

Dr. Subhasish Dhal
Associate Professor (CSE)
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Joined the Institute in July 2015

About

Hello, welcome to my home page. I am Associate Professor in the Department of Computer Science and Engineering at Indian Institute of Information Technology, Guwahati. My current research focus is on Blockchain, Cryptocurrency, Deep Learning, Brain Computer Interface and Secure Healthcare System, etc. I completed PhD from IIT Kharagpur in 2016. The area in which I did my PhD was Information Security. More Specifically, it was on various security issues in RFID technology based Object Identification. Prior to my PhD, I completed M. Tect in CSE with specialization as Information Security from NIT Rourkela. During my M. Tech. at NIT Rourkela, I was working on the area of Key pre distribution for Wireless Sensor Network. Apart from my professional activities, I like to indulge myself in any sports like cricket, football, etc.

Research Interests

- Blockchain
- Security and Privacy in IoT
- Deep Learning based Classification
- Brain Computer Interface
- Secure Healthcare System
- Cloud Computing, etc.

Sponsored Projects

Title: Security and Privacy Preserved Automatic Health Emergency Detection and MSP Selection in IoT Based Smart Healthcare System

Principal Investigator: Dr. Subhasish Dhal

Budget: 20 Lacs

Duration: 3 Years

Sponsoring Agency: SERB (DST), Govt. of India.

Current Status: Ongoing

Workshop Conducted

Title: ATAL FDP in Blockchain and its Security Perspectives

Coordinator: Dr. Subhasish Dhal

Duration: 6th December to 10th December 2021

Sponsoring Agency: All India Technical Education (AICTE), Govt. of India.

Students Supervision

PHD Students

- Barnana Baruah, Thesis Title: Reliability of Third Party in Security and Privacy Protocols. (Submitted on 14th October 2020)
- Anupam Pattanayak, Area of Research: Cloud based Body Area Network (ongoing)
- Abhishek Paul, Area of Research: Vehicular Technology (ongoing)
- Mou Dutta, Area of Research: Secure Healthcare System (ongoing)

M. Tech Students

- Neenu Mary, Area of Research: Security and Privacy Preserved relaying Vehicle Selection for NLOS communication (ongoing)
- Jose N. N., Area of Research: Security in Software design (ongoing)
- Akansha Singh Rajput, Thesis Title: Prediction of Vehicle Availability in Bike Sharing System (Completed in June 2021)
- Saurav Jyoti Barman, Thesis Title: Detection of Architecture Smell using Deep Learning (Completed in June 2020)

B. Tech Students

- Anushree Anil, Area of Research: Blockchain (ongoing)
- Nitesh Dubey, Thesis Title: Structure-Preserving Deep Autoencoder-based Dimensionality Reduction for Data Visualization (Completed in December 2021)
- Rishav Baghel, Thesis Title: Application of VAEs in Paintings to Photorealism and 3D Layout Generation (Completed in May 2021)
- Shikhar Yadav, Thesis Title: Detection of Design Pattern in Softwares using Deep Learning (Completed in May 2020) Kedarnath P, Thesis Title: Music Generation using RNN (Completed in May 2019)
- Biswa Bhusan Soren, Thesis Title: Privacy Preserved Navigation System (Completed in May 2018)
- Palnatya Navya Veni, Thesis Title: Grouping Proof Generation using RFID Technology (Completed in May 2018)
- Vaibhav Bhuwan, Thesis Title: Access Control in Cloud Computing (Completed in May 2017)
- Cherukupalli Sandeep, Thesis Title: Authentication System for Emergency Response Scheduling (Completed in May 2017)
- Abhishek B. Jangid, Thesis Title: Secure Object Tracking Protocol using IoT (Completed in May 2017)

Experience

- Assistant Professor Grade-I at Indian Institute of Information Technology Guwahati [June 2018-February 2022]
- **Assistant Professor** at Indian Institute of Information Technology Guwahati [June 2015-May 2018]
- **Lecturer** at Institute of Engineering and Industrial Technology (IE & IT) Durgapur [July 2009-December 2009]
- **Lecturer** at Asutosh College Kolkata [August 2005-August 2007]
- **Software Trainee** at Maple Technologies Kolkata [December 2004-May 2005]

