Arindam Biswas

Professor,
Department of Information Technology,
Former Dean, International Relations and Alumni Affairs,
Indian Institute of Engineering Science and Technology, Shibpur

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Profile

Arindam Biswas graduated from Jadavpur University, Kolkata, India, and received his master's and doctorate degree both from the Indian Statistical Institute, Kolkata, India. He is currently a Professor in the Department of Information Technology, Indian Institute of Engineering Science and Technology, Shibpur, India. His research interests include digital geometry, image processing, approximate shape matching and analysis, medical image analysis, natural language processing, and biometrics. He has published over 150 research papers in international journals, edited volumes, and refereed conference proceedings, and holds one US patent. He has served as a Board Member of the Technical Committee 18 (tc18) for Discrete Geometry and Mathematical Morphology of International Association of Patern Recognition (IAPR) from 2016 to 2021. He has served as the Dean, International Relations and Alumni Affairs of Indian Institute of Engineering Science and Technology, Shibpur from 2019 to 2022. He is currently an Associate Editor of the IET, Image Processing journal. He is

a member of the Expert Committee on Artificial Intelligence/Machine Learning, Big Data Analytics, Robotics and other ICTs of the Department of Science and Technology and Biotechnology, Government of West Bengal (01.06.2023). He is a member of the Committee for Academic Reforms, MAKAUT, West Bengal. He is currently the Dean Academic, IIEST Shibpur.

Education

1990 Bachelor of Engineering, Jadavpur University, Kolkata, India.

2001 M. Tech in Computer Science, Indian Statistical Institute, Kolkata, India.

2010 PhD in Computer Science, Indian Statistical Institute, Kolkata, India.

PhD: ISI, Kolkata

Biswas, A. (2010). "Geometric Characterisation of Digital Objects: Algorithms and Applications to Image Analysis". PhD thesis. Indian Statistical Institute, Kolkata (08/05/2010).

Area of Research

Digital Geometry, Shape Analysis, and Medical Image Analysis, Deep Learning and applications.

Editorial Responsibilties

1. Associate Editor, IET Image Processing

Member

1. Board Member: IAPR Technical Committee 18 (tc18) (2016-2021)

2. IEEE Member

3. ACM Member

Subjects Taught

Algorithms, Graph Algorithms, Operating Systems, Computer Networks, Computational Geometry, Computational Topology, Information and System Security, Discrete Mathematics, Software Engineering, Web Technology, Graph Theory, Network and Information Security, Machine Learning, and Formal Languages and Automata Theory.

PhD Supervised

Completed

1. Subarna Chatterjee (2013) "Computer Aided Breast Cancer Diagnosis Systems for Sono-mammogram"

2. Anirban Chatterjee (2013) "Automatic Diagram Drawing based on Natural Language Text Understanding"

3. Mousumi Dutt (2014) "On Some Shape-Analytic Algorithms and Applications for Isothetic Polygons"

4. Oishila Bandyopadhya (2016) "Automated Analysis of Orthopaedic X-ray Images based on Digital-Geometric Techniques"

5. Nilanjana Karmakar (2016) "Shape Analysis of 3D Objects using Digital Geometric Techniques"

6. Apurba Sarkar (2016) "On Some Combinatorial Algorithms for Analysis of Digital Objects on Isothetic and Triangular Grids"

7. Sandip Banerjee (2018) "Studies in four geometric optimization problems based on neighborhood-attributes of point-sets"

8. Shanta Phani (2019) "Culturomics and Style Analyses of Low-resourced Indian Languages"

9. Nilanjana Dutta Roy (12.02.2021) "Retinal Vascular Structure: Its Application in Biometry and Ocular Disease Detection"

10. Sharmistha Mandal (12.11.2021) "Characterization and Enhancement of 3D Objects using Digital Geometric Techniques"

11. Somrita Saha (14.09.2023) "Characterization of 3D Digital Straight Segments and Planes towards Polygonization and Decomposition of 3D Objects"

12. Aman Aziz (2018) (04.10.2023) "Towards Analysis of Digital Objects using Combinatorial Algorithms on Orthogonal and Triangular Grids"

13. Sabyasachi Mukherjee (13.05.2024) "AI-based Disease Diagnosis using Medical Imaging"

14. Debapriya Sengupta (22.06.2024), "Efficient Algorithms for Multi-modal Registration and Enhancement of Medical Images"

Ongoing

1. Anukul Maity (2018) (submitted)

2. Bijoly Saha (2018) (submitted)

3. Shubhajyoti Das (2021) (submitted)

4. Pritam Bikram (2022) (submitted Feb 2026)

5. Aneswa Datta (2025)

6. Antara Das (2025)

7. Subrata Saha (2025)

8. Mouli Das (2026)

Reviewer of

1. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).

2. IEEE Transactions on Systems, Man and Cybernatics (SMC-A)

3. Theoretical Computer Science - Elsevier.

4. Information Sciences - Elsevier.

5. Pattern Recognition Letters - Elsevier.

6. Journal of Computer and System Sciences - Elsevier.

Projects

COMPLETED

1. Generation, Decomposition, and Analysis of Isothetic Polygon, UGC, 3 years (July 2012 - June 2015), Rs. 2,59,400/-, PI

2. 3DTV-3D View from All Directions without Glasses, CSIR, 3 years (May 2012 - March 2015), Rs. 7,38,993/-, PI

3. A Foldscope Based Malaria Detection and Realtime Monitoring of Malaria outbreak, DBT, 1 year (May 2018 -September 2019), Rs. 8,00,000/- PI.

