Prof. (Dr.) Amlan Chakrabarti **Curriculum Vitae**

Director
A.K. Choudhury School of Information Technology
University of Calcutta, India
Email: acakcs@caluniv.ac.in, Mobile: +91 9831129520

Education

University of Calcutta and Indian Statistical Institute Kolkata, India
Doctoral Studies *December 2005 – Feb 2010*
- Ph.D Thesis: On Architectural Synthesis of Quantum Computer
- Supervisor: Prof. Susmita Sur-Kolay, Advanced Computing and Microelectronics Unit, Indian Statistical Institute, Kolkata, India

University of Calcutta Kolkata, India
Master of Technology in Radiophysics and Electronics *Jan 2000 – May 2001*
- Specialization: IT and VLSI Design
- Overall Percentage: 81%, 1st Class, Rank: 3/18

University of Calcutta Kolkata, India
Master of Electronic Science *August 1996 - July 1998*
- Specialization: Microelectronics
- Overall Percentage: 77%, 1st Class, Rank: 2/22

University of Calcutta Kolkata, India
Bachelor of Science with Honours in Physics *August 1993 - July 1999*
- Specialization: Physics
- Overall Percentage: 63.5, 1st Class, Received National Fellowship for Postgraduate Studies

Research Experience

A.K.Choudhury School of Information Technology, University of Calcutta, India

Professor *April 2016 - current*

Associate Professor *April 2013-March 2016*

Reader *April 2010-March 2013*

Assistant Professor *April 2007-March 2010*

Sr. Lecturer *April 2007-March 2009*

Lecturer *September 2006-March 2007*

- Supervised a team of 20 Ph.D.and 4 Post-Doctoral Researchers till date.
- Leading multiple research groups in the domain of Quantum Computing, Machine Learning, Computer Vision, IoT and Cyberphysical Systems and VLSI CAD
- Executed 15 Research Projects till date, funded by DST, MietY, DRDO, Ministry of Social Empowerment, MHRD-TEQIP, WB-DST, TCS and Intel India. Total Funding of TNR 10 Crore (approx..)
- Ph.D. students have been working as faculties in NIT, University of Essex UK, University of Cork Ireland and has received top placements in industries such as Intel, ATOS, PWC, IT Head in Government Department etc.
- Masters thesis students have received faculty positions in University of Nebraska Lincoln USA, IIT Kharagpur and top industry positions in Microsoft Research, PWC, IBM etc.

Department of Computer Science and Technology, University of Cambridge Cambridge, UK
Hamid Visiting Professor *May 2018-June 2018*
- Worked with Prof. Anuj Dewar in formulating verification models for real-time systems.
- Delivered a Colloquium Lecture titled "Scheduling Tasks for Reconfigurable Architectures", on 18th May, 2017.

University of Oradea Oradea, Romania
Erasmus Mundus Visiting Professor *April 2018-May 2018*
- Helped to develop the Masters Course on Mechatronics incorporating the topics of Artificial Intelligence
- Collaborated with the Departments of Mechatronics and Computer Science Engineering in developing courses related to Machine Intelligence and Computer Vision.

Kyushu Institute of Technology Kyushu, Japan
JSPS Visiting Professor *January 2017-May 2018*
- Collaborated with the researchers in the Dependable Integrated Systems Research Center of the Institute for the design of power efficient design of Real-Time Embedded Systems.
- Contributed in developing the video course content on "Embedded Systems Design" for the university.
- Delivered a Colloquium lecture titled "IoTs and Smart City" on January 23, 2017

Dept. of Computer Sc. & Engg. Indian Institute of Technology, Kharagpur Kharagpur, India
INSA Visiting Faculty Fellow *August 2014*
- Worked in developing Quantum Simulation Algorithms for Physical Placement of Qubits
- Offered lectures on Embedded and Real Time Systems for M.Tech. students.

School of Electrical Engineering, Princeton University Princeton, USA
Postdoctoral Researcher *August 2011 - September 2012*
- Led the Quantum Computing Project funded by IRPA
- Led the research team for developing the popular quantum logic synthesis tool coined as "FTQLS: Fault Tolerant Quantum Logic Synthesis"
- Supervised 2 Ph.D. students

Department of Computer Science, State University of New York at Buffalo Buffalo, USA
Visiting Researcher October 2007-November 2007
- Worked with Prof. Ken Regan, SUNY Buffalo in formulating polynomial forms of Quantum Computing circuits for simulation and Entanglement Aanlysis.

Administrative Experience

Director A.K. Choudhury School of Information Technology, University of Calcutta April 2016-current

Head Information Technology and Technology Innovation Cell, Dept. of Higher Education, Govt. of West Bengal July 2021-September 2022

Dean Faculty of Technology and Engineering, University of Calcutta December 2016-January 2020

Coordinator, A.K. Choudhury School of Information Technology, University of Calcutta April 2011-March 2016

Research Visits

State University at New York at Buffalo Buffalo, USA
Visiting Researcher *October 2007*
– Worked on Quantum Computing Circuit Simulation
–

GHI Helmholtz Institute Darmstadt, Germany
Visiting Researcher *December 2010*
– Worked on FPGA based Giga-bit Transcreceiver Data Communication Protocol design.
–

Aurel Vlaicu University of Arad, Arad, Romania
Visiting Faculty *May 2013*
– Worked on FPGA based Embedded Systems Design at the Automation and Applied Informatics Department of the University
– Delevered Colloquim Lecture on FPGA based Embedded Systems Design.
–

University of Bremen Bremen, Germany
Visiting Faculty *February 2014*
– Worked on Quantum Random Walk-Algorithms.
–

CERN, the European Organization for Nuclear Research Geneva, Switzerland
Visiting Scientist *July 2015*
– Member of the Indian Team for CERN-ALICE Collaboration.
– Worked on development of FPGA Firmware for ALICE Experiment

Nanyang Technological University Singapore
Visiting Professor *June 2016*
– Worked on Medical Image Analysis and Visualization for Computer Aided Diagnostics and Neuromorphic Computing.

