

Apurba Sarkar

Curriculum Vitae

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Affiliation: Assistant Professor, Department of Computer Science and Technology, Indian Institute of Engineering Science and Technology, Shibpur, Howrah 711102, India.

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Profile

Prof. Apurba Sarkar has done his Bachelor of Technology in Computer Science and Engineering from University of Calcutta, Kolkata, India, in 2001 and subsequently completed master's degree in Computer Science and Engineering from Indian Institute of Technology Guwahati, India in 2003. He then joined the then Bengal Engineering College as lecturer in the department of Computer Science and Technology where he is currently an assistant professor. The institute has been converted to institute of National Importance (INI) by Ministry of Human Resource and Development (MHRD), Govt. of India and renamed as Indian Institute of Engineering Science and Technology, Shibpur. He has obtained his Ph.D. degree in Computer Science and Engineering from the Department of Computer Science and Engineering, Indian Institute of Technology Kanpur. Prof. Sarkar's areas of interests are digital geometry, discrete and combinatorial geometry, algebraic and computational topology.

Education

2001	Bachelor of Technology in Computer Science & Engineering	Department of Computer Science & Engineering, University of Calcutta, Kolkata.
2003	M.Tech in Computer Science & Engineering	Department of Computer Science & Engineering, Indian Institute of Technology, Guwahati.
2016	Ph.D	Department of Computer Science & Engineering, Indian Institute of Technology Kanpur.

Phd Thesis

1. Sarkar, A. (2016). "On Some Combinatorial Algorithms for the Analysis of Digital Objects on Isothetic and Triangular Grids". PhD thesis. Indian Institute of Technology, Kanpur.

Area of research

Digital Geometry, discrete and combinatorial geometry, topology, Image Analysis and Text Summarization.

Courses Taught

- Topics in Operating System (ME - 2015, 2016 (even Semester); BE 6th Sem 2016; ME, PDSIT 2014,2015).
- Data Structure and Algorithm (BE 3rd Sem 2017, BE 3rd Sem - 2015 (even Semester), also for MCA).
- Theory of Computation (BE 4th Sem 2018, BE 5th Sem (2015, 2014, 2013), BE 6th Sem (2013)).
- Discrete Structure (BE 4th Sem(2014), BE 3rd Sem (2015)).
- Introduction to computing (Non Departmental).
- Object Oriented programming (BE and MCA).
- E-Commerce (PDSIT, IEST Shibpur, 2014)

Invited Talks

1. "Algorithm Design Techniques" at SRISTI, The Technical Festival of Jalpaiguri Govt. Engg. on 9th February, 2018;

2. “Infinity and beyond: A closer look at infinity” at the Department of CSE, Jalpaiguri Govt. Engg. on 27th March, 2017; at the Department of CSE, St. Thomas College of Engg. Kolkata on 23rd June, 2017 and at the Department of Computer Science and Technology, IEST Shibpur on 10th January 2018.
3. “Visibility of Your Research on the Web”, A lecture delivered as part of research methodology course at IEST Shibpur on 11th March, 2017.
4. “A Very (Short) Introduction to L^AT_EX”, A lecture delivered as part of research methodology course at IEST Shibpur on 7th December, 2017.

Conferences/Workshop/School Organized

1. International Conference on Emerging Technologies in Data mining and Information Security (IEMIS 18) as **Organising Chair**.
2. International Conference on Computational Intelligence in Data Mining (ICCIDM-2018) as **Publicity Chair**.
3. Five day workshop on “Some Theoretical Aspects in Computing and Applications”, January 8 – 12, 2018, Department of CSE, IEST Shibpur. (as Course Coordinator)
4. One day workshop on “Internet of Things (IoT)”, February 15, 2017, Department of CSE, IEST Shibpur. (as Course Coordinator)
5. “Research Promotion Workshop on *Digital geometry*”, June 23 – 25, 2014, IEST Shibpur. (as Course Coordinator)
6. Short Term course on “*JavaPrimer. 2006*” BESU, Shibpur. (as Co-organizer)
7. Seventeenth International Workshop on Combinatorial Image Analysis, IWCIA - 2015, November 24-27, 2015, ISI Kolkata. (as member, Organizing Committee)

