Curriculum Vitae

1. Name : **DR. RAJAT KUMAR PAL**

2. Date of Birth : **09.03.1963**

3. Designation : **Professor**

4. Office Address : **Department of Computer Science and Engineering,**
University of Calcutta, Acharya Prafulla Chandra Roy Shiksha Prangan, Block – JD-2, Sector – III, Saltlake, Kolkata – 700106.

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8. Academic/Industrial Experience

Designation	Name of Employer	From	To
Assistant Engineer	WBPDCL (KTPP)	August 31, 1988	March 7, 1989
Lecturer	University of Calcutta	March 1, 1994	February 28, 1998
Senior Lecturer	University of Calcutta	March 1, 1998	February 28, 2003
Reader	University of Calcutta	March 1, 2003	February 28, 2006
Associate Professor	University of Calcutta	March 1, 2006	April 29, 2010
Professor	Assam University (A Central University)	April 30, 2010	April 29, 2012
Professor	University of Calcutta	April 30, 2012 (*w.e.f.* June 30, 2010)	Till Date

9. Academic Qualifications

Institution	Examination Passed	Year of Passing	Class / Division	Subject
Mitra Institution (Main)	Madhyamik	1979	1st Division	General
	Higher Secondary	1981	1st Division	Science
B.E. College, Shibpur	B.E.	1985	1st Class	Electrical Engineering
University of Calcutta	M.Tech.	1988	1st Class	Computer Science and Engineering
IIT, Kharagpur	Ph.D.	1996	Research Degree Awarded in Computer Science and Engineering	

10. PhD Thesis Supervision

A. PhD Degree Awarded

#	Name of the Candidate (Year)	Title of the Thesis	University	Principal Supervisor	Joint Supervisor
1.	Dilip Kumar Gayen (2011)	Some Studies on All-Optical Logic based Information Processing with the help of Terahertz Optical Asymmetric Demultiplexer (TOAD) based Interferometric Devices	University of Calcutta	Rajat Kumar Pal	Jitendra Nath Roy
2.	Ajoy Kumar Khan (2014)	Design and Implementation of Efficient Algorithms for 3D VLSI Physical Design	Assam University, Silchar	Sudipta Roy	Rajat Kumar Pal
3.	Jhunu Debbarma (2014)	Analysis and Design of Cross-Layer Architecture for Data Accessibility in MANETs through Power Efficient Routing Protocol	Assam University, Silchar	Sudipta Roy	Rajat Kumar Pal
4.	Arnab Kumar Maji (2015)	Design and Analysis of an Efficient Guessed Free Sudoku Solver	Assam University, Silchar	Sudipta Roy	Rajat Kumar Pal
5.	Debasis Dhal (2015)	Pin Assignment and Droplet Routing in Digital Microfluidic Biochip	Assam University, Silchar	Sudipta Roy	Rajat Kumar Pal
6.	Sumana Bandyopadhyay (2015)	On the Theory of Perfect Graphs and Some of Their New Applications	University of Calcutta	Rajat Kumar Pal	-
7.	Ranjan Mehera (2015)	Design of Algorithms for Computing Guard Zones for Two- and Three-Dimensional Simple Objects	University of Calcutta	Rajat Kumar Pal	-
8.	Chiranjit Changdar (2017)	Soft Computing Techniques for Solving Different Variants of Travelling Salesman and Knapsack Problem	University of Calcutta	Rajat Kumar Pal	Ghanshaym Mahapatra
9.	Joydeb Ghosh (2018)	Design and Analysis of Algorithms for Solving *n* Coins Problem	North Bengal University	Ranjit Kumar Samanta	Rajat Kumar Pal
10.	Pijush Kanti Bhattacharjee (2018)	Study on Mutual Authentication Techniques in Fourth Generation (4-G) Mobile Communications	Assam University, Silchar	Sudipta Roy	Rajat Kumar Pal
11.	Sudip Mandal (2018)	The Role of Microarray Data Analysis in Gene Regulatory Network Design	University of Calcutta	Rajat Kumar Pal	Goutam Saha
12.	Maumita Chakraborty (2019)	Studies on Design and Analysis of Algorithms for Computation Related to Trees of a Graph	University of Calcutta	Rajat Kumar Pal	-
13.	Abhinandan Khan (2019)	Some Computational Approaches for Construction of Biologically Relevant Gene Regulatory Networks	University of Calcutta	Rajat Kumar Pal	Goutam Saha
14.	Arpan Chakraborty (2020)	Synthesis of Digital Microfluidic Biochips: Allied Design Issues and Algorithms	University of Calcutta	Rajat Kumar Pal	-
15.	Piyali Datta (2021)	Design Synthesis for Microfluidic Biochips: Issues, Optimization, and Algorithms	University of Calcutta	Rajat Kumar Pal	-
16.	Suman Das (2020)	Studies on Design Methodologies and Security Analysis of Different Types of S-Boxes for Cryptographic Applications	University of Calcutta	Sankhayan Choudhury	Rajat Kumar Pal
17.	Debayan Ganguly (2022)	Study on Variants of Nano-Scale Automata	University of Calcutta	Kumar Sankar Ray	Rajat Kumar Pal
18.	Debapratim Das Dawn (2023)	On Processing of Bengali Text: A Study on Word Sense Disambiguation and Document Classification	University of Calcutta	Rajat Kumar Pal	Soharab Hossain Shaikh

19.	Soumen Roy (2023)	Some Studies on Keystroke Dynamics and Its Security Issues	University of Calcutta	Devadatta Sinha	Utpal Roy (Rajat Kumar Pal)
20.	Rituparna Sinha (2023)	Detection and Analysis of Some Human DNA Alterations: A Root Cause of Cancer	University of Calcutta	Rajat Kumar De	Rajat Kumar Pal
21.	Sunita Roy (2023)	Deep-Learning Based Models for Brain Tumour Segmentation: Enhancements and Comparative Studies	University of Calcutta	Samir Kumar Bandyopadhyay	Rajat Kumar Pal (Ranjan Mehera)
22.	Sagarika Chowdhury (2023)	Design and Testing in Digital Microfluidic Biochips: Algorithms and Optimization	University of Calcutta	Rajat Kumar Pal	Goutam Saha

B. Thesis Submitted

#	Name of the candidate	Title of the thesis	University	Principal Supervisor	Joint Supervisor
1.	Dipankar Kundu (2021)	Formulation of Expertise Retrieval Systems in Community Question Answering Services	University of Calcutta	Deba Prasad Mandal	Rajat Kumar Pal

C. PhD Work Ongoing

#	Name of the candidate	Title of the thesis	University	Principal Supervisor	Joint (Associate) Supervisor
1.	Tarak Nath Mandal	Crosstalk Minimization in Two- and Three-Layer Channel Routing	University of Calcutta	Rajat Kumar Pal	Ranjan Mehera (Alak Kumar Datta)
2.	Srirupa Dasgupta	Studies on Feature Selection from Microarray Data Set for Disease Diagnosis	University of Calcutta	Goutam Saha	Rajat Kumar Pal
3.	Sunanda Jana	Solving Sudoku Puzzles of Different Dimensions and Some of Its Applications	University of Calcutta	Rajat Kumar Pal	Arnab Kumar Maji (Abhinandan Khan)
4.	Shovan Roy	Modelling Intractable Problems with Hybridized Metaheuristics and Soft-Computing Approaches	University of Calcutta	Rajat Kumar Pal	Manoranjan Maiti
5.	Sandip Samaddar	Design of Computing Models for Efficient Processing and Analysis of Genomic Sequence Data	University of Calcutta	Rajat Kumar De	Rajat Kumar Pal
6.	Taniya Seal	Extraction of Intrinsic Connotations from Bengali Text: Document Set Identification and Polysemy Resolution	University of Calcutta	Rajat Kumar Pal (Special Case)	Sanjit Kumar Setua (Abhinandan Khan)
7.	Jayanta Pratihar	Optimization Problems in Operations Research using Computing with Words	University of Calcutta	Pritha Banerjee	Rajat Kumar Pal (Abhinandan Khan)
8.	Riya Majumder	Incorporating Electrode Shape Diversity in Digital Microfluidics for Synthesizing Allied Operations	University of Calcutta	Rajat Kumar Pal	-
9.	Amartya Dutta	Pin-Constrained High-Performance Droplet Routing, Optimization, and Extension in Hexagonal Digital Microfluidic Biochip with Its Utility Diversification	University of Calcutta	Rajat Kumar Pal	-
10.	Sumit Chakraborty	Design and Analysis of Algorithms for Various Computations Related to Trees and Graphs	University of Calcutta	Rajat Kumar Pal	Maumita Chakraborty
11.	Shyamasree Karmakar	On Machine Learning Based Liver and Tumor Segmentation from Computed Tomography Images	University of Calcutta	Bulusu Uma Shankar	Rajat Kumar Pal (Ranjan Mehera)

12.	Ritwika Majumdar	Design and Security Issues of Microfluidic Biochips	University of Calcutta	Rajat Kumar Pal	Piyali Datta
13.	Subhranil Mustafi	AAP: Analysis & Assessment of Atmospheric Factors for the Early Detection and Prediction of Glacier Induced Disasters	University of Calcutta	Sarbani Palit	Rajat Kumar Pal
14	Koyel Mukherjee	Design of Analog Front End ICs for Energy Efficient Applications	University of Calcutta	Soumya Pandit	Rajat Kumar Pal
15.	Gautam Mahapatra	Multi-Level Digital Contact Tracing	University of Calcutta	Sanjit Kumar Setua	Rajat Kumar Pal (Abhinandan Khan)
16.	Kaushik Sarkar	Weather Prediction using Machine Learning Approach	University of Calcutta	Sarbani Palit	Rajat Kumar Pal

11. Publications:

A. <u>Books</u>

A.1. **Rajat Kumar Pal**. ***Multi-Layer Channel Routing: Complexity, and Algorithms*****.** NAROSA Publishing House, New Delhi (Indian Edition, Paperback), CRC Press, Boca Raton, USA, and Alpha Sc. Intl. Ltd., UK (International Editions, Hardbound), Sep. 2000. (ISBN 81-7319-280-4)

A.2. D. K. Gayen, J. N. Roy, and **R. K. Pal**. ***Optics in Computing: All-Optical Logic and Information Processing with Terahertz Optical Asymmetric Demultiplexer* (*TOAD*).** LAP Lambert Academic Publishing, Saarbrücken, Germany, Nov. 2012. (ISBN-13: 978-3-659-25260-0; ISBN-10: 3659252603; EAN: 9783659252600)

B. <u>SCI/E Indexed Journal Publications</u>

B.1. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). An Algorithm for Finding a Non-Trivial Lower Bound for Channel Routing. ***Integration: the VLSI Journal*** 25, no. 1 (1998): 71–84.

B.2. **Rajat Kumar Pal** (with D. K. Gayen, and J. N. Roy). All-Optical Adder/Subtractor based on Terahertz Optical Asymmetric Demultiplexer. ***Chinese Optics Letters*** 7, no. 6 (2009): 530–533.

B.3. **Rajat Kumar Pal** (with D. K. Gayen, C. Taraphdar, and J. N. Roy). Terahertz Optical Asymmetric Demultiplexer Based All Optical Data Comparator. ***Journal of Circuits, Systems, and Computers*** 19, no. 03 (2010): 671–682.

B.4. **Rajat Kumar Pal** (with D. K. Gayen, A. Bhattacharyya, C. Taraphdar, and J. N. Roy). All-Optical Binary-Coded Decimal Adder with a Terahertz Optical Asymmetric Demultiplexer. ***Computing in Science & Engineering*** 13, no. 1 (2011): 50–57.