Work Experience

TEACHING

1. Lecturer, Computer Science and Technology, IIEST Shibpur, 01.09.2003 - 22.09.2008, 5 years

2. Assistant Professor, Information Technology, IIEST Shibpur, 23.09.2008 - 22.09.2011, 3 years

3. Associate Professor, Information Technology, IIEST Shibpur, 23.09.2011 - 21.02.2019, 7 years

4. Professor, Information Technology, IIEST, Shibpur, 22.02.2019 - till date

1. Deputy Manager, Steel Authority of India Ltd, Durgapur Steel Plant, 20.10.1990 - 09.10.2000, 10 years

2. Senior Software Engineer, Novell Software Development India Ltd, 06.08.2001 - 29.08.2003, 2 years

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Institute Administrative Responsibilities and outside

1. HOD (Actg.), Department of Information Technology, IIEST, Shibpur, 26.01.2009 - 14.08.2009

2. Director, Purabi Das School of Information Technology, IIEST, Shibpur, 09.09.2010 - 09.07.2018.

3. Convener, INSTRUO 2009, Techno-Management festival of IIEST, Shibpur.

4. HOD, Department of Information Technology, IIEST, Shibpur, 03.02.2014 - 09.07.2018

5. External Member, Purchase Committee of CST, IIEST Shibpur, 2012 - 2015

6. Member, Website and Infrastructure Committee, IIEST, Shibpur, 2010 - 02.07.2018

7. Convener, INSTRUO 2015, Techno-Management festival of IIEST, Shibpur.

8. Member, Academic Committee, IIIT Kalyani, 2014 - 2017

9. Member, CPPC, IIEST, Shibpur, 2017 - 2018

10. Chairman, Network and IT Infrastructure Committee, 03.07.2018 -

11. Convener, Committee for Strengthening Placement, 29.09.2018 -

12. Institutional Coordinator, Scheme for Promotion of Academic and Research Collaboration, 24.10.2018 -

13. Member, Committee for Digital Display Board, 01/01/2019 -

14. Dean, International Relations and Alumni Affairs, 01/03/2019 - 28.02.2022

15. Member, High Performance Computing Center, 08/07/2019 -

16. Member, Rajbhasa Implementation Committee, 10/07/2019 -

17. Chairman, Committee for Development and Re-design of Institute Website, 13/08/2019 -

18. Deputy Coordinator, Digital Education Technology Cell, 20.06.2022 –

19. President, Digital Education Hub in memory of Sushama Basu (ex-officio Dean, IRAA) – 28.02.2022

20. Chairman, Committee for upgradation and Maintenance of Institute Telephone System, 22/03/2021 –

21. Chairman, Subcommittee for Network and IT Infrastructure for Convocation 2021 (held on 11.03.2022)

22. Member, Advisory Committee on Faculty Recruitment (ACoFAR), dated 18.04.2022

23. Chairman, Subcommittee for Network and IT Infrastructure for Convocation 2021-22 (held on 16.12.2022)

24. President, Institute Innovation Council, IIC 5.0, 7.12.2022 to 11/2024

25. Skill Hub : Nodal Officer

26. Chairman: Network and IT Services Cell

27. Member, of AIML expert committee, WB DST, 5th July 2023 –

28. CISO Chief Information Security Officer, National Cyber Crisis Management Plan, 9.10.2023

29. Head of School of Advanced Materials, Green Energy and Sensor Systems, 30.11.2023 -

30. Chairman, Cyber Security Team, IIEST, Shibpur 16.01.2024 –

31. HOD, School of VLSI Technology

32. Nodal Officer Eoffice and eHRMS Chairperson ERP Committee

33. Chairman, Committee for Computer Proficiency Test for Junior Assistant, 01.11.2024

34. Dean Academic, 01.08.2026

35. Member, Committee for Academic Reforms, MAKAUT, WB

Conferences/Workshops Attended

Annexure I

Conferences/Workshops Organized

Annexure II

Publications

INTERNATIONAL JOURNALS

61. Md Abdul Aziz Al Aman, Apurba Sarkar, Mousumi Dutt, Arindam Biswas A combinatorial algorithm to compute the triangular convex skull of a digital object, Multimedia Tools and Applications (2026) 85:151 https://doi.org/10.1007/s11 026-21366-8

60. S. Das, P. Bikram, A. Biswas, B. Roy and P. Sinha, "Multigranular Swin Transformer-Based Hierarchical Mixing of Spectral Indices for Rice Blast Monitoring," in IEEE Geoscience and Remote Sensing Letters, vol. 23, pp. 1-5, 2026, Art no. 2500705, doi: 10.1109/LGRS.2025.3646059.

59. Bikram, Pritam, Shubhajyoti Das, and Arindam Biswas. "A dynamic graph-based multi-task learning model for cut-in intention and trajectory prediction." Knowledge-Based Systems 329 (2025): 114304.

58. Karmakar, Nilanjana, and Arindam Biswas. "Face recognition using life-centroid distance between featured persistence diagrams." Journal of Combinatorial Optimization 50.4 (2025): 40.