Invited Talks

- Delivered Technical Talk on Consensus Algorithms and Related Attacks at AICTE Sponsored ATAL FDP Program Organized by Indian Institute of Information Technology Guwahati, Guwahati, Assam, India [December 2021]
- Delivered Invited Talk on Cybersecurity at Cyber Jagrookta (Cyber Awareness), an initiative of Govt. of India, Organized by Indian Institute of Information Technology Guwahati, Guwahati, Assam, India [November 2021]
- Delivered Invited Talk on Wearable Device Security & IoT in Healthcare at AICTE Sponsored ATAL FDP Program Organized by Indian Institute of Information Technology Guwahati, Guwahati, Assam, India [July 2021]

- Delivered Invited Talk on Reliability of the Third parties in IoT based Protocols at AICTE Sponsored Online One Week Short Term Training Program on Smart Perspectives of IoT in Green Technologies Organized by Gandhi Institute for Technology, Bhubaneswar, Odisha, India [December 2020]
- Delivered Invited Talk on Security and Privacy issues in Cloud Enabled Body Area Network at Online Workshop on Wearable Devices (WWD-2020) Organized by National Institute of Technology Jamshedpur, Jharkhand, India [December 2020]
- Delivered Invited Talk on Consensus in Blockchain at the International Webinar on Blockchain and Cryptocurrency organized jointly by IQAC & Dept. of Computer Science, Government General Degree College, Singur, Hooghly-712409, West Bengal, India [September 2020]
- Delivered Invited Talk on Consensus Algorithms at the Faculty Development Program on Blockchain Technology and its Applications organized jointly by NIT Karnataka (Surathkal) and JNN College of Engineering, Shivamogga, Karnataka, India [August 2020]
- Delivered Invited Talk on Security and Privacy in IoT based Applications at the department of Electronics and Communication Engineering in National Institute Technology Durgapur, Durgapur, West Bengal, India [February 2020]
- Delivered Invited Talk on RFID based Grouping Proof Generation and Validation at Raja Narendra Lal Khan Women's College (Autonomous), Midnapore, West Bengal, India [May 2019]
- Delivered TEQIP Sponsored Invited Talk on RFID based Grouping Proof Generation Problem in Cloud Environment at Assam Engineering College, Guwahati, India [January 2018]

Other Projects and Dissertation

1. Object Identification in RFID Technology (At IIT Kharagpur, January 2010 - June 2016) (Supervisor: Professor Indranil Sen Gupta) [Ph. D. Thesis]
2. **Key Pre-distribution in Wireless Sensor Networks** (At NIT Rourkela, July 2008 - July 2009) (Supervisor: Professor P. M. Khilar) [M. Tech thesis]
3. **Studies on ID based Key Pre distribution and its variations in WSN** (At ISI Kolkata, May 2008 - July 2008) (Supervisor: Professor Bimal Roy) [Summer Internship]
4. **Web based Application for Asutosh College Kolkata** (At Maple Technologies Kolkata, January 2005 - June 2005) (Coordinator: Mr. Prasanta Mahapatra) [MCA project]
5. **Library Automation System** (At Midnapore College, Vidyasagar University Midnapore, July 2001 - June 2002) (Supervisor: Prof. Arindam Dasgupta) [B.Sc.(H) final year project]

Teaching

- Winter 2022 Introduction to Blockchain and Cryptocurrency (Theory)
- **Monsoon 2021** Cybersecurity (Theory)
- **Winter 2021** Introduction to Blockchain and Cryptocurrency (Theory)
- **Monsoon 2020:** Computer Programming Lab (Laboratory)
- **Monsoon 2020:** Algorithms and Data Structures (Theory)
- **Monsoon 2020:** Programming Lab (Laboratory)
- **Winter 2020:** Introduction to Blockchain and Cryptocurrency (Theory)
- **Winter 2020:** Data Structure (Laboratory)
- **Monsoon 2019:** Data Communication (Theory)
- **Monsoon 2019:** Computer Programming Lab(Laboratory)
- **Winter 2019:** Operating Systems (Theory)
- **Winter 2019:** Operating Systems (Laboratory)
- **Autumn 2018:** Data Communication (Theory)
- **Autumn 2018:** Computer Programming (Laboratory)
- **Winter 2018:** Computer and Network Security (Theory)
- **Monsoon 2017:** Data Communication (Theory)
- **Monsoon 2017:** Algorithms (Theory)
- **Winter 2017:** Computer and Network Security (Theory)
- **Monsoon 2016:** Data Communication (Theory)
- **Winter 2016:** Computer and Network Security (Theory)
- **Winter 2016:** Computer Organization (Theory)
- **Monsoon 2015:** Data Communication (Theory)