B.5. **Rajat Kumar Pal** (with D. K. Gayen, J. N. Roy, and C. Taraphdar). All-Optical Reconfigurable Logic Operations with the Help of Terahertz Optical Asymmetric Demultiplexer. ***Optik: International Journal for Light and Electron Optics*** 122, no. 8 (2011): 711–718.

B.6. **Rajat Kumar Pal** (with C. Changdar, and G. S. Mahapatra). An Ant Colony Optimization Approach for Binary Knapsack Problem under Fuzziness. ***Applied Mathematics and Computation*** 223 (2013): 243–253.

B.7. **Rajat Kumar Pal** (with C. Changdar, and G. S. Mahapatra). An Efficient Genetic Algorithm for Multi-Objective Solid Travelling Salesman Problem under Fuzziness. ***Swarm and Evolutionary Computation*** 15 (2014): 27–37.

B.8. **Rajat Kumar Pal** (with C. Changdar, and G. S. Mahapatra). An Improved Genetic Algorithm Based Approach to Solve Constrained Knapsack Problem in Fuzzy Environment. ***Expert Systems with Applications*** 42, no. 4 (2015): 2276–2286.

B.9. **Rajat Kumar Pal** (with S. Mandal, A. Khan, and G. Saha). Reverse Engineering of Gene Regulatory Networks Based on S-Systems and Bat Algorithm. ***Journal of Bioinformatics and Computational Biology*** 14, no. 03 (2016): 1650010.

B.10. **Rajat Kumar Pal** (with D. Dhal, P. Datta, A. Chakraborty, G. Saha). Multiple Parallel Assay Operations with Cross Contamination Avoidance in a Given Biochip. ***IET Computers & Digital Techniques*** 10, no. 5 (2016): 243–253.

B.11. **Rajat Kumar Pal** (with A. Pal, A. Chaudhuri, and A. K. Datta). Hardness of Crosstalk Minimization in Two-Layer Channel Routing. ***Integration: the VLSI Journal*** 56 (2017): 139–147.

B.12. **Rajat Kumar Pal** (with C. Changdar and G. S. Mahapatra). A Genetic Ant Colony Optimization based Algorithm for Solid Multiple Travelling Salesmen Problem in Fuzzy Rough Environment. ***Soft Computing*** 21, no. 16 (2017): 4661-4675.

B.13. **Rajat Kumar Pal** (with S. Mandal and G. Saha). Recurrent Neural Network based Modeling of Gene Regulatory Network using Elephant Swarm Water Search Algorithm. ***Journal of Bioinformatics and Computational Biology*** 15, no. 4 (2017): 1750016.

B.14. **Rajat Kumar Pal** (with A. Khan and G. Saha). An Approach for Reduction of False Predictions in Reverse Engineering of Gene Regulatory Networks. ***Journal of Theoretical Biology*** 445 (2018): 9-30.

B.15. **Rajat Kumar Pal** (with C. Changdar, G. S. Mahapatra, and A. Khan). A Genetic Algorithm based Approach to Solve Multi-Resource Multi-Objective Knapsack Problem for Vegetable Wholesalers in Fuzzy Environment. ***Operational Research*** (2018): 1-32.

B.16. **Rajat Kumar Pal** (with A. Chakraborty and P. Datta). Fluid-Level Synthesis Unifying Reliability, Contamination Avoidance, and Capacity-Wastage-Aware Washing for Droplet-Based Microfluidic Biochips. ***IET Computers & Digital Techniques*** 13, no. 3 (2018): 166–177.

B.17. **Rajat Kumar Pal** (with A. Chakraborty and P. Datta). A Low-Cost Fluid-level Synthesis for Droplet-based Microfluidic Biochips Integrating Design Convergence, Contamination Avoidance, and Washing. ***Design Automation for Embedded Systems*** 22 (2018): 315.

B.18. **Rajat Kumar Pal** (with M. Chakraborty and S. Chowdhury). Two Algorithms for Computing All Spanning Trees of a Simple, Undirected, and Connected Graph: Once Assuming a Complete Graph. ***IEEE Access*** 6 (2018): 56290–56300.

B.19. **Rajat Kumar Pal** (with S. Chowdhury, P. Datta, and G. Saha). An Efficient Multiple Fault Detection Technique in Digital Microfluidic Biochips. ***IETE Journal of Research*** (2019): 1–14.

B.20. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). Reconstruction of Gene Regulatory Networks Using S-System with a Genetic Algorithm and Flower Pollination Algorithm Hybrid. ***International Journal of Bio-Inspired Computation*** 13, no. 3 (2019): 169–188.

B.21. **Rajat Kumar Pal** (with D. Das Dawn, and S. H. Shaikh). A Comprehensive Review of Bengali Word Sense Disambiguation. ***Artificial Intelligence Review*** 53, (2019): 4183–4213.

B.22. **Rajat Kumar Pal** (with S. Das and R. Ghosh). An Approach of Refining RC4 with Performance Analysis on New Variants. ***Sādhanā*** 44, no. 11 (2019): 223.

B.23. **Rajat Kumar Pal** (with M. Chakraborty, S. Chowdhury, J. Chakraborty, and R. Mehera). Algorithms for Generating All Possible Spanning Trees of a Simple Undirected Connected Graph: An Extensive Review. ***Complex & Intelligent Systems*** 5, no. 3 (2019): 265–281.

B.24. **Rajat Kumar Pal** (with D. Kundu and D. P. Mandal). Preference Enhanced Hybrid Expertise Retrieval System in Community Question Answering Services. ***Decision Support Systems*** 129 (2020): 113164.

B.25. **Rajat Kumar Pal** (with A. Khan and G. Saha). Modified Half-System Based Method for Reverse

Engineering of Gene Regulatory Networks. ***IEEE/ACM Transactions on Computational Biology and Bioinformatics*** 17, no. 4, (2020): 1303–1316.

B.26. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). Design Optimisation for Programmable Microfluidic Devices Integrating Contamination Removal and Capacity-Wastage-Aware Washing. ***IETE Journal of Research*** 66, no. 6 (2020): 781–796.

B.27. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). A Predictive Model for Fluid-Control Codesign of Paper-Based Digital Biochips Following a Machine Learning Approach. ***IEEE Transactions on Very Large-Scale Integration (VLSI) Systems*** 28, no. 12, (2020): 2584–2597.

B.28. **Rajat Kumar Pal** (with D. Kundu and D. P. Mandal). Time-Aware Hybrid Expertise Retrieval System in Community Question Answering Services. ***Applied Intelligence*** (2021).

B.29. **Rajat Kumar Pal** (with D. Kundu and D. P. Mandal). Topic Sensitive Hybrid Expertise Retrieval System in Community Question Answering Services. ***Knowledge-Based Systems*** 211, (2021): 106535.

B.30. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). An Integrated Co-Design of Flow-Based Biochips Considering Flow-Control Design Issues and Objectives. ***IETE Journal of Research*** (2021).

B.31. **Rajat Kumar Pal** (with U. Nandi, A. Ghorai, C. Changdar, and M. M. Singh). Indian Sign Language Alphabet Recognition System using CNN with diffGrad Optimizer and Stochastic Pooling. ***Multimedia Tools and Applications*** (2021).

B.32. **Rajat Kumar Pal** (with M. Chakraborty and R. Mehera). Divide-and-Conquer based All Spanning Tree Generation Algorithm of a Simple Connected Graph. ***Theoretical Computer Science*** (2022).

B.33. **Rajat Kumar Pal** (with C. Changdar, P. K. Giri, S. Acharyya, A. Haldar, D. Dhal, M. Khowas, and S. K. Sahana). Solving a Mathematical Model for Small Vegetable Sellers in India by a Stochastic Knapsack Problem: An Advanced Genetic Algorithm Based Approach. ***International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*** 30, no. 5 (2022) 909–933; World Scientific Publishing Company.

B.34. **Rajat Kumar Pal** (with R. Sinha and R. K. De). GenSeg and MR-GenSeg: A Novel Segmentation Algorithm and Its Parallel MapReduce Based Approach for Identifying Genomic Regions with Copy Number Variations. ***IEEE/ACM Transactions on Computational Biology and Bioinformatics*** 19, no. 1, (2022): 443–454.

B.35. **Rajat Kumar Pal** (with A. Khan and G. Saha). Controlling the Effects of External Perturbations on a Gene Regulatory Network Using Proportional-Integral-Derivative Controller. ***IEEE/ACM Transactions on Computational Biology and Bioinformatics*** 19, no. 3, (2022): 1531-1544.

B.36. **Rajat Kumar Pal** (with K. Mukherjee, T. Sau, S. Upadhyay, S. Mitra, A. Bhowmik, S. Sarkhel, and S. Pandit). A 588nW, 1nA Current Reference Circuit with Extremely Low (0.002 % /V) Line Sensitivity over a Wide Supply Voltage Range, and Low Temperature Coefficient. ***International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*** (2022).

B.37. **Rajat Kumar Pal** (with C. Changdar, M. Mondal, P. K. Giri, and U. Nandi). A Two-Phase Ant Colony Optimization based Approach for Single Depot Multiple Travelling Salesman Problem in Type-2 Fuzzy Environment. ***Artificial Intelligence Review*** (2022).

B.38. **Rajat Kumar Pal** (with D. Das Dawn, A. Khan, and S. H. Shaikh). A Dictionary Based Model for Bengali Document Classification. ***Applied Intelligence*** (2022).

B.39. **Rajat Kumar Pal** (with S. Roy, J. Pradhan, A. Kumar, D. R. Das Adhikary, U. Roy, and D. Sinha). A Systematic Literature Review on Latest Keystroke Dynamics Based Models. ***IEEE Access***, 10 (2022): 92192–92236.

B.40. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). Attack-Detection and -Recovery: An Integrated

Approach towards Attack-Tolerant Cyber-Physical Digital Microfluidic Biochips. ***IETE Journal of Research*** (2022).

B.41. **Rajat Kumar Pal** (with S. Bhakta, U. Nandi, T. Si, S. K. Ghosal, and C. Changdar). DiffMoment: An adaptive optimization technique for Convolutional Neural Network. ***Applied Intelligence*** (2022).

B.42. **Rajat Kumar Pal** (with S. Chowdhury, R. Majumdar, and G. Saha). Automated Path Selection Technique while Incorporating Multiple Assay Operations and Cross-Contamination Avoidance in Cross-Referencing DMFBs. ***Integration: the VLSI Journal*** 88 (2023): 125–138.

B.43. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). Imbalanced Ensemble Learning in Determining Parkinson's Disease using Keystroke Dynamics. ***Expert Systems with Applications*** 217 (2023): p. 119522.

B.44. **Rajat Kumar Pal** (with D. Das Dawn, A. Khan, and S. H. Shaikh). A 2-Tier Bengali Dataset for Evaluation of Hard and Soft Classification Approaches. ***IETE Journal of Research*** (2023).

B.45. **Rajat Kumar Pal** (with D. Das Dawn, A. Khan, and S. H. Shaikh). Lexeme Connexion Measure of Cohesive Lexical Ambiguity Revealing Factor: A Robust Approach for Word Sense Disambiguation of Bengali Text. ***Multimedia Tools and Applications*** (2023).

B.46. **Rajat Kumar Pal** (with S. Roy, R. Saha, S. Sarkar, R. Mehera, and S. K. Bandyopadhyay). Brain Tumour Segmentation using S-Net and SA-Net. ***IEEE Access***, pp. 1–22 (2023).

B.47. **Rajat Kumar Pal** (with S. Jana, M. Mallik, A. Khan, and A. K. Maji). Design and Analysis of a Modified 3D Sudoku Solver. ***IEEE Access***, pp. 1–17 (2023).