57. Bikram, Pritam, Shubhajyoti Das, and Arindam Biswas. "Effective message-passing scheme and aggregation technique embedded in graph-based encoder-decoder learning framework for trajectory prediction." Expert Systems with Applications 292 (2025): 128545.

56. S. Das, P. Bikram, A. Biswas, V. C., P. Sinha and B. B. Bhattacharya, "Transformer-Embedded Attentive CNN for Spectral Image Analysis of Rice Blast Syndromes," in IEEE Transactions on AgriFood Electronics, vol. 3, no. 2, pp. 615-622, Sept.-Oct. 2025, doi: 10.1109/TAFE.2025.3601808.

55. Raina Paul, Apurba Sarkar, Arindam Biswas, Parametric Algorithm to Find the Largest Empty Rectangle from a Set of Line Segments Publication date 2024/10/18, Journal International Journal of Foundations of Computer Science, Pages 1-15, World Scientific Publishing Company [Q2]

54. Shubhojyoti Das, Pritam Bikram, Arindam Biswas, C Vimalkumar, P Sinha, Multilayer optimized deep learning model to analyze spectral indices for predicting the condition of rice blast disease, Remote Sensing Applications: Society and Environment, vol. 37, p. 101394, https://doi.org/10.1016/j.rsase.202 [Q1]

53. Pritam Bikram; Shubhajyoti Das; Arindam Biswas, Dynamic attention aggregated missing spatial-temporal data imputation for traffic speed prediction Neurocomputing 2024-08 | Journal article DOI: 10.1016/j.neucom.2024.128441 [Q1]

52. Raina, Apurba Sarkar, Arindam Biswas Parametric Algorithm to Find the Largest Empty Rectangle from a Set of Line Segments, International Journal of Foundations of Computer Science [Q2]

51. Debapriya Sengupta, Phalguni Gupta, Arindam Biswas, An efficient similarity metric for 3D medical image registration, 2024/3/21, Multimedia Tools and Applications pp 1-31, Publisher Springer US, https://doi.org/10.1007/s11042-024-18710-1 (Q1)

50. Acta Polytechnica Hungarica Vol. 21, No. 6, 2024 Counting of Shortest Paths in a Cubic Grid, Mousumi Dutt1, Arindam Biswas and Benedek Nagy [Q2]

49. P Bikram, S Das, A Biswas, Attentive graph structure learning embedded in deep spatial-temporal graph neural network for traffic forecasting, 2/2024,

Applied Intelligence, Springer, 1-34 (Q2)

48. Somrita Saha, Arindam Biswas, A combinatorial technique for generation of digital plane using GCD, 1/2024, Annals of Mathematics and Artificial Intelligence, Vol 92 Pages 139-167 Springer International Publishing (Q2)

47. Sabyasachi Mukherjee, Oishila Bandyopadhyay, Arindam Biswas, Bhargab B Bhattacharya, Tracking patellar osteophytes to detect osteoarthritis, 2023 Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization p 1-11, Taylor and Francis. (Q2)

46. Shubhajyoti Das, Arindam Biswas, Vimalkumar C, Parimal Sinha: Deep Learning Analysis of Rice Blast Disease Using Remote Sensing Images. IEEE Geoscience and Remote Sensing Letters 20: 1-5 (2023) (Q1)

45. Raina Paul, Md Abdul Aziz Al Aman, Apurba Sarkar, Arindam Biswas: A combinatorial algorithm to compute set operations on simple isothetic polygons. 8/1/2024, Multim. Tools Appl. 82(5): 6647-6666 (2023) (Q1)

44. Debapriya Sengupta, Phalguni Gupta, Arindam Biswas: A survey on mutual information based medical image registration algorithms. Neurocomputing 486: 174-188 (2022) (Q1)

43. S Majumdar, S K Nandi, S Ghosal, B Ghosh, W Mallik, N D Roy, A Biswas, Subhankar Mukherjee, Souvik Pal, Nabarun Bhattacharyya, Deep learning-based potential ligand prediction framework for COVID-19 with drug–target interaction model Cognitive Computation (2021), pp 1-13 (Q1)

42. Sharmistha Mondal, Arindam Biswas, Apurba Sarkar: Finding the largest empty cuboid inside a 3D digital object. Multim. Tools Appl. 80(28-29): 35521-35541 (2021) (Q1)

41. S Dutta, T Banerjee, ND Roy, B Chowdhury, Arindam Biswas, Development of a BCI-based gaming application to enhance cognitive control in psychiatric disorders Innovations in Systems and Software Engineering vol 17 (2), pp. 99-107, Springer London

40. S Das, ND Roy, A Biswas, SK Saha, A novel methodology for vessel extraction from retinal fundus image and detection of neovascularization Multimedia Tools and Applications, 80 (3), 4093-4110, Springer, US (Q1)

39. Debapriya Sengupta, Arindam Biswas, Phalguni Gupta, Non-linear weight adjustment in adaptive gamma correction for image contrast enhancement, Multimedia Tools and Applications, vol 80(3), 3835-3862, Springer US (Q1)

38. Somrita Saha and Arindam Biswas, Surface polygonization of 3D objects using norm similarity, Journal of Combinatorial Optimization, 2022, 44(4), pp. 2729–2747, Springer US (Q2)