Conferences/Workshop/School Attended

1. International Symposium CompIMAGE’16 *Computational Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications*. September 21 – 23, 2016, Niagara Falls, USA.
2. CTIC 2016: *6th International Workshop on Computational Topology in Image Context, CTIC-2016* June 15 – 17, 2016, Marseille, France.
3. DGCI 2016: *19th IAPR International Conference on Discrete Geometry for Computer Imagery, DGCI 2016* April 18 – 20, 2016, Nantes, France.
4. IWCIA 2015: *17th International Workshop on Combinatorial Image Analysis IWCIA 2015*, November 24 – 27, 2015, Indian Statistical Institute, Kolkata India.
5. PReMI 2015: *6th International Conference on Pattern Recognition Machine Intelligence*, Warsaw, Poland, 2015, June 30 - July 3.
6. CALDAM 2015: *1st International Conference on Algorithms and Discrete Applied Mathematics*, IIT Kanpur, February 8 – 10, 2015.
7. *Indo Czech School on Discrete Mathematics (pre-CALDAM 2015)* 2015, IIT Kanpur.
8. Workshop on *Digital Communications and Networks*, Decemeber 04 – 06, 2014, IIT Kanpur.
9. *TEQIP Workshop for Computer Science Teachers*, 14 – 16 July 2014, IIT Kanpur.
10. Short Term course on *Social Media Analysis and Data Mining*, 10 – 14, June 2013, IEST Shibpur.
11. Research Promotion Workshop on *Recent Trends in Computing*, 13 – 15, May 2013, IEST Shibpur.
12. Research Promotion Workshop on *Introduction to Graph and Geometric Algorithm* , 14 – 16, March 2013, organized by TIFR and IEST Shibpur.

Publications

International Journals (SCI and Scopus indexed)

1. Biswas, A., P. Bhowmick, B. B. Bhattacharya, B. Das, M. Dutt, and A. Sarkar (2017). Triangular Covers of a Digital Object. *Journal of Applied Mathematics and Computing, JAMC (accepted on 15/12/17)*. IOS Press.
2. Sarkar, A., A. Biswas, M. Dutt, and A. Bhattacharya (2017). Finding a Largest Rectangle inside a Digital Object and Rectangularization. *Journal of Computer and System Sciences, JCSS (accepted, in press)*.
3. Sarkar, A., A. Biswas, P. Bhowmick, M. Dutt, and B. B. Bhattacharya (2017). A linear-time algorithm to compute the triangular hull of a digital object. *Discrete Applied Mathematics, Elsevier* **216**, 408–423.
4. Sarkar, A., A. Biswas, M. Dutt, and S. Mondal (2018). Finding Shortest Triangular Path and its Family inside a Digital Object. *Fundamenta Informaticae (Accepted, in Press)* **159**, 297–325.

Papers in conference proceedings (Scopus indexed)