B.48. **Rajat Kumar Pal** (with S. Roy, A. Khanra, S. Maity, and M. Maiti). GA-ABC Hybridization for Profit Maximization of Green 4DTSPs with Discrete and Continuous Variables. ***Engineering Applications of Artificial Intelligence*** 123 (2023).

B.49. **Rajat Kumar Pal** (with J. Pratihar, A. Dey, A. Khan, and P. Banerjee). Computing With Words for Solving the Fuzzy Transportation Problem. ***Soft Computing*** (2023). https://doi.org/10.1007/s00500-023-08958-4

B.50. **Rajat Kumar Pal** (with R. Sinha and R. K. De). ENLIGHTENMENT: A Scalable Annotated Database of Genomics and NGS-based Nucleotide Level Profiles. ***IEEE/ACM Transactions on Computational Biology and Bioinformatics*** (2023).

B.51. **Rajat Kumar Pal** (with D. Das Dawn, A. Khan, and S. H. Shaikh). Likelihood Corpus Distribution: An Efficient Topic Modelling Scheme for Bengali Document Class Identification. ***Sādhanā***, vol. 49:198 (19 pages) (2024).

B.52. **Rajat Kumar Pal** (with U. Nandi, S. Bhakta, C. Changdar, and S. K. Ghosal). EmapDiffP: A novel learning algorithm for Convolutional Neural Network optimization. ***Neural Computing and Applications (NCAA)*** (2024).

B.53. **Rajat Kumar Pal** (with R. Sinha and R. K. De). A Novel Method Addressing NGS based Mappability Bias for Sensitive Detection of DNA Alterations. ***Journal of Bioinformatics & Computational Biology (JBCB)***, vol. 22, Issue 03, Article No. 2450009 (2024).

B.54. **Rajat Kumar Pal** (with D. Das Dawn, A. Khan, and S. H. Shaikh). A Dataset for Evaluating Bengali Word Sense Disambiguation Techniques. ***Journal of Ambient Intelligence and Humanized Computing*** 70, no. 2, (2024): 1449-1461.

B.55. **Rajat Kumar Pal** (with T. N. Mandal, S. Sarkar, D. Roy, A. Khan, R. Mehera, and A. K. Datta). Bottleneck Crosstalk Minimisation in Two- and Three-Layer Manhattan Channel Routing. . ***IEEE Access***, pp. 1–42 (2024). Accepted for Publication.

B.56. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). A Novel Approach to Identify Parkinson's

Disease and other Similar Neural Stress by Analysing Keystrokes on Modern Active Devices with Ensemble Classification. ***Multimedia Tools and Applications*** (2024). Accepted for Publication.

C. Other Journal Publications

C.1. **Rajat Kumar Pal** (with A. Pal, D. Kundu, A. K. Datta, and T. N. Mandal). Algorithms for Reducing Crosstalk in Two-Layer Channel Routing. ***Journal of Physical Sciences*** (ISSN: 0972-8791), vol. 10, pp. 167–177, Dec. 2006.

C.2. **Rajat Kumar Pal** (with S. Sen Sarma). An Encounter with Graphs. ***Journal of Physical Sciences*** (ISSN: 0972-8791), vol. 10, pp. 188–200, Dec. 2006.

C.3. **Rajat Kumar Pal** (with A. Pal, and A. K. Datta). Parallel Crosstalk Minimization Algorithms for Two-Layer Channel Routing. ***The ICFAI Journal of Computer Sciences*** (Reference # 56J-2007-10-02-01), vol. I, no. 2, pp. 31–44, Oct. 2007.

C.4. **Rajat Kumar Pal**. RKPianGraphSort: A Graph based Sorting Algorithm. ***International Journal of ACM Ubiquity***, vol. 8, issue 41 (16 pages), Oct. 16-22, 2007.

C.5. **Rajat Kumar Pal**. A Revisit to YACRIT: Yet another Channel Router with Interchangeable Terminals. ***Journal of Physical Sciences*** (ISSN: 0972-8791), vol. 11, pp. 172–184, Dec. 2007.

C.6. **Rajat Kumar Pal** (with D. Saha, and S. Sen Sarma). A Mimetic Algorithm for Computing a Nontrivial Lower Bound on Number of Tracks in Two-Layer Channel Routing. ***Journal of Physical Sciences*** (ISSN: 0972-8791), vol. 11, pp. 199–210, Dec. 2007.

C.7. **Rajat Kumar Pal** (with A. Pal, and A. K. Datta). Weighted Hamiltonian Path Problem is also NP-Hard. ***The ICFAI Journal of Computer Sciences*** (Reference # 56J-2007-10-02-01), vol. II, no. 2, pp. 80–82, Apr. 2008.

C.8. **Rajat Kumar Pal** (with R. Mehera, and S. Chatterjee). Yet another Linear Time Algorithm for Guard Zone Problem. ***The Icfai Journal of Computer Sciences*** (Reference # 56J-2007-10-02-01), vol. II, no. 3, pp. 14–23, Jul. 2008.

C.9. **Rajat Kumar Pal** (with S. K. Ghosh, and J. Ghosh). A New Algorithm to Represent a Given *k*-ary Tree into Its Equivalent Binary Tree Structure. ***Journal of Physical Sciences*** (ISSN: 0972-8791), vol. 12, pp. 253–264, Dec. 2008.

C.10. **Rajat Kumar Pal**. Absolute Area Approximation in Channel Routing is NP-Hard. ***Journal of Informatics and Mathematical Sciences*** (ISSN 0974-875X), vol. 1, nos. 2-3, pp. 121–137, 2009.

C.11. **Rajat Kumar Pal** (with A. Pal, T. N. Mandal, D. Kundu, and A. K. Datta). Algorithms for Generating Random Channel Instances for Channel Routing Problem. ***International Journal of Applied Research on Information Technology, and Computing*** (IJARITAC) (ISSN: 0975-8070), vol. 1, no. 1, pp. 106–129, Jan-Apr 2010.

C.12. **Rajat Kumar Pal** (with A. K. Maji). Yet another Organized Move towards Solving Sudoku Puzzle. ***International Journal of Advanced Research, and Computer Science*** (IJARCS), ISSN: 0976-5697, vol. 1, no. 3, pp. 370–375, Sep-Oct 2010.

C.13. **Rajat Kumar Pal** (with J. Ghosh, and S. K. Ghosh). A Revisit to the Eight Coins Problem. ***International Journal of Computing and Information Technology*** (IJCIT) (ISSN: 0974-696X), vol. 2, no. 1, pp. 1–14, 2010.

C.14. **Rajat Kumar Pal** (with A. Bhattacharjya). OSGi-based Self-Configurable Multi-Layered RFID Reader Communication Protocol. ***International Journal of Industrial, and Systems Engineering*** (IJISE) (ISSN: 1748-5037), 2011.

C.15. **Rajat Kumar Pal** (with S. Bandyopadhyay). Minimum Frequency Requirement for a Wireless Communication System in Polynomial Time. ***International Journal of Information Processing*** (IJIP) (ISSN: 0973-8215), vol. 4, no. 3, pp. 64–73, 2010.

C.16. **Rajat Kumar Pal** (with P. K. Bhattacharjee). Vehicular Ad Hoc Network in Mobile Communications with Different Routing Protocols. ***Assam University Journal of Science and Technology***, vol. 7, no. 2, pp. 29–35, 2011.

C.17. **Rajat Kumar Pal**. A Revisit to *RKPianGraphSort*. ***Assam University Journal of Science and Technology***, vol. 7, no. 2, pp. 66–72, 2011.

C.18. **Rajat Kumar Pal** (with A. Pal, T. N. Mandal, S. Saha Sau, A. K. Datta, and A. Chaudhuri). Graphs: The Tool to Visualize the Problems in VLSI Channel Routing. ***Assam University Journal of Science and Technology***, vol. 7, no. 2, pp. 73–83, 2011.

C.19. **Rajat Kumar Pal** (with A. Bhattacharjya). Universal RFID Service Framework with Auto-7Configuration using OSGi. ***International e-Journal VSRD Technical & Non-Technical Journal*** (VSRD-TNTJ) (ISSN: 0976-7967), vol. 2, no. 1, pp. 1–7, 2011.

C.20. **Rajat Kumar Pal** (with J. Ghosh, P. Senmajumdar, S. Maitra, and D. Dhal). Yet another Algorithm for Solving *n* Coins Problem. ***Assam University Journal of Science and Technology: Physical Sciences and Technology*** (ISSN: 0975-2773), vol. 8, no. II, pp. 118–125, 2011.

C.21. **Rajat Kumar Pal** (with P. K. Bhattacharjee). Mutual Authentication Technique Applying Three Entities in 4G Mobile Communications. ***International Journal of Computer Theory, and Engineering*** (IJCTE) (ISSN: 1793-8201), Article #: 401, vol. 3, no. 6, pp. 732–737, 2011.

C.22. **Rajat Kumar Pal** (with A. Pal, S. Saha Sau, T. N. Mandal, A. K. Datta, and A. Chaudhuri). An Efficient Heuristic to Find Reduced Area VLSI Channel Routing Solutions with Floating Terminals. ***Assam University Journal of Science and Technology: Physical Sciences and Technology*** (ISSN: 0975-2773), vol. 9, no. II, pp. 55–64, 2012.

C.23. **Rajat Kumar Pal** (with P. K. Bhattacharjee). Password based Mutual Authentication Technique using Two Entities in 4-G Mobile Communications. ***Assam University Journal of Science and Technology: Physical Sciences and Technology*** (ISSN: 0975-2773), vol. 9, no. II, pp. 65–74, 2012.

C.24. **Rajat Kumar Pal** (with M. Chakraborty). Extraction of All Spanning Trees of a Simple Symmetric Connected Graph using Divide-and-Conquer Technique. ***Assam University Journal of Science & Technology: Physical Sciences and Technology*** (ISSN: 0975-2773), vol. 9, no. II, pp. 112–126, 2012.

C.25. **Rajat Kumar Pal** (with P. K. Bhattacharjee). Artificial Intelligence based on Authentication Technique using Three Entities in 4G Mobile Communications. ***Assam University Journal of Science and Technology: Physical Sciences and Technology*** (ISSN: 0975-2773), vol. 10, no. II, pp. 149–159, 2012.

C.26. **Rajat Kumar Pal** (with J. Debbarma, M. K. Debbarma, and S. Roy). Literature Survey on Cross-Layer Design Architecture for Bandwidth Management in Mobile Ad-hoc Networks. ***International Journal of Computer Applications***, vol. 60, no. 7 (2012).

C.27. **Rajat Kumar Pal** (with A. K. Maji, and S. Roy). A Novel Algorithmic Approach for Solving Sudoku Puzzle in Guessed Free Manner. ***European Academic Research*** (ISSN: 2286-4822), Romania, vol. 1, no. 6, pp. 1126–1154, 2013.

C.28. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). Reconstruction of Dominant Gene Regulatory Network from Microarray Data Using Rough Set, and Bayesian Approach. ***Journal of Computer Science and Systems Biology***, ISSN: 0974-7230, vol. 6, no. 5, pp. 262–270, 2013.

C.29. **Rajat Kumar Pal** (with A. K. Maji, and S. Jana). An Algorithm for Generating only Desired Permutations for Solving Sudoku Puzzle. ***Procedia Technology***, vol. 10, pp. 392–399, 2011.

C.30. **Rajat Kumar Pal** (with C. Changdar, and G. S. Mahapatra). Solving 0-1 Knapsack Problem by Continuous ACO Algorithm. ***International Journal of Computational Intelligence Studies***, vol. 2, nos. 3-4, pp. 333–349, 2013.