37. Nilanjana Dutta Roy and Arindam Biswas, Retinal image registration from artery–venous subtree by graph theoretical characterization of retinal vascular network, Journal Innovations in Systems and Software Engineering Volume 16 Issue 1 Pages 79-86 Publisher Springer London

36. Md AAA Aman, Apurba Sarkar, Mousumi Dutt, Arindam Biswas, A linear time combinatorial algorithm to compute the relative orthogonal convex hull of digital objects, 2020, Theoretical Computer Science, Vol. 847 Pages 103-121, Elsevier (Q2)

35. Nilanjana Dutta Roy, Arindam Biswas, Fast and robust retinal biometric key generation using deep neural nets, 2020/3, Multimedia Tools and Applications, 79(9), 6823-6843, Springer US (Q1)

34. Nilanjana Dutta Roy, Arindam Biswas (2019), "Fast and Robust Retinal Feature Selection Approach using Deep Learning for Biometric Applications", Multimedia Tools and Applications (accepted), Springer (Q1)

33. Oishila Bandyopadhyay, Arindam Biswas, and Bhargab B Bhattacharya (2018). Bone Cancer Assessment and Destruction Pattern Analysis in Long-Bone X-ray Image. Journal of Digital Imaging, 32 (2), 300-313, Springer. (Q1)

32. Sarkar, A., A. Biswas and, M. Dutt, and S. Mondal (2018). Finding Shortest Triangular Path and its Family inside a Digital Object. Fundamenta Informaticae 159(3), pp. 297-325, 2018.

31. S. Phani, S. Lahiri, and A. Biswas (2018). Readability Analysis of Bengali Literary Texts. Journal of Quantitative Linguistics. 26(4), pp. 287-305 Taylor and Francis. DOI: 10.1080/09296174.2018.1499456 (Q1)

30. Nilanjana Karmakar, Sharmistha Mondal, and Arindam Biswas (2018). Determination of 3D curve skeleton of a digital object. Information Sciences, vol. 499, pp. 84-101 https://doi.org/10.1016/j.ins.2018.06.021 (Q1)

29. Sarkar, A., A. Biswas, M. Dutt, and A. Bhattacharya (2018). Finding a Largest Rectangle inside a Digital Object and Rectangularization. Journal of Computer and System Sciences, JCSS (95), pp. 204-217. (Q1)

28. Bandyopadhyay, O., T. Dutta, N. Dutta, A. Biswas, and B. B. Bhattacharya (2017). Structural feature analysis of the vascular network in retinal images. Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization, 37-48, Taylor and Francis. (Q2)

27. Banerjee, S., B. B. Bhattacharya, B. Bhattacharya, A. Biswas, S. Das, R. Mandal, and S. Roy (2017). On Representing a Simple Polygon Perceivable to a Blind Person. Information Processing Letters 120. http://dx.doi.org/10.1016/j.ipl.2 1-5. [Q2]

26. 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, 58(1-2), pp. 667-691, https://doi.org/10.1007/s12190-017-1162-8. (Q2)

25. Phani, S., S. Lahiri, and A. Biswas (2017). A Supervised Learning Approach for Authorship Attribution of Bengali Literary Texts. ACM Transaction Asian Low-Resource Language Information Processing 16(4), 20-27. (Q2)

24. Sarkar, A., A. Biswas, M. Dutt, P. Bhowmick, and B. B. Bhattacharya (2017). A Linear-Time Algorithm to Compute the Triangular Hull of a Digital Object. Discrete Applied Mathematics 216. doi:10.1016/j.dam.2016.01.014, pp 408-423. (Q2)

23. Bandyopadhyay, O., A. Biswas, and B. B. Bhattacharya (2016). Automated Analysis of Orthopaedic X-ray Images based on Digital-Geometric Techniques. Electronic Letters in Computer Vision and Image Analysis 15(2), 7-9.

22. Bandyopadhyay, O., A. Biswas, and B. B. Bhattacharya (2016). Classification of Long-Bone Fractures based on Digital-Geometric Analysis of X-ray images. Pattern Recognition and Image Analysis: Advances in Mathematical Theory and Applications 26(4), 10-25.

21. Bandyopadhyay, O., A. Biswas, and B. B. Bhattacharya (2016). Long-bone Fracture Detection in Digital X-ray Images Based on Digital-Geometric

Techniques. Computer Methods and Programs in Biomedicine 123, pp 2-14. (Q1)

20. Karmakar, N., A. Biswas, and P. Bhowmick (2016). Reeb Graph based Segmentation of Articulated Components of 3D Digital Objects. Theoretical Computer Science 624. DOI=10.1016/j.tcs.2015.11.013, 25-40. (Q1)

19. Bera, S., A. Biswas, and B. B. Bhattacharya (2015). A Fast and Automated Granulometric Image Analysis Based on Digital Geometry. Fundamenta Informaticae 138, 321-338.

18. Biswas, Arindam, Shibamouli Lahiri, Shanta Phani, Inter-Rater Agreement Study on Readability Assessment in Bengali, International Journal on Natural Language Computing (IJNLC), Vol. 3, No.3, June 2014.

17. Dutt, M., A. Biswas, P. Bhowmick, and B. B. Bhattacharya (2014). On Finding a Shortest Isothetic Path and its Monotonicity inside a Digital Object. Annals of Mathematics and Artificial Intelligence 22(7), 590-605.

