval of Encrypted Similar Documents using Bloom Filters", Undergraduate Research Assistant, January 2020 - August 2020
- 17. Divya Karthikeyan, "Efficient Privacy-Preserving Protocol for Shortest Path Discovery", Graduate Volunteer Research Assistant, August 2019 - August 2020
- 18. Daniel Laratta, "A Literature Survey: Blockchain and Double Spending, Master's Project, Sep 2019 - Dec 2019.
- 19. Dylan Laloo, "Secure Retrieval of Top-K Similar Documents in Cloud", Master's Project, August 2019 - Dec 2019.
- 20. Mirza Mehran, "Assimilating Computational and Mathematical Thinking into Earth and Environmental Science", Graduate Research Assistant, December 2017 - Present.
- 21. Rudy Crespo, "Developing Interactive Web Tools for ACMES", Graduate Research Assistant, March 2019 - May 2020
- 22. Mona Alkanhal, "Privacy-Aware Online Social Networks: Modeling and Analysis", Master's Thesis, June 2018 - July 2019.
- 23. Salha Albehairi, "Privacy-Preserving Association Rule Mining in Cloud", Master's Thesis, September 2018 - July 2019.
- 24. Chante Stewart-Wallace, "Data Mining and Predictive Policing", Master's Thesis (co-advised with Katherine Herbert and John Jenq), Dec 2019 - May 2019.
- 25. Paul Sun, "Top-K Secure Similar Document Detection in Cloud", Undergraduate Research Assistant, May 2018 - May 2019.
- 26. James Liporace, "A Privacy-Aware and User-Centric Approach for Query Processing in Cloud", Master's Project, January 2018 - May 2018.
- 27. Ahmed Malik, "Privacy-Preserving Association Rule Mining", Graduate Research Assistant, January 2018 - May 2018.
- 28. Scott Thompson, "Secure Data Aggregation in Wireless Sensor Networks", work under investigation as Master's Thesis, Summer 2016 - Present.
- 29. Geethu Sreedhar Bindhu Mol, "Privacy-Preserving Association Rule Mining", Independent Research Study, August 2017 - December 2017.

30. Martin Issiov, “Secure Comparison over Encrypted Integers”, Undergraduate Research Assistant, April 2016 - December 2017.
31. Samuel Acheampong, “Secure Similar Document Detection over Encrypted Data in Cloud”, Undergraduate Research Assistant and GS-LSAMP Scholar, September 2016 - May 2017.
32. Frank Paladino, “Secure and Distributed Frequent Itemset Mining in Cloud”, Master’s Project, September 2016 - December 2016.
33. Janu Barot, “Faster Privacy-Preserving Range Queries over Encrypted Data”, Master’s Project, May 2016 - May 2017.
34. Michael Tobin, “Efficient Privacy-Preserving Protocol for Shortest Path Discovery”, Master’s Project, September 2016 - December 2016.
35. Nirav Kotadiya, “Secure Data Aggregation in Wireless Sensor Networks”, Independent Research Study, May 2016 - August 2016.

### **Stanford University**

- Sam Forman, “Secure Two-Party Similar Document Detection”, Volunteer Research Assistant, May 2016 - August 2018.

### **Purdue University**

- Actively involved in mentoring and supervising Fang-Yu Rao (a PhD Candidate), January 2014 - August 2015.