C.31. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). An Approach towards Automated Disease Diagnosis, and Drug Design Using Hybrid Rough-Decision Tree from Microarray Dataset. ***Journal of Computer Science, and Systems Biology*** (ISSN: 0974-7230), vol. 6, no. 6, pp. 337–343, 2013.

C.32. **Rajat Kumar Pal** (with A. K. Maji, S. Jana, and S. Roy). An Exhaustive Study on Different Sudoku Solving Techniques. ***International Journal of Computer Science Issues*** (IJCSI), vol. 11, no. 2, 2014.

C.33. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). A Comparative Study on Disease Classification using Different Soft Computing Techniques. ***The SIJ Transactions on Computer Science Engineering and Its Applications*** (CSEA) (ISSN: 2321-2381), vol. 2, no. 3, pp. 59–66, 2014.

C.34. **Rajat Kumar Pal** (with J. Ghosh, L. Dey, A. Nandy, A. Chakrabarty, P. Datta, and R. K. Samanta). An Advanced Approach to Solve Two Counterfeit Coins Problem. ***Annals of Pure, and Applied Mathematics*** (ISSN: 2279-087X (P), 2279-0888 (online)), vol. 7, no. 1, pp. 77–82, 2014.

C.35. **Rajat Kumar Pal** (with S. Bandyopadhyay). Selection of *k*-Disjoint Channels for Advertising with an Aim to Maximize Viewers' Count, and Minimize Cost Constrained by Budget. ***Annals of Pure, and Applied Mathematics*** (ISSN: 2279-087X (P), 2279-0888 (online)), vol. 7, no. 1, pp. 97–103, 2014.

C.36. **Rajat Kumar Pal** (with A. Pal, T. N. Mandal, A. Khan, A. K. Datta, and A. Chaudhuri). Two Algorithms for Minimizing Crosstalk in Two-Layer Channel Routing. ***International Journal of Emerging Trends & Technology in Computer Science*** (ISSN 2278-6856), vol. 3, no. 6, pp. 194–204, 2014.

C.37. **Rajat Kumar Pal** (with S. Bandyopadhyay). Selection of *k*-Disjoint Channels for Advertising with an Aim to Maximize Viewers' Count and Minimize Cost Constrained by Budget. ***Annals of Pure and Applied Mathematics: Special Issue on Optimization and Fuzzy Mathematics*** (ISSN: 2279-087X (Print) and 2279-0888 (Online)), vol. 7, no. 1, pp. 97–103, 2014.

C.38. **Rajat Kumar Pal** (with D. Dhal, A. Chakraborty, P. Datta, and S. Roy). Fortification of Multiple Parallel Assay Operations with Cross Contamination Avoidance in a Restricted Biochip. ***International Journal of Scientific and Engineering Research***, vol. 6, issue 3, pp. 746–755. 2015.

C.39. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). Neural Network Training using Firefly Algorithm. ***Global Journal on Advancement in Engineering and Science***, vol. 1, no. 1, pp. 7–11, 2015.

C.40. **Rajat Kumar Pal** (with A. Pal, T. N. Mandal, A. Khan, A. K. Datta, and A. Chaudhuri). A Review on Crosstalk Avoidance and Minimization in VLSI Systems. ***International Journal of Emerging Technology and Advanced Engineering*** (ISSN 2250 – 2459 (Online)), vol. 5, issue 3, pp. 144–150, 2015.

C.41. **Rajat Kumar Pal** (with R. Mehera, P. Datta, and A. Chakraborty). Advancement in Guard Zone Computation through Detection and Exclusion of the Overlapped Regions. ***International Journal of Scientific and Engineering Research*** (IJSER) (ISSN 2229-5518), vol. 6, no. 5, pp. 280–288, 2015.

C.42. **Rajat Kumar Pal** (S. Mandal, A. Khan, and G. Saha). Large-Scale Recurrent Neural Network Based Modelling of Gene Regulatory Network Using Cuckoo Search-Flower Pollination Algorithm. ***Advances in Bioinformatics***, vol. 2016, Article ID 5283937, doi: 10.1155/2016/5283937, 9 pages, 2016.

C.43. **Rajat Kumar Pal** (A. Khan, Sudip M., and G. Saha). Construction of Gene Regulatory Networks

Using Recurrent Neural Networks and Swarm Intelligence. ***Scientifica***, vol. 2016, Article ID 1060843. doi: 10.1155/2016/1060843

C.44. **Rajat Kumar Pal** (S. Mandal and G. Saha). A Survey on Recurrent Neural Network Based Modelling of Gene Regulatory Network. ***MOJ Proteomics and Bioinformatics***, vol. 4, issue 3, pp. 244–254, 2016. doi: 10.15406/mojpb.2016.04.00125

C.45. **Rajat Kumar Pal** (with P. Datta, A. Dutta, R. Majumder, A. Chakraborty, D. Dhal). A Design of Digital Microfluidic Biochip along with Structural and Behavioural Features in Triangular Electrode Based Array. ***Procedia Computer Science***, vol. 93, pp. 183–190, 2016.

C.46. **Rajat Kumar Pal** (with C. Changdar, and G. S. Mahapatra). A Modified Genetic Algorithm Approach to Solve Constrained Solid TSP with Time Window Using Interval Parameter. ***International Journal of Operational Research***, vol. 26, no. 4, pp. 398–421, 2016.

C.47. **Rajat Kumar Pal** (with C. Changdar and G. S. Mahapatra). A Modified Ant Colony Optimisation based Approach to Solve Sub-Tour Constant Travelling Salesman Problem. ***International Journal of Mathematics in Operational Research***, vol. 11, no. 3, pp. 310–331, 2017.

C.48. **Rajat Kumar Pal** (with A. Chakraborty and P. Datta). A New Fluid-Chip Co-Design for Digital Microfluidic Biochips Considering Cost Drivers and Design Convergence. ***IEEE Transactions on Multi-Scale Computing Systems***, vol. 4, no. 4, pp. 548–564, 2018.

C.49. **Rajat Kumar Pal** (with S. Jana and A. K. Maji). A Novel SPN-based Video Steganographic Scheme using Sudoku Puzzle for Secured Data Hiding. ***Innovations in Systems and Software Engineering***, vol. 15, no. 1, pp. 65–73, 2019.

C.50. **Rajat Kumar Pal** (with C. Changdar, K. Dhara, and P. K. Giri). An Ant Colony Optimization-based Approach to Solve Time Interval Dependent Travelling Salesman Problem under Fuzziness. ***International Journal of Computing Science and Mathematics***, vol. 14, no. 2, pp. 196–214, 2021.

C.51. **Rajat Kumar Pal** (with S. Jana, A. Dey, and A. K. Maji). A Novel Hybrid Genetic Algorithm based Firefly Mating Algorithm for Solving Sudoku. ***Innovations in Systems and Software Engineering***, Springer, 2021.

C.52. **Rajat Kumar Pal** (with S. Roy, S. Sen, R. Mehera, and S. Bandyopadhyay). Brain Tumour Detection: A Comparative Study among Fast Object Detection Methods. ***Advanced Computing and Systems for Security***, Volume 14, pp. 179–196, 2021.

C.53. **Rajat Kumar Pal** (with S. Dasgupta, M. Dutta, A. Halder, A. Khan, and G. Saha). Computational Analysis of Gene Expression Data using Bidirectional Long Short-Term Memory for Disease Diagnosis. ***Innovations in Systems and Software Engineering***, Springer, 2022.

C.54. **Rajat Kumar Pal** (with A. Pramanik, C. Changdar, A. Khan, S. Chatterjee, and S. K. Sahana). A 0-1 Knapsack Problem based Approach for Solving Open-Pit Mining Problem with Type-2 Fuzzy Parameters. ***Innovations in Systems and Software Engineering***, Springer, 2022.

C.55. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). A Unique Approach Towards Keystroke Dynamics Based Entry-Point User Access Control. Proceedings of the 9th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS 2022), and Published in the ***International Journal of Biometrics***, Inderscience, vol. 16, issue 2, pp. 133–157, 2023.

C.56. **Rajat Kumar Pal** (with S. Chakraborty and M. Chakraborty). Generation of All Rooted Trees up to a Given Height. Proceedings of the 9th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS 2022), and Published in the ***Innovations in Systems and Software Engineering***, Springer, 2023.

C.57. **Rajat Kumar Pal** (with S. Roy, R. Mehera, and S. Bandyopadhyay). Hyperparameter Optimization for

Deep Neural Network Models: A Comprehensive Study on Methods and Techniques. Proceedings of the 10th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS 2023), and to be Published in the ***Innovations in Systems and Software Engineering***, Springer, 2024.

C.58. **Rajat Kumar Pal** (with R. Majumdar, P. Datta, and S. Chowdhury). Advancement with Digital Microfluidic Biochips towards Sustainability and Secured Outcome: A Comprehensive Survey on Specific Design Metrics. Accepted for publication in *Discover Electronics*, Springer Nature, 2024.

D. Book Chapters

D.1. **Rajat Kumar Pal** (with A. Singha). Performance Driven Routing in Distributed Environment. In: Das S. K., Bhattacharya S. (eds.), Distributed Computing. Lecture Notes in Computer Science, vol. 2571 (ISBN 3-540-00355-X). Springer, Berlin, Heidelberg, 2002. (Proceedings of the 4th International Workshop on Distributed Computing (IWDC 2002), Kolkata, India, pp. 257–267, Dec. 28-31, 2002.)

D.2. **Rajat Kumar Pal** (with D. Saha and S. S. Sarma). A Mimetic Algorithm for Refinement of Lower Bound of Number of Tracks in Channel Routing Problem. In: Shi Z., Shimohara K., Feng D. (eds.), Intelligent Information Processing III. IIP 2006. IFIP International Federation for Information Processing (IFIP TC12), vol. 228 (ISBN: 10: 0-387-44639-7). Springer, Boston, MA, 2006. (Proceedings of the 4th International Conference on Intelligent Information Processing (ICIIP 2006), Adelaide, Australia, pp. 307–316, Sep. 20-23, 2006.)

D.3. **Rajat Kumar Pal** (with R. Mehera). A Cost-Optimal Algorithm for Guard Zone Problem. In: Garg V., Wattenhofer R., Kothapalli K. (eds.), Distributed Computing and Networking. Lecture Notes in Computer Science, vol. 5408 (ISBN-13 978-3-540-92294-0). Springer, Berlin, Heidelberg, 2009. (Proceedings of the 10th International Conference on Distributed Computing, and Networking (ICDCN 2009), Hyderabad, India, pp. 91–98, Jan. 3-6, 2009.)

D.4. **Rajat Kumar Pal** (with A. K. Maji). A Novel Biometric Template Encryption Scheme using Sudoku Puzzle. Applied Computation, and Security Systems (ISBN: 978-81-322-1987-3 (Print), 978-81-322-1988-0 (Online)), pp. 109–128. Springer India, 2014.

D.5. **Rajat Kumar Pal** (with S. Saha Sau). An Efficient Algorithm for Reducing Wire Length in Three-Layer Channel Routing. Applied Computation, and Security Systems (ISBN: 978-81-322-1987-3 (Print), 978-81-322-1988-0 (Online)), pp. 145–156. Springer India, 2014.

D.6. **Rajat Kumar Pal** (with D. Dhal, A. Chakrabarty, and P. Datta). A New Move toward Parallel Assay Operations in a Restricted Sized Chip in Digital Microfluidics. Applied Computation, and Security Systems (ISBN: 978-81-322-1987-3 (Print), 978-81-322-1988-0 (Online)), pp. 157–182. Springer India, 2014.