Indian Institute of Technology, Kanpur Kanpur, India
Visiting Professor *August 2017*
– Academic Visit at the Dept. of CSE, IIT Kanpur and invited lecture titled "Task Scheduling and Hardware Design in Reconfigurable Space" on 19th August

Stefan cel Mare University of Suceava Suceava, Romania
Visiting Professor *May 2018*
– Academic Visit for delivering an ACM Distinguished Speaker Lecture titled "Software-Hardware Co-design for New Generation IoTs
–

City University of London London, UK
Visiting Professor *June 2018*
– Academic Visit for delivering an ACM Distinguished Speaker Lecture titled "Software-Hardware Co-design for New Generation IoTs
–

National School of Applied Sciences, ibn Tofail University Kenitra, Morocco
Visiting Professor *May 2018*
– Academic Visit for delivering Keynote lecture titled "Medical Image Processing: Analysis and Visualization," at ISAECT 2018
–

University of Global Village, Bangladesh Barisal, Bangladesh
Visiting Professor *December 2019*
– Academic Visit for lecturing on a Training Program on Machine Learning
– Delivered a Colloquium Lecture on Quantum Computing

Center for the Advancement of Integrated Medical and Engineering Sciences, Karolinska Institute Stockholm, Sweeden
Visiting Professor *September 2022*
Academic Visit for lecturing at a Colloquium lecture titled "Machine Learning for Water Informatics".

Industrial Experience

Nikel India Pvt. Ltd. (OrCAD subsidiary) Bangalore, India
Member of Electronic Design Automation Team *January 1999 - January 2000*
– Worked in developing EDA libraries for PCB and On-Chip Designs

Skills

Languages: C/C++, Java, SQL, VHDL, Verilog HDL, C Shell, Python, Matlab

Packages & Tools: Mentor Leonardo Spectrum Synthesizer, Xilinx ISE, Mentor ModelSim Simulator, National Instruments Tool Suite.

Operating Systems: Linux, iOS, Windows, SUN Solaris

Utilities: MS Office, LaTeX Software Configuration Management and Tools (SVN, git, CVS, ClearCase)

Awards and Recognitions

1. Fellow of **West Bengal Academy of Science and Technology**, **2022**
2. **Course Developer** for the *IEEE Blended Learning Course* on "**Machine Learning**", 2021
3. *IEEE Computer Society*, **Distinguished Visitor 2020-2022.**
4. **Siksha Ratna Award**, *Department of Higher Education, Govt. of West Bengal*, 2018.
5. **ACM Distinguished Speaker** (2017-2020).
6. **Hamied Visiting Professor Fellowship**, *University of Cambridge*, 2018
3. **ERASMUS MUNDUS LEADERS Fellowship**, 2017
4. **DST International Travel Grant**, 2017
5. **Jt. Secretary IEEE CEDA**, *India Council*, 2016-2021
6. **JSPS Invitation Fellowship for Research in Japan,** 2016
7. **CERN Travel Fellowship, 2015**
8. **Honorable Mention Award in VLSI Design Conference 2015, Bangalore**
9. **INSA Visiting Faculty Fellow 2014**
10. **Awarded BOYSCAST Fellowship in Engineering**, by *Department of Science of Technology*, Govt. of India, 2011

TEACHING RECORD	
Courses Taught (UG Level)	*Courses Taught (PG Level)*
1. Data Structure and Algorithms 2. Embedded Systems 3. Computer Architecture 4. Operating Systems 5. Database Management system 6. Computer Networks 7. Digital Signal and Image Processing 8. Java /PythonProgramming 9. VLSI Design 10. Multimedia Systems	1. Graph algorithms 2. Machine Learning 3. CAD for VLSI 4. Computer Vision 5. High Performance Computing 6. Distributed Systems 7. Quantum Computing 8. Cyberphysixal Systems and IoT 9. Reconfigurable Computing 10. Ethics in research

Invention Disclosures

Patet:

1. Title: "SYSTEM FOR SECURING RECONFIGURABLE SYSTEM ON CHIPS" Indian patent, Patent filed on 9th April, 2022, Appl.No. 202231021338.

2. Title: 'A SYSTEM ON CHIP BASED PORTABLE SMART DEVICE FOR DEMARCATION OF DISEASE AND PEST INFECTED PARTS OF CROPS', approved for filing of patent to be supported by Department of Science and Technology and Biotechnology, Government of West Bengal.

3. Title: "*A SYSTEM AND METHOD FOR ANALYZING VIDEOS OF APPLICATION AND FUNCTION FOR FUTURE IDENTIFICATION OF VIDEOS AND RELATED APPLICATION AND FUNCTION*" Indian patent filed in July 2015, No. 628/KOL/2015.

4. Title: "*FINDING OPTIMAL WATER CONSUMPTION AND LEAKAGE RATE IN A RESIDENTIAL AREA USING A SMART SYSTEM*", Indian Patent filed in October 2019, Application No. R20191032301.

5. Title: "*A SYSTEM METHOD FOR DETECTING PLATELET FUNCTION USING UV LIGHT AND DEEP LEARNING ANALYSIS OF MICROSCOPIC IMAGES*", Indian Patent filed in November 2019, Application No.: 201931048635

6. Title: "*INTERNET-OF-THINGS BASED SYSTEMS AND METHODS FOR MONITORING QUALITY OF EDIBLE PRODUCTS*" Indian Patent filed in April 2020, Application No.: 202031017818

Copyright:

"3D Reconstruction and Slicing of MR Images of Brain", **A. Chakrabarti**, S. Ghoshal, P.Chatterjee and S. Banu, Indian Copyright Registration No.:L-69022/2017.