16. Dutt, M., A. Biswas, P. Bhowmick, and B. B. Bhattacharya (2014). On the Family of Shortest Isothetic Paths in a Digital Object: An Algorithm with Applications. Computer Vision and Image Understanding 129, 75-88. (Q1)

15. Mukherjee, A., U. Garain, and A. Biswas (2014). Experimenting with Automatic Text-to-Diagram Conversion: A Novel Teaching Aid for the Blind People. Journal of Educational Technology and Society (ISSN 1436-4522), Vol. 17, No. 3 (July 2014), pp. 40-53.

14. Nilanjana Karmakar, Arindam Biswas, Partha Bhowmick, and Bhargab B. Bhattacharya (2013) A combinatorial algorithm to construct 3D isothetic covers, International Journal of Computer Mathematics, 90:8, 1571-1606, DOI: 10.1080/00207160.2012.734813 (Q2)

13. Dutt, M., A. Biswas, and P. Bhowmick (2013). Approximate Partitioning of 2D Objects into Orthogonally Convex Components. Computer Vision and Image Understanding 117(4), 326-341. (Q1)

12. Subarna Chatterjee1, Ajoy Kumar Ray2, Rezaul Karim3, Arindam Biswas, Color Doppler to Characterize Malignant Breast Lesion International Journal of Life Science and Medical Research Jun. 2013, Vol. 2 Iss. 2, PP. 24-27-24 -DOI: 10.5963/LSMR0202003 (2013)

11. Biswas, A., P. Bhowmick, M. Sarkar, and B. B. Bhattacharya (2012). A Linear-time Combinatorial Algorithm to Find the Orthogonal Hull of an Object on the Digital Plane. Information Sciences, Elsevier 216. DOI:10.1016/j.ins.2012 176-195. (Q1)

10. Bhowmick, P., A. Biswas, and B. B. Bhattacharya (2011). On the Representation of a Digital Contour with an Unordered Point Set for Visual Perception. Journal of Visual Communication and Image Representation 22(7), 590-605. (Q1)

9. Chatterjee, S., R. Karim, A. Biswas, and A. K. Ray (2011). Image Processing of Ultrasound Color Doppler to Characterize Malignant Breast Lesion. Advanced Materials Research Journal (AMR) 403. DOI:10.4028/www.scientific.net/AM 408.830, ISSN:1022-6680, pp 830-834.

8. Chatterjee, S., A. K. Ray, R. Karim, and A. Biswas (2011). Architectural Design to Characterize Malignant Breast Lesion. International Journal of Computer Applications 31(11). DOI: 10.5120/3939-5529, ISBN: 978-93-80865-13-7, 8-15.

7. Dutt, M., A. Biswas, P. Bhowmick, and B. B. Bhattacharya (2011). On Finding an Orthogonal Convex Skull of a Digital Object. International Journal of Imaging Systems and Technology 21(1), 14-27. (Q2)

6. Dutt, M., A. Sarkar, A. Biswas, P. Bhowmick, and B. B. Bhattacharya (2011). Efficient Word Segmentation and Baseline Localization in Handwritten Documents Using Isothetic Covers. International Journal of Digital Library Systems 2(3), 1-13.

5. Biswas, A., P. Bhowmick, and B. B. Bhattacharya (2010). Construction of Isothetic Covers of a Digital Object: A Combinatorial Approach. Journal of Visual Communication and Image Representation, Elsevier 21(4), 295-310. (Q1)

4. Pal, S., P. Bhowmick, A. Biswas, and B. B. Bhattacharya (2010). Understanding Digital Documents Using Gestalt Properties of Isothetic Components. International Journal of Digital Library Systems 1(3), 1-25.

3. Bhowmick, P., A. Biswas, and B. B. Bhattacharya (2008). Thinning-free Polygonal Approximation of Thick Digital Curves Using Cellular Envelope.

Electronic Letters on Computer Vision and Image Analysis (ELCVIA) 7(2), 76-95.

2. Biswas, A., P. Bhowmick, and B. B. Bhattacharya (2008). Archival Image Indexing with Connectivity Features using Randomized Masks. Applied Soft Computing, Elsevier 8(4), 1625-1636. (Q1)

1. Biswas, A., P. Bhowmick, and B. B. Bhattacharya (2008). Multiresolution Shape Codes and Their Applications to Image Retrieval. Electronic Letters on Computer Vision and Image Analysis (ELCVIA) 7(2), 62-75.

