Haider Banka

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ASSOCIATE PROFESSOR, DEPARTMENT OF CSE, IIT(ISM)
DHANBAD

EDUCATION

Jadavpur University, West Bengal, India
Ph. D., Computer Science & Engineering (2006- 2008)

University of Calcutta, West Bengal, India
Masters (M. Tech.), Computer Science & Engineering (2001- 2003)

University of Calcutta, West Bengal, India
Masters (M. Sc.), (1999- 2001) & *Bachelor (B. Sc.)*, (1996- 1999) in Computer Science

West Bengal council Board for Secondary & Higher Secondary Education, WB, India
Certificate for Secondary (1991- 1993) & Higher Secondary Education (1993- 1995)

RESEARCH INTERESTS

Soft Computing, Machine Learning, Data Mining, Nature Inspired Computing, and related subjects of Computer Science & Engineering.

EXPERIENCE OF EMPLOYMENT(S)

Teaching:

- Lecturer in *Dr. BCROY Engg. College, Durgapur, WB, India*, from 15/01/2003 to 31/03/2004 (1 yr. 2 month)
- Asst. Professor in *IIT(ISM) Dhanbad*, from 3/12/2007 to 21/05/2013 (5yrs. 9 months)
- Assoc. Professor in *IIT(ISM) Dhanbad*, from 22/05/2013 to Till date (13 yrs)

Research:

- Worked as SRF in *MIU, ISI KOLKATA*, from 14/4/2004 to 31/3/2006 (2yrs)
- Worked as Research Associate in *DISI, Univ. of Geneva, Italy*, from 05/04/2007 to 05/07/2007(3 months)
- Worked as Visiting Researcher in *CSCR, ISI KOLKATA* , from 31/6/2006 to 30/8/2007(1 yr. 2 month)
- Worked as Visiting Asst. Professor in *CSCR, ISI KOLKATA*, from 31/08/2007 to 30/11/2007(3 months)

AWARDS & ACHIEVEMENTS

Awarded the **EU-INDIA fellowship**, Department of Computer and Information Science (DISI),
University of Genova, Italy, *April 2006 to July 2006*

Visiting Research Fellowship at Centre for Soft Computing Research (ISI Kolkata) funded by Department of Science & Technology (DST), *July 2006 to August 2007*

Scientific Research

CSIR project entitled *Design of Machine Learning Techniques for Specialized Biological On-line Database-Mining*, Project No- CSIR(11)/2012-2013/314/CSE, sanctioned vide **letter No. 22(0586)/12/EMR-II** for **Rs. 16,05,000.00/- only**, **Completed (2012- 2015).**
Role: Principal Investigator.

DRDO project entitled *Energy Efficient Intruder Detection Schemes for WSN using LearningBased Techniques*, Project No- DRDO (2)/2015-2016/431/CSE, sanctioned vide **letter No. ERIP/ER/1402239/M/01/1584** for **Rs. 28,52,000.00/- only**, **Completed (2015-2018)**. ***Role: Co-Principal Investigator***

"DISTRIBUTED COGNITIVE SYSTEM FOR HEALTHCARE", Funded by MeitY, **Rs. 20,00,000.00/- only**, **MeitY/2020-2021/720/CSE, Completed (2021- 2023).**
Role: Principal Investigator

To develop an Artificial Intelligence (AI) based machine learning solutions to enable prediction of occurrence of fire in Open cast mines extracting locked coal pillars with safety, CIL (CMPDI, **CIL(15)/2020-2021/789/CSE**, **Rs. 25,99,000.00/- , Completed (2021- 2023),**
Role: Principal Investigator

"DEVELOPMENT OF AI BASED INTEGRATED SYSTEM FOR EXPLORATION TARGETING OF COPPER DEPOSITS", Funded by **TEXMIN, DST, Rs. 24,92,000.00/-, June 2023 -May 2025, Running**
Role: Co - Principal Investigator

Patent

A practical approach for coal fire prevention and its prediction integrating machine learning and statistics in opencast mines working over developed pillars, Satish Kumar Sinha, D.C. Panigrahi, Haider Banka, March 2015, **(Patent Application No. 305/KOL/2015)**. **Status: Granted**

