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November 7, 1971



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Research Interests

Artificial Intelligence *E-Commerce Security*
Network Security *E-Governance Security,*
Database Security *Recommender System Design,*
DRM

Academic & Administrative Assignments

1. *Acted as the Head of the Department for Department of Computer Science, The University of Burdwan from June 2010 – June 2012.*
2. *Acted as the Joint Coordinator for UGC Coursework Refresher Course in ICT 2010, 2011 and 2012 (thrice).*
3. *Acting as Member, UG Board of Studies (BOS) and PG Board of Studies (BOS) in Computer Science.*
4. *Acted as Examiner, Moderator and Paper Setter in different universities like Jadavpur University, Kalyani University, North Bengal University, etc.*
5. *Acted as Organizing Secretary at National Conference on Computing & Systems January 2010.*
6. *Acted as Chair Person at International Conference on Computing & Systems November 2010.*
7. *Acted as Chair Person at Second National Conference on Computing & Systems March 2012.*
8. *Acted as Joint Secretary at Second International Conference on Computing & Systems September 2013.*
9. *Author of Study Materials for M.Sc Computer Science course under DDE of The University of Burdwan.*
10. *Author of Study Materials for M.Com course under DDE of The University of Burdwan for the paper Application of Computer in Business.*
11. *Acting as the Member for the Adhoc Board of UG & PG Engineering courses under The University of Burdwan.*

Research Supervision

Acting as the Supervisor of the candidates for Ph.D. degree in Computer Science from The University of Burdwan. Details are as follows –

1. *Ph.D. Awarded – Sanjay Banerjee. Thesis Title – DIPRMS In E-Commerce System – An UML Approach.*
2. *Ph.D Awarded – Partha Sarathi Chakraborty. Thesis Title - Studies on scalable, secure and trust-aware E-Commerce Recommender Systems.*
3. *Ph.D. continuing – Abhishek Roy. Thesis Title – Studies on Information Security In E-Governance Using Cryptography*
4. *Ph.D. continuing – Sirsendu Sarbavidya. Thesis Title – Studies of security in E-Governance using Digital Watermarking.*
5. *Ph.D. continuing – Nikhilesh Barik. Thesis Title – Studies on Security Issues In E-Learning.*
6. *Ph.D. continuing – Ambalika Ghosh*
7. *Ph.D. continuing – P K Samanta. Thesis Title – Studies of secured E-Education system with special reference to rural India.*
8. *Ph.D continuing – Purba Mukherje. Thesis Title – Studies on E-Learning security using Steganograhya.*

Textbooks Published by The University of Burdwan

1. *S. Karforma, A. C. Mondal. “Computer Fundamental and Programming in C” (2007), Published by The Director, Distance Education, The University of Burdwan.*
2. *S. Karforma. “Mobile Computing”, published by The Director, Distance Education, The University of Burdwan.*
3. *S. Karforma, A. C. Mondal. “Internet and E-Commerce” (2007), published by The Director, Distance Education, The University of Burdwan.*
4. *S. Karforma. Software Engineering, published by The Director, Distance Education, The University of Burdwan.*
5. *S. Karforma. OOAD, published by The Director, Distance Education, The University of Burdwan.*
6. *S. Karforma. Cryptography & Network Security, published by The Director, Distance Education, The University of Burdwan.*