PAPERS IN INTERNATIONAL CONFERENCE PROCEEDINGS

87. Saha Bhattacharya, B., Mandal, B., Biswas, A., and Bhattacharyya, M. (20 5). Revealing Abstract Arts with Feedback-Induced Crowdsourcing to LLM Source. Proceedings of the AAAI Symposium Series, 7(1), 87 94. https://doi.org/10.1609/aaaiss.v7i1.36872

86. Anukul Maity, Mousumi Dutt, Arindam Biswas, Bhargab B Bhattacharya, Approximate Cuboidization of an Orthogonal Polyhedron: A Combinatorial Approach, 2025 Conference International Conference on Pattern Recognition, Pages 253-269, Springer, Cham

85. Generation of Straight Line in Hexagonal Cell Grid M Dutt, M Ghosh, A Biswas International Conference on Frontiers in Computing and Systems, 357-367

84. Anukul Maity, Mousumi Dutt, Arindam Biswas: Finding the Straight Skeleton for 3D Orthogonal Polyhedrons: A Combinatorial Approach. ISAIM 2024: 206-217

83. Sabyasachi Mukherjee, Oishila Bandyopadhyay, Arindam Biswas: Detection of Knee Osteoarthritis using Light-weight CNN. Proceedings of the International Symposium on Artificial Intelligence and Mathematics 2022 (ISAIM 2022), Fort Lauderdale, Florida, USA, January 3-5, 2022, ISAIM 2022

82. Somrita Saha, Arindam Biswas: Approximate Convex Decomposition of 3D Digital Object Surface Using Scalar Triple Product of Vectors. Proceedings

of the International Symposium on Artificial Intelligence and Mathematics 2022 (ISAIM 2022), Fort Lauderdale, Florida, USA, January 3-5, 2022, ISAIM 2022

81. Somrita Saha, Arindam Biswas: On Construction of a Digital Plane using GCD Algorithm. Proceedings of the International Symposium on Artificial Intelligence and Mathematics 2022 (ISAIM 2022), Fort Lauderdale, Florida, USA, January 3-5, 2022, ISAIM 2022

80. Maity, A., Dutt, M., Biswas, A. (2023). Rectangularization of Digital Objects and Its Relation with Straight Skeletons. In: Barneva, R.P., Brimkov, V.E., Nordo, G. (eds) Combinatorial Image Analysis. IWCIA 2022. Lecture Notes in Computer Science, vol 13348, pp. 31-45. Springer, Cham. $https://doi.org/10.1007/978-3-031-23612-9_2$

79. Karmakar, N., Biswas, A., Nandy, S.C., Bhattacharya, B.B. (2023). On the Construction of Planar Embedding for a Class of Orthogonal Polyhedra. In: Barneva, R.P., Brimkov, V.E., Nordo, G. (eds) Combinatorial Image Analysis. IWCIA 2022. Lecture Notes in Computer Science, vol 13348, pp. 84-104. Springer, Cham. $https://doi.org/10.1007/978-3-031-23612-9_6$

78. Al Aman, M.A.A., Paul, R., Sarkar, A., Biswas, A. (2023). Largest Area Parallelogram Inside a Digital Object in a Triangular Grid. In: Barneva, R.P., Brimkov, V.E., Nordo, G. (eds) Combinatorial Image Analysis. IWCIA 2022. Lecture Notes in Computer Science, vol 13348. Springer, Cham. pp. 122–135 $https://doi.org/10.1007/978-3-031-23612-9_8$

77. Saha, S., Biswas, A. (2023). Face Characterization Using Convex Surface Decomposition. In: Barneva, R.P., Brimkov, V.E., Nordo, G. (eds) Combinatorial Image Analysis. IWCIA 2022. Lecture Notes in Computer Science, vol 13348, pp. 288–300. Springer, Cham. $https://doi.org/10.1007/978-3-031-23612-9_18$

76. B. Saha Bhattacharya, B. Mandal, A. Biswas and M. Bhattacharyya, "Improving Character Recognition by the Crowd Workers via Corrective Feedback," 2022 IEEE International Conference on Big Data (Big Data), Osaka, Japan, 2022, pp. 3982-3985, doi: 10.1109/BigData55660.2022.10020560.

75. Raina Paul, Md. Abdul Aziz Al Aman, Apurba Sarkar and Arindam Biswas, Generation of Random Curve Inside an Isothetic Cover of Digi-

tal Object, 2021 3rd International Conference on Video, Signal and Image Processing (VSIP 2021), accepted.

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Springer, pp. 407-412.

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1. Biswas, A., P. Bhowmick, and B. B. Bhattacharya (2004). CONFERM: Connectivity Features with Randomized Masks and Their Applications to Image Indexing. In: In Proc. of 4th Indian Conference on Computer Vision, Graphics and Image Processing: ICVGIP'04. Ed. by S. C. B. Chanda and L. Davis. Kolkata, India: Allied Publishers Private Limited, pp. 556-562.

Book Chapters

1. Mukherjee, A., U. Garain, and A. Biswas (2014). Diagram Drawing Using Braille Text: A Low Cost Learning Aid for Blind People, Global Trends in Intelligent Computing Research and Development, IGI Global, B. K. Tripathy and D. P. Acharjya (Eds.), Chapter 14, pp. 384-426

2. Biswas, A., S. Pal, P. Bhowmick, and B. B. Bhattacharya (2010). Geometric Analysis and Efficient Indexing of Digital Documents, Machine Learning Techniques for Adaptive Multimedia Retrieval: Technologies, Applications and Perspectives, C. H. Wei.

3. Mukherjee, S., Biswas, A., Bandyopadhyay, O. Detection and Classification of Brain Tumors Using Light-Weight Convolutional Neural Network, Current Applications of Deep Learning in Cancer Diagnostics, 2023, pp. 75–84

Papers in National Conferences

1. S. Chatterjee, A. K. Ray, R. Karim, A. Biswas, Architectural Design for Median Filter, IEEE Proceed- ings of the 3rd National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG-2011), pp. 247 250, Dec, 15 17, 2011, Hubli, Karnataka, India.

