

Oishila Bandyopadhyay

DESIGNATION AFFILIATION

Assistant Professor (Grade I)
Department of Computer Science & Engineering
Indian Institute of Information Technology Kalyani
Kalyani - 741235, West Bengal
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EDUCATION

Ph.D 2016
Indian Institute of Engineering Science and Technology (IEST), Shibpur, West Bengal, India

M.E 2008
*West Bengal University of Technology
Computer Science & Engineering*

B.Tech 1998
*University of Calcutta
Computer Science & Engineering*

B.Sc 1995
*University of Calcutta
Physics (Hons.)*

Higher Secondary 1992
*West Bengal Council for Higher Secondary Education
Serampore Girls High School*

Secondary 1990
*West Bengal Board of Secondary Education
Serampore Girls High School*

PH.D THESIS

Bandyopadhyay O. (2016), 'Automated Analysis of Orthopaedic X-ray Images based on Digital-Geometric Techniques', IEST, Shibpur
Under supervision of Prof. Arindam Biswas (IEST, Shibpur) and Prof. Bhargab B. Bhattacharya (ISI, Kolkata)

AREA OF RESEARCH

Computer Vision, Machine Learning, Medical Image Analysis, Digital Geometry

MEMBER

Senior member, IEEE Computer Society

PUBLICATIONS

Journals

1. S. Pal, U. Das, O. Bandyopadhyay, "SSN: A Novel CNN-based Architecture for Classification of Tropical Cyclone Images from INSAT-3D", IEEE Transactions on Geoscience and Remote Sensing, vol. 62, pp. 1-8, Art no. 4108208, doi: 10.1109/TGRS.2024.3441729, 2024.
2. S. Neogi, G. Aich, A. Dey, S. Maitra, O. Bandyopadhyay, K. Ghosh, "Otsu-BRSG: An Effective Algorithm for River Bank Line Detection and Monitoring in the Challenging Terrains of Kaziranga National Park", Journal of the Indian Society of Remote Sensing, doi: <https://doi.org/10.1007/s12524-024-01843-z>, 2024.
3. S. C. Mondal, O. Bandyopadhyay, S. Pratihar, "Geometry-Based Counting and Classification of WBCs for Analysis of Leukocyte Disorders", SN Computer Science, doi: <https://doi.org/10.1007/s42979-023-02414-8>, 2024.
4. S. Mukherjee, O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, "Tracking patellar osteophytes to detect osteoarthritis", Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, doi: <https://doi.org/10.1080/21681163.2023.2194453>, 2023.
5. M. Dasgupta, O. Bandyopadhyay, S. Chatterji, "Detection of Helmetless Motorcycle Riders by Video Captioning using Deep Recurrent Neural Network", Multimedia Tools and Applications, doi: <https://doi.org/10.1007/s11042-022-13473-z>, 2022.
6. A. Choudhury, S. Samanta, S. Pratihar, O. Bandyopadhyay, "Multilevel Segmentation of Hippocampus Images using Global Steered Quantum Inspired Firefly Algorithm", Applied Intelligence, Springer, doi: <https://doi.org/10.1007/s10489-021-02688-6>, 2021.
7. O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, "Bone-Cancer Assessment and Destruction Pattern Analysis in Long-Bone X-ray Images", Journal of Digital Imaging, Springer, doi: <https://doi.org/10.1007/s10278-018-0145-0>, 2018.
8. O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, 'Long-bone Fracture Detection in Digital X-ray Images Based on Digital Geometric Techniques', Computer Methods and Programs in Biomedicine, Elsevier, volume 123, pp. 2-14, 2016.
9. O. Bandyopadhyay, T. Dutta, N. Dutta, A. Biswas, Bhargab B. Bhattacharya, 'Structural Feature Analysis of the Vascular Network in Retinal Images,' Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization, doi: <https://doi.org/10.1080/21681163.2017.1402210>, 2017.

10. O. Bandyopadhyay, B. Chanda, B. B. Bhattacharya, 'Automatic Segmentation of Bones in X-ray Images based on Entropy Measure', *International Journal of Image and Graphics*, World Scientific, volume 16 (1), pp. 1650001-1650032, 2016.
11. O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, '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*, Springer, volume 26(4), pp. 742-757, 2016.
12. O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, 'Automated analysis of Orthopaedic X-ray images based on Digital-Geometric Techniques', *ELCVIA Electronic Letters on Computer Vision and Image Analysis*, vol. 15(2), pp. 7-9, 2016.