1. Tanmoy Halder, Sunil Karforma, Rupali Mandal. A Novel data hiding approach by pixel-value-difference steganography and optimal adjustment to secure e-governance documents. *Indian Journal of Science & Technology, Informatics Publishing Ltd.* Print ISSN : 0974-6846, Online ISSN : 0974-5645, Vol 8(16), July 2015 (IC: 5.02).
2. Soumendu Banerjee, Sunil Karforma. Object Oriented Metric based analysis of ElGamal digital signature algorithm for study material authentication. ISSN: 2394-1537, *IJSTM*, Vol. 4, Special Issue 01, Sep. 2015. Pp:522-530.
3. Ambalika Ghosh, Sunil Karforma. Object Oriented Modeling of IDEA for E- Learning Security. *ICICA 2014, The book on Intelligent Computing and Applications of Springer India 2015*, Chapter 12, pp. 1-9. Book ISBN: 978-81-322-2267-5.
4. "A secret key digital watermarking based authentication of mark sheet in E-learning", *IJATES*, ISSN: 2348-7550, Vol: 04, Issue: 08, Aug-2016, IF: 2.870, pp: 104-107.
5. Akash Nag, Sunil Karforma. "Classifying Snake Toxins using using decision trees", *International Journal of scientific Research*, Vol-05, Issue-08, Aug-16, IF: 3.508, ISSN: 2277-8179, PP:23-24.
6. Soumendu Banerjee, Sunil Karforma. "Object Oriented modeling of ElGamal Digital Signature for authentication of study material in E-learning system", *IJARSE*, Vol. No.4, Special Issue (02), February 2015, ISSN: 2319-8346, pp: 455-460, IF: 1.142
7. Tanmoy Halder, Sunil Karforma. "A block-based adaptive data hiding approach using pixel-value-difference and LSB substitution to secure E-governance documents", *Journal of Information Processing System (JIPS)*. (Korea). 2015, ISSN: 1976-913X(Print), ISSN:2092 805X(Online), IF: 2.35
8. Partha Sarathi Chakraborty, Sunil Karforma. "Effectiveness of Proximity-Based Outlier Analysis in Detecting Profile-Injection Attacks in E-Commerce Recommender Systems", *Information Systems Design and Intelligent Applications*. Springer India, 2015, ISBN: 978-81-322-2246-0, DOI: 10.1007/978-81-322-2247-7_27, pp: 255-263.
9. Akash Nag, Sunil Karforma. "A Space-Efficient Approach towards Distantly Homologous Protein Similarity Searches", *International Journal of Advanced Research in Computer Science (IJARCS)*, Vol 6, No. 2, 2015, pp: 80-85, ISSN: 0976 -5697, IF: 5.312.
10. Akash Nag, Sunil Karforma. "A Heuristic Approach to High-Speed Multiple Sequence Alignment for Phylogenetic Tree Construction." *IPASJ* 4.4 (2016): 10-15.

11. Abhishek Roy, Sunil Karforma. *A Study on implementation of security in E-Governance using cryptography. International Journal of Advanced Research in Computer Science and Software Engineering (IJARCSSE), April 2014, Volume 4 Issue 4, Pp: 652-659, Print ISSN 2277 6451 Online ISSN 2277 128X. (I.F.: 2.08)*
12. Abhishek Roy, Sunil Karforma. *Stream cipher based user authentication technique in E-Governance transactions. International Society of Thesis Publication Journal of Research in Electrical and Electronics Engineering (ISTP-JREEE), May 2014, Volume 3 Issue 3, Pp: 31-37, ISSN 2321-2667.*
13. Abhishek Roy, Sunil Karforma. *E-Governance To E-Health: A Smart Road Map For Society. The International Journal of Science and Technoledge (The IJST), July 2014, Volume 2 Issue 7, Pp: 217-221, ISSN 2321-919X. (I.F.: 0.675)*
14. Abhishek Roy, Sunil Karforma. *E-Governance To E-Commerce: A Smart Transition. International Journal of Emerging Research in Management and Technology (IJERMT), July 2014, Volume 3 Issue 7, Pp: 82-86, ISSN 2278-9359.*
15. Abhishek Roy, Sunil Karforma. *Authentication of user in E-Governance: A Digital Certificate based approach. International Journal of Scientific Research and Management (IJSRM), August 2014, Volume 2 Issue 8, Pp: 1212-1221, ISSN 2321-3418. (I.F.: 3.994)*
16. Ambalika Ghosh, Sunil Karforma. *Object Oriented Modeling of DSA for Authentication of Student in E-Learning. International Journal of Science and Research, Volume 3 Issue 7 Page No. 5 July 2014. ISSN: 2319-7064.*
17. Ambalika Ghosh, Sunil Karforma. *Object Oriented Modeling of SET for Security in E-Learning. International Journal of Advanced Research in Computer Science and Software Engineering, Volume 4 Issue 8 August 2014. ISSN: 2277-128X. (I.F.: 2.08)*
18. Ambalika Ghosh, Sunil Karforma. *Object Oriented Modeling of IDEA for E- Learning Security. ICICA-2014, No:25.*
19. Nikhilesh Barik, Dr. Sunil Karforma. *Digital Right Management in e-Learning Security (DRM-eLS) IJARCSSE ISSN:2277-128X. Vol 4, Issue 4. Apr-2014. (I.F.: 2.08)*
20. Nikhilesh Barik, Dr. Sunil Karforma. *Utilization of Multimedia Database with secure registration in e-Learning system. EeL 2014 Conference Proceedings. Print ISSN:2251-1814. E-Periodical:2251-1822. 25th-26th August, 2014.*
21. Tanmoy Halder, Sunil Karforma, Rupali Mandal. *E-Governance Data Security using Steganography: Concepts, Algorithms and Analysis. International Journal of Applied Sciences & Engineering (IJASE) 2(1). April 2014. Pages 1-13. (I.F.: 2.38)*
22. Tanmoy Halder, Sunil Karforma, Rupali Mandal. *Analysis of Least-Significant-Bit and Pixel-Value-Difference Steganography - An E-Governance Data-Security Issue. International Journal of Advanced Research in Computer Science and Software Engineering, Volume 4, Issue 8. Aug, 2014. ISSN:2277-128X. (I.F.: 2.08)*