Publication

Conference

1. Mou Dutta, Subhasish Dhal, "GDPR-Compliant Data Management Protocol: A Scalable Solution", in Proceedings of the IEEE COMSNETS, (2022), IEEE Explore, (To Appear) (Indexed by Scopus, DBLP, Google Scholar)
2. Bamana Baruah, Subhasish Dhal, "An Authenticated Key Agreement Scheme for Secure Communication in Smart Grid", in Proceedings of the IEEE COMSNETS 2021, IEEE Explore, February, (2021), pages. 447-455, (Indexed by Scopus, DBLP, Google Scholar)
3. Ananta Kumar Das, Amogh Manoj Joshi, Subhasish Dhal, "A Machine Learning Based Bike Recommendation System Catering To User's Travel Needs", in Proceedings of IEEE INDICON 2021, IEEE Explore, February, (2021), pages. 1-6, (Indexed by Scopus, DBLP, Google Scholar)
4. Amogh Manoj Joshi, Ananta Kumar Das, Subhasish Dhal, "Deep Learning Based Approach For Malaria Detection in Blood Cell Images", in Proceedings of IEEE Region 10 Conference (IEEE TENCON 2020), IEEE Explore, December, (2020), pages. 241-246, (Indexed by Scopus, DBLP, Google Scholar)
5. Bamana Baruah, Subhasish Dhal, "An Efficient Authentication Scheme for Secure Communication between Industrial IoT Devices", in Proceedings of the the 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT 2020), IEEE Explore, October, (2020), pages. 1-7, (Indexed by Scopus, DBLP, Google Scholar)
6. Anupam Pattanayak, Subhasish Dhal, "An A Study on Reversible Rules of Probabilistic Cellular Automata", in Proceedings of the IEEE Calcon 2020, IEEE Explore, February, (2020), pages. 39-44, (Indexed by Scopus, DBLP, Google Scholar)
7. Ananta Kumar Das, Shikhar Yadav, Subhasish Dhal, "Detecting Code Smells using Deep Learning", in Proceedings of the IEEE Region 10 Conference (IEEE TENCON 2019), IEEE Explore, October, (2019), pages. 2018-2086, (Indexed by Scopus, DBLP, Google Scholar)
8. Bamana Baruah, Subhasish Dhal, "An Intelligent Privacy Preserving Vehicle Navigation System", in Proceedings of the IEEE Region 10 Symposium (IEEE TENSYP 2019), IEEE Explore, June, (2019), pages. 727-732, (Indexed by Scopus, DBLP, Google Scholar)
9. Subhasish Dhal, Vaibhav Bhuwan, "Cryptanalysis and Improvement of a Cloud Based Login and Authentication Protocol", in Proceedings of the 4th International Conference on Recent Advances in Information Technology (RAIT 2018), IEEE Explore, March, (2018), pages. 668-673, (Indexed by Scopus, DBLP, Google Scholar)