Automated position and latch locking control mechanism using mobile application, Srijan Varma, Prateek Kumar. Haider Banka, March 2016 **(Ref. No. E-12/30/2016-KOL, Appl. No. 201631007292).**

Administrative Support Work

- *Head of the Department (H.O.D),* from 7/06/2018 to 12/06/2020.
- *Member, DSC (Doctoral Secruitiny Commettie)* from 2012 to Till date
- *BOCS member* from 2013 to Till date
- *Co-ordinator, 3 yr. M.Tech. Program* from 2015 to Till date
- *Member house allotment Committee* from May 2016 to August 2018
- *Co-ordinator for JRF* from 2015 to June 2018
- *Coordinator TEQIP-II & TEQIP-III* from Oct-2013 to June 2018
- *Secretary in Dept. Advisory Committee* from 2008 to June 2018.
- *Co-ordinator Intr. Inchange Program (Erasmus Mundus Euphrates)* from 2014 to 2016
- *Time table incharge* from 2009 to 2014
- *Tabulator of Examination* from 2009 to 2011

SHORT TERM COURSES

S.N.	Title	External Funding in Rs.(Lakh))	Funding Agency	Role (CI/CO-CI)	No. of CO-CI	Duration	Status
1.	Fundamentals of soft computing and its applications" (consultancy no. Cons/2956/2015-16)	1.95	SELF SPONSORED	CI	1	09-13 September, No. of Participants: 51 2015	Completed
2.	Nature inspired computing and its applications	2.85	SELF SPONSORED	CI	1	08-12 February, 2016, No. of Participants 55	Completed
3.	Network protocols and their simulation using ns- 2/ns-3	2.05	SELF SPONSORED	CO-CI	1	19-23 August, 2015, Consultancy No. CONS/2934/2015	Completed
4.	Network protocols & their simulations using ns2	1.5	SELF SPONSORED	CO-CI	1	9- 13 September 2015,	Completed
5.	Data modelling for artificial intelligence applications	0	SELF SPONSORED	CI	1	March 25- April 06, 2019	Completed
6.	Digital Transformation for improving mine productivity and profitability, NOVOTEL, New Town	16.5	SELF SPONSORED	Co-CI	03	18th-19th Oct 2019	Completed
7.	Training program on "Python Programming Language" for revised curriculum of Computer Science/Informatics Practices for different Jawahar Navodaya Vidyalaya under Navodaya Vidyalaya Samiti, Government of India	0	Free Training to the faculty members of Officers/Teachers	CI	01	03rd December– 07th December, 2018.	Completed
8	24 weeks AICTE-sponsored QIP-PG Certificate Program on "AI and Data Science for Smart Healthcare"	20.00	AICTE Sponsored	CI	0	16 June, 2025 - December, 2025, Hybrid mode	Ongoing

ORGANIZING PARTICIPATION TRAINING WORKSHOPS

Organized First IEEE International Conference on Recent Advances in Information Technology (RAIT-12) during March 2012 at ISM Dhanbad.

Organizing Third IEEE International Conference on Recent Advances in Information Technology (RAIT-16) to be held on March 2016 at ISM Dhanbad.

Organized two Guest Lectures on Ubiquitous computing and Insights into key industries and How to tie-up your Coding Goal to Business Goal on 19.1.2014 under TEQIP-II at Penman Auditorium, ISM Dhanbad (Coordinator).

Organized Guest Lecture on 21 August 2015 under TEQIP-II at NLHC on How to work on Network Simulator at ISM Dhanbad (Coordinator).

Organized Short term course on *"Ubiquitous computing and Insights into key industries" (CI)*, TEQIP II Sponsored, held on 19 January 2014.

MEMBERSHIP IN PROFESSIONAL BODIES

- IEEE membership IEEE membership
  IAENG membership (Life Member)

SEMINAR INVITED TALKS

Department of Information Science (DISI), University of Genoa, Italy, August, 2006

Invited Talk on National Seminar on Data Mining and Decision Support (DMDS) during (4-5)th March, 2010, organized by Computer Centre, Vidya Sagar University, Midnapore.