## **PROFESSIONAL RESEARCH PRESENTATIONS**

1. “Fast and Secure Friend Recommendations in Outsourced Online Social Networks”, presented at the IEEE MIT URTC, Oct 8-10, 2021.
2. “Experiences Toward An Interactive Cloud-Based Learning System for STEM Education”, presented at the 10th IEEE Integrated STEM Education Conference (ISEC), Princeton, NJ, USA, August 1, 2020.
3. “A Privacy-Preserving Framework for Collaborative Association Rule Mining in Cloud”, presented at the IEEE International Conference on Cloud and Fog Computing Technologies and Applications (IEEE Cloud Summit), Washington D.C., USA, August 8-10, 2019.
4. “A Privacy-Aware Framework for Friend Recommendations in Online Social Networks”, presented at the 22nd IEEE International Conference on Computational Science and Engineering (IEEE CSE), New York, USA, August 1-3, 2019.
5. “Secure Similar Document Detection: Optimized Computation Using the Jaccard Coefficient”, presented at the IEEE International Conference on Big Data Security on Cloud (BigDataSecurity), Omaha, NE, USA, May 3-5, 2018.
6. “Privacy-preserving outsourced collaborative frequent itemset mining in the cloud”, presented at the IEEE International Conference on Big Data, Boston, MA, USA, December 11-14, 2017.
7. “Optimized Secure Data Aggregation in Wireless Sensor Networks”, presented at the 15th International Conference on Privacy, Security and Trust (PST), Calgary, Alberta, Canada, August 28-30, 2017.
8. “A New Era for Cybersecurity” presented at the CSAM Discovery Day, Montclair State University, April 30, 2016.
9. “Security with Privacy - A Research Agenda”, presented at the Center for Education and Research in Information Assurance and Security (CERIAS) seminar series, Purdue University,

West Lafayette, IN, USA, January 21, 2015.

10. “Security with Privacy - A Research Agenda”, presented at the 10th IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom) Miami, Florida, USA, October 22-25, 2014.
11. “Secure  $k$ -Nearest Neighbor Query over Encrypted Data in Outsourced Environments”, presented at the 30th IEEE International Conference on Data Engineering (ICDE), Chicago, IL, USA, March 31-April 4, 2014.
12. “Efficient Privacy-Preserving Range Queries over Encrypted Data”, Invited Talk, Cloud Computing Course, Missouri S&T, October 2013.
13. “N-Gram Based Secure Similar Document Detection”, presented at the 25th Annual WG 11.3 Conference on Data and Applications Security (DBSEC 2011), Richmond, Virginia, July 11-13, 2011.
14. “Achieving  $k$ -Anonymity Privacy Protection Using Generalization and Suppression”, presented at the Center for Information Assurance Laboratory, Missouri S&T, March 2011.

## **RESEARCH POSTERS**

1. Lauren Boyle, Aspen Akunne and **Bharath K. Samanthula**, “Fast and Secure Friend Recommendations in Outsourced Online Social Networks”, IEEE MIT URTC, Oct 8-10, 2021.
2. Louay Ahmad, B. Dong and **Bharath K. Samanthula**, “A Game Theoretical Authentication Approach Towards Trustworthy Outsourced Deep Neural Networks”, IEEE MIT URTC, Oct 8-10, 2021.
3. Lauren Boyle, Aspen Akunne and **Bharath K. Samanthula**, “Fast and Secure Friend Recommendations in Outsourced Online Social Networks”, NSF REU Student Research Symposium, Montclair State University, August 12, 2021.
4. Louay Ahmad, B. Dong and **Bharath K. Samanthula**, “A Game Theoretical Authentication Approach Towards Trustworthy Outsourced Deep Neural Networks”, NSF REU Student Research Symposium, Montclair State University, August 12, 2021.
5. Divya Karthikeyan and **Bharath K. Samanthula**, “An Efficient and Secure Shortest-Path Discovery in Location-Based Services”, Annual Student Research Symposium, MSU, April 29-30, 2020.
6. Himesh Damegunta, **Bharath K. Samanthula** and Pankaj Lal, “Towards a Privacy-Enhanced Power Usage Control in Smart Grids”, Annual Student Research Symposium, MSU, April 29-30, 2020.
7. German Guzman and **Bharath K. Samanthula**, “Secure Retrieval of Encrypted Similar Documents using Bloom Filters”, Annual Student Research Symposium, MSU, April 29-30, 2020.
8. Jay Singh, Pankaj Lal, Bernabas Wolde, Pricila Iranah, Michelle Zhu, Nicole Panorkou, **Bharath K. Samanthula**, “Students attitude towards environmental awareness following STEM based educational intervention: evidence from a student survey”, International Conference on Sustainable Development, Columbia University, New York, USA. September 24-25, 2019.
9. Mirza Mehran, **Bharath K. Samanthula**, Michelle Zhu, Nicole Panorkou and Pankaj Lal, “ACMES: A Cloud-Based Web App to Enhance STEM Education”, Sigma Xi Research Symposium, Montclair State University, April 27, 2019.
10. Salha Albehairi and **Bharath K. Samanthula**, “A Privacy-Preserving Framework for