2. S. Bag, P. Bhowmick, G. Harit, and A. Biswas, Character Segmentation of Handwritten Bengali Text by Vertex Characterization of Isothetic Covers, 3rd National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG 2011), Dec, 15 17, 2011, Hubli, Karnataka, India.

Patents

1. Acharya, T., B. B. Bhattacharya, P. Bhowmick, A. Bishnu, A. Biswas, M. K. Kundu, C. A. Murthy, S. Das, and S. C. Nandy (2008). Minutia Matching using Scoring Techniques". Patent US 7359532 (US).

Invited Talks

1. Expert talk on World Heart Day 2021 on 29.09.2021, organized by Cardiological Society of India, "Digital Application for CVD Detection", CSI,

29th Sep 2021.

2. Workshop on Digital Geometric Algorithms, Shape analysis using digital geometric techniques, IIIT Kalyani, 29th Oct 2018.

3. Insitute Talk: Cyber Security and Ethical Hacking, St. Thomas College of Engineering & Technology, 31st Oct, 2018.

Annexure I

Conferences/Workshops Attended

1. IWCIA 2022, online (Session Chair) 13-15 July 2022, Messina, Italy

2. PReMI 2021, 16 Dec, 2021, online, ISI, Kolkata (session Chair)

3. 9th ICIEV, 4th IVPR & 2nd ABC, 26-29 August, 2020, online, Kitakyushu, Japan.

4. IWCIA-2017: (PC Member) 17th International Workshop on Combinatorial Image Analysis, June 19-21, 2017, Plovdiv, Bulgaria, Europe. (attended - session chair to a keynote session, a paper presented)

5. CompIMAGE-2016: (As a session chair) International Symposium CompIMAGE'16 - Computa- tional Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications, Sep 21-23, 2016, Niagara Falls, USA. (attended, session chair and presented a paper)

6. (Member Scientific Committee) WRRPR 2016 : 1st workshop on Reproducible Research in Pattern Recognition, 4 Dec 2016, Cancun (Mexico).

7. (Member of the Review Committee) Tenth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2016 18 - 22 December, Indian Institute of Technology Guwahati.

8. (Member Review Committee) 5th International Conference on Informatics, Electronics & Vision (5th ICIEV), 13 14 May, 2016, Dhaka, Bangladesh.

9. DGCI-2016:(Member of the review committee) 19th IAPR International Conference on Discrete Geometry for Computer Imagery, Nantes, France, April 18-20, 2016.

10. CTIC-2016:(Member Program Committee) 6th International Workshop on Computational Topol- ogy in Image Context, Marseille, France June 15-17, 2016.

11. CALDAM-2015: (As a member of organizing committee) Conference on Algorithms and DiscreteApplied Mathematics, February 8-10, 2015, Indian Institute of Technology, Kanpur, India. (attended and presented a paper)

12. ICAPR-2015: (As a member of program committee) 8th International Conference on Advances in Pattern Recognition, January 4-7, 2015, Indian Statistical Institute, Kolkata, India.

13. ICACNI-2014: (As session chair) 2nd International Conference on Advanced Computing, Net- working, and Informatics, June 24-26, 2014, St. Thomas' College of Engineering and Technology, Kolkata, India.

14. IWCIA-2014: (As session chair) 16th International Workshop on Combinatorial Image Analysis, May 28-30, 2014, Brno University of Technology, Czech Republic, Europe.

15. WALCOM-2013: (As a member of organizing committee) 7th International Workshop on Algorithms and Computation, February 14-16, 2013, Indian Institute of Technology, Kharagpur, India.

16. ICVGIP-2012: (Attended) The Eight Indian Conference on Computer Vision, Graphics, and Image Processing, December 16-19, 2012, Indian Institute of T echnology, Bombay, India.

17. DGCI 2011: 16th IAPR International Conference on Discrete Geometry for Computer Imagery

18. EAIT 2011: Second International Conference on Emerging Applications of Information Technology

19. ICFHR 2010: International Conference on Frontiers in Handwriting Recognition ICFHR 2010

20. ICCTA-2007: International Conference on Computing: Theory and Applications (ICCTA-2007), Platinum Jubilee of the Indian Statistical Institute, March 5-7, 2007, Kolkata.

21. ICAPR-2007: The Sixth International Conference on Advances in Pattern Recognition (ICAPR- 2007), January 2 - 4, 2007, Indian Statistical Institute, Kolkata.

22. PReMI-2005: 1st International Conference on Pattern Recognition and Machine Intelligence (PReMI 2005). Organized by: Indian Statistical Institute, Kolkata. Dec. 20-22, 2005.

23. SCIA 2005: 14th Scandinavian Conference on Image Analysis, Joensuu, Finland, June 19-22, 2005.

24. Biometrics Workshop 2005: International Workshop on Recent Advances in Biometric Systems. Organized by: IIT, Kanpur. April 15-16, 2005. Major Speakers: Prof. J. L. Wayman (Director, U.S. National Biometric Test Center, San Jose State University, U.S.A.), Dr. Vinod Chandran (Queensland University of Technology, Australia), Dr. V.K. Chhada (Bhaba Atomic Research Center, Mumbai).