Invited talk at TIT Agartala for Staff Development Program, 11-13 July, 2011

Presentation at DEXA, Austria, Viena, (BIOKDD), 3-5 September, 2012

Invited Talk on AICTE sponsored Staff Development Programme on Soft computing in Bioinformatics from July (11-21), 2011 in Tripura Institute of Technology, Agartala. Tripura, 2011.

Invited Talk on Nature Inspired Computing, Sponsored by UGC for National Seminar on Quatum Information Theory and Computer Science, organized by Jogesh Chandra Chaud- huri College, Kolkata during 14-15 February, 2012

Invited talk on Faculty Development Program on Pattern Recognition and its Applications sponsored by AICTE, 15th July, 2013

Invited talk on Data Warehousing for the workshop during 23-25 September, 2013 at BCET, ODISHA, India.

Invited talk on Improving Equipment Utilization by Applying Machine Intelligence during 10 January, 2014 at IICM, Ranchi, India.

Invited talk on Soft Computing and Applications, 5 March, 2014 at NIT Durgapur, India.

Participated and presented papers : in the 6th International Conference of the Associa- tion of the Asia Pacific Operational Research Societies (APORS 2003), New Delhi, 8-11 December, 2003

Computers and Devices for Communication (CODEC-04)

Advanced Computing & Communication Technologies (ICACCT-2012)

DEXA 2012 3-6 September, 2012, Austria

ICCRC 2011, 21-23 March, 2011, New Delhi

RAIT-2009, 6-7 2009, ISM Dhanbad

Others

Training Courses Attended

ed Two weeks short term course on Robotics and Automation held at IIT Kanpur during July 7-18, 2003

- Attended two days International workshop on Algorithm (IWA) during 15-16 December, 2005, held at Indian Statistical Institute, Kolkata
- Attended 1 week Winter School on Soft Computing Tools, Simulation and Applications, during 10- 14 January, 2006, held at Centre for Soft Computing Research, Kolkata.
- Participated 1 week SERC School on Advanced Software Engineering Techniques and Their Applications, funded by DST during 4-8 June, 2012 held at NIT Rourkela.
- Participated 1 week course on Programmable Logic Controller (PLC) Programming, Applications and Troubleshooting during 04-09 October, 2013 held at ISM Dhanbad
- Participated 2 days' workshop on Embedded System Design using MSP430 Micro-controller during 14-15 February, 2014 held at ISM Dhanbad.
- **Attended 90 Days' Training and Internship Certificate short term course on Introduction to AI and IoT IIT Kanpur during 1st April 2020 to 29 June, 2020 organized by Centre for Continuing Education, IIT Kanpur, Course Coordinator: Prof. Laxmidhar Behera**.

- Attend

Practicing Activities

- Coordinator, International Exchange Program (Erasmus Mundus Euphrates)
- Secretary, Departmental Advisory Committee (DAC) since 2008.
- Departmental Coordinator, TEQIP-II Program, since 2013
- Co-coordinator of 3yrs. M. Tech. Course in CSE, for ISM Industry Institute Interaction Centre.
- Faculty in charge for ISM JRFs Full time, since 2014
- Time Table In-charge, Dept. of CSE & Central Time Table committee during 2008-2013, to arrange schedule of subjects for other as well as own departments for smooth functioning of the institute & departments
- Tabulator of Examination, Manipulate/Prepare Results of the B. Tech. & M. tech. Examination during 2009 2011
- Member, Departmental purchase Committee, To fulfil departmental requirements, 2012
- Reviewer of many international journals such as IEEE Trans. on SMC: Part A, B, C, Pattern Recognition, IJPRAI, PRL, ICPR, IJCNN etc.
- Member, ISM House Allotment Committee, since May, 2016