- Collaborative Association Rule Mining in Cloud”, Sigma Xi Research Symposium, Montclair State University, April 27, 2019.
11. James Liporace and **Bharath K. Samanthula**, “A Privacy-Aware and User-Centric Approach for Query Processing in Outsourced Databases”, Annual Student Research Symposium, Montclair State University, April 27, 2018.
  12. Martin Issiov and **Bharath K. Samanthula**, “Efficient Secure Comparison Over Encrypted Integers and Its Application to Privacy-Preserving Range Query in Cloud”, In the IEEE MIT Undergraduate Research Technology Conference (URTC), Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, November 3-5, 2017.
  13. Scott Thompson and **Bharath K. Samanthula**, “Optimized Secure Data Aggregation in Wireless Sensor Networks”, 15th International Conference on Privacy, Security and Trust (PST), Calgary, Alberta, Canada, August 28-30, 2017.
  14. Janu Barot and **Bharath K. Samanthula**, “Efficient Secure Comparison Over Encrypted Integers and Its Application to Privacy-Preserving Range Queries in Cloud”, Annual Student Research Symposium, Montclair State University, April 28, 2017.
  15. Samuel Acheampong and **Bharath K. Samanthula**, “Optimized and Secure Similar Document Detection in Outsourced Environments”, Annual Student Research Symposium, Montclair State University, April 28, 2017.
  16. Sam Forman and **Bharath K. Samanthula**, “Optimized Secure Computation of Similar Documents Using the Jaccard Coefficient”, The Nokia Bell Labs North Jersey Regional Science Fair, Rutgers University, New Brunswick, March 10-11, 2017.
  17. Janu Barot and **Bharath K. Samanthula**, “Faster Privacy-Preserving Range Queries over Encrypted Data”, 4th Annual Symposium on Cybersecurity and Internet of Things (IoT), Fairleigh Dickinson University, September 28, 2016.
  18. Michael Tobin and **Bharath K. Samanthula**, “Efficient Privacy-Preserving Protocol for Shortest Path Discovery”, 4th Annual Symposium on Cybersecurity and Internet of Things (IoT), Fairleigh Dickinson University, September 28, 2016.
  19. Scott Thompson and **Bharath K. Samanthula**, “Secure Data Aggregation in Wireless Sensor Networks”, 6th Annual Cyber Security Conference, New York Institute of Technology, September 22, 2016 (**Best Poster Award - First Prize**).
  20. Yousef Elmehdwi, **Bharath K. Samanthula** and Wei Jiang, “Secure  $k$ -Nearest Neighbor Query over Encrypted Data in Outsourced Environments”, In the IEEE 30th International Conference on Data Engineering (ICDE), Chicago, IL, USA, March 31-April 4, 2014.
  21. **Bharath K. Samanthula**, “Efficient Privacy-Preserving Range Queries over Encrypted Data in Cloud Computing”, 4th Trusted Infrastructure Workshop, Pennsylvania State University, University Park, PA, June 2 - 6, 2013.
  22. Wei Jiang and **Bharath K. Samanthula**, A Web-based Secure and Distributed Framework to Identify and Share Needed Information, Center on Net-Centric Systems and Software, Missouri S&T, Feb 2, 2012.
  23. **Bharath K. Samanthula**, Secure Data Sharing in a Cloud Environment, Center on Net-Centric Systems and Software, Missouri S&T, Feb 2, 2012.
  24. Wei Jiang and **Bharath K. Samanthula**, “A Secure and Distributed Framework to Identify and Share Needed Information”, 3rd IEEE International Conference on Privacy, Security, Risk and Trust (PASSAT), MIT, Boston, USA, October 9-11, 2011.