Funded Research Projects

Sl. No.	Project Title	Worked As	Funding Agency	Amount (in INR lacs=0.1 Million)	Duration	Period	Status
1.	Indian Participation in The ALICE Experiment at CERN	Principal Investigator	DST, Govt. of India	73	5 Years	Dec 2021-Oct 2026	Ongoing
1.	Reconfigurable Machine Learning Accelerator design and development for Avionics applications	Co-Investigator in Collaboration with IIT Hyderabad	DRDO	394.228	3 years	Feb 2021-Feb 2024	Ongoing
2.	Development of Trusted Middleware Strategies in IoT Framework using Blockchain Technology	Principal Supervisor (TCS RSP Funding)	Tata Consultancy Services	24 lacs	4 years	2020-24	Ongoing
3.	New Generation Communications and Security	Principal Supervisor (Ph.D. Research Funding)	Intel India	8 lacs	1 year	2019-2020	Completed
4.	Real time image based Machine Learning techniques for site specific insect pest and disease management of crops	Principal Investigator	DST, West Bengal	9.83 lacs	3 years	April 2019-March 2022	Ongoing
5.	Developing Open Source Tool Using Quantum based Feature Selection for High Dimensional Datasets	Principal Investigator	DST, Govt. of India	4.21 lacs	2 years	Sept 2018-August 2020	Completed
6.	Detection of An Unknown Stream Cipher and Recovery of Its Embedded Keys Through Cryptanalysis of a Class of Iterative Ciphers Using Fault Analysis	Principal Investigator	DRDO, Govt. of India	25 lacs	2 years	April 2018-March 2020	Ongoing
7.	Open Hardware based Communicable Digital Bio-Sensing Platform	Principal Investigator	MietY, Govt. of India	49.874 lacs	2 years	September 2017-August 2019	Completed
8.	3D Visualization for Brain and Spine Tumor Detection	Principal Investigator	UGC (UPE-II), Govt. of India	20 lacs	3 years	September 2017-August 2020	Completed
9.	CBM-India Project	Co-Principal Investigator	DST, Govt. of India	20 lacs	3year	April 2016-March 2019	Completed
10.	Task Mapping and Scheduling in Dynamically Reconfigurable Heterogeneous Real-time Systems.	Principal Supervisor (Ph.D. research Funding)	Tata Consultancy Services	14 lacs	4 year	May 2014-April 2018	Completed
11.	Center for Systems Biology and Bio-Medical Engineering	Joint-Principal Investigator	MHRD (TEQIP-II)	5 Crores	3 years	September 2013-August 2016	Completed
12.	Measurement Of Lateral Curvature, Modelling And Measurement Of 3D	Principal Investigator	Ministry of Social Empowerment, Govt. Of India	11 lacs	3 years	April 2011-March 2014	Completed
13.	Development of FPGA based Data Acquisition System and related Hardware for CBM Muon Detection	Co-Principal Investigator	DST, Govt. of India	47 lacs	5 years	April 2009-March 2014	Completed
14.	Stereo Image Processing for Unmanned Ground Vehicle	Principal Investigator	DRDO, Govt. of India	5 lacs	2 Years	April 2004-March 2006	Completed

Research Guidance (Ph.D.Awarded)

Sl. No.	Candidate Name	Thesis Title	Remark	Supervisor(s) Name
1.	Jyoti Prakash Singh	Temporal Characterization of Mobile Ad Hoc Network Environment	Awarded in 2016	**Prof. Amlan Chakrabarti** and Prof. Paramartha Dutta
2.	Arindam Ray	Effective Delivery Model for Technology Enabled Learning Using Physiological Signals	Awarded in 2018	**Prof. Amlan Chakrabarti**
3.	Saptarsi Goswami	Meta features and clustering based approaches for feature selection	Awarded in 2018	**Prof. Amlan Chakrabarti** and Prof. Basabi Chakraborty
4.	Suman Sau	Design of Efficient Secure Data Communication Techniques for Reconfigurable Hardware Platform	Awarded in 2018	**Prof. Amlan Chakrabarti**
5.	Chandrajit Pal	Implementation And Evaluation Of Image And Video Processing Algorithms On Reconfigurable Architecture	Awarded in 2018	Dr. Ranjan Ghosh and **Prof. Amlan Chakrabarti**
6.	Sangeet Saha	Task Mapping and Scheduling in Dynamically Reconfigurable Heterogeneous Real-time System	Awarded in 2018	Dr. Ranjan Ghosh Dr. Arnab Sarkar and **Prof. Amlan Chakrabarti**
7.	Rourab Paul	Studies and Design Exploration of Crypto Implementations on Recongurable Hardware	Awarded in 2018	Dr. Ranjan Ghosh and **Prof. Amlan Chakrabarti**
8.	Biswajit Patra	Development of CAD Techniques for Studying Signal Integrity and Power Delivery Network System for Wireless SOC with Advanced Technology Nodes (45nm and below)	Awarded in 2018	**Prof. Amlan Chakrabarti** and Dr. Sanatan Chattopadhyay
9.	Satyabrata Maity	Design and Implementation of Novel Summarization Technique for Video Analysis	Awarded in 2018	**Prof. Amlan Chakrabarti** and Prof. Debotosh Bhattacharjee
10.	Subhankar Bhattacharya	Design, Analysis and Implementation of Broadband Communication System Applicable to WLAN	Awarded in 2019	Prof. Sanjib Sil **Prof. Amlan Chakrabarti**
11.	Moumita Chakraborty	Computer Aided Design Strategies For Ecient On-Chip Power Distribution Networks	Awarded in 2021	Dr. Debasri Saha **Prof. Amlan Chakrabarti**
12.	Tanmay Biswas	An Approach Towards Hardware-Software Co-design for Enhancing Speech Application	Awarded in 2021	Dr. Debasri Saha **Prof. Amlan Chakrabarti**
13.	Krishnendu Guha	Self Aware Nature Inspired Approaches Ensuring Embedded Security	Awarded in 2021	Dr. Debasri Saha **Prof. Amlan Chakrabarti**
14.	Amit Kumar Das	Graph-based approach for feature selection in high-dimensional datasets	Awarded in 2021	**Prof. Amlan Chakrabarti** and Prof. Basabi Chakraborty
15.	Sanjay Chakrabarti	Quantum Inspired Algorithms for Data Clustering, Classification and Image Processing Applications	Awarded in 2022	Dr. Ranjan Ghosh Dr. Shorab Hossain Sheikh and **Prof. Amlan Chakrabarti**
16.	Kalyan Baital	Energy Efficient Scheduling of Real-Time Tasks in Multi-Core Systems	Awarded in 2022	**Prof. Amlan Chakrabarti**
17.	Arindrajit Pal	Temporal Characterization of mobile Ad-hoc Network in multivariate framework	Awarded in 2022	Prof. Paramartha Dutta and **Prof. Amlan Chakrabarti**
18.	Jhilam Mukherjee	Development of an automated lung nodule risk prediction model from radiological images	Awarded in 2022	**Prof. Amlan Chakrabarti** Dr. Madhuchanda Kar