D.7. **Rajat Kumar Pal** (with R. Mehera, A. Chakrabarty, and P. Datta). A 2D Guard Zone Computation Algorithm for Reassignment of Subcircuits to Minimize the Overall Chip Area. Applied Computation, and Security Systems (ISBN: 978-81-322-1987-3 (Print), 978-81-322-1988-0 (Online)), pp. 183–209. Springer India, 2014.

D.8. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). Inference of Gene Regulatory Networks with Neural-Cuckoo Hybrid. Advanced Computing and Systems for Security, pp. 87–99. Springer India, 2016.

D.9. **Rajat Kumar Pal** (with A. Maji, and S. Jana). A Comprehensive Sudoku Instance Generator. Advanced Computing and Systems for Security, pp. 215–233. Springer India, 2016.

D.10. **Rajat Kumar Pal** (with R. Mehera, P. Datta, and A. Chakraborty). An Algorithm to Solve 3D Guard Zone Computation. Advanced Computing and Systems for Security, pp. 271–288. Springer India,

2016.

D.11. **Rajat Kumar Pal** (with A. Chakraborty, J. Ghosh, A. Nandy, and P. Datta). Anomaly Detection and Three Anomalous Coins Problem. Advanced Computing and Systems for Security, pp. 303–320. Springer India, 2016.

D.12. **Rajat Kumar Pal** (with S. Chowdhury, and G. Saha). A Novel Double Fault Diagnosis and Detection Technique in Digital Microfluidic Biochips. In Computer Information Systems and Industrial Management, pp. 181–192. Springer International Publishing, 2015.

D.13. **Rajat Kumar Pal** (with R. Mehera, P. Datta, and A. Chakraborty). An Algorithm to Solve 3D Guard Zone Computation Problem. In Advanced Computing and Systems for Security, pp. 271–288. Springer India, 2016.

D.14. **Rajat Kumar Pal** (with D. Dey, A. Bandyopadhyay, S. Jana, and A. K. Maji). A Novel Image Steganographic Scheme using 8×8 Sudoku Puzzle. In Advanced Computing and Systems for Security, pp. 85–100. Springer Singapore, 2017.

D.15. **Rajat Kumar Pal** (with M. Chakraborty and R. Mehera). A Divide-and-Conquer Algorithm for All Spanning Tree Generation. In Advanced Computing and Systems for Security, pp. 19–36. Springer Singapore, 2017.

D.16. **Rajat Kumar Pal** (with A. Chakraborty, P. Datta, and D. Dhal). A Dependability Preserving Fluid-Level Synthesis for Reconfigurable Droplet-Based Microfluidic Biochips. In International Symposium on VLSI Design and Test (VDAT 2017), pp. 694–706. Springer, Singapore, 2017.

D.17. **Rajat Kumar Pal** (with P. Datta, A. Dutta, R. Majumder, A. Chakraborty, and D. Dhal). An Euler Path Based Online Testing Technique to Detect Catastrophic Fault in Triangular DMFBs. In: Mandal J., Saha G., Kandar D., Maji A. (eds.), Proceedings of the International Conference on Computing and Communication Systems. Lecture Notes in Networks and Systems, vol. 24. Springer, Singapore, 2018.

D.18. **Rajat Kumar Pal** (with A. Bandyopadhyay, D. Dey, and A. K. Maji). An Indirect Addressing Image Steganographic Scheme using 9×9 Sudoku Matrix. In: Mandal J., Saha G., Kandar D., Maji A. (eds.), Proceedings of the International Conference on Computing and Communication Systems. Lecture Notes in Networks and Systems, vol. 24. Springer, Singapore, 2018.

D.19. **Rajat Kumar Pal** (with S. Jana and A. K. Maji). A Robust Video Steganographic Scheme using Sudoku Puzzle for Secured Data Hiding. In Annual Convention of the Computer Society of India, pp. 533–545. Springer, Singapore, 2018.

D.20. **Rajat Kumar Pal** (with D. Kundu and D. P. Mandal). Finding Active Experts for Question Routing in Community Question Answering Services. In International Conference on Pattern Recognition and Machine Intelligence, pp. 320–327. Lecture Notes in Computer Science, vol. 11942, Springer, Cham, 2019.

D.21. **Rajat Kumar Pal** (with A. Dutta, R. Majumder, and D. Dhal). Augmenting Mixing Quality on the basis of New Geometrical Features of Digital Microfluidic Biochip. Proceedings of the International Symposium on VLSI Design and Test (VDAT 2019). Communications in Computer and Information Science, vol. 1066. Springer, Singapore, 2019.

D.22. **Rajat Kumar Pal** (with T. N. Mandal, A. D. Banik, K. Dey, and R. Mehera). Algorithms for Minimizing Bottleneck Crosstalk in Two-Layer Channel Routing. Proceedings of the Computational Advancement in Communication Circuits and Systems, pp. 313–330. Lecture Notes in Electrical Engineering, vol. 575. Springer, Singapore, 2020.

D.23. **Rajat Kumar Pal** (with S. Dasgupta, A. Das, A. Khan, and G. Saha). Biomarker Gene Identification Using a Quantum Inspired Clustering Approach. Proceedings of the Advanced Computing and Systems for Security, pp. 43–56. Advances in Intelligent Systems and Computing, vol. 995. Springer,

Singapore, 2020.

D.24. **Rajat Kumar Pal** (with M. Chakraborty and S. Chowdhury). Generation of Simple, Connected, Non-isomorphic Random Graphs. Proceedings of the Advanced Computing and Systems for Security, pp. 69–77. Advances in Intelligent Systems and Computing, vol. 995. Springer, Singapore, 2020.

D.25. **Rajat Kumar Pal** (with T. N. Mandal, K. Dey, A. Dutta Banik, and R. Mehera). Bottleneck Crosstalk Minimization in Three-Layer Channel Routing. Proceedings of the Advanced Computing and Systems for Security, pp. 79–98. Advances in Intelligent Systems and Computing, vol. 995. Springer, Singapore, 2020.

D.26. **Rajat Kumar Pal** (with S. Jana, A. Dey, and A. K. Maji). Solving Sudoku using Neighbourhood-based Mutation Approach of Genetic Algorithm. Proceedings of the 8th International Doctoral Symposium on Applied Computation and Security Systems (ACSS), 2021.

D.27. **Rajat Kumar Pal** (with S. Dasgupta, S. Bhattacharya, A. Khan, A. Halder, and G. Saha). Disease-Relevant Gene Selection using Mean Shift Clustering. Proceedings of the 8th International Doctoral Symposium on Applied Computation and Security Systems (ACSS), 2021.

D.28. **Rajat Kumar Pal** (with S. Chowdhury, K. A. Kabir, D. Dhal, and G. Saha). Multiple Fault Identification and Diagnosis in Cross-Referencing Digital Microfluidic Biochips. Proceedings of the 8th International Doctoral Symposium on Applied Computation and Security Systems (ACSS), 2021.

D.29. **Rajat Kumar Pal** (with S. Roy, S. Sen, R. Mehera, and S. K. Bandyopadhyay). Brain Tumor Detection: A Comparative Study among Fast Object Detection Methods. Proceedings of the 8th International Doctoral Symposium on Applied Computation and Security Systems (ACSS), 2021.

D.30. **Rajat Kumar Pal** (with S. Dasgupta, S. Mondal, A. Khan, and G. Saha). Identification of Differentially Expressed Genes using Deep Learning in Bioinformatics. Proceedings of the International Conference on Frontiers in Computing and Systems. Advances in Intelligent Systems and Computing, vol. 1255. Springer, Singapore, 2021.

D.31. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). AI for Stress Diagnosis at Home Environment. In *Next Generation Healthcare Informatics*. In: B. K. Tripathy, P. Lingras, A. K. Kar, and C. L. Chowdhary (eds.), Next Generation Healthcare Informatics: Studies in Computational Intelligence, vol. 1039, pp. 173–195. Springer, Singapore, 2022.

D.32. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). Predicting Useful Information From Typing Patterns Using A Bootstrapped-based Homogeneous Ensemble Approach. Proceedings of the 9th International Doctoral Symposium on Applied Computation and Security Systems (ACSS). In: R. Chaki, A. Cortesi, K. Saeed, and N. Chaki (eds.), Applied Computing for Software and Smart Systems. Lecture Notes in Networks and Systems, vol. 555, pp. 3–31. Springer, Singapore, 2022.

D.33. **Rajat Kumar Pal** (with S. Pahari and A. Pal). Community Detection in Large and Complex Networks Using Semi-local Similarity Measure. Proceedings of the 9th International Doctoral Symposium on Applied Computation and Security Systems (ACSS). In: Chaki, R., Cortesi, A., Saeed, K., Chaki, N. (eds.), Applied Computing for Software and Smart Systems. Lecture Notes in Networks and Systems, vol. 555, pp. 81–98. Springer, Singapore, 2022.

D.34. **Rajat Kumar Pal** (with T. Seal, D. Das Dawn, A. Khan, and S. K. Setua). BEN-CNN-BiLSTM: A Model of Consequential Document Set Identification of Bengali Text. Proceedings of the 9th International Doctoral Symposium on Applied Computation and Security Systems (ACSS). In: Chaki, R., Cortesi, A., Saeed, K., Chaki, N. (eds.), Applied Computing for Software and Smart Systems. Lecture Notes in Networks and Systems, vol. 555, pp. 175–190. Springer, Singapore, 2022.

D.35. **Rajat Kumar Pal** (with S. Chakraborty, R. Bhattacharyya, and M. Chakraborty). Generation of All Rooted Ordered Trees. Proceedings of the 10th International Doctoral Symposium on Applied

Computing for Software and Smart Systems (ACSS), 2023.

D.36. **Rajat Kumar Pal** (with R. Majumder and A. Dutta). Augmentation of Mixing Quality and Its Analysis Based on Electrode Shape Diversity in Digital Microfluidics Biochips. Proceedings of the 10th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS), 2023.

D.37. **Rajat Kumar Pal** (with S. Jana, M. Sen, A. Khan, and A. K. Maji). A Novel Video Encryption Scheme using Giant Sudoku for Secured Data Transmission. Proceedings of the 10th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS), 2023.

D.38. **Rajat Kumar Pal** (with T. Seal, A. Bhattcharya, S. Das, S. Patra, D. Das Dawn, A. Khan, and S. K. Setua). BEN-RS-ANN: An Innovative Approach for Revealing Emotion from Bengali Text with Exposure to Polysemy Resolution. Proceedings of the 11th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS), 2024.

D.39. **Rajat Kumar Pal** (with S. Roy, U. Roy, D. Sinha). Advancing Smartphone Sensor-Based Keystroke Dynamics for Implicit and Active Authentication: Addressing Challenges and Enhancing Usability Control. Proceedings of the 11th International Doctoral Symposium on Applied Computing for Software and Smart Systems (ACSS), 2024.

D.40. **Rajat Kumar Pal** (with S. Roy, S. Maity, A. Khanra, and M. Maiti). Sustainable Routing for the 4DTSP Model for Biomaterial Distribution to Different Service Points to Minimize Travel Costs using a Genetic Algorithm, Accepted for Publication In: T. Bhattasali, Sheng-Lung-Peng, and S. Roy (eds.), Exploring Cutting-Edge Intelligent Applications of Bioinformatics: A Practical Perspective, Apple Academic Press, Exclusive Co-Publishing with CRC Press, a Taylor and Francis Group, 2024.

E. Conference Proceedings, Technical Reports, and Invited Talks

E.1. **Rajat Kumar Pal** (with U. K. Bhattacharya, and A. Pal). YACRIT: Yet Another Channel Router with Interchangeable Terminals. Presented in Prof. A. K. Choudhury Commemoration Symposium, Calcutta, India, Feb. 21-23, 1990.