List of PH.D. Awarded

Sl. No	Name	Date of Award	Thesis title	(Main-guide/Co-guide)
1	Suresh Dara	28.3.2015	EVOLUTIONARY COMPUTATION FOR FEATURE SELECTION, CLASSIFICAITON AND VALIDATION FROM HIGH DIMENSIONAL DATA	Guide
2	Manoj Kumar Shukla	04.06.2015	DEGRADED SCRIPT IDENTIFICATION OF DEVNAGARI AND BANGLA SCRIPT	Guide
3	Baij Nath Kaushik 2013DR1106	28.03.2016	PERFORMANCE EVALUATION OF APPROXIMATED ARTIFICIAL NEURAL NETWORK FOR SOLVING SOME RELIABILITY PROBLEMS IN COMPLEX NETWORKS	Guide
4	Mohammad Nadeem 2013DR0059	14.01.2017	DESIGNING SOFT COMPUTING TECHNIQUES FOR PARAMETER ESTIMATION AND OPTIMIZATION IN GREEN PELLETIZATION	Guide
5	Annavarapu Chandra Sekhara Rao 2013DR1042	08.02.2017	ANALYSIS AND SYNTHESIS OF PUBLIC BIOINFORMATIC DATA USING DATA MINING AND MACHINE LEARNING TECHNIQUES	Guide
6	P. CHJ. Srinivasa Rao 2012DR0152	14.03.2017	DESIGNING SOFT COMPUTING ALGORITHMS FOR WIRELESS SENSOR NETWORKS	Guide
7	Rohit Kumar Yadav 2012DR0132	29.03.2017	DESIGN OF SOFT COMPUTING METHODOLOGIES FOR BIOINFORMATICS PROBLEMS	Guide
8	Praveen Lalwani 2014DR0023	10.08.2017	STUDY AND INVESTIGATION OF ROUTING PROTOCOLS FOR WIRELESS SENSOR NETWORKS USING SOFT COMPUTING	Guide
9	Abeg Kumar Jaiswal 2014DR0249	22.01.2018	PATTERN RECOGNITION AND CLASSIFICATION OF EEG SIGNALS USING MACHINE LEARNING	Guide
10	Jayraj Singh 2015DR0089	17.12.2020	DESIGN OF META-HEURISTIC BASED METHODOLOGIES TO LOCATE CRITICAL FAILURE SURFACE FOR SLOPE STABILITY ANALYSIS	Guide
11	Tapan Kumar Sahoo 2014DR0250	17.08.2021	PRINCIPAL COMPONENT ANALYSIS IN FACIAL FEATURE EXTRACTION AND APPLICATION	Guide
12	Jitesh Pradhan 2015DR0263	07.10.2021	IMAGE FEATURE EXTRACTION AND CLASSIFICATION IN CBIR	Co-Guide
13	Imran Rasheed 2014DR0022	02.12.2021	INFORMATION RETRIEVAL IN URDU LANGUAGE: TECHNIQUES AND EVALUATION	Guide
14	Ramesh Kumar Huda	08.04.2022	SOFT COMPUTING IN MACHINE LEARNING AND HIGH DIMENSIONAL DATA ANALYSIS	Guide

	2015DR0241			
15	Shipra Shukla 17DR000463	26.06.2023	AUTOMATIC MUSIC COMPOSITION AND IMPROVISATION USING EVOLUTIONARY ALGORITHM AND REINFORCEMENT LEARNING	Guide
16	Sanjeev Kumar 18DP000424	02.02.2024	LOW COST EFFECTIVE AND INTELLIGENT AUTHENTICATION PROTOCOL FOR RFID	Guide
17	Naveen Chauhan 18DP000431	23.02.2024	PERFORMANCE ANALYSIS OF COMPUTATIONAL ALGORITHMS IN FOG COMPUTING ENVIRONMENT	Guide
18	Ayush Sahu 18DR0049	11.11.2024	DETECTION AND PREVENTION OF ROOF FALL IN UNDERGROUND COAL MINES USING ARTIFICIAL INTELLIGENCE	Guide
19	Gourav Mohindru 18DP000359	03.02.2026	DIFFERENT DATA ANALYSIS TECHNIQUES FOR IOT DATA	Guide

In addition, 06 Full Time and 3 Part time Scholars are currently guiding

BOOKS PUBLISHED

Soft Computing for Machine Learning and Bioinformatics, Verilog Dr. Muller Publication, Mauritius, Germany, June 2010.

Feature selection in High dimensional data using meta-heuristic, H. Banka & Suresh Dara, Lambert Acad. Pub., 2017

Proceedings of the First IEEE International Conference on Recent Advances in Information Tech-nology, Vol. I & Vol. II, Dr. C. Kumar & Dr. H. Banka and D. Ramesh, Vol. I- & Vol. II IEEEX-Plore, India, March, 2012.