Publications

Books (Authored/Edited)

1. **Deep Learning, A. Chakrabarti,** A. K. Das, S. Goswami, P. Mitra, Pearson 2021.
2. **Agricultural Informatics: Automation Using the IoT and Machine Learning (Advances in Learning Analytics for Intelligent Cloud-IoT Systems)**, A. Choudhury, A. Biswas, M. Prateek, **A. Chakrabarti**, Wiley 2021.
3. **Modern Techniques in Biosensors: Detection Methods and Commercial Aspects: 327 (Studies in Systems, Decision and Control)**, G. Dutta, A. Biswas and **A. Chakrabarti**, Springer, eBook ISBN 978-981-15-9612-4, Hardcover ISBN 978-981-15-9611-7 2021.
4. **Data Management, Analytics and Innovation,** V. E. Balas, N. Sharma an**d A. Chakrabarti,** Springer Singapore, ISBN: 978-981-13-1274-8, 2019.
5. **AdHoc Networks: A Statistical Perspective**: J.P. Singh, P. Dutta and **A. Chakrabarti**, *Springer Singapore*, ISBN: 978-981-10-8769-1, 2018.
6. **Advances in Computing Applications, Springer Singapore, A. Chakrabarti,** N. Sharma and V. E. Balas, ISBN 978-981-10-2629-4, 2016.

Book Chapters

1. A.K. Das, S. Goswami, A.K. Das, **A. Chakrabarti**, B. Chakraborty, (2023), "**Augmented Feature Generation Using Maximum Mutual Information Minimum Correlation**," In: Goswami, S., Barara, I.S., Goje, A., Mohan, C., Bruckstein, A.M. (eds) Data Management, Analytics and Innovation. ICDMAI 2022. Lecture Notes on Data Engineering and Communications Technologies, vol 137. Springer, Singapore. https://doi.org/10.1007/978-981-19-2600-6_15
2. S. Ghosh, D. Ghosh, K. Samanta, S. Goswami, S. Bhowmick, S. K. Purkayastha, A. Sarkar and **A. Chakrabarti**, (2023), "**A Data Science Approach to Evaluate Drug Effectiveness: Case Study of Remdesivir for Covid-19 Patients in India**," In: Goswami, S., Barara, I.S., Goje, A., Mohan, C., Bruckstein, A.M. (eds) Data Management, Analytics and Innovation. ICDMAI 2022. Lecture Notes on Data Engineering and Communications Technologies, vol 137. Springer, Singapore. https://doi.org/10.1007/978-981-19-2600-6_49
3. M Ghosh, N Dey, D Mitra and **A Chakrabarti**, (2021), "**2D Qubit Placement of Quantum Circuits Using LONGPATH**, " in R. Chaki, A. Cortesi, K. Saeed, N. Chaki, (eds) Advanced Computing and Systems for Security. Advances in Intelligent Systems and Computing, vol 996. Springer, Singapore. https://doi.org/10.1007/978-981-13-8969-6_8
4. S. Malakar, S.Goswami, **A. Chakrabarti**, B. Chakraborty, (2020), "**A Hybrid and Adaptive Approach for Classification of Indian Stock Market-Related Tweets**," In: Sharma, N., Chakrabarti, A., Balas, V. (eds) Data Management, Analytics and Innovation. Advances in Intelligent Systems and Computing, vol 1016. Springer, Singapore. https://doi.org/10.1007/978-981-13-9364-8_24
5. T. Poddar, J. Mukherjee, B. Ganguli, M. Kar, **A. Chakrabarti, (2020), "A Clinically Applicable Automated Risk Classification Model for Pulmonary Nodules,"** In: Sharma, N., Chakrabarti, A., Balas, V. (eds) Data Management, Analytics and Innovation. Advances in Intelligent Systems and Computing, vol 1016. Springer, Singapore. https://doi.org/10.1007/978-981-13-9364-8_5
6. K. Baital, **A. Chakrabarti**, (2020), "**An Approach: Applicability of Existing Heterogeneous Multicore Real-Time Task Scheduling in Commercially Available Heterogeneous Multicore Systems**," In: Sharma, N., Chakrabarti, A., Balas, V. (eds) Data Management, Analytics and

Innovation. Advances in Intelligent Systems and Computing, vol 1042. Springer, Singapore. https://doi.org/10.1007/978-981-32-9949-8_8

7. A. Ghosh, A. Sufian, F. Sultana, **A. Chakrabarti**, D. De, (2020), "**Fundamental Concepts of Convolutional Neural Network**," In: Balas, V., Kumar, R., Srivastava, R. (eds) Recent Trends and Advances in Artificial Intelligence and Internet of Things. Intelligent Systems Reference Library, vol 172. Springer, Cham. https://doi.org/10.1007/978-3-030-32644-9_36