2013

23. Sumita Sarkar, Abhishek Roy. *Survey on Biometric applications for implementation of authentication in smart Governance. Researchers World- Journal of Arts, Science and Commerce, October 2013, Volume IV Issue 4(1), Pp: 103-114, Print ISSN 2231-4172 Online ISSN 2229-4686.*
24. Abhishek Roy, Sunil Karforma. *Object oriented metrics analysis for implementation of authentication in smart card based E-Governance mechanism. Researchers World- Journal of Arts, Science and Commerce, October 2013, Volume IV Issue 4(2), Pp: 103-109, Print ISSN 2231-4172 Online ISSN 2229-4686.*
25. Ambalika Ghosh, Sunil Karforma. *Object Oriented Modeling of SSL for Secure Information in E- Learning. Proceedings of ICCS-2013, pp. 62-66. ISBN:978-9-35-134273-1.*
26. Sarbavidya S., Karforma S. *"Design of Forgery resistance Digital Academic Documents using Digital Watermarking" - Research Journal of Computer Systems Engineering (ISSN 2230-8563), Volume 04, Issue 01, Jan-Feb 2013, Pages 452 - 455. (I.F.: 2.988)*
27. Sarbavidya S., Karforma S. *"A Unified Framework of Multimedia Fingerprinting Using Digital Watermarking" - International Journal of Multidisciplinary Research & Advances in Engineering (ISSN 0975-7074), Volume 5, No. II, April 2013, Pages 79 – 86. (I.F.: 0.3095)*

2012

28. Abhishek Roy, Sunil Karforma. *A Survey on digital signatures and its applications. Journal of Computer and Information Technology, August 2012, Vol 03 No 1 & 2, Pp: 45-69, ISSN 2229-3531.*
29. Ambalika Ghosh, Sunil Karforma. *An UML based Design of E-Learning System using Digital Certificate. Oriental Journal of Computer Science and Technology, Volume 5 No. 2 Page No. 257-262 Dec 2012. ISSN : 0974-6471.*
30. Nikhilesh Barik, Dr. S. Karforma. *Risks and Remedies In E-Learning System. IJNSA ISSN:0974-9330. Vol 4, Issue 1. Jan 2012.*
31. Nikhilesh Barik, Dr. S Karforma. *A Study On Efficient Digital Signature Scheme For E-Governance Security. GJCST ISSN:0975-4172. Vol 12, Issue 3. 25-Jan-2012.*
32. Nikhilesh Barik, Dr. S Karforma. *Object Oriented Modelling of Secured E-Assessment System. IJSER ISSN:2229-5518. Vol 3(8). July-Aug 2012. (I.F.: 1.4)*