E.2. **Rajat Kumar Pal** (with A. Pal). An Efficient Interchangeable Switch-Box Router: A Generalized Study. Proceedings of the Fourth CSI/IEEE International Symposium on VLSI Design (VLSID 1991), New Delhi, India, pp. 279–280, Jan. 4-8, 1991.

E.3. **Rajat Kumar Pal** (with S. Bose, and A. Pal). An Efficient Algorithm for Switch-Box Routing with Interchangeable Terminals. Proceedings of the National Conference on Real-Time Systems, Indore, India, pp. 84–88, Feb. 23-25, 1991.

E.4. **Rajat Kumar Pal** (with S. Bose, and A. Pal). A Graph-Theoretic Approach for Two-Layer Channel Routing. Proceedings of the Fourteenth National Systems Conference 1990, Aligarh, India, pp. 532–537, Mar. 12-14, 1991.

E.5. **Rajat Kumar Pal** (with A. Pal). A New Generalized Channel Router with Interchangeable Terminals: GYACRIT. Proceedings of the AMSE International Conference on Signals, Data and Systems, New Delhi, India, vol. 2, pp. 19–30, Dec. 9-11, 1991.

E.6. **Rajat Kumar Pal** (with A. Pal). An Efficient Two-Layer Channel Router Using Graph Applications. Proceedings of the AMSE International Conference on Signals, Data and Systems, New Delhi, India, vol. 2, pp. 31–42, Dec. 9-11, 1991.

E.7. **Rajat Kumar Pal** (with A. Pal). An Efficient Four-Layer Channel Routing Algorithm based on Graph Theoretical Applications. Proceedings of the AMSE International Conference on Signals, Data and Systems, New Delhi, India, vol. 2, pp. 43–54, Dec. 9-11, 1991.

E.8. **Rajat Kumar Pal** (with A. Pal). An Efficient Graph-Theoretic Algorithm for Three-Layer Channel Routing. Proceedings of the Fifth VSI/IEEE International Conference on VLSI Design (VLSID 1992), Bangalore, India, pp. 259–262, Jan. 4-7, 1992.

E.9. **Rajat Kumar Pal** (with S. Bose, and A. Pal). Intra-Row Standard Cell Placement Algorithm for Cost-Optimal Routing. Proceedings of the Fifteenth National Systems Conference 1991, Roorkee, India, pp. 174–178, Mar. 13-15, 1992.

E.10. **Rajat Kumar Pal** (with S. Bose, and A. Pal). A Graph-Theoretic Four-Layer Channel Router. Proceedings of the Fifteenth National Systems Conference 1991, Roorkee, India, pp. 179–183, Mar. 13-15, 1992.

E.11. **Rajat Kumar Pal** (with A. K. Datta, and A. Pal). An Efficient Track Assignment Technique for Channel Routing Problem. Proceedings of the Second National Seminar on Theoretical Computer Science (NSTCS 1992), Calcutta, India, pp. 69–79, Jun. 17-19, 1992.

E.12. **Rajat Kumar Pal** (with S. Bose, and A. Pal). A Graph-Based Three-Layer Channel Router. Proceedings of the National Symposium on Optimization Techniques, and Applications, Madurai, India, pp. 280–286, Jul. 2-3, 1992.

E.13. **Rajat Kumar Pal** (with A. K. Datta, S. P. Pal, and A. Pal). Resolving Horizontal Constraints, and Minimizing Net Wire Length for VHV Channel Routing. Technical Report No.: TR/IIT/CSE/92/01, Dept. of Computer Sc. & Engg., IIT, Kharagpur, 1992.

E.14. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). On the Computational Complexity of Multi-Layer Channel Routing. Technical Report No.: TR/IIT/CSE/92/02, Dept. of Computer Sc. & Engg., IIT, Kharagpur, 1992.

E.15. **Rajat Kumar Pal** (with S. P. Pal, A. K. Datta, and A. Pal). NP-Completeness of Multi-Layer No-Dogleg Channel Routing, and an Efficient Heuristic. Proceedings of the Sixth VSI/IEEE International Conference on VLSI Design (VLSID 1993), Bombay, India, pp. 80–83, Jan. 3-6, 1993.

E.16. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). On the Computational Complexity of Area, and Wire Length Minimization in Multi-Layer Channel Routing. Proceedings of the Third National Seminar on Theoretical Computer Science (NSTCS 1993), IIT, Kharagpur, India, pp. 103–119, Jun. 16-18, 1993.

E.17. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). A New Lower Bound for Channel Routing. Proceedings of the IEEE Region 10's Eighth Annual International Conference on Computer, Communication, Control, and Engineering (IEEE TENCON 1993), Beijing, China, vol. 1, pp. 507–510, Oct. 19-21, 1993.

E.18. **Rajat Kumar Pal** (with A. K. Datta, S. P. Pal, and A. Pal). Resolving Horizontal Constraints and Minimizing Net Wire Length for Multi-Layer Channel Routing. Proceedings of the IEEE Region 10's Eighth Annual International Conference on Computer, Communication, Control, and Engineering (IEEE TENCON 1993), Beijing, China, vol. 1, pp. 569–573, Oct. 19-21, 1993.

E.19. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). Minimizing Net Wire Length in Multi-Layer Channel Routing (Invited Paper). Proceedings of the CSA Silver Jubilee Workshop on Computing, and Intelligent Systems, IISc. Bangalore, India, pp. 171–188, Dec. 20-22, 1993.

E.20. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). Wire Length Minimization in Multi-Layer Channel Routing: Complexity Results, and Efficient Algorithms. Technical Report No.: TR/IIT/CSE /93/07, Dept. of Computer Sc. & Engg., IIT, Kharagpur, 1993.

E.21. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). Absolute Approximation for Channel Routing is NP-Hard. Proceedings of the Fourth National Seminar on Theoretical Computer Science (NSTCS 1994), IIT, Kanpur, India, pp. 28–39, Jun. 8-10, 1994.

E.22. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). On the Computational Complexity of Approximate Area Minimization in VLSI Design. Proceedings of the International Conference on Computer Systems, and Education, IISc., Bangalore, India, pp. 378–380, Jun. 22-25, 1994.

E.23. **Rajat Kumar Pal** (with S. P. Pal, M. M. Das, and A. Pal). Computing Area and Wire Length Efficient Routes for Channels. Proceedings of the Eighth VSI/IEEE International Conference on VLSI Design (VLSID 1995), New Delhi, India, pp. 196–201, Jan. 4-7, 1995.

E.24. **Rajat Kumar Pal** (with A. K. Datta, S. P. Pal, M. M. Das, and A. Pal). A General Graph Theoretic Framework for Multi-Layer Channel Routing. Proceedings of the Eighth VSI/IEEE International Conference on VLSI Design (VLSID 1995), New Delhi, India, pp. 202–207, Jan. 4-7, 1995. (Nominated for the Best Paper Award of the Conference.)

E.25. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). An Algorithm for Finding a Non-Trivial Lower Bound for Channel Routing. Proceedings of the Tenth VSI/IEEE International Conference on VLSI Design (VLSID 1997), Hyderabad, India, pp. 531–532, Jan. 4-7, 1997.

E.26. **Rajat Kumar Pal** (with S. P. Pal, and A. Pal). Wire Length Minimization in Multi-Layer Channel Routing. Proceedings of the Second VLSI Design and Test Workshops (VDAT 1998), New Delhi, India, Aug. 6-7, 1998.

E.27. **Rajat Kumar Pal** (with S. Sen Sarma). Wire Length Minimization in Routing and Performance Enhancement in VLSI Design. Invited Tutorial presented in the Fourth IEEE VLSI Design and Test Workshops 2000 (VDAT 2000), New Delhi, India, Aug. 25-27, 2000; VLSI Design and Test: Milestones, and Challenges, Edited by C. P. Ravikumar, pp. 70–71, Phoenix Publishing House Pvt Ltd., New Delhi, 2000.

E.28. **Rajat Kumar Pal**. Many Facets of Two-Layer Channel Routing. Proceedings of the Intelligent Computing and VLSI, Kalyani, India, pp. 186–193, Feb. 16-17, 2001.

E.29. **Rajat Kumar Pal** (with A. Singha, S. Ghosh, and A. Pal). High Performance Routing for VLSI Circuit Synthesis. Proceedings of the Sixth IEEE VLSI Design and Test Workshops 2002 (VDAT 2002), Bangalore, India, pp. 348–351, Aug. 29-31, 2002.

E.30. **Rajat Kumar Pal** (with A. Pal, A. Singha, and S. Ghosh). Crosstalk Minimization in Two-Layer Channel Routing. Proceedings of the 17th IEEE Region 10 International Conference on Computers, Communications, Control, and Power Engineering (IEEE TENCON 2002), Beijing, China, vol. 1, pp. 408–411, Oct. 28-31, 2002.

E.31. **Rajat Kumar Pal** (with P. Mitra, and N. Ghoshal). Total Wire Length Minimization in Channel Routing. Proceedings of the Conference on Horizons of Telecommunication (HOT 2003), Kolkata, India, Page 60 (Abstract), Feb. 3-5, 2003.

E.32. **Rajat Kumar Pal** (with P. Mitra, N. Ghoshal, and A. Chatterji). TAH based Total Wire Length Minimization in Two-Layer Channel Routing. Proceedings of the National Conference on Emerging Trends in VLSI Design, and Testing (NCVDAT 2003), Coimbatore, India, pp. 428–437 (In CD: A Paper of Ten pages), Feb. 21-22, 2003.

E.33. **Rajat Kumar Pal**. *ChannelSort*: A Sorting Algorithm by Constructing Instances of Channel Routing Problem. Proceedings of the 7th IEEE VLSI Design, and Test Workshops 2003 (VDAT 2003), Bangalore, India, pp. 230–234, Aug. 28-30, 2003.

E.34. **Rajat Kumar Pal** (with P. Mitra, and N. Ghoshal). A Graph Theoretic Approach to Minimize Total Wire Length in Channel Routing. Proceedings of the 18th IEEE Region 10 International Conference on Convergent Technologies for the Asia-Pacific (IEEE TENCON 2003) (ISBN 0-7803-8162-9), Bangalore, India, vol. 1, pp. 414–418, Oct. 14-17, 2003.

E.35. **Rajat Kumar Pal**. *ARKEPIanGraphSort*: A Graph based Sorting Algorithm. Proceedings of the 18th IEEE Region 10 International Conference on Convergent Technologies for the Asia-Pacific (IEEE TENCON 2003) (ISBN 0-7803-8162-9), Bangalore, India, vol. 4, pp. 1386–1390, Oct. 14-17, 2003.

E.36. **Rajat Kumar Pal** (with N. Ghoshal, and P. Mitra). A Two-, and Three-Layer Dogleg Channel Routing Algorithm for Minimizing Total Wire Length. Proceedings of the International Conference on Computers, and Devices for Communication (CODEC 2004), CD: Paper ID: CNA_0435_CO (Four pages), Kolkata, India, Jan. 1-3, 2004.

E.37. **Rajat Kumar Pal** (with A. Pal, B. Dam, and S. Sadhu). Performance Driven Physical Synthesis. Proceedings of the International Conference on Communications, Devices, and Intelligent Systems (CODIS 2004), Kolkata, India, pp. 194–197, Jan. 9-10, 2004.

E.38. **Rajat Kumar Pal** (with S. Bhowal). Yet Another High Performance Channel Router. Proceedings of the International Conference on Communications, Devices, and Intelligent Systems (CODIS 2004), Kolkata, India, pp. 211–214, Jan. 9-10, 2004.