8. A. Pal, P. Dutta, **A. Chakrabarti**, J.P. Singh, (2020), "**Stable Neighbor-Node Prediction with Multivariate Analysis in Mobile Ad Hoc Network Using RNN Model**," In: Mandal, J., Mukhopadhyay, S., Dutta, P., Dasgupta, K. (eds) Algorithms in Machine Learning Paradigms. Studies in Computational Intelligence, vol 870. Springer, Singapore. https://doi.org/10.1007/978-981-15-1041-0_10

9. S. Sarkar, S. Ali, **A. Chakrabarti**, (2020), "**Shot Classification and Replay Detection in Broadcast Soccer Video**," In: Chaki, R., Cortesi, A., Saeed, K., Chaki, N. (eds) Advanced Computing and Systems for Security. Advances in Intelligent Systems and Computing, vol 1136. Springer, Singapore. https://doi.org/10.1007/978-981-15-2930-6_5

10. P. Banerjee, T.K. Ballabh, **A. Chakrabarti**, (2020), "**PLEADER: A Fast and Area Efficient Hardware Implementation of Leader Algorithm**," In: Saini, H.S., Singh, R.K., Tariq Beg, M., Sahambi, J.S. (eds) Innovations in Electronics and Communication Engineering. Lecture Notes in Networks and Systems, vol 107. Springer, Singapore. https://doi.org/10.1007/978-981-15-3172-9_61

11. S. Chakraborty, S.H. Shaikh, **A. Chakrabarti**, R. Ghosh, (2020), "**A Study of Scrambled Noisy Quantum Image Formation with Geometric Transformation and Its Denoising Using QWT**," In: Nanda, A., Chaurasia, N. (eds) High Performance Vision Intelligence. Studies in Computational Intelligence, vol 913. Springer, Singapore. https://doi.org/10.1007/978-981-15-6844-2_10

12. A.K. Mandal, M. Panday, A. Biswas, S. Goswami, **A. Chakrabarti**, B, Chakraborty, (2021), "**An Approach of Feature Subset Selection Using Simulated Quantum Annealing**," In: Sharma, N., Chakrabarti, A., Balas, V., Martinovic, J. (eds) Data Management, Analytics and Innovation. Advances in Intelligent Systems and Computing, vol 1174. Springer, Singapore. https://doi.org/10.1007/978-981-15-5616-6_10

13. M.T. Dey, P. Chatterjee, **A. Chakrabarti**, (2021), "**Smart Waste Monitoring Using Internet of Things. In: Sharma, N., Chakrabarti**," A., Balas, V., Martinovic, J. (eds) Data Management, Analytics and Innovation. Advances in Intelligent Systems and Computing, vol 1174. Springer, Singapore. https://doi.org/10.1007/978-981-15-5616-6_30

14. A. Kumar Barik, S. Malakar, S. Goswami, B. Ganguli, S. Sen Roy, **A. Chakrabarti**, (2021), "**Analysis of GHI Forecasting Using Seasonal ARIMA**" In: Sharma, N., Chakrabarti, A., Balas, V.E., Martinovic, J. (eds) Data Management, Analytics and Innovation. Advances in Intelligent Systems and Computing, vol 1175. Springer, Singapore. https://doi.org/10.1007/978-981-15-5619-7_5

15. P. Banerjee, **A. Chakrabarti**, T.K. Ballabh, (2021), "**An Efficient Algorithm for Complete Linkage Clustering with a Merging Threshold**," In: Sharma, N., Chakrabarti, A., Balas, V.E., Martinovic, J. (eds) Data Management, Analytics and Innovation. Advances in Intelligent Systems and Computing, vol 1175. Springer, Singapore. https://doi.org/10.1007/978-981-15-5619-7_10

16. J. Saini, G. Sikder, **A. Chakrabarti**, S. Chattopadhyay, (2021), "**Test-Bench Setup for Testing and Calibration of a Newly Developed STS/MUCH-XYTER ASIC for CBM-MUCH Detectors**," In: Bhattacharjee, D., Kole, D.K., Dey, N., Basu, S., Plewczynski, D. (eds) Proceedings of International Conference on Frontiers in Computing and Systems. Advances in Intelligent Systems and Computing, vol 1255. Springer, Singapore. https://doi.org/10.1007/978-981-15-7834-2_74

17. G. Samanta, **A. Chakrabarti**, B.B. Bhattacharya, (2021), "**Extraction of Leaf-Vein Parameters and Classification of Plants Using Machine Learning**," In: Bhattacharjee, D., Kole, D.K., Dey, N., Basu, S., Plewczynski, D. (eds) Proceedings of International Conference on Frontiers in Computing and Systems. Advances in Intelligent Systems and Computing, vol 1255. Springer, Singapore. https://doi.org/10.1007/978-981-15-7834-2_54

18. S.D. Choudhury, S. Goswami, **A. Chakrabarti**, (2020), "**Time Series- and Eigenvalue-Based Analysis of Plant Phenotypes**," In book: Intelligent Image Analysis for Plant Phenotyping, Taylor & Francis, 10.1201/9781315177304-10.

Journals

1. S. Basu, A. Saha, **A. Chakrabarti**, S Sur-Kolay, "i-QER: An Intelligent Approach Towards Quantum Error Reduction," in *ACM Transactions on Quantum Computing*, 2022.

2. MD. Mallick, S Biswas, AK Das, HN Saha, **A Chakrabarti**, N Deb, "Deep learning based automated disease detection and pest classification in Indian mung bean," in *Springer Multimedia Tools and Applications*, 2022.

3. W. Ansar, S Goswami, **A Chakrabarti**, B Chakraborty, A novel selective learning based transformer encoder architecture with enhanced word representation, in *Springer Applied Intelligence*, 2022.

4. S. Sarkar, D. P. Mukherjee and **A. Chakrabarti**, "Reinforcement Learning for Pass Detection and Generation of Possession Statistics in Soccer," in *IEEE Transactions on Cognitive and Developmental Systems*, 2022, doi: 10.1109/TCDS.2022.3194103.