33. Partha Sarathi Chakraborty and Dr. Sunil Karforma. *Designing Trust Propagation Algorithms based on Simple Multiplicative Strategy for Social Networks - Proceedings of The Second International Conference on communication computing Security (ICCCS-2012) ORGANIZED BY National Institute of Technology, Durgapur (published in Procedia Technology, Elsevier <http://www.sciencedirect.com/science/journal/22120173/6>).*
34. Sarbavidya S., Karforma S., "Applications of Public Key Watermarking for Authentication of Job-Card in MGNREGA" – *BVICAM'S International Journal of Information Technology (ISSN 0973-5658), Volume 4, No. 1, (January-July, 2012), pages 45 – 48 & 54. (I.F.: 0.605)*
35. Sarbavidya S., Karforma S., "UML Implementation of E-Tendering using Secret Key Digital Watermarking" – *International Journal of Computers & Distributed Systems (ISSN 2278-5183), Volume 1, Issue 2, August 2012, pages 72 – 75. (I.F.: 0.521)*
36. Sarbavidya S., Karforma S., "Security of Smart-Card Based Personal Data Using Digital Watermarking" – *International Journal of Emerging Technology and Advanced Engineering (ISSN 2250-2459), Volume 2, Issue 9, September 2012, pages 401 – 403. (I.F.: 2.324)*
37. Banerjee S., Karforma S. *Protection of DIP using object oriented modeling of DIPRMS in E-Commerce – An Indian Perspective, International Journal of Scientific & Engineering Research, Volume 3 Issue 8, August 2012, Pp: 1 – 5, ISSN 2229-5518. ((I.F.: 1.4)*
38. Banerjee, S., and Sunil Karforma. "On Designing a Secure E-Commerce Transaction Management System–A UML Based Approach." *Innovative Systems Design and Engineering 3, no. 6 (2012): 102-108.*

39. Abhishek Roy, Sunil Karforma. *A Survey on E-Governance Security. International Journal of Computer Engineering and Computer Applications (IJCECA), Fall Edition 2011, Vol: 08 Issue No. 01, Pp: 50-62, ISSN 0974-4983.*
40. Abhishek Roy, Subhadeep Banik, Sunil Karforma. *Object Oriented Modelling of RSA Digital Signature in E-Governance Security. International Journal on Computer Engineering and Information Technology (IJCEIT), Summer Edition 2011, Vol 26 Issue No. 01, Pp: 24-33, ISSN 0974-2034.*
41. Abhishek Roy, Sunil Karforma. *Risk and Remedies of E-Governance Systems. Oriental Journal of Computer Science & Technology, December 2011, Vol 04 No 02, Pp: 329-339 ISSN 0974-6471.*
42. Sarbavidya S., Karforma S., "Image Watermarking: A Survey" – *Journal of Global Research in Computer Science (ISSN 2229-371X), Volume 2, No. 8, August 2011, pages 38-41. (I.F.: 0.92)*
43. Sarbavidya S., Karforma S., "Image Steganography: A Survey" - *International Journal on Computer Engineering and Information Technology (ISSN 0974-2034), Fall Edition 2011 (Aug, 2011 – Oct, 2011), Volume – 27, Issue – 01, pages 14 – 19.*

Journal Publications

2005-2008

34. Banerjee S., Karforma S. A prototype design for DRM based credit card transaction in E-Commerce, ACM, New York, USA, Volume 2008 Issue May Article No. 2, DOI 10.1145/1376144.1376146.
35. Karforma S., Mukhopadhyay S. A secured banking transaction system using digital signature algorithm, South Asian Journal of Socio-Political Science (SAJOSPS), An International Journal since 2000, July - December 2005, Vol 6, No 1.

Books & Book Chapters

1. Data Modeling of a multifaceted electronic card based secure E-Governance system. Abhishek Roy, Sunil Karforma. Chapter No: 12 of Book Emerging Mobile and Web 2.0 Technologies for Connected E-Government by Dr. Zaigham Mahmood, University of Derby, United Kingdom (UK), Published by: IGI Global, USA, May 2014, Pp: 280-299, DOI: 10.4018/978-1-4666-6082-3.
2. Abhishek Roy, Sunil Karforma, Subhadeep Banik. Implementation of authentication in E-Governance- An UML based approach. LAP LAMBERT Academic Publishing, 1 Ed, 2013, Germany, ISBN 978-3-659-41310-0.
3. Roy A, Karforma S, Banik S. Implementation of authentication in E-Governance – An UML Based Approach, LAP Lambert Academic Publishing 2013 1 Ed, Germany, ISBN 978-3-659-41310-0.
4. Banerjee S, Karforma S. DIPRMS in E-Commerce – A UML based approach, LAP Lambert Academic Publishing, 2013, ISBN 3659415715, 9783659415715.