## UNIVERSITY SERVICE

- CSAM Faculty Representative, Graduate Council, Montclair State University (September 2022 - Present)
- Organized NSF REU Site Student Research Symposium at Montclair State University, August 4, 2022
- Organized NSF REU Site Student Research Symposium at Montclair State University, August 12, 2021
- Graduate Program Coordinator, MS-Cybersecurity Program, Montclair State University (November 2018 - Present)
- Established Cybersecurity Seminar Series (CSS) at MSU in Spring 2020
- Research Talk on Cybersecurity for MSU Presidential Scholars, Oct 7, 2019
- Member, Curriculum Committee, Department of Computer Science, Montclair State University (July 2018 - Present)
- Member, CSAM Curriculum Committee, Montclair State University (October 2016 - Present)
- Member, Graduate Committee, Department of Computer Science, Montclair State University (July 2016 - Present)
- Member, PhD Ad-Hoc Committee, Department of Computer Science, Montclair State University (April 2018 - Present)
- Member, MS in Cybersecurity Ad-Hoc Committee, Department of Computer Science, Montclair State University (October 2015 - Present)
- CSAM Faculty Representative, Graduate Council, Montclair State University (September 2017 - June 2019)
- Invited Talk on “New Era for Cybersecurity” at the CSAM Discovery Day, April 29, 2016.
- Poster Judge, Science Day for High School Students, University Hall Conference Center, Montclair State University, May 20, 2016
- Member, New Course Proposal (Grad) - CSIT 567, March 2016
- Vice President, IEEE Computer Society Student Branch, Missouri S&T (October 2011 - February 2013)
- Computer Science Department Representative, Council of Graduate Students, Missouri S&T (October 2010 - October 2011)

## **DISCIPLINE BASED SERVICE**

### **Peer Reviewer (Journals)**

- ACM Transactions on Information Systems, September 2020
- Ad Hoc Networks, Elsevier, July 2020
- Computer & Security Journal, Elsevier, June 2020
- MDPI Information Journal, May 2020
- IEEE Transactions on Dependable and Secure Computing, April 2020
- IEEE SmartDataServices, April 2020
- Journal of Information Security and Applications, March 2020
- IEEE ACCESS, March 2020
- IEEE Transactions on Dependable and Secure Computing, March 2020
- IEEE Transactions on Information Forensics & Security, February 2020
- Computer & Security Journal, Elsevier, February 2020
- Secure and Communication Networks, Hindawi, February 2020
- IEEE Transactions on Information Forensics & Security, December 2019

- IEEE Internet of Things Journal, December 2019
- IEEE Transactions on Dependable and Secure Computing, November 2019
- IEEE ACCESS, October 2019
- IEEE Transactions on Cloud Computing, October 2019
- Sensors, MDPI, August 2019
- IEEE Transactions on Information Forensics & Security, March 2019
- IEEE Internet of Things Journal, March 2019
- IEEE Internet of Things Journal, February 2019
- IEEE Transactions on Dependable and Secure Computing, March 2019
- ACM Transactions on Intelligent Systems and Technology, March 2019
- IEEE Transactions on Information Forensics & Security, January 2019
- IEEE Access, October 2018
- IEEE Transactions on Dependable and Secure Computing, October 2018
- IEEE Transactions on Dependable and Secure Computing, September 2018
- IEEE Transactions on Dependable and Secure Computing, March 2018
- IEEE Transactions on Information Forensics & Security, June 2018
- Knowledge and Information Systems, March 2018
- IEEE Transactions on Information Forensics & Security, January 2018
- ACM Transactions on Database Systems, November 2017
- IEEE Signal Processing Letters, May 2017
- Transactions on Dependable and Secure Computing (TDSC), May 2017
- Knowledge and Information Systems (KAIS), April 2017
- IEEE Communications Letters, December 2016
- IET Information Security, August 2016
- Knowledge and Information Systems (KAIS), Springer, May 2016
- IEEE Transactions on Information Forensics and Security (T-IFS), January 2016
- IEEE Transactions on Dependable and Secure Computing (TDSC), 2014 - 2016
- Journal of Computer Security, November 2015
- Knowledge-Based Systems (KNOSYS), ELSEVIER, November 2015
- IEEE Transactions on Computers, September 2015
- Security and Communications Network, September 2015
- Distributed and Parallel Databases, September 2015
- IEEE Transactions on Parallel and Distributed Systems (TPDS), July 2015
- IEEE Transactions on Reliability, June 2015
- IEEE Transactions on Services Computing, since November 2014
- Expert Systems With Application, September 2014
- International Journal of Information Security, May 2014
- Computer Science Review, May 2014
- Concurrency and Computation: Practice and Experience, June 2013
- Social Network Analysis and Mining, January 2013