5. M. Rakshit, S. Bhattacharjee, G. Garai, **A Chakrabarti**, "A novel differential evolution algorithm for tone reservation based peak to average power ratio reduction technique in orthogonal frequency division multiplexing systems," *Swarm and Evolutionary Computation*, Elsevier, Volume 72, July 2022

6. A. Saha, R. Majumdar, D. Saha, **A. Chakrabarti**, and S. Sur-Kolay, "Asymptotically improved circuit for a d-ary Grover's algorithm with advanced decomposition of the n-qudit Toffoli gate," *Phys. Rev. A*, Vol. 105, 062453 – Published 28 June 2022.

7. AK Das, B Chakraborty, S Goswami, **A Chakrabarti**, "A fuzzy set based approach for effective feature selection," *Fuzzy Sets and Systems*, Elsevier, In press, 2022.

8. T. Chatterjee, A. Das, S. I. Mohtashim, A. Saha, **A. Chakrabarti**, "Qurzon: A Prototype for a Divide and Conquer-Based Quantum Compiler for Distributed Quantum Systems," Springer Nature Computer. Science, Vol. 3, 323, 2022.

9. S. Basu, A. Saha, **A. Chakrabarti**, and S. Sur-Kolay, "*i*-QER: An Intelligent Approach towards Quantum Error Reduction," *ACM Transactions on Quantum Computing*, Accepted (May 2022).

10. A. Majumder, S. Saha, **A. Chakrabarti** and K. McDonald-Maier, "Energy-Aware Real-Time Tasks Processing for FPGA-Based Heterogeneous Cloud," *IEEE Transactions on Sustainable Computing*, vol. 7, no. 2, pp. 414-426, 2022.

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38. B. Biswas, S. Ghoshal, P. Chatterjee, **A. Chakrabarti**, K. N. Dey, ìMedical Image Fusion by Combining SVD and Shearlet Transform, *Proc. of 4th IEEE International Conference on Signal Processing and Integrated Networks (SPIN-15*).
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40. B. Biswas, **A. Chakrabarti**, K. N. Dey, ìMedical Image Fusion Using Regional Statistics of Shift-invariant Shearlet Domain, *Proc. of IEEE Conference on Biomedical Engineering and Sciences (IECBES 2014*).
41. K. Guha, R. R. Sahani, M. Chakraborty, **A. Chakrabarti**, D. Saha, ìAnalysis of Secret Key Revealing Trojan Using Path Delay Analysis for Some Cryptocores, *Proc. of Frontiers in Intelligent Computing, Theory and Application (FICTA 2014)*.
42. M. Chakraborty, K. Guha, **A. Chakrabarti**, D. Saha, ìAnalysis of power distribution network for some cryptocores, *Proc. of 3rd International Conference on Advances in Computing, Communications and Informatics (ICACCI 2014).*
43. T. Biswas, C. Pal, S. B. Mandal, **A. Chakrabarti**, ìAudio de-noising by spectral subtraction technique implemented on reconfigurable hardware, *Proc. of Seventh International Conference on Contemporary Computing (IC3 2014)*.
44. S.B.Mondal, S.Sur-Kolay and **A.Chakrabarti**, ìSynthesis of Ternary Groverës Algorithmî, *Proc. of IEEE 41st International Symposium on Multiple-Valued Logic (ISMVL 2014), Bremen Germany, 19-21 May 2014*.
45. S. Ghoshal, P. Chatterjee, B. Biswas, **A. Chakrabarti** and K. N. Dey, "A Novel Method for Automatic Image Registration Based on Wavelet and Near Fuzzy Set, *Proc. of IEEE INDICON 2013, 13-15 Dec 2013, IIT Mumbai*.
46. C. Pal, C. Pal, K. N. Chaudhury, A. Samanta, **A. Chakrabarti** and Ranjan Ghosh, "Hardware software co-design of a fast bilateral filter in FPGA, *Proc. of IEEE INDICON 2013, 13-15 Dec 2013, IIT Mumbai*.
47. S. Saha, **A. Chakrabarti** and Ranjan Ghosh, "Exploration of Multi-thread Processing on XILKERNEL for FPGA Based Embedded Systems, *Proc. of 19th International Conference on Control Systems and Computer Science, 29-31 May 2013, Romania*.