- ❶ Subhasish Dhal and Indranil Sen Gupta, "A New Authentication Protocol for RFID communication in Multi-tag Arrangement", In Proceedings of 8th International Conference on Computing for Sustainable Global Development (INDIACom 2014), Mar, (2014), pages. 668-673, New Delhi, India.
- ❷ Subhasish Dhal and Indranil Sen Gupta, "Protocol to Authenticate the Objects Attached with Multiple RFID tags", In Proceedings of Emerging Trends in Computing and Communication (ETCC 2014), Mar, (2014), pages. 149-156, Kolkata, India.
- ❸ Subhasish Dhal and Indranil Sen Gupta, "Generation of a Proof of Coexistence of Multiple Objects in Multi-tag Arrangement", Presented in the PhD Symposium of 9th International Conference on Information System Security (ICISS 2013) Dec, (2013), Kolkata, India.
- ❹ Subhasish Dhal and Indranil Sen Gupta, "A New Authentication Protocol for Multi-tag RFID Applicable to Passive Tag", In Proceedings of 2nd International Conference on Communication, Computing and Security, (ICCCS 2012), Oct, (2012), pages. 880-888, Rourkela, India.
- ❺ Subhasish Dhal and Indranil Sen Gupta, "A New Authentication Protocol for Multi-tag RFID", In Proceedings of 1st International Conference on RAIT 2012 , Mar, (2012), Dhanbad, India.
- ❻ Subhasish Dhal and P. M. Khillar, "ID-NIKD based security of Temporary key during Path Key Establishment in Key Pre Distribution for WSN", In Proceedings of 4th ICEMC2 2009, Jul, (2009), pages. 9-13, Bangalore, India.
- ❼ Subhasish Dhal and P. M. Khillar, "Deterministic Merging of Blocks for Key Pre-Distribution in Wireless Sensor Networks", In Proceedings of NCRAC 2009, Jan, (2009), pages. 119-123, Rourkela, India.
- ❽ Bhabesh Mali, Subhasish Dhal, Ananta Kumar Das, "Diagnosis of Asthma in Children Based on Symptoms: A Machine Learning Approach", in Proceedings of the IEEE Region 10 Conference (IEEE TENCON), (0), IEEE Explore (To Appear) (Indexed by Scopus, DBLP, Google Scholar)
- ❾ Bamana Baruah, Subhasish Dhal, "A Secure and Privacy-Preserved Road Condition Monitoring System", in Proceedings of the IEEE COMSNETS 2020, IEEE Explore, January, (0), pages. 594-597, (Indexed by Scopus, DBLP, Google Scholar)
- ❿ Ajay Kant Singh, Subhasish Dhal and Indranil Sen Gupta, "An Approach to Solve Tracking and Message Blocking Problems in RFID", In Proceedings of 3rd International Conference on Communications System and Network Technology (CSNT 2014), Apr, (0), pages. 1187-1191, Bhopal, India.

Journal

- ❶ Bamana Baruah, **Subhasish Dhal**, "A secure road condition monitoring scheme in cloud based VANET", Journal of Computer Communications (Elsevier), 174, pp 131-142, May 2021 (Indexed by SCI (E), Scopus, DBLP, Inspec, Google Scholar, etc.), (2021),
- ❷ Bamana Baruah, Subhasish Dhal, "An IoT Based Secure Object Tracking System", Journal of Wireless Personal Communication (Springer), February, 106(3), (2019), pages. 1209-1242, (Indexed by SCI (E), Scopus, DBLP, Inspec, Google Scholar, etc.)
- ❸ Bamana Baruah, Subhasish Dhal, "A Two-Factor Authentication Scheme Against FDM Attack in IFTTT based Smart Home System", Journal of Computers and Security (Elsevier), vol. 7, (2018), pages. 21-35, (Indexed by SCI (E), Scopus, EI, CSI)
- ❹ Dheerendra Mishra, Subhasish Dhal, "Privacy Preserving Password-Based Multi-server Authenticated Key Agreement Protocol Using Smart Card", Journal of Wireless Personal Communication (Springer), March, vol. 99, no. 1, (2018), pages. 1-21, (Indexed by SCI (E), Scopus, DBLP, Inspec, Google Scholar, etc.)
- ❺ Subhasish Dhal, Indranil Sen Gupta, "A New Object Searching Protocol for Multi-tag RFID", Journal of Wireless Personal Communication (Springer), December, (2017), pages. 3547 – 3568, (Indexed by SCI (E), Scopus, DBLP, Inspec, Google Scholar, etc.)
- ❻ Subhasish Dhal, Indranil Sen Gupta, "Object Authentication Using RFID Technology: A Multi-tag Approach", International Journal of Computer Network and Information Security, March, vol. 7, no. 4, (2015), pages. 44-53, (Indexed by Scopus, IET Inspec, Google Scholar, Ulrich, CrossRef, Stanford University Libraries, ProQuest, etc.)
- ❼ Subhasish Dhal, Atanu Basu, Indranil Sen Gupta, "Managing Authentication and Detection Probability in Multi-tag RFID System", Journal of Information Assurance and Security, November, vol. 9, no. 6, (2014), pages. 316-328, (Indexed by (E)SCI, IET Inspec, Google Scholar)

Book Chapters

- ❶ Anupam Pattanayak, Subhasish Dhal, "Cloud Enabled Body Area Network, in Cloud Network Management: An IoT Based Framework", Chapter 5 of 1st Edition, Chapman and Hall/CRC, ISBN 9780367256050, Published on October 26., (2020),



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