Book Chapters

1. M. Lohith, S. Bardhan and O. Bandyopadhyay, "Cervical Pap smear Screening and Cancer Detection using Deep Neural Network", *Current Applications of Deep Learning in Cancer Diagnostics (1st ed.)*. CRC Press., Chaki, J., & Ucar, A. (Eds.). (2023). <https://doi.org/10.1201/9781003277002>
2. S. Mukherjee, O. Bandyopadhyay and A. Biswas, "Detection and Classification of Brain Tumors using Light Weight Convolutional Neural Network", *Current Applications of Deep Learning in Cancer Diagnostics (1st ed.)*. CRC Press., Chaki, J., & Ucar, A. (Eds.). (2023). <https://doi.org/10.1201/9781003277002>,

Conferences

1. C. Jha, S. K. Jha, O. Bandyopadhyay, D. Nandi "Realtime Gait Phase Prediction and Early Detection of Gait Abnormalities", *International Conference on Computer, Communication, Control Information Technology (C3IT)*, 2024 (accepted).
2. A. Choudhury, S. Samanta, S. Pratihari, O. Bandyopadhyay, "Color Hippocampus Image Segmentation using Quantum Inspired Firefly Algorithm and Merging of Channel-wise Optimums", *International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO)*, LNCS 13920, pp. 270-282, 2023.
3. M. Lohith, S. Bardhan, O. Bandyopadhyay and B. Chanda, "AntiNuclear Antibody Pattern Classification using CNN with Small Dataset", *International Conference on Computational Intelligence in Communications, and Business Analytics (CICBA)*, CCIS 1955, 2023.
4. M. Dasgupta, O. Bandyopadhyay and S. Chatterji, Attention-Residual Convolutional Neural Network for Image De-hazing Due to Bad Weather, *International Conference on Computational Intelligence in Communications, and Business Analytics (CICBA)*, CCIS 1955, 2023.
5. S. Pal, U. Das, O. Bandyopadhyay, "Detecting Tropical Cyclones in INSAT-3D Satellite Images using CNN-based model", *IAPR Conference on Computer Vision and Image Processing (CVIP)*, doi: <https://doi.org/10.1007/978-3-031-31407-0>, 2022.
6. A. Choudhury, S. Samanta, S. Pratihari and O. Bandyopadhyay, "Segmentation of Brain MR Images using Quantum Inspired Firefly Algorithm with Mutation", *International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO)*, LNCS LNBI, vol 13346. Springer, Cham. https://doi.org/10.1007/978-3-031-07704-3_30.