48. **A. Chakrabarti**, CC Lin and N.K. Jha, ìDesign of Quantum Circuits for Random Walk Algorithms, *Proc. of IEEE Annual Symposium on VLSI (ISVLSI-2012), University of Massachusetts, Amherst, USA, Aug 19-21. 2012*.
49. S.B. Mandal, **A.Chakrabarti** and S. Sur-Kolay, ìA Synthesis Method for Quaternary Quantum Logic Circuits, *Proc. of the VLSI Design and Test Symposium (VDAT-2012), Kolkata, July 2012. DOI: 10.1007/978-3-642-31494-0_31*.
50. B.Patra, S. Chattopadhyay and **A. Chakrabarti**, ìA Novel Approach To Voltage-Drop Aware Placement in Large SoCs, in Advanced Technology nodes,î Proc. of the VLSI Design and Test Symposium (VDAT-2012), Kolkata, July 2012. DOI: 10.1007/978-3-642-31494-0_44.
51. S.B.Mondal, S.Sur-Kolay and **A.Chakrabarti**, ìSynthesis Techniques For Ternary Quantum Logicî, *Proc. of IEEE 41st International Symposium on Multiple-Valued Logic (ISMVL 2011), Tuusula Finland, 23-25 May 2011, IEEE DOI: 10.1109/ISMVL.2011.55*.
52. S. Sau, C. Pal and **A.Chakrabarti**, ìDesign and implementation of real time secured RS232 link for multiple FPGA communicationî, *Proc. of 2011 International Conference on Communication, Computing & Security (ICCCS 2011), NIT Rourkela, 12th -14th February, 2011, ACM DOI: 10.1145/1947940.1948022*.
53. A. Som and **A. Chakrabarti**, "A New BSQDD Approach for Synthesis of Quantum Circuitî, *Proc. of International Symposium on Electronic System Design (ISED) 2011, published by IEEE Computer Society, 19th -21st December 2011, Kochi, India*.
54. S. Bhattacharjee, S. Sil, S. Dey and **A. Chakrabarti**, ìSimulation, Design and Analysis of a Low Power MIMO-OFDM System and its Implementation on FPGA," *Proc. of International Conference on Recent Trends in Information Systems (RETIS-2011), published by IEEE Computer Society* 21st- 23rd Dec. 2011, Jadavpur University, Kolkata.
55. A. Pal, T. Roy, B. Das, S. Maity, S. B. Mandal, **A. Chakrabarti**, Design of an Efficient Quantum Circuit Simulatorî, *Proc. of International Symposium on Electronic System Design (ISED 2010)*, 20-22nd December, Bhubaneswar, India.
56. **A. Chakrabarti** and S. Sur-Kolay, ìDesigning Quantum Adder Circuits and Evaluating Their Error Performanceî, *Proc. IEEE International Conference on Electronic Design 08*, Penang, Malyasia, December 2008.
57. **A. Chakrabarti** and S.Sur-Kolay, ìRules for Synthesizing Quantum Boolean Circuits using Minimized Nearest-Neighbour Templates", *Proc. 15th International Conference on Advanced Computing & Communication (IEEE-ADCOM) 2007*, December 18-21, IIT Guwahati India.
58. S.Misra and **A.Chakrabarti**, "An Efficient Approach to Estimate Velocity Fields Using Optical Flow and Wavelet Transformî," *Proc. WORLDCOMP '07 : IPCV-07*, Las Vegas U.S.A., June 25-28, 2007.

59. **A.Chakrabarti**, S.Sur-Kolay and Mousumi Malakar; ìA Programming Model for Quantum Computing Simulatorî, *Proc. IEEE International Conference on Computer and Devices for Communication CODEC - 2006*, Kolkata.

Invited Lectures Abroad

(i) Workshop Lecture titled “An Innovative Paradigm In Water Informatics For Smart City Paradigm”, World Water Congress and Exhibition (WWCE 2022), Copenhagen, 15th September, 2022.

(ii) IEEE Distinguished Speaker Lecture titled “Machine Learning for IoT Analytics”, IEEE Penang, 24th August 2022.

(iii) Workshop Lecture titled “SOC Testing And Verification: Machine Learning Approach”, 24th August 2022, EPCON 2022, Penang Malaysia.

(iv) Workshop Lecture titled “Power Distribution Networks In High-Speed Integrated Circuits”, 22nd August 2022, EPCON 2022, Penang Malaysia.

(v) Workshop Lecture Titled “Understanding Deep Networks”, Machine Learning-Driven Digital Technologies for Educational Innovation, Technology de Monterrey, Mexico, 15th December 2021 (Online).

(vi) Research Seminar titled “AI & its Multidisciplinary Research Opportunities”, Department of Information Technology, University of Technology and Applied Sciences – Shinas, Oman, 25th March 2021 (Online).

(vii) IEEE Distingusihed Lecture Series Webinar on “Demystifying Medical Image Analysis and Visualization using Machine Learning”, 10th June 2020 (Online).

(viii) Invited lecture titled “Trends in Computer-Aided Diagnosis Using Deep Learning”, IEEE TENSYMP, 7th June 2020, Dhaka, Bangladesh (Online).

(ix) IEEE Webinar on “Data Science in Epidemiology: A Tool To Combat COVID-19”, 31st May 2020, IEEE BUET Chapter, Bangladesh (Online).

(x) ACM Distinguished Speaker Lecture titled “Medical Image Processing: Analysis and Visualization”, International Symposium on Advanced Electrical and Communication Technologies, ISAECT 2018, Rabat Morocco, 21st November 2018.

(xi) ACM Distinguished Speaker Lecture titled “Software-Hardware Co-design for New Generation IoTs”, City University of London, UK, June 5th 2018.

(xii) Invited Lecture titled “Scheduling Tasks for Reconfigurable Architectures”, Computer Laboratory, University of Cambridge, UK, 18th May 2018.

(xiii) ACM Distinguished Speaker Lecture titled “Computer Aided Design for Quantum Computing Circuits”, 7th International Conference on Computers Communications and Control (ICCCC 2018), Oradea Romania, 9th May 2018.

(xiv) ACM Distinguished Speaker Lecture titled “Software-Hardware Co-design for New Generation IoTs”, Stefan cel Mare University Suceava, Romania, 2nd May 2018.

(xv) Invited Lecture titled “Task Scheduling and Hardware Design in Reconfigurable Space”, Iwate Prefectural University Japan, 30th January, 2017

(xvi) Colloquium Lecture titled “Data Analytics for IoT”, Kyushu Institute of Technology Japan, January 23rd, 2017.

(xvii) IEEE Tutorial talk titled “Real-Time Task Scheduling on FPGAs”, Penang Malaysia, June 6, 2016.

(xviii) Invited lecture titled “Real Time Task Scheduling For Reconfigurable Hardware”, at 3rd Test Symposium 2016 Symposium, Fukuoka, Japan, 1st March, 2016

(xix) Invited lecture titled “Multi Metric Preferential Algorithm for Partially Re-Configurable

(xx) Targets”, at DISC 2016 Symposium, Kyushu Institute of Technology, Japan, Feb 29th, 2016

(xxi) Workshop lecture on System on Chip Design, NEPCON 2015, Penang Malaysia, June 9-10, 2015.

(xxii) A Tutorial Lecture On: Health Informatics Recent Trends and Upcoming Challenges, Lincoln University College, Malaysia, Nov 20th 2014.

(xxiii) Design Automation Tool for Quantum Computing Circuits, Bremen University, Feb 6th, 2014.