Proceedings of the Third IEEE International Conference on Recent Advances in Information Technology, Vol. I & Vol. II (IEEE Conference) Dr. C. Kumar & Dr. H. Banka Vol. I- 582 (pages), Vol. II- 581(pages), Cygnus, India, March, 2016.

Proceedings of the Sixth IEEE International Conference on Recent Advances in Information Technology, Vol. I & Vol. II (IEEE Conference) Dr. ACS, R, Pamula, Dr. H. Banka Vol. I- 581 (pages), Vol. II- 565(pages), Cygnus, India, March, 2025.

SELECTED JOURNAL PUBLICATIONS

Sl. No.	autohrs	title	year	publisher	JCR_Quartile
1	A Sahu, S Sinha, H Banka	Fuzzy inference system using genetic algorithm and pattern search for predicting roof fall rate in underground coal mines	2024	International Journal of Coal Science &Technology	Q1
2	J Singh, AK Verma, H Banka, A Jaiswal	Optics-based metaheuristic approach to assess critical failure surfaces in both circular and non-circular failure modes for slope stability analysis	2024	Rock Mechanics Bulletin	Q1
3	S Kumar, H Banka, B Kaushik	Lightweight group authentication protocol for secure RFID system	2024	Multimedia Tools and Applications	Q2
4	S Kumar, H Banka, B Kaushik, S Sharma	An ultra-lightweight secure rfid authentication protocol for low-cost tags	2024	Journal of Computer Virology and Hacking Techniques	Q3
5	S Shukla, H Banka	Markov-based genetic algorithm with ?-greedy exploration for Indian classical music composition	2023	Expert Systems with Applications	Q1
6	A Kumar, M Nadeem, H Banka	Nature inspired optimization algorithms: a comprehensive overview	2023	Evolving Systems	Q3
7	S Kumar, H Banka, B Kaushik	Ultra-lightweight blockchain-enabled RFID authentication protocol for supply chain in the domain of 5G mobile edge computing	2023	Wireless Networks	Q3
8	N Chauhan, R Agrawal, H Banka	Adaptive application offloading for QoS maximization in cloud-fog environment with delay-constraint	2023	Peer-to-Peer Networking and Applications	Q3
9	S Shukla, H Banka	Monophonic music composition using genetic algorithm and Bresenham$^{\prime}$s line algorithm	2022	Multimedia Tools and Applications	Q2
10	J Pradhan, AK Pal, H Banka	A CBIR system based on saliency driven local image features and multi orientation texture features	2022	Journal of Visual Communication and Image Representation	Q2
11	RK Huda, H Banka	Efficient feature selection methods using PSO with fuzzy rough set as fitness function	2022	Soft Computing	Q3
12	G Mohindru, K Mondal, H Banka	Different hybrid machine intelligence techniques for handling IoT-based imbalanced	2021	CAAI Transactions on Intelligence Technology	Q1

		data			
13	J Pradhan, AK Pal, H Banka, P Dansena	Fusion of region based extracted features for instance-and class-based CBIR applications	2021	Applied Soft Computing	Q1
14	I Rasheed, H Banka, HM Khan	Pseudo-relevance feedback-based query expansion using boosting algorithm	2021	Artificial Intelligence Review	Q1
15	PCS Rao, P Lalwani, H Banka, GSN Rao	Competitive swarm optimization based unequal clustering and routing algorithms (CSO-UCRA) for wireless sensor networks	2021	Multimedia Tools and Applications	Q2
16	N Chauhan, H Banka, R Agrawal	Adaptive bandwidth adjustment for resource constrained services in fog queueing system	2021	Cluster computing	Q2
17	TK Sahoo, H Banka, A Negi	Design and analysis of various bidirectional 2DPCAs in feature partitioning framework	2021	Multimedia Tools and Applications	Q2
18	S Kumar, H Banka, B Kaushik, S Sharma	A review and analysis of secure and lightweight ECC-based RFID authentication protocol for Internet of Vehicles	2021	Transactions on Emerging Telecommunications Technologies	Q3
19	N Chauhan, H Banka, R Agrawal	Delay-aware application offloading in fog environment using multi-class Brownian model	2021	Wireless Networks	Q3
20	I Rasheed, H Banka, HM Khan	Building a text collection for Urdu information retrieval	2021	ETRI Journal	Q3
21	RK Huda, H Banka	A group evaluation based binary PSO algorithm for feature selection in high dimensional data	2021	Evolutionary Intelligence	Q3
22	G Mohindru, K Mondal, H Banka	Internet of Things and data analytics: A current review	2020	Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery 10 (3ĩ ĩ…	Q1
23	RK Huda, H Banka	New efficient initialization and updating mechanisms in PSO for feature selection and classification	2020	Neural Computing and Applications	Q2
24	TK Sahoo, H Banka, A Negi	Novel approaches to one-directional two-dimensional principal component analysis in hybrid pattern framework	2020	Neural Computing and Applications	Q2
25	J Pradhan, S Kumar, AK Pal, H Banka	Texture and colour region separation based image retrieval using probability annular histogram and weighted similarity matching scheme	2020	IET Image Processing	Q3