**Peer Reviewer (Conferences/Workshops)**

- IEEE 16th International Conference on Wireless Algorithms, Systems, and Applications (WASA), 2021
- IEEE 15th International Conference on Wireless Algorithms, Systems, and Applications (WASA), 2020
- IEEE Smart Data Services (SMDS), 2020

- International Conference on Machine Learning, Security and Cloud Computing (ICMLSC), 2020
- 15th International Conference on Information Systems Security (ICISS), 2019
- IEEE 14th International Conference on Wireless Algorithms, Systems, and Applications (WASA), 2019
- IEEE BigData Congress, 2019
- IEEE 30th International Conference on Tools with Artificial Intelligence (ICTAI), 2018
- IEEE International Conference on Collaboration and Internet Computing, 2018
- IEEE BigData Congress, 2018
- IEEE 13th International Conference on Wireless Algorithms, Systems and Applications, 2018
- The 23rd ACM Symposium on Access Control Models and Technologies (SACMAT), 2018
- International Conference on Information System Security (ICISS), 2017
- The 22nd ACM Symposium on Access Control Models and Technologies (SACMAT), 2017
- 8th IEEE Latin American Symposium, 2016
- The 31st IEEE International Conference on Data Engineering (ICDE), 2015
- The 6th IEEE International Conference on Smart Grid Communications (SMARTGRIDCOMM), 2015
- The 34th IEEE International Conference on Distributed Computing Systems (ICDCS), 2014
- The 7th IEEE International Conference on Cloud Computing (CLOUD), 2014
- The 26th International Conference on Scientific and Statistical Database Management (SSDBM), 2014
- The IEEE Conference on Communications and Network Security (CNS), 2014
- The 5th IEEE International Conference on Smart Grid Communications (SMARTGRIDCOMM), 2014
- Privacy in Statistical Databases (PSD), 2014
- The 10th China International Conference on Information Security and Cryptology (INSCRYPT), 2014
- The 7th International Workshop on Privacy and Anonymity in the Information Society (PAIS), 2013
- The 3rd International Workshop on Autonomous and Spontaneous Security (SETOP), 2013
- The 7th International Workshop on Data Privacy Management (DPM), 2012
- The 21st ACM International Conference on Information and Knowledge Management (CIKM), 2011
- The 7th International Conference on Collaborative Computing: Networking, Applications and Worksharing (COLLABORATECOM), 2011
- The 2nd International Congress on Computer Applications and Computational Science (CACCS), 2011
- The 4th Canada-France MITACS workshop on Foundations and Practice of Security (FPS), 2011
- The 35th IEEE Annual Computer Software and Applications Conference (COMPSAC), 2011
- The 5th International Workshop on Privacy and Anonymity in the Information Society (PAIS), 2011
- The 10th Annual ACM workshop on Privacy in the Electronic Society (WPES), held in conjunction with the ACM CCS conference, 2011
- The 6th International Workshop on Data Privacy Management (DPM), 2011
- The 1st International Workshop on Autonomous and Spontaneous Security (SETOP), 2011