25. VLSI-2005: (As a member of the organizing committee.) 18th International Conference on VLSI Design and 4th International Conference on Embedded Systems. Organized by: Indian Statistical Institute, Kolkata. Taj Bengal, January 3-7, 2005.

26. IWDC-2004: (As a member of the organizing committee.) 6th International Workshop on Dis- tributed Computing. Organized by: IEEE, Calcutta Chapter. Indian Statistical Institute, Kolkata, 27-30 December, 2004.

27. ICVGIP-2004: 4th Indian Conference on Computer Vision, Graphics and Image Processing. Organized by: Indian Unit for Pattern Recognition and Artificial Intelligence (IUPRAI-IAPR) and Indian Statistical Institute. In cooperation with: ACM Siggraph and IIT Bombay. December 16-18, 2004, Kolkata.

Annexure II

Conferences/Workshops Organized

1. PC Member: CTIC 2019: 7th Workshop on Computational Topology in Image Context, Universidad de Malaga, France

2. PC Member: MIKE 2017: 5th International Conference on Mining Intelligence and Knowledge Exploration IDRBT Hyderabad, India, December 13-15, 2017

3. PC Member: ISED2017 (7th International Symposium on Embedded Computing and System Design). Durgapur, India, December 18-20, 2017

4. PC Member: Ninth International Conference on Advances in Pattern Recognition (ICAPR-2017) December 28-30, 2017

5. WoAAA-2016: (Co-Coordinator) Workshop on Advanced Application of Algorithms, 21-23 December, IIEST, Shibpur. (organized)

6. IWCIA-2015:(Program Chair) Seventeenth International Workshop on Combinatorial Image Analysis, November 24-27, 2015, ISI, Kolkata, India. (organized)

7. Research Promotion Workshop on Digital Geometry-2014: (As Coordinator and Speaker) Research PromotionWorkshop on Digital Geometry, June 23-25, 2014, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, India.

8. Research Promotion Workshop-2013: (As Co-convener) Research Promotion Workshop on Introduction to Graph and Geometric Algorithms, March 14-16, 2013, Bengal Engineering and Science University, Shibpur, Howrah, India.

9. Research Promotion Workshop-2013: (As Co-convener) Research Promotion Workshop on Introduction to Graph and Geometric Algorithms, March 14-16, 2013, Bengal Engineering and Science University, Shibpur, Howrah, India.

10. ISED-2012: (As organizing Chair) International Symposium on Electronic System Design, December 19-22, 2012, Bengal Engineering and Science University, Shibpur, Howrah, India.

11. VDAT-2012: (As organizing Chair) 16th International Symposium on VLSI Design and Test, July 1-4, 2012, Bengal Engineering and Science University, Shibpur, Howrah, India.

12. ISAAC 2006: (As a member of the organizing committee) 17th International Symposium on Algorithms and Computation (ISAAC 2006) at Hotel Taj Bengal, Kolkata, India, December 18-20,2006. Hosted by Indian Statistical Institute, Kolkata in association with Indian Association for Research in Computing Science (IARCS) and Computer Science and Engineering Department, Indian Institute of Technology, Kharagpur.

Post Graduate Students

Annexure III

Graduate Students

Annexure IV

Annexure III

Post Graduate Students

COMPLETED

1. 2018: Arnab Chakrabarty

2. 2019: Debanjan Basak

3. 2020: Suman Kumar Bera

ONGOING

1. 2021: Bishwayan Saha "Deriving depth image from 2D image using ML"

2. 2021: Pritam Bikram "Object recognition in video sequences using AI"

Annexure IV

Graduate Students

PROJECTS

1. 2023:
   1. Medical report summarization using Natural Language Processing
   2020ITB099 Subhrajit Dey
   2020ITB073 Akanksha Lohia
   2020ITB009 Dipanwita Rano
   2 Analysis of wilt resistance in Pigeon Pea using deep learning 2020ITB080

Akshansh Agarwal
2020ITB042 Bhuvaneswari Kavoori
2020ITB087 Nikhil Gupta
3 Weight prediction from human image using machine learning techniques
2020ITB019 Manav Sarkar
2020ITB033 Sabarna Bhowmik
2020ITB027 Tanmay Mahato

2. 2019: Malarial Parasite Classification using Deep learning: Arpita Raj, Khusboo Dohare, Ritesh Kumar Pandey

3. 2019: Detection of Geometric Patterns in Scene using Deep Learning Techniques: Arjun Basu, Sayantan Ray, Riya Srivastava

4. 2018: Face recognition using Deep Learning Methods: Rohitashwa Chakraborty, Vivek Sharma

5. 2018: Object recognition from a video stream: Kanav Mehra, Soumik Pal, Agnibha Chandra

6. 2018: Analyzing patterns in Brain MRIs: Mimat Khalil Kasu, Suprotik Dey

Mini Projects

1. 2018 Fall: GENERATION OF FRACTALS, Sobhan Mondal (Reg.No-510816054), Kainat Kauser Ali (Reg.No-510816059), Adil Mahmood (Reg.No-B08-511116011)

2. 2018 Fall: Study of Digital Spiral, Arjun Basu, Anagh Goswami, Md Jasimuddin

3. 2019 Fall: Determination of straight sjkeleton using Python, Joyoshish Saha, Debraj Das, Sahil Barnwal