26	J Singh, H Banka, AK Verma	A BBO-based algorithm for slope stability analysis by locating critical failure surface	2019	Neural computing and applications	Q2
27	RK Huda, H Banka	Efficient feature selection and classification algorithm based on PSO and rough sets	2019	Neural Computing and Applications	Q2
28	J Pradhan, AK Pal, H Banka	Principal texture direction based block level image reordering and use of color edge features for application of object based image retrieval	2019	Multimedia Tools and Applications	Q2
29	J Singh, H Banka, AK Verma	Locating critical failure surface using meta-heuristic approaches: a comparative assessment	2019	Arabian Journal of Geosciences	Q3
30	P Lalwani, S Das, H Banka, C Kumar	CRHS: clustering and routing in wireless sensor networks using harmony search algorithm	2018	Neural Computing and Applications	Q2
31	J Pradhan, S Kumar, AK Pal, H Banka	A hierarchical CBIR framework using adaptive tetrolet transform and novel histograms from color and shape features	2018	Digital Signal Processing	Q2
32	TK Sahoo, H Banka	Multi-feature-based facial age estimation using an incomplete facial aging database	2018	Arabian Journal for Science and Engineering	Q2
33	P Lalwani, H Banka, C Kumar	BERA: a biogeography-based energy saving routing architecture for wireless sensor networks	2018	Soft Computing	Q3
34	M Nadeem, H Banka, R Venugopal	A neural network-based approach for steady-state modelling and simulation of continuous balling process	2018	Soft Computing	Q3
35	AK Jaiswal, H Banka	Epileptic seizure detection in EEG signal using machine learning techniques	2018	Australasian physical &engineering sciences in medicine	Q4
36	AK Jaiswal, H Banka	Local transformed features for epileptic seizure detection in EEG signal	2018	Journal of Medical and Biological Engineering	Q4
37	M Nadeem, H Banka, R Venugopal	Estimation of pellet size and strength of limestone and manganese concentrate using soft computing techniques	2017	Applied Soft Computing	Q1
38	AK Jaiswal, H Banka	Local pattern transformation based feature extraction techniques for classification of epileptic EEG signals	2017	Biomedical Signal Processing and Control	Q2
39	TK Sahoo, H Banka	New hybrid PCA-based facial age estimation using inter-age group variation-based hierarchical classifier	2017	Arabian Journal for Science and Engineering	Q2

40	PCS Rao, PK Jana, H Banka	A particle swarm optimization based energy efficient cluster head selection algorithm for wireless sensor networks	2017	Wireless networks	Q3
41	PC Srinivasa Rao, H Banka	Novel chemical reaction optimization based unequal clustering and routing algorithms for wireless sensor networks	2017	Wireless Networks	Q3
42	PC Srinivasa Rao, H Banka	Energy efficient clustering algorithms for wireless sensor networks: novel chemical reaction optimization approach	2017	Wireless Networks	Q3
43	P Lalwani, H Banka, C Kumar	CRWO: Clustering and routing in wireless sensor networks using optics inspired optimization	2017	Peer-to-Peer Networking and Applications	Q3
44	AK Jaiswal, H Banka	Epileptic seizure detection in EEG signal with GModPCA and support vector machine	2017	Bio-medical materials and engineering	Q4
45	CSR Annavarapu, S Dara, H Banka	Cancer microarray data feature selection using multi-objective binary particle swarm optimization algorithm	2016	EXCLI journal	Q1
46	M Nadeem, H Banka, R Venugopal	SVM-based predictive modelling of wet palettization using experimental and GA-based synthetic data	2016	Arabian Journal for Science and Engineering	Q2
47	J Singh, AK Verma, H Banka, TN Singh, S Maheshwar	A study of soft computing models for prediction of longitudinal wave velocity	2016	Arabian Journal of Geosciences	Q3
48	H Banka, SK Ray, DC Panigrahi	Standardization of a method for studying susceptibility of Indian coals to self-heating	2016	Arabian Journal of Geosciences	Q3
49	RK Yadav, H Banka	IBBOMSA: An improved biogeography-based approach for multiple sequence alignment	2016	Evolutionary Bioinformatics 12, EBO. S	Q4
50	B Kaushik, H Banka	Performance evaluation of approximated artificial neural network (AANN) algorithm for reliability improvement	2015	Applied Soft Computing	Q1
51	H Banka, S Dara	A Hamming distance based binary particle swarm optimization (HDBPSO) algorithm for high dimensional feature selection, classification and validation	2015	Pattern Recognition Letters	Q2
52	M Pal, D Bhati, B Kaushik, H Banka	Solving Classification Problem using Reduced Dimension and Eigen Structure in RSVM	2015	International Journal of Computer Applications	Q4

53	MK Shukla, H Banka	Line-wise Script segmentation for Indian language documents	2014	INTERNATIONAL JOURNAL OF COMPUTER APPLICATIONS IN TECHNOLOGY	Q4
54	R Chaturvedi, H Banka	Modified Ant Colony Optimization Algorithm for Travelling Salesman Problem	2014	International Journal of Computer Applications	Q4
55	MK Shukla, H Banka	Degraded script identification for Indian language-A survey	2014	International Journal of Computer Applications	Q4
56	V Kumar, B Kaushik, H Banka	Improved Multi-Agent Reinforcement Learning for Minimizing Traffic Waiting Time	2013	International Journal of Computer Applications	Q4
57	M Banerjee, S Mitra, H Banka	Evolutionary rough feature selection in gene expression data	2007	IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and…	Q1
58	S Mitra, H Banka	Multi-objective evolutionary biclustering of gene expression data	2006	Pattern Recognition	Q1
59	S Mitra, H Banka, W Pedrycz	Rough–fuzzy collaborative clustering	2006	IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics) 36…	Q1

Selected conferences papers/ Book chapters

1. Mitra, Sushmita, **Haider Banka**, and Witold Pedrycz. "Collaborative rough clustering." In International Conference on Pattern Recognition and Machine Intelligence, pp. 768-773. Springer, Berlin, Heidelberg, 2005. [*Book chapter*]
2. Mitra, Sushmita, **Haider Banka**, and Sankar K. Pal. "A MOE framework for biclustering of microarray data." In Pattern Recognition, 2006. ICPR 2006. 18th International Conference on, vol. 1, pp. 1154-1157. IEEE, 2006.
3. **Haider Banka**, and Sushmita Mitra. "Soft Computing in BI clustering." Introduction to Machine Learning and Bioinformatics (2008): 277. [*Book chapter*]
4. **Haider Banka** and Suresh Dara. "Feature Selection and Classification for Gene Expression Data Using Evolutionary Computation." In Database and Expert Systems Applications (DEXA), 2012 23rd International Workshop on, pp. 185-189. IEEE, 2012.
5. Filippone, Maurizio, Francesco Masulli, Stefano Rovetta, Sushmita Mitra, and **Haider Banka**. "Possibilistic approach to biclustering: An application to oligonucleotide microarray data analysis." In International Conference on Computational Methods in Systems Biology, pp. 312-322. Springer, Berlin, Heidelberg, 2006. [*Book chapter*]
6. Das, Ranajit, Sushmita Mitra, **Haider Banka**, and Subhasis Mukhopadhyay. "Evolutionary biclustering with correlation for gene interaction networks." In International Conference on Pattern Recognition and Machine Intelligence (PReMI), pp. 416-424. Springer, Berlin, Heidelberg, 2007.
7. Mitra, Sushmita, **Haider Banka**, and Jiaul Hoque Paik. "Evolutionary fuzzy biclustering of gene expression data." In International Conference on Rough Sets and Knowledge Technology, pp. 284-291. Springer, Berlin, Heidelberg, 2007. [*Book chapter*]
8. **Haider Banka**, and Sushmita Mitra. "Feature selection, classification and rule generation using rough sets." In Rough Sets: Selected Methods and Applications in Management and Engineering, pp. 51-76. Springer, London, 2012.
9. Rao, A. Chandra Sekhara, Durvasula VLN Somayajulu, and **Haider Banka**. "Modified correlation based technique in micro array data analysis for searching differentially expressed genes." In Recent Advances in Information Technology (RAIT), 2012 1st International Conference on, pp. 526-530. IEEE, 2012.
10. Rao, A. Chandra Sekhara, D. V. L. N. Somayajulu, **Haider Banka**, and Rohit Chaturvedi. "Outlier detection in microarray data using hybrid evolutionary algorithm, "*Procedia Technology 6 (2012): 291-298.*[*Book chapter*]
11. Dara, Suresh, and **Haider Banka**. "A binary PSO feature selection algorithm for gene expression data." Advances in Communication and Computing Technologies (ICACACT), 2014 International Conference on. IEEE, 2014. [*Book chapter*]
12. Dara, Suresh, and **Haider Banka**. "An Elitist Binary PSO Algorithm for Selecting Features in High Dimensional Data." Advanced Computing, Networking and Informatics-Volume 1. Springer International Publishing, 2014. 679-686.

13. Rao, PC Srinivasa, **Haider Banka**, and Prasanta K. Jana. ”Energy Efficient Clustering for Wireless Sensor Networks: A Gravitational Search Algorithm.” In International Conference on Swarm, Evolutionary, and Memetic Computing, pp. 247-259. Springer, Cham, 2015.
14. Rao, PC Srinivasa, **Haider Banka**, and Prasanta K. Jana. “A gravitational search algorithm for energy efficient multi-sink placement in wireless sensor networks.” In International conference on swarm, evolutionary, and memetic computing, pp. 222-234. Springer, Cham, 2015.
15. Yadav, Rohit Kumar, and **Haider Banka**. “Genetic Algorithm with Improved Mutation Operator for Multiple Sequence Alignment.” Information Systems Design and Intelligent Applications. Springer India, 2015. 515-523. [*Book chapter*]
16. P. CH Srinivas, **H. Banka**, and Prasanta K. Jana. ”PSO-Based Multiple-sink Placement Algorithm for Protracting the Lifetime of Wireless Sensor Networks.” In Proceedings of the Second International Conference on Computer and Communication Technologies, pp. 605-616. Springer India, 2016.
17. Alam, Manaar, Soumyajit Chatterjee, and **Haider Banka**. ”A novel parallel search technique for optimization.” In Recent Advances in Information Technology (RAIT), 2016 3rd International Conference on, pp. 259-263. IEEE, 2016.
18. Seth, Himanshu Ranjan, and **Haider Banka**. ”Hardware implementation of Nave Bayes classifier: A cost effective technique.” In Recent Advances in Information Technology (RAIT), 2016 3rd International Conference on, pp. 264-267. IEEE, 2016.
19. Singh, Jayraj, A. K. Verma, and **Haider Banka**. “Application of biogeography based optimization to locate critical slip surface in slope stability evaluation.” In 2018 4th International Conference on Recent Advances in Information Technology (RAIT), pp. 1-5. IEEE, 2018.
20. Singh, Jayraj, **Haider Banka**, and A. K. Verma. “Analysis of slope stability and detection of critical failure surface using gravitational search algorithm.” In 2018 4th International Conference on Recent Advances in Information Technology (RAIT), pp. 1-6. IEEE, 2018.

21. Singh, Jayraj, A. K. Verma, and **Haider Banka**. "A Comparative Study for Locating Critical Failure Surface in Slope Stability Analysis via Meta-Heuristic Approach." In Handbook of Research on Predictive Modeling and Optimization Methods in Science and Engineering, pp. 1-18. IGI Global, 2018. [*Book chapter*]

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