7. R. Chakraborty, S. Kumar, S. De and O. Bandyopadhyay, "Smart Surveillance Video Monitoring for Home Intruder Detection using Deep Neural Network", International Conference on Computational Intelligence in Pattern Recognition (CIPR), https://doi.org/10.1007/978-981-19-3089-8_42, 2022.
8. S. Mandal, O. Bandyopadhyay, S. Pratihar, "Acute Lymphocytic Leukemia Classification using Color and Geometry Based Features", International Conference on Computational Intelligence in Pattern Recognition (CIPR), https://doi.org/10.1007/978-981-19-3089-8_45, 2022.
9. C. Maheshwari, P. Kumar, A. Gupta, O. Bandyopadhyay, "VISION HELPER: CNN Based Real Time Navigator for the Visually Impaired", doi: IAPR Conference on Computer Vision and Image Processing (CVIP), https://doi.org/10.1007/978-3-031-11346-8_20, 2021.
10. S. Mondal, O. Bandyopadhyay, S. Pratihar, "Detection of Concave Points in Closed Object Boundaries Aiming at Separation of Overlapped Objects", IAPR Conference on Computer Vision and Image Processing (CVIP), CCIS 1378, pp. 514–525, https://doi.org/10.1007/978-981-16-1103-2_43, 2020.
11. M. Dasgupta, O. Bandyopadhyay, S. Chatterji, "Automated Helmet Detection for Multiple Motorcycle Riders using CNN", IEEE Conference on Information and Communication Technology, DOI: <https://doi.org/10.1109/CICT48419.2019>, 2019.
12. B. P. S. Bankoti, C. S. Gupta, O. Bandyopadhyay, M. Banerjee, "Analysis of Multi-tasking in Divided Attention using Machine Learning", IEEE Conference on Information and Communication Technology, DOI: <https://doi.org/10.1109/CICT48419.2019>, 2019.
13. S. Mukherjee, S. Chatterji, O. Bandyopadhyay, A. Biswas, "Detection of Malaria Parasites in Thin blood Smears using CNN Based Approach", Computational Intelligence and Machine Learning, Advances in Intelligent Systems and Computing 1276, DOI: https://doi.org/10.1007/978-981-15-8610-1_3, 2019
14. S. Mukherjee, O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, "Detection of Osteoarthritis by Gap and Shape Analysis of Knee Bone X-ray", International Workshop on Combinatorial Image Analysis (IW CIA) , LNCS 11255, pp. 121-133, 2018.
15. U. Kamila, O. Bandyopadhyay, A. Biswas, "Detection of Hemorrhagic region in Brain MRI", International Conference on Communication, Computing and Networking, LNNS 46, pp. 383 – 391, 2018.
16. S. Mukherjee, O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, "Does Rotation Influence the Estimated Contour Length of a Digital Object?", Pattern Recognition and Machine Intelligence (PReMI), LNCS 10597, pp. 179-186, 2017.
17. S. Mukherjee, O. Bandyopadhyay, A. Biswas, "Automated Brain Tumor Diagnosis and Severity Analysis from Brain MRI", International Symposium COMPImage, vol. LNCS 10149, pp. 198 – 207, 2016.
18. T. Dutta, N. Dutta, O. Bandyopadhyay, "Retinal Blood Vessel Segmentation and Bifurcation Point Detection", International Workshop on Combinatorial Image Analysis (IW CIA) , LNCS 9448 , pp. 261-275, 2015.

19. O. Bandyopadhyay, A. Biswas, B. B. Bhattacharya, "Long-Bone Fracture Detection in Digital X-ray Images based on Concavity Index", International Workshop on Combinatorial Image Analysis (IWCIA) , LNCS 8466, pp. 212-223, 2014.
20. O. Bandyopadhyay, A. Biswas, B. Chanda, B. B. Bhattacharya, "Bone Contour Tracing in Digital X-ray Images Based on Adaptive Thresholding". Pattern Recognition and Machine Intelligence (PReMI), LNCS 8251, pp. 465-473, 2013.
21. O. Bandyopadhyay, B. Chanda, B. B. Bhattacharya, "Entropy-Based Automatic Segmentation of Bones in Digital X-ray Images". Pattern Recognition and Machine Intelligence (PReMI), LNCS 6744, pp.122-129, 2011.
22. A. Sil, O. Bandyopadhyay, N. Chaki, "Data Diverse Fault Tolerant Architecture for Component Based Systems" in World Congress on Nature and Biologically Inspired Computing (NaBIC), pp. 942-946, 2009.
23. P. P. Kundu, O. Bandyopadhyay, A. Sinha, "An Efficient Architecture of RNS Based Wallace Tree Multiplier for DSP Applications", in IEEE Annual Midwest Symposium on Circuits and Systems, pp. 221-224, 2008.

PATENT

O. Bandyopadhyay, R. Nanda, S. Sahoo, K. Goswami, "Low Cost Portable Multilevel ANA Pattern Classifier", Application No.: 202431031631 A (Journal No. 18/2024), Published on: 03.05.2024.

REVIEWER & OTHER ROLES

1. Computer Methods and Programs in Biomedicine - Elsevier
2. Information Sciences - Elsevier
3. IAPR Computer Vision and Image Processing

SPONSORED RESEARCH & DEVELOPMENT PROJECT

Title: Smart Assistive System for Visually Impaired
Funding Agency: WBSTBT (West Bengal)
Period: July 2022-June 2025
Role: Principal Investigator
Fund: 14.4L
Status: Ongoing

Title: Prediction of Walking Imbalance and Performance Improvement of Designed Prosthetic Lower Limb
Funding Agency: IDEAS-TIH, ISI Kolkata
Period: June 2023-June 2025
Role: Co-principal Investigator
Fund: 30.56L
Status: Ongoing

Title: Long Short Term Memory based Neural Network Approach for Prediction of Wintertime Fog over Northern India

Funding Agency: MoES
Period: October 2022-October 2025
Fund: 24.375L
Role: Co-principal Investigator
Status: Ongoing

Title: Cyclone Intensity and Track Prediction
Funding Agency: SERB (POWER)
Period: September 2023-September 2026
Fund: 26.43L
Role: Co-principal Investigator
Status: Ongoing

Title: Automated Helmet Detection for Motorcyclists from Traffic Surveillance Videos using Deep Convolutional Neural Network
Funding Agency: DST (WOS-A)
Period: January 2024-January 2027
Role: Mentor of Principal Investigator
Fund: 29.568L
Status: Ongoing

Title: Automated X-ray Image Analysis using Digital Geometric Approaches
Funding Agency: DST (WOS-A)
Period: July 2015-June 2018
Role: Principal Investigator
Fund: 18.3L
Mentor: Prof. B. B. Bhattacharya, ACMU, ISI, Kolkata
Status: Completed

TEACHING EXPERIENCE

1. Indian Institute of Information Technology Kalyani (2017-till date)
2. Institute of Engineering and Management, Kolkata (2016-2017)
3. Camellia Institute of Technology (2010-2013)
4. National Institute of Technical Teachers' Training and Research, Kolkata (2008-2010)

SUBJECTS TAUGHT

Computer Vision and Image Understanding, Image Processing, Machine Learning, Analysis and Design of Algorithms, Object Oriented Programming, Computer Graphics, Multimedia and Applications, Software Engineering

RESEARCH EXPERIENCE

DST Women Scientist

2014 - 2016

Indian Statistical Institute, Kolkata, India

Principal Investigator of the DST funded project under mentorship of Prof. Bhargab B. Bhattacharya, Advanced Computing and Microelectronics Unit, ISI, Kolkata

PH.D SUPERVISION

Awarded

Co-Supervisor

2017-2024

IEST, Shibpur

Name: Sabyasachi Mukherjee

Domain: Medical Image Analysis Using Digital Geometry and Machine Learning Approaches

Student's Registration: August 2018

Status: Degree awarded on May 13, 2024

Department: Information Technology, IEST, Shibpur

Supervisor

2019-2025

IIT Kalyani

Madhuchhanda Dasgupta

Domain: Towards the Development of Automated Traffic Monitoring System

Student's Registration: November 2020

Computer Science and Engineering, IIT Kalyani

Ongoing

Supervisor

2020-till date

IIT Kalyani

Sourav Mondal

Domain: Microscopic Image Analysis using Machine Learning

Student's Registration: December 2021

Status: Degree awarded on February 17, 2025

Computer Science and Engineering, IIT Kalyani

Supervisor

2021-till date

IIT Kalyani

Srutiparna Neogi

Domain: Satellite Image and Data Analysis using Deep Network

Student's Registration: August 2022

Computer Science and Engineering, IIT Kalyani

Supervisor

2023-till date

IIT Kalyani

Debmani Saha

Domain: Detection of Autism and Smart Assistance: A Comprehensive Approach

Student's Registration: May 2024
Computer Science and Engineering, IIIT Kalyani

Supervisor 2023-till date
IIIT Kalyani

Ariji Das
Domain: Smart Assistive System for Visually Impaired
Student's Registration: June 2024
Computer Science and Engineering, IIIT Kalyani

Supervisor 2023-till date
IIIT Kalyani

Tanushree Roy
Domain: Fog Prediction and Source Apportionment using Deep Learning
Student's Registration: December 2024
Computer Science and Engineering, IIIT Kalyani

ADMINISTRATIVE & INDUSTRY EXPERIENCE

Faculty-in-charge, Academics 2024-till date
Indian Institute of Information Technology Kalyani

Ph.D Coordinator 2019-2024
Indian Institute of Information Technology Kalyani

Faculty-in-charge, CSE 2010 - 2013
Camellia Institute of Technology

Project Officer-EDUSAT 2006 - 2008
West Bengal University of Technology

Senior Software Engineer 2000 - 2005
SkyTech Solutions Pvt. Ltd., Kolkata

Scientific Officer(C) 1999 - 2000
Indira Gandhi Center for Atomic Research (IGCAR), Kalpakkam

CONTACT DETAILS

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