E.39. **Rajat Kumar Pal** (with S. Bhowal). High Performance Multi-Layer Routing for VLSI Circuit Synthesis. Proceedings of the 19th IEEE Region 10 International Conference on Analog, and Digital Techniques in Electrical Engineering (TENCON 2004), Chiang Mai, Thailand, vol. D, pp. 328–331, Nov. 21-24, 2004.

E.40. **Rajat Kumar Pal**. *SieveSort*: Yet Another Sorting Algorithm. Proceedings of the 19th IEEE Region 10 International Conference on Analog, and Digital Techniques in Electrical Engineering (IEEE TENCON 2004), Chiang Mai, Thailand, vol. B, pp. 357–360, Nov. 21-24, 2004.

E.41. **Rajat Kumar Pal** (with S. Sen Sarma). Graphs – Our Experience with Truth (abstract). Proceedings of the 20th Indian Engineering Congress, Kolkata, India, pp. 77–78, Dec. 15-18, 2005.

E.42. **Rajat Kumar Pal** (with S. Ghosh). Fault Tolerant Data Routing in Optimum Number of Passes in Parallel Processing Environment. Proceedings of the International Conference on Electronic, and Photonic Materials, Devices, and Systems (EPMDS 2006), Kolkata, India, pp. I30–I32, Jan. 4-6, 2006.

E.43. **Rajat Kumar Pal** (with D. Saha, and S. Sen Sarma). A Mimetic Algorithm for Refinement of Lower Bound of Number of Tracks in Channel Routing Problem. Proceedings of the 4th International Conference on Intelligent Information Processing (ICIIP 2006) (Intelligent Information Processing III: International Federation for Information Processing (IFIP TC12), Springer (ISBN: 10: 0-387-44639-7)), Adelaide, Australia, pp. 307–316, Sep. 20-23, 2006.

E.44. **Rajat Kumar Pal** (with S. Ghosh). Association Rule Mining: A Graph based Approach. Proceedings of the International Conference on Computers, and Devices for Communication (CODEC 2006), CD: Paper ID: TCJNB1030_42P (TEA-57) (Four pages), Kolkata, India, Dec. 18-20, 2006.

E.45. **Rajat Kumar Pal** (with S. Ghosh). Parallel High Performance Routing Algorithms for Rearrangeable Symmetrical Networks. Proceedings of the International Conference on Computers, and Devices for Communication (CODEC 2006), CD: Paper ID: TCJNB1030_53P (CNA-36) (Four pages), Kolkata, India, Dec. 18-20, 2006.

E.46. **Rajat Kumar Pal** (with S. Naskar, K. Basuli, and S. Sen Sarma). Spanning Tree Generation in the Limelight. Proceedings of the National Seminar on Recent Advances in Operational Research, and Related Computational Aspects, Department of Applied Mathematics, University of Calcutta, Kolkata, India, pp. 57–60, Aug. 22-23, 2007.

E.47. **Rajat Kumar Pal** (with A. Pal, D. Kundu, A. K. Datta, and T. N. Mandal). Algorithms for High Performance Two-Layer Channel Routing. Proceedings of the 22nd IEEE Region 10 International Conference on Intelligent Information Communication Technologies for Better Human Life (IEEE

TENCON 2007), CD: Session: WeSC-O1.4 (Electronic Design Automation (EDA) of System-on-Chip) (Four pages), Taipei, Taiwan, Oct. 30 – Nov. 02, 2007.

E.48. **Rajat Kumar Pal** (with R. Mehera, and S. Chatterjee). A Time-Optimal Algorithm for Guard Zone Problem. Proceedings of the 22nd IEEE Region 10 International Conference on Intelligent Information Communication Technologies for Better Human Life (IEEE TENCON 2007), CD: Session: ThCP-P.2 (Computing) (Four pages), Taipei, Taiwan, Oct. 30 – Nov. 02, 2007.

E.49. **Rajat Kumar Pal** (with S. Das, and S. Banerjee). Novelty of TAH Framework in Computing Reduced Wire Length Two-, and Three-Layer Routing Solutions. Proceedings of the 22nd IEEE Region 10 International Conference on Intelligent Information Communication Technologies for Better Human Life (IEEE TENCON 2007), CD: Session: FrSC-O10.1 (Routing, Interconnect and Bus Design of System-on-Chip) (Four pages), Taipei, Taiwan, Oct. 30 – Nov. 02, 2007.

E.50. **Rajat Kumar Pal** (with S. Bandyopadhyay, and D. Dhal). Yet Another Way of Selecting Programme Slots for Advertising Products through Different Television Channels. Proceedings of the National Seminar on Applied, and Computational Mathematics, and their Applications, Department of Applied Mathematics with Oceanology, and Computer Programming, Vidyasagar University, Midnapore, India, Page 4 (Abstract), Mar. 6-7, 2008.

E.51. **Rajat Kumar Pal**. Perfect Graphs in Everyday Life (Invited Talk). Proceedings of the National Seminar on Applied, and Computational Mathematics, and their Applications, Department of Applied Mathematics with Oceanology, and Computer Programming, Vidyasagar University, Midnapore, India, pp. 9–10 (Abstract), Mar. 6-7, 2008.

E.52. **Rajat Kumar Pal**. On Perfect Graphs, and their Applications (Invited Talk). Proceedings of the Seminar on Recent Trends in I.T., Its Challenges, and Opportunities, Bankura Unnayani Institute of Engineering, Bankura, India (Five pages), Mar. 9, 2008.

E.53. **Rajat Kumar Pal**. *MCC1* and *TAH* Framework for Developing Channel Routing Algorithms (Invited Talk). Presented in the Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan, May 15, 2008.

E.54. **Rajat Kumar Pal**. An Encounter with Perfect Graphs (Invited Talk). Proceedings of the International Conference on Electronics, Computer, and Communication (ICECC 2008) (ISBN 984-300-002131-3), University of Rajshahi, Bangladesh, pp. 17–20, Jun. 27-29, 2008.

E.55. **Rajat Kumar Pal** (with A. Pal, and A. K. Datta). On Weighted Hamiltonian Path Problem. Proceedings of the International Conference on Electronics, Computer, and Communication (ICECC 2008) (ISBN 984-300-002131-3), University of Rajshahi, Bangladesh, pp. 97–100, Jun. 27-29, 2008.

E.56. **Rajat Kumar Pal** (with S. Bandyopadhyay, and D. Dhal). A Method to Select Programme Slots for Giving Advertisements in Different Television Channels. Proceedings of the 23rd IEEE Region 10 International Conference on Innovative Technologies for Societal Transformation (IEEE TENCON 2008), CD: Session: O24 (Innovative Technologies – I) (Six pages), Hyderabad, India, Nov. 18-21, 2008.

E.57. **Rajat Kumar Pal**. Perfect Graphs: A Class of Special Graphs with their Applications (Invited Talk). Proceedings of the National Conference on Computer Applications for the 21st Century – Synergies, and Vistas, Department of Computer Science, Vidyasagar College, Kolkata, India, pp. 41–50, Dec. 11-12, 2008.

E.58. **Rajat Kumar Pal** (with D. K. Gayen, J. N. Roy, and S. Mondal). All-Optical Parallel Scheme of Parity Generator. Proceedings of the International Conference on Fiber Optics, and Photonics (PHOTONICS 2008), New Delhi, India, CD: Four pages, Dec. 14-17, 2008.

E.59. **Rajat Kumar Pal** (with A. Pal, T. N. Mandal, A. K. Datta, and D. Kundu). Generation of Random Channel Specifications for Channel Routing Problem. Proceedings of the 11th IEEE International Conference on Computer, and Information Technology (IEEE ICCIT 2008), and Workshops, Khulna, Bangladesh, pp. 19–24, Dec. 24 – 27, 2008.

E.60. **Rajat Kumar Pal** (with S. Bandyopadhyay). Some New Applications of Perfect Graphs. Proceedings of the National Symposium on Applied Mathematics, and Related Computational Problems, Department of Applied Mathematics, University of Calcutta, Kolkata, India, pp. 7–8 (Abstract), Jan. 13-14, 2009.

E.61. **Rajat Kumar Pal** (with S. K. Ghosh, and J. Ghosh). An Algorithm for Converting a Given *k*-ary Tree into Its Equivalent Binary Tree. Proceedings of the 1st International Conference on Computer, Communication, Control, and Information Technology (C3IT 2009), Academy of Technology, Adisaptagram (Hooghly, West Bengal), India, pp. 56–62, Feb. 6-7, 2009.

E.62. **Rajat Kumar Pal** (with S. K. Ghosh, and D. Nath). A New Approach of Computing Minimal Dominating Sets of a Simple Symmetric Connected Graph. Proceedings of the 1st International Conference on Computer, Communication, Control, and Information Technology (C3IT 2009), Academy of Technology, Adisaptagram (Hooghly, West Bengal), India, pp. 69–77, Feb. 6-7, 2009.

E.63. **Rajat Kumar Pal** (with J. Ghosh, and S. K. Ghosh). Two New Solutions of the Eight Coins Problem. Proceedings of the 1st International Conference on Computer, Communication, Control, and Information Technology (C3IT 2009), Academy of Technology, Adisaptagram (Hooghly, West Bengal), India, pp. 85–92, Feb. 6-7, 2009.

E.64. **Rajat Kumar Pal** (with D. K. Gayen, and J. N. Roy). All Optical Logic Shifter with the help of Terahertz Optical Asymmetric Demultiplexer. Proceedings of the International Conference on Trends in Optics, and Photonics (IConTOP 2009), Department of Optics, and Photonics, University of Calcutta, India, pp. 146–153, Mar. 2-4, 2009.

E.65. **Rajat Kumar Pal** (with S. Bandyopadhyay). Computation of Minimum Frequency Requirement for a Wireless Communication System in Polynomial Time using a Graph Theoretic Approach. Proceedings of the Third International Conference on Information Processing (ICIP 2009), Bangalore, India, pp. 229–237, Aug. 7-9, 2009.

E.66. **Rajat Kumar Pal** (with D. K. Gayen, and J. N. Roy). All-Optical Binary Coded Decimal (BCD) Adder. Proceedings of the International Conference on Computers, and Devices for Communication (CODEC 2009), Department of Radio-Physics, and Electronics, University of Calcutta, India, Dec. 14-16, 2009.

E.67. **Rajat Kumar Pal** (with A. Bhattacharjya). An RFID-based Ubiquitous Framework for Mobile Object Tracking with Reconfigurable Lightweight RFID Reader Protocol. Proceedings of the International Conference on Distributed Computing, and Networking, PhD Forum Publication, pp. 33–36, 2010.

E.68. **Rajat Kumar Pal** (with A. Bhattacharjya). Layered OSGi-based Reconfigurable Lightweight RFID Reader Protocol. Proceedings of the International Conference on Industrial Engineering, and Operations Management (IEOM 2010), pp. 978–984, 2010.

E.69. **Rajat Kumar Pal**. An Application of Perfect Graphs in Selecting Programme Slots for Giving Advertisements in Different Television Channels (Invited Talk). Proceedings of the National Workshop on Discrete Structures, Department of Applied Mathematics with Oceanology, and Computer Programming, Vidyasagar University, Midnapore, India, pp. 3–4, Mar. 17-19, 2010.

E.70. **Rajat Kumar Pal** (with A. Bhattacharjya). An RFID-based Self-Organizing Architecture for Remote Sensing. Proceedings of the International Conference on Informatics, Cybernetics, and Computer Applications (ICICCA 2010), Id: 206, Bangalore, India, Jul. 19-21, 2010.

E.71. **Rajat Kumar Pal** (with A. K. Maji). A Systematic Approach for Solving Sudoku Puzzle. Proceedings of the International Conference on Computing, and Systems, Burdwan University, India, pp. 168–174, Nov. 19-20, 2010.