## **Conference and Journal Committee Participation**

- Review Editor, Cybersecurity and Privacy, Frontiers Journal in Big Data (April 2018 - Present)
- Program Committee Member, IEEE 16th International Conference on Wireless Algorithms, Systems and Applications (WASA), Nanjing, China, June 2021
- Program Committee Member, IEEE Smart Data Services (SMDS), Beijing, China, October 2020
- Program Committee Member, IEEE 15th International Conference on Wireless Algorithms, Systems and Applications (WASA), Qingdao, China, September 2020
- Program Committee Member, International Conference on Machine Learning, Security and Cloud Computing (ICMLSC), Hyderabad, India, June 2020
- Program Committee Member, 15th International Conference on Information Systems Security (ICISS), Hyderabad, India, December 2019
- Program Committee Member, IEEE BigData Congress, Milan, Italy, July 2019
- Program Committee Member, IEEE 14th International Conference on Wireless Algorithms, Systems and Applications (WASA), Hawaii, USA, June 2019
- Program Committee Member, IEEE International Conference on Collaboration and Internet Computing (CIC), Philadelphia, October 2018
- Program Committee Member, IEEE BigData Congress, San Francisco, July 2018
- Program Committee Member, IEEE 13th International Conference on Wireless Algorithms, Systems and Applications (WASA), Tianjin, China, June 2018
- Program Committee Member, 23rd ACM Symposium on Access Control Models and Technologies (SACMAT), Indianapolis, June 2018
- Program Committee Member, 13th International Conference on Information System Security (ICISS), Mumbai, India, December 2017
- Program Committee Member, 22nd ACM Symposium on Access Control Models and Technologies (SACMAT), Indianapolis, June 2017
- Session Chair - Research Track Papers, 30th IEEE International Conference on Data Engineering (ICDE), Chicago, March 2014
- Member, Student Travel Award Committee, 30th IEEE International Conference on Data Engineering (ICDE), Chicago, March 2014
- Program Committee Member, Social Network Analysis and Mining, 2013

## **PROFESSIONAL MEMBERSHIPS**

- Cybersecurity working group, New Jersey Economic Development Authority (NJEDA)
- New Jersey Cybersecurity and Communications Integration Cell (NJCCIC)
- Association for Computing Machinery (ACM)
- European Alliance for Innovation (EAI)
- Institute of Electrical and Electronics Engineers (IEEE), member since 2010
- IEEE Computer Society, member since 2010

## **CURRENT AND PAST STUDENTS SUPERVISED**

### **Current Students**

- German Guzman (MS Student, Research Assistant)



- Melanie Forenza (MS Student, Research Assistant)
- Austin Witter (MS Student, Research Assistant)
- Hemadri Patel (MS Student, Research Assistant)

### **Past Students**

- Meherin Khoda (MS Project), Dec 2021
- Gowri Sundarapandian (**MS Thesis**), May 2021
- Raiyan Hossain (**MS Thesis**), May 2021
- Chandana Jasrai (MS Project), May 2021
- Divya Karthikeyan (MS Student, Research Assistant), August 2020
- Salma Bokhary (**MS Thesis**), Dec 2020
- Murad Hasan (MS Project), Dec 2020
- Himesh Damegunta (MS Student, Research Assistant), August 2020
- German Guzman (Undergraduate Research Assistant), June 2020
- Rudy Crespo (MS Student, Research Assistant), May 2020
- Dylan Laloo (MS Project), December 2019
- Daniel Laratta (MS Project), December 2019
- Mona Alkanhal (**MS Thesis**), May 2019
- Salha Albehairi (**MS Thesis**), May 2019
- Paul Sun (Undergraduate Research Assistant) , May 2019
- Sam Forman (Research Assistant, Stanford University), August 2018
- Mirza Mehran (MS Project), May 2018
- James Liporace (MS Project), May 2018
- Ahmed Malik (MS Project), May 2018
- Scott Thompson (**MS Thesis**), December 2017
- Martin Issiov (Undergraduate Research Assistant), December 2017
- Janu Barot (MS Project), May 2017
- Samuel Acheampong (Undergraduate Research Assistant), May 2017
- Michael Tobin (MS Project), December 2016
- Frank Paladino (MS Project), December 2016
- Nirav Kotadiya (MS Student, Research Assistant), August 2016
- Fang-Yu Rao (PhD Student, Purdue University), August 2015