1. Sarkar, A., A. Biswas, M. Dutt, and A. Bhattacharya (2015). Generation of Random Digital Curves using Combinatorial Techniques. In: *Conference on Algorithms and Discrete Applied Mathematics (CALDAM)*. Springer, pp.286–297.
2. Sarkar, A., A. Biswas, M. Dutt, and A. Bhattacharya (2015). Generation of Random Triangular Digital Curves Using Combinatorial Techniques. In: *6th International Conference on Pattern Recognition and Machine Intelligence (PReMI)*. Springer, pp.136–145.
3. Sarkar, A. and M. Dutt (2015). Construction of Sandwich Cover of Digital Objects. In: *Seventeenth International Workshop on Combinatorial Image Analysis, IWCIA*. Springer, pp.172–184.
4. Sarkar, A. and A. Kar (2015). Construction of Hexagonal Covers of Digital Objects Using Combinatorial Technique. In: *Seventeenth International Workshop on Combinatorial Image Analysis*. RPS.
5. Sarkar, A., A. Biswas, M. Dutt, and A. Bhattacharya (2016). Finding Largest Rectangle inside a Digital Object. In: *6th International Workshop on Computational Topology in Image Context, CTIC-2016*, pp.157–169.
6. Sarkar, A., A. Biswas, S. Mondal, and M. Dutt (2016). Finding Shortest Triangular Path in a Digital Object. In: *19th IAPR International Conference on Discrete Geometry for Computer Imagery, DGCI-2016*, pp.206–218.
7. Chakrabarty, N., T. Kundu, S. Dandapat, A. Sarkar, and D. Kole (2017). Flight Arrival Delay Prediction using Gradient Boosting Classifier. In: *International Conference on Emerging Technologies in Data Mining and Information Security, IEMIS (accepted)*.
8. Das, A. K., A. Sarkar, and A. K. Das (2017). An Evolutionary Algorithm based Text Categorization Technique. In: *4th International Conference on Computational Intelligence in Data Mining (ICCIDM-2017) (accepted)*.
9. Dobe, O., A. Halder, and A. Sarkar (2017). Rough K-means and Morphological Operation based Brain Tumor Extraction. In: *Second International Conference on Integrated Intelligent Computing (accepted)*.
10. Dutta, M., A. K. Das, C. Mallick, A. Sarkar, and A. K. Das (2017). A Graph Based Approach on Extractive Summarization. In: *International Conference on Emerging Technologies in Data Mining and Information Security, IEMIS (accepted)*.
11. Halder, A., S. Dutta, and A. Sarkar (2017). Automatic lip extraction using DHT and Active Contour. In: *First International Symposium on Signal and Image Processing (ISSIP 2017) (accepted)*.
12. Halder, A., S. Dutta, A. Sarkar, and P. Bhattacharya (2017). Contrast Enhancement Using Savitzki Golay Filter and Convolution Coefficient. In: *Fifth International Conference on Emerging Applications of Information Technology (EAIT-2018) (accepted)*.
13. Halder, A., S. Ghosh, and A. Sarkar (2017). Adaptive Histogram Equalization and Opening Operation based Blood Vessel Extraction. In: *1st international Conference on Soft Computing in Data Analytics (accepted)*.
14. Halder, A., A. Kundu, K. Palodhi, and A. Sarkar (2017). A Memory Efficient Image Compression method using DWT applied to Histogram based Block Optimization. In: *International Conference on Emerging Technologies in Data Mining and Information Security, IEMIS (accepted)*.
15. Halder, A., A. Maity, A. Sarkar, and A. Das (2017). A Dynamic Spatial Fuzzy C-Means Clustering based Medical Image Segmentation. In: *International Conference on Emerging Technologies in Data Mining and Information Security, IEMIS (accepted)*.
16. Halder, A., K. Saha, A. Sarkar, and A. Sen (2017). A Change Detection Technique using Rough C-Means on Medical Images. In: *International Conference on Cognitive Informatics and Soft Computing (accepted)*.

17. Mallick, C., A. K. Das, M. Dutta, A. K. Das, and A. Sarkar (2017). Graph-based Text Summarization Using Modified TextRank. In: *1st international Conference on Soft Computing in Data Analytics (accpeted)*.
18. Mallick, C., M. Dutta, A. K. Das, A. Sarkar, and A. Das (2017). Extractive Summarization of a Document using Lexical Chains. In: *1st international Conference on Soft Computing in Data Analytics (accpeted)*.
19. Paul, R., A. Sarkar, and A. Biswas (2017). Construction of Simple Isothetic Polygon from a Set of Points. In: *Fifth International Conference on Emerging Applications of Information Technology (EAIT-2018) (accpeted)*.
20. Rakshit, S., S. Mondal, A. Chakraborty, A. Sarkar, and D. K. Kol (2017). Synthesis of Reversible Array Divider Circuit. In: *Third International Conference on ICT for Competitive Startegies (accpeted)*.