E.72. **Rajat Kumar Pal** (with A. Pal, A. K. Khan, S. Saha Sau, A. K. Datta, and A. Chaudhuri). Application of Graph in Computing Reduced Area VLSI Channel Routing Solutions. Proceedings of the International Conference on Computing, and Systems (ICCS 2010), pp. 249–256, 2010.

E.73. **Rajat Kumar Pal**. An Improvement on the Number of Iterations of a Perfect Graph based Sorting Algorithm (Invited Talk). Proceedings of the International Conference on Recent Advances in Mathematical Sciences, and their Applications (RAMSA 10), Department of Mathematics, Assam University, Silchar, India, Nov. 25-27, 2010.

E.74. **Rajat Kumar Pal**. Developing Algorithms for *n* Coins Problem (Invited Talk). Proceedings of the National Conference on LOGIC: From Philosophy to Computer Science through Mathematics, Vivekananda College for Women, Kolkata, India, pp. 1–8, Dec. 11-12, 2010.

E.75. **Rajat Kumar Pal** (with M. Chakraborty, and G. Hazra). Generation of All Spanning Trees of a Simple Symmetric Connected Graph using Divide-and-Conquer Approach. Proceedings of the National Conference on LOGIC: From Philosophy to Computer Science through Mathematics, Vivekananda College for Women, Kolkata, India, pp. 58–81, Dec. 11-12, 2010.

E.76. **Rajat Kumar Pal** (with A. Bhattacharjya). Distributed Design of Universal Lightweight RFID System for Large-Scale RFID Operation. Proceedings of the IEEE International Summer Conference of Asia Pacific on Business Innovation, and Technology Management (APBITM 2011), pp. 40–44, IEEE, 2011.

E.77. **Rajat Kumar Pal** (with A. Bhattacharjya). An RFID-based Universal Lightweight Multi-Domain Auto-Monitoring System. Proceedings of the International Conference on Industrial Engineering, and Operations Management (IEOM 2011), ISBN: 978-0-9808251-0-7, Id: 126, Kuala Lumpur, Malaysia, 2011.

E.78. **Rajat Kumar Pal** (with S. Bandyopadhyay). An Algorithm for Selecting Programme Slots to Broadcast Advertisements in Parallel in Different Television Channels. Proceedings of the IEEE International Conference on Computer Science, and Automation Engineering (CSAE 2011), vol. 2, pp. 399–403. IEEE, 2011.

E.79. **Rajat Kumar Pal** (with J. Ghosh, P. Senmajumdar, S. Maitra, and D. Dhal). A Generalized Algorithm for Solving *n* Coins Problem. Proceedings of the IEEE International Conference on Computer Science, and Automation Engineering (CSAE 2011), vol. 2, pp. 411–415. IEEE, 2011.

E.80. **Rajat Kumar Pal** (with M. Chakraborty, and G. Hazra). Divide-and-Conquer: An Approach to Generate All Spanning Trees of a Connected and Undirected Simple Graph. Proceedings of the International Conference on Scientific Paradigm Shift in Information Technology, and Management (ITM 2011), IEEE, Science City, Kolkata, India, 2011.

E.81. **Rajat Kumar Pal** (with S. Saha Sau, A. Pal, T. N. Mandal, A. K. Datta, and A. Chaudhuri). A Graph Based Algorithm to Minimize Total Wire Length in VLSI Channel Routing. Proceedings of the IEEE International Conference on Computer Science, and Automation Engineering (CSAE 2011), vol. 3, pp. 61–65. IEEE, 2011.

E.82. **Rajat Kumar Pal**. *CompleteGraphSort*: A Complete Graph Structure based Sorting Algorithm. Proceedings of the IEEE International Conference on Computer Science, and Automation Engineering (CSAE 2011), vol. 4, pp. 193–197. IEEE, 2011.

E.83. **Rajat Kumar Pal**. Graph Theory and Perfect Graphs (Keynote Speech). Proceedings of the International Conference on Advances in Electrical Engineering (ICAEE 2011), IUB, Dhaka,

Bangladesh, p. 23, 2011.

E.84. **Rajat Kumar Pal** (with A. Pal). Crosstalk Minimization is a Challenge in Designing High Performance VLSI Circuits. Proceedings of the International Conference on Advances in Electrical Engineering (ICAEE 2011), IUB, Dhaka, Bangladesh, pp. 189–194, 2011.

E.85. **Rajat Kumar Pal** (with A. Pal, S. Saha Sau, T. N. Mandal, A. K. Datta, and A. Chaudhuri). Yet an Efficient Algorithm for Computing Reduced Area VLSI Channel Routing Solutions with Floating Terminals. Proceedings of the 14th International Conference on Computer, and Information Technology (ICCIT 2011), pp. 393–398. IEEE, 2011.

E.86. **Rajat Kumar Pal** (with A. Pal, T. N. Mandal, A. K. Datta, and A. Chaudhuri). Approximate, and Bottleneck High Performance Routing for Self-healing VLSI Circuits. Proceedings of the 2nd IEEE International Workshop on Reliability Aware System Design, and Test (RASDAT 2011) (In conjunction with the 24th International Conference on VLSI Design (VLSID 2011)), Chennai, India, 2011.

E.87. **Rajat Kumar Pal** (with S. Saha Sau, A. Pal, T. N. Mandal, A. K. Datta, and A. Chaudhuri). A Graph based Reduced Area VLSI Channel Routing Algorithm with Floating Terminals. Proceedings of the 3rd International Conference on Recent Advances in Mathematics, Technology, and Management, BITM, Santiniketan, WB, India, 2011.

E.88. **Rajat Kumar Pal** (with D. Dhal, and S. Roy). A Review on Some Droplet Routing Algorithms. Proceedings of the UGC Sponsored National Symposium on Emerging Trends in Computer Science (ETCS 2012), BRSN College, Barrackpore, Jan. 20-21, 2012.

E.89. **Rajat Kumar Pal**. Graph Theory, and Perfect Graphs: Some of Their Scientific, and Real Life Applications (Invited Talk). Proceedings of the UGC Sponsored National Conference on Research, and Higher Education in Computer Science, and Information Technology (RHECSIT 2012), Sammilani Mahavidyalaya, Kolkata, pp. 32–33, Feb. 21-22, 2012.

E.90. **Rajat Kumar Pal** (with S. Saha Sau). An Efficient High Performance Parallel Algorithm to Yield Reduced Wire Length VLSI Circuits. Proceedings of the 5th International Conference on Computers, and Devices for Communication (CODEC 2012), pp. 1–4. IEEE, 2012.

E.91. **Rajat Kumar Pal** (with P. K. Bhattacharjee, and S. Roy). A Great Landmark to Achieve 4G Mobile Communications. Proceedings of the National Conference on Research, and Higher Education in Information Technology (RHEIT 2013), Assam University, Silchar, Assam, pp. 1–8, 2013.

E.92. **Rajat Kumar Pal** (with J. Debbarma, M. K. Debbarma, and S. Roy). Mobile Ad hoc Network: Challenges in the Research Activities. Proceedings of the National Conference on Research, and Higher Education in Information Technology (RHEIT 2013), Assam University, Silchar, Assam, 2013.

E.93. **Rajat Kumar Pal** (with J. Debbarma, M. K. Debbarma, and S. Roy). Energy Management System in Mobile Ad hoc Networks through Cross-Layer Framework. Proceedings of the IEEE Workshop on Computational Intelligence: Theories, Applications, and Future Directions, Department of Electrical Engineering, IIT Kanpur, 2013.

E.94. **Rajat Kumar Pal** (with J. Debbarma, M. K. Debbarma, N. Debbarma, and S. Roy). An Energy-Efficient Protocol for Power Conservation in Mobile Ad hoc Networks. Proceedings of the IEEE International Symposium on Computational and Business Intelligence (ISCBI 2013), New Delhi, pp. 239–242, 2013.

E.95. **Rajat Kumar Pal** (with S. Dasgupta, R. Mondal, and G. Saha). Prediction of Prominent Genes for Insulin Effect using Rough Set Theory. Proceedings of the 4th International Conference on Technical, and Managerial Innovation in Computing, and Communications in Industry, and Academia (IEMCON 2013), pp. 170–174, 2013.

E.96. **Rajat Kumar Pal** (with A. K. Maji, S. Jana, and S. Roy). An Exhaustive Study on Elimination based Sudoku Solver. Proceedings of the 4th International Conference on Technical, and Managerial Innovation in Computing, and Communications in Industry, and Academia (IEMCON 2013), pp. 234–239, 2013.

E.97. **Rajat Kumar Pal** (with Khan, A. K., S. Roy, and B. Das). A New Efficient Layer Assignment Algorithm for Partitioning in 3D VLSI Physical Design. Proceedings of the 1st International Conference on Emerging Trends, and Applications in Computer Science (ICETACS 2013), pp. 203–207. IEEE, 2013.

E.98. **Rajat Kumar Pal** (with J. Debbarma, M. K. Debbarma, and S. Roy). A Cross-Layer Approach for Network, and MAC Layers in Mobile Ad-hoc Networks. Proceedings of the National Seminar on Energy Science, Tripura Institute of Technology, Agartala, 2013.

E.99. **Rajat Kumar Pal** (with J. Debbarma, M. K. Debbarma, and S. Roy). An Energy-Efficient Framework for Performance Evaluation of Mobile Ad-hoc Networks. Proceedings of the International Conference in Multimedia Processing, Communication, and Information Technology, Jawaharlal Nehru National College of Engineering, Shimoga, 2013.

E.100. **Rajat Kumar Pal** (with D. Dhal, A. Chakrabarty, P. Datta, and S. Roy). A Connect-5 Structure based Parallel Assay Operations in a Restricted Sized Chip in Digital Microfluidics. Proceedings of the International Conference on Advances in Electrical Engineering (ICAEE 2013), pp. 75–80. IEEE, 2013.

E.101. **Rajat Kumar Pal** (with A. K. Maji, and S. Roy). A Novel Steganographic Scheme using Sudoku. Proceedings of the International Conference on Electrical Information, and Communication Technology (EICT 2013), pp. 1–6. IEEE, 2014.

E.102. **Rajat Kumar Pal** (with D. Dhal, P. Datta, and A. Chakrabarty). Enhancement of Multiple Parallel Assay Operations with Cross Contamination Avoidance in a Given Biochip. Proceedings of the International Conference on Electronics, and Communication Systems (ICECS 2014), pp. 1–7. IEEE, 2014.

E.103. **Rajat Kumar Pal** (with S. Saha Sau). A Re-router for Optimizing Wire Length in Two- and Four-layer No-dogleg Channel Routing. Proceedings of the 18th International Symposium on VLSI Design, and Test (VDAT 2014), pp. 1–6. IEEE, 2014.

E.104. **Rajat Kumar Pal** (with A. K. Maji). Sudoku Solver using Minigrid based Backtracking. Proceedings of the IEEE International Advance Computing Conference (IACC 2014), pp. 36–44. IEEE, 2014.

E.105. **Rajat Kumar Pal** (with S. Mandal, and G. Saha), Identification of Genetic Pathway for Cervical Cancer Development using Rough, and Bayesian Theory. Proceedings of the Fourth International Conference of Emerging Applications of Information Technology (EAIT 2014), Indian Statistical Institute, Kolkata, India, pp. 77–82, December 2014, IEEE.

E.106. **Rajat Kumar Pal** (with D. Dhal, P. Datta, A. Chakrabarty, and G. Saha). An Algorithm for Parallel Assay Operations in a Restricted Sized Chip in Digital Microfluidics. Proceedings of the IEEE Computer Society Annual Symposium on VLSI (ISVLSI 2014), pp. 142–147, IEEE, 2014.

E.107. **Rajat Kumar Pