

## CURRICULUM VITAE

### **Dr. Akshaya Kumar Mandal**



*Designation* : Assistant Professor

*Department* : Faculty of Computing & Information Technology

*University* : Usha Martin University, Ranchi

*Email:* [akshayacs207@gmail.com](mailto:akshayacs207@gmail.com)

**Phone:** - +919861834757(whatsapp-9090006076)

**Google Scholar Id:** [scholar.google.com/citations?view\\_op=list\\_works&hl=id&user=vR2CFoAAAAJ](https://scholar.google.com/citations?view_op=list_works&hl=id&user=vR2CFoAAAAJ)

**Scopus Id:** <https://www.scopus.com/authid/detail.uri?authorId=58075252700>

---

### **Permanent Address**

---

Tawn Thana Back side- Arjun bandaha, Kunsha (Bankashi), Bhadrak, Odisha-756100

---

### **Higher Education**

---

- **PhD. Computer Science:** Department of Computer Science, Assam University, A Central University of India, Assam, Silchar- 788011  
**Thesis Title:** Application of Bio-inspired Computing Techniques in Select Areas of Bioinformatics  
<https://scholar.google.com/scholar?oi=bibs&cluster=11374373780820987890&btnI=1&hl=en>
- **M.Phil. Computer Science**  
**Thesis Title:** Ant Colony Optimization for Solving Some of the Selected Np-Hard Problems
- **M.Tech. Computer Science**  
**Thesis Title:** Comparison of Multiple Sequence Alignment in DNA Sequences

---

## Certificate Achieved

---

- AICTE Teacher Training Program on Wireless Sensor Networks, IIT, Kharagpur, India, February 2-15, 2010.
- AICTE Teacher Training Program on Computer Architecture & Organization, NIT, Rourkela, India, 29th October-11th November's 2008.

---

## Achievement(Awards & Honours)

---

- Best Researcher Award in Machine Learning, by science father, Cryogenicist Global Awards.
- Best Poster Presentation Certificate on “International conference on Advanced computing, Machine learning, Robotics and Internet Technologies (AMRIT-2023), March 10-11, 2023, Department of Computer Science, Assam University, A Central University of India, Assam, Silchar.

---

## Fields of Research Interest

---

- **Machine learning:** Pattern recognition, deep learning, and their applications in diverse domains, aiming to contribute innovative solutions that push the boundaries of AI-driven technologies.
- **Bio-inspired computing:** Emulating nature's ingenious solutions to tackle intricate challenges and endeavor to uncover innovative approaches that bridge biology and computation.
- **Big Data Analytics:** Developing novel techniques that harness the potential of machine learning and statistical methods to identify unusual patterns within large and complex datasets namely, anomaly detection, disease detection and classification.
- **Bioinformatics:** Developing innovative algorithms and computational methods to decipher biological complexities.

---

## Journal Paper Reviewed

---

- Enhancing Chronic Kidney Disease Diagnosis with Modified Logistic Regression and Particle Swarm Optimization; **SN Computer Science**
- Enhancing Weed Classification in Agriculture: Leveraging Deep Neural Networks and Segment Anything Model; **SN Computer Science**

- Innovation in Bioinformatics: Recent tools, Database and Involvement of Artificial Intelligence; Indonesian **Journal of Medical Chemistry and Bioinformatics**; Department of Medical Chemistry, Faculty of Medicine Universities Indonesia
- Vocal Fold Disorders Recognition Based on Machine Learning Using Spatial and Temporal Features; **Multimedia Tools and Applications**.

---

**Membership:** ISTE Live Member, IAENG International association of Engineers.

---

---

**Professional Experience:** 12 years

---

---

### **Training/Workshop**

---

- AICTE Teacher Training Program on Wireless Sensor Networks, IIT, Kharagpur, India, February 2-15, 2010.
- AICTE Teacher Training Program on Computer Architecture & Organization, NIT, Rourkela, India, 29th October-11th November's 2008.
- Participated in IEEE Authorship and Open Access Symposium: Tips and Best Practices to Get Published from IEEE Editors, held from August 30, 2022, IEEE Advancing Technology for Humanity, IEEE Client Services
- Participated in IEEE International Seminar on “Research Methodology- Contemporary Challenges (RMCC-2022)”, held from September 8, 2022, Organized by Assam University, A Central University of India, Assam, Silchar- 788011, IEEE Kolkata Section & CSI Student branch, Assam University
- Workshop on “Soft Computing” held from 27<sup>th</sup> to 30<sup>th</sup> July 2006, Organised by Krupajal Engineering College (KEC) & Odisha Information Technology, Bhubaneswar, Odisha.
- Workshop on “Advanced Computer Architecture” held from 11th to 13th November 2006, Organised by Silicon Institute of Technology & Odisha Information Technology, Bhubaneswar, Odisha.
- Workshop on “Parallel & Distributed Computing” held from 22th to 25th December 2006, Organised by Eastern Academy of Science & Technology and Odisha Information Technology, Bhubaneswar, Odisha.
- Workshop on “Discrete Mathematics and its Application” held from 15th to 19th December 2004, Organised by Fakir Mohan Autonomous College Balasore, Odisha.

- Workshop on “Soft Computing based Optimization” held from 30th to 31th December 2010, Organised by Konark Institute of Science and Technology & Odisha Information Technology, Bhubaneswar, Odisha.
- 

## Teaching Philosophy

---

- **Courses I Can Teach (UG/PG):**
    - **Programming & Algorithms:** Programming in Python, Design and Analysis of Algorithms, Theory of Computation.
    - **Systems & Architecture:** Computer Organization, Advanced Computer Architecture.
    - **Data & Intelligence:** Machine Learning, Big Data Analytics, Bioinformatics, Pattern Recognition.
    - **Networking & Emerging Tech:** Wireless Sensor Networks, Distributed Systems, Computer Graphics.
  - **Student Mentorship & Curriculum Development:**
    - Guided multiple student projects in e-learning, automation, and bioinformatics.
    - Will initiate a research group focused on AI in healthcare.
    - Aim to develop interdisciplinary electives linking Computer Science with Biotechnology and Medical Informatics.
- 

## Conference / Poster Presentation

---

- **Presented:** “A survey on ant colony optimization for solving some of the selected np-hard problem”, Biologically Inspired Techniques in Many-Criteria Decision Making: International Conference on Biologically Inspired Techniques in Many-Criteria Decision Making (BITMDM-2019).
- **Presented:** “Novel Applications of Ant Colony Optimization with the Traveling Salesman Problem in DNA Sequence Optimization “2nd IEEE International Symposium on Sustainable Energy, Signal Processing and Cyber Security (iSSSC 2022) • December 15 – 17, 2022, GIET University, Gunupur, Odisha, IEEE Conference Record #56467.
- **Presented:** “Machine Learning Approaches and Particle Swarm Optimization based Clustering for the Human Monkeypox Viruses: A Study”, First International Conference, ICIICC 2022, December 16-17, 2022, Bhubaneswar, Odisha, India.
- **Presented:** (Best presentation)“Bio-inspired Techniques to solve optimization problems in Bioinformatics”, International conference on Advanced computing, Machine learning, Robotics and Internet Technologies(AMRIT-2023)”, March 10-11, 2023, Department of Computer Science, Assam University, A Central University of India, Assam, Silchar- 788011.
- **Presented:** " A Hybrid Machine Learning based Cuckoo Search Clustering with application of Image Recognition Techniques for Tomato Flu Skin Lesion Detection", First International Conference on Machine Intelligence, Tools, and Applications (ICMITA-2024), April 12-13, 2024, VIT Bhopal University, Kothri Kalan, Bhopal-Indore Highway, India.
- **Presented:** “Application of Bio-inspired Techniques to solve optimization problems in

Bioinformatics”, Physical Science Research Conclave (Sc. RECON 1.0), March 26, 2022, organized by: Albert Einstein School of Physical Sciences, Assam University, A Central University of India, Assam, Silchar- 788011.