(xxiv) Multi/Many-Core Embedded System Design: Recent Trends and Challenges, University of Arad, Romania, June 1st 2013.

(xxv) Quantum Algorithm and Coding for the Binary Welded Tree Problem, University of California, Santa Barbara, April 26th, 2012.

(xxvi) Data Fusion for Computer Vision and Related Applications, Princeton Knowledge Engineering Meetup, Princeton, USA, Dec 5, 2011.

(xxvii) Design considerations: Read-Out Board for MUCH, CBM /DAQ Workshop, Frankfurt Institute of Advanced Studies, Germany, November 30th 2010.

(xxviii) Workshop Lecture on “Advances In Electronic Design And Automation”, NEPCON 2008, Penang Malaysia, June 3, 2008.

(xxix) Workshop Lecture on “Computer for Future Devices”, NEPCON 2008, Penang Malaysia, June 3, 2008.

(xxx) Workshop Lecture on “Wireless Electronic Devices”, NEPCON 2008, Penang Malaysia, June 3, 2008.

(xxxi) Colloquium talk on “Rules for Quantum Circuit Synthesis”, Department of Computer Science, New York State University at Buffalo, October 4, 2007.

Academic Services & Affiliation

- Member of the European Science Foundation (ESF) College of Expert Reviewers.
- Member of the State Council of Science and Technology, Govt. of West Bengal
- Chairman of Board of Studies for B.Tech. IT, MCA, M.Tech IT and M.Tech CEA, University of Calcutta.
- Chairman of Board of Studies of UG Computer Science, University of Calcutta
- Member of Ph.D. RAC in Information Technology, University of Calcutta
- Adjunct Professor, Department of Computer Science and Engineering, GITAM University, Vishakhapatnam, India
- Distinguished Visiting Professor, Christ University, Lavasa Pune, India
- Advisor for the research project entitled “Monitoring of Environmental Parameters in Underground Mines using Internet of Things” under the Scheme for Trans-Disciplinary Research for India’s Developing Economy (STRIDE) of the University Grants Commission (UGC), Kazi Nazrul University, Asansol.
- Member of the Advisory Committee Meeting for the Centre of IoT and AI, Kazi Nazrul University, Asansol, West Bengal.
- Program Review Committee Member for the Grand Challenge on "AgriEnICS GRAND CHALLENGE ON ELECTRONICS AND ICT APPLICATIONS IN AGRI, ENVIRONMENT" program funded by the Ministry of Electronics and IT (MeitY), Government of India at C-DAC, Kolkata.
- Member of Board of Studies for MCA program, Savitribai Phule Pune University, Maharashtra.
- Member of Board of Studies for B.Tech. CSE, Kalyani University, West Bengal
- Member of Board of Studies for M.Sc. Computer Science, St. Xavier’s University, Kolkata
- Member of Board of Studies for M.Sc. Computer Science, Kazi Nazrul University, Asansol, West Bengal
- Member of Board of Studies for M.Sc. Computer Science, Rani Rashmoni University, Hooghly, West Bengal.
- Coordinator and Instructor High Performance Computing for M.Tech Information Technology, University of Calcutta.
- Coordinator and Instructor for Computer Vision Course for M.Tech Coumputer Engineering and Application, University of Calcutta.
- Coordinator and Instructor for Graph Algorithms Course for M.Tech Coumputer Engineering and Application, University of Calcutta.
- Coordinator and Instructor for Computer Aided Design for Digital Systems for M.Tech Computer Engineering and Application, University of Calcutta.
- Coordinator and Instructor for Digital Signal Processing for B.Tech IT, M.Sc. Computer Science and M.Sc. Electronics, University of Calcutta.
- Coordinator and Instructor for Computer Vision for B.Tech IT, University of Calcutta.
- Coordinator and Instructor for Embedded Systems and IOT for MCA, University of Calcutta.
- Coordinator and Instructor for Advanced Computer Architecture for MCA, University of Calcutta
- Coordinator for the IBM Quantum Computing Researcher Access Program, University of Calcutta
- Coordinator for the Data Science Laboratory, A.K.Choudhury School of IT, University of Calcutta.
- Coordinator for the Embedded and Real-Time Systems Laboratory, A.K.Choudhury School of IT, University of Calcutta.

- Coordinator for the Water Informatics Laboratory, A.K.Choudhury School of IT, University of Calcutta.

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Professional Services

- **Series Editor** of Springer Transactions in Computer Systems and Newtorks
- **Series Editor** of Springer Book Series on Waterinformatics for Water Resource Management.
- **Associate Editor** of Elsevier Journal of Computer and Electrical Engineering
- **Guest Editor**, Springer Nature Applied Sciences, Special Issue on Reconfigurable Hardware Design and Applications, 2019. Co-Editors: Anupam Chattopadhyay, Fernanda Lima Kastensmidt.
- **Reviewer** of IEEE Transactions on Computers.
- **Reviewer** of IEEE Transactions on VLSI Systems
- **Reviewer** of IEEE Transactions on Neural Networks and Learning Systems
- **Reviewer** of IEEE Transactions on Emerging Topics in Computing
- **Reviewer** of IEEE Transactions on Quantum Engineering
- **Reviewer** of IEEE Access
- **Reviewer** of ACM TODAES.
- **Reviewer** of ACM JETC.
- **Reviewer** of Elsevier Journal of Parallel and Distributed Computing.
- **Reviewer** of Elsevier Journal of Medical Image Analysis.
- **Reviewer** of Elsevier Journal of Microprocessor and Microsystems.
- **Reviewer** of Springer Journal of Electronic Testing: Theory and Applications.
- **Reviewer** of Elsevier journal on Simulation Modeling Practice and Theory (SIMPAT).
- **Reviewer** of IET Computers & Digital Techniques.
- **Reviewer** of Inderscience Int. J. of Innovative Computing and Applications.
- **Reviewer** of Journal of The Institution of Engineers (India): Series B.

Referees

On request.