Conference Publications

2013-2015

1. Akash Nag, Sunil Karforma. "Identifying Neurotoxins in Snake Venoms through Automated Generation of Probabilistic Consensus Motifs." SUSTECH, Nov. 2015, DAVIM, Faridabad. ISBN: 978-81-931039-7-5. pp:716-722.
2. Akash Nag, Sunil Karforma. "A Randomized Algorithm for Fast Sequence Alignment.", ICSTM, Sep. 2015, University of Delhi. ISBN: 978-81-931039-6-8. pp:1968-1972.
3. Sarbavidya S., Karforma S., "Multimedia Document Authentication using Scanned Signatures as Digital Watermarks", Proceedings of 12th IRF International Conference on Innovations In Electrical, Electronics, Information & Communication Technology (ICIEEICT) (ISBN – 978-93-84209-48-3) 31st August, 2014, Chennai, pages 101 – 104.
4. Abhishek Roy, Sunil Karforma. Coupling and cohesion analysis for implementation of authentication in E-Governance. ACEEE Conference Proceedings Series 02, Fourth International Joint Conference - Advances in Engineering and Technology (AET) 2013, December 13-14, 2013 (Elsevier), Pp: 544-554, Organized by: The Association of Computer Electronics and Electrical Engineer (ACEEE), The Association of Mechanical and Aeronautical Engineers (AMAE), The Association of Civil and Environmental Engineers (ACEE), Sponsored by : Indian Society for Technical Education (ISTE), NCR, INDIA. ISBN 978-93-5107-193-8.
5. Abhishek Roy, Sunil Karforma. UML based modeling of ECDSA for secured and smart E-Governance system. Computer Science & Information Technology (CS & IT-CSCP 2013), Proceedings of National Conference on Advancement of Computing in Engineering Research (ACER13) organized by Global Institute of Management & Technology (GIMT) in association with IEEE Kolkata Section, Operational Research Society of India (ORSI), Kolkata Chapter and Rural Development Forum, Institution of Engineers-INDIA (IEI), March 22-23, 2013, Pp: 207-222, ISSN 2231-5403, ISBN 978-1-921987-11-3, DOI: 10.5121/csit.2013.3219.

Conference Publications

2012-2013

6. *Tanmoy Halder, Sunil Karforma. A LSB Indexed Steganographic Approach to Secure E-Governance Data. 2nd International Conference on Computing and Systems, 2013. (ICCS 2013). Sep 21-22, 2013. The University of Burdwan. ISBN:978-935-134273-1. Page:158.*
7. *Partha Sarathi Chakraborty and Dr. Sunil Karforma. A Time Series based Technique for Detecting shilling attacks in Recommender Systems. Proceedings of International Conference On Computing and Systems-2013 (ICCS-2013), Dept of Comp. Sc., The University of Burdwan.*
8. *Partha Sarathi Chakraborty and Dr. Sunil Karforma. Detection of Profile-injection attacks in Recommender Systems using Outlier Analysis. International Conference on Computational Intelligence: Modeling Techniques and Applications (CIMTA) 2013, Dept of Comp. Sc.,The University of Burdwan. Published in Procedia Technology, Elsevier.*
9. *Abhishek Roy, Sunil Karforma. Object Oriented approach of Digital Certificate based E-Governance mechanism. ACEEE Conference Proceedings Series 03, International Conference on IPC&ITEeL ACT&CIIT CENT&CSPE 2012 Proceedings, December 03-04, 2012 (Elsevier), Pp:380-386, Organized by: The Association of Computer Electronics and Electrical Engineer (ACEEE), Chennai, INDIA. ISBN 978-93-5107-194-5.*
10. *Anamul Hoda, Abhishek Roy, Sunil Karforma. Application of ECDSA for security of transaction in E-Governance. Proceedings of Second National Conference on Computing and Systems- 2012 (NaCCS- 2012), March 15-16, 2012, 1st Edition- 2012, Pp: 281-286, Organized by:The Department of Computer Science, The University of Burdwan, INDIA. ISBN: 978-93-80813-18-9.*
11. *Nikhilesh Barik, Dr. S Karforma. On Security Management of E-Learning System. CSI, KOLKATA. International Conf. December, 2012.*