---

## List of Publications

---

- Mandal, Akshaya Kumar, Satchidananda Dehuri and Pankaj Kumar Deva Sarma. “Analysis of Machine Learning Approaches for Predictive Modeling in Heart Disease Detection Systems.” Biomedical Signal Processing and Control, ISSN 1746-8094 (online medium) Elsevier B.V... H-Index. 108; SCI, Scopus Index Journal. <https://doi.org/10.1016/j.bspc.2025.107723> .
- Mandal, Akshaya Kumar, and Pankaj Kumar Deva Sarma. "Usage of Particle Swarm Optimization in Digital Images Selection for Monkeypox Virus Prediction and Diagnosis." Malaysian Journal of Computer Science, vol. 37, no. 2, 2024, pp. 124–138. DOI: <https://doi.org/10.22452/mjcs.vol37no2.2>.
- Mandal, Akshaya Kumar, Pankaj Kumar Deva Sarma, and Satchidananda Dehuri. "A Study of Bio-inspired Computing in Bioinformatics: A State-of-the-art Literature Survey." The Open Bioinformatics Journal 16.1 (2023). <http://dx.doi.org/10.2174/18750362-v16-e230517-2022-17>
- Mandal, Akshaya Kumar, Pankaj Kumar Deva Sarma, and Satchidananda Dehuri. "Image-based Skin Disease Detection and Classification through Bioinspired Machine Learning Approaches." International Journal on Recent and Innovation Trends in Computing and Communication 12.1 (2023): 85-94. <https://doi.org/10.17762/ijritcc.v12i1.7914>
- Mandal, Akshaya Kumar, Nurulla Mansur Barbhuiya, Pankaj Kumar Deva Sarma. " A Hybrid Ant Colony Optimization Algorithm for Human Monkeypox DNA Codon Selection." uijin Jishu/Journal of Propulsion Technology. <https://www.propulsiontechjournal.com/index.php/journal/article/view/8114>
- Mandal, Akshaya Kumar, Pankaj Kumar Deva Sarma, and Satchidananda Dehuri. "A Hybrid Machine Learning Based Cuckoo Search Clustering with Application of Image Recognition Techniques for Tomato Flu Skin Lesion Detection." Machine Intelligence, Tools, and Applications. ICMITA 2024, vol. 40, Springer, Cham, 2024. DOI: [https://doi.org/10.1007/978-3-031-65392-6\\_15](https://doi.org/10.1007/978-3-031-65392-6_15).
- Mandal, Akshaya Kumar, and Satchidananda Dehuri. "A survey on ant colony optimization for solving some of the selected np-hard problem." *Biologically Inspired Techniques in Many-Criteria Decision Making: International Conference on Biologically Inspired Techniques in Many-Criteria Decision Making (BITMDM-2019)*. Springer International Publishing, 2020. [https://doi.org/10.1007/978-3-030-39033-4\\_9](https://doi.org/10.1007/978-3-030-39033-4_9).
- Mandal, Akshaya Kumar, Pankaj Kumar Deva Sarma, and Satchidananda Dehuri. "Machine Learning Approaches and Particle Swarm Optimization Based Clustering for the Human Monkeypox Viruses: A Study." *International Conference on Innovations in Intelligent Computing and Communications*. Cham: Springer International Publishing, 2022. [https://doi.org/10.1007/978-3-031-23233-6\\_24](https://doi.org/10.1007/978-3-031-23233-6_24).
- Mandal, Akshaya Kumar, and Pankaj Kumar Deva Sarma. "Novel Applications of Ant Colony Optimization with the Traveling Salesman Problem in DNA Sequence Optimization." *2022 IEEE 2nd International Symposium on Sustainable Energy, Signal Processing and Cyber Security (iSSSC)*. IEEE, 2022. <https://doi.org/10.1109/iSSSC56467.2022.10051206>.

- Mandal, Akshaya Kumar, P. K. D. Sarma, Satchidananda Dehuri, and Nilanjan Mazumdar. "Bioinspired Machine Learning: A New Era in Sustainable Energy Systems." *Biomass and Solar-Powered Sustainable Digital Cities*, 2024, <https://doi.org/10.1002/9781394249374.ch6>.
- Mandal, Akshaya Kumar, Pankaj Kumar Deva Sarma, and Satchidananda Dehuri; "Human Monkeypox Skin Lesion Classification and Detection Based on Bioinspired Machine Learning Methods for Medical Diagnosis." *Multimedia Tools and Applications*, ISSN: 1380-7501; SCI Scopus Index Journal ([Under review](#)).
- Mandal, Akshaya Kumar, Pankaj Kumar Deva Sarma, and Satchidananda Dehuri; "Usage of Bioinspired Machine Learning Techniques for Tomato Flu Skin Rashes Classification and Detection": *SN Computer Science*, vol. ISSN: 2661-8907; Scopus Index journal ([Under review](#)).
- Mandal, Akshaya Kumar. "A Step-By-Step Mathematical Derivation of Ant Colony Optimization Algorithm for Solving The Traveling Salesman Problem"; *International Research Journal of Modernization in Engineering Technology and Science*, e-ISSN: 2582-5208. Volume: 05/Issue: 12/December-2023, 1902-1917. <https://www.doi.org/10.56726/IRJMETS47505>.
- Mandal, Akshaya Kumar. "A Step-By-Step Mathematical Derivation of Ant Colony Optimization Algorithm for Solving 0/1 Knapsack Problem", *International Research Journal of Modernization in Engineering Technology and Science*, e-ISSN: 2582-5208. Volume: 05/Issue: 12/December-2023, 2274-2282. <https://www.doi.org/10.56726/IRJMETS47614> .
- Mandal, Akshaya Kumar. "Usage of Image Processing Techniques in Disease Detection and Classification through Bioinspired Machine Learning Approaches: A Review"; *International Journal of Creative Research Thoughts*, Volume 11, and Issue 12 December 2023 | ISSN: 2320- 2882; PP, e843-e857.
- Mandal, Akshaya Kumar. "A Step-by-Step Mathematical Derivation of Ant Colony Optimization for Solving Subset Selection Problems"; *International Journal of Research Publication and Reviews*, Vol 4, no 12, pp 3488-3494 December 2023; [www.ijrpr.com](http://www.ijrpr.com) ISSN 2582-7421.
- Mandal, Akshaya Kumar. "A Study of Ant Colony Optimization Application for Solving Minimum Vertex Cover Problem." *International Journal of Engineering Applied Sciences and Technology*, vol. 8, no. 8, Dec. 2023, pp. 66-72. *International Journal of Engineering Applied Sciences and Technology*, <http://www.ijeast.com>.



Dr. Akshaya Kumar Mandal