12. Sarbavidya S., Karforma S., "Implementation of Security in E-Procurement Environment Using Public Key Digital Watermarking", *Proceedings of the International Conference on Intelligent Infrastructure - 2012 (ISBN - 13: 978-1-25-906170-7 / ISBN - 10: 1-25-906170-1) December 1-2, 2012, Kolkata, pages 207 - 210, McGraw Hill Professionals.*
11. Sarbavidya S., Karforma S., Karforma C., "Video Watermarking: A Survey" - *Second National Conference on Computing & Systems - 2012 (NaCCS - 2012) Proceedings (ISBN 93-80813-18-X), March 15 - 16, 2012, Burdwan, pages 24 - 27.*
12. Sarbavidya S., Karforma S., "Multimedia Document Watermarking: A Survey" - *National Seminar on Intellectual Property Rights & Patent Laws - 2012 (IPRPL - 2012) Proceedings, 25th Aug, 2012, Jadavpur, pages 50 - 56.*
13. Barik N., Karforma S. "On Security Management in E-learning System" *47th Annual National Convention of the Computer Society of India , Event: International Conference on Intelligent Infrastructure on December 1-2, 2012, Science City, Kolkata, India.*
14. Ambalika Ghosh, Sunil Karforma. *Object Oriented Modeling of Digital Certificate based E-Learning System. Proceedings of RHECSIT -2012, pp. 103-111. ISBN: 978-81-923820-0-5.*
15. Ambalika Ghosh, Sunil Karforma. *Object Oriented Modeling of Digital Certificate for Secure Transaction in E-Banking. Proceedings of NaCCS-2012, pp. 103-111. ISBN: 93-80813-18-X.*
16. Partha Sarathi Chakraborty and Dr. Sunil Karforma. *A Distributed Collaborative Filtering Algorithm For a DHT-Based P2P Network. Proceedings of International Conference On Computing and Systems-2010 (ICCS-2011), Dept of Comp. Sc., The University of Burdwan.*
17. Abhishek Roy, Subhadeep Banik, Sunil Karforma, Jayanta Pattanayak. *Object Oriented Modeling of IDEA for E-Governance security. Proceedings of International Conference on Computing And Systems-2010 (ICCS-2010) November 19 - 20, 2010, Pp:263-269, Organized by: The Department of Computer Science, The University of Burdwan, INDIA. ISBN 93-80813-01-5.*
18. Nikhilesh Barik, Dr. S. Karforma, Dr. J.K. Mondal, Ms. A. Ghosh. *Towards Design and implementation of space efficient and secured transmission Scheme on E-governance Data. ICCS-2010. International Conference. Nov-19-20, 2010.*
19. Sarbavidya S., Karforma S., Karforma C., "Secured E-Tendering using Secret Key Digital Watermarking", *International Conference on Computing & Systems - 2010 (ICCS - 2010) Proceedings (ISBN 93-80813-01-5), November 19-20, 2010, Burdwan, pages 86-90.*
20. Sarbavidya S., Karforma C., "E-governance Implementation Challenges & their Counter Measures in West Bengal" - *National Conference on Computing & Systems - 2010 (NaCCS - 2010) Proceedings (ISBN 819077417-4), 29th Jan, 2010, Burdwan, pages 150-155.*
21. Ambalika Ghosh, Sunil Karforma, Ajit Kumar Singh. *Object Oriented Modeling of E-Learning System. Proceedings of ICCS-2010, pp. 103-111. ISBN: 93-80813-01-5.*
22. Ajit Kumar Singh, Sripati Mukhopadhyay, Sunil Karforma, Ambalika Ghosh. *Object Oriented Design of E-Library for E-Education. Proceedings of ICCS-2010, pp. 163-167. ISBN:93-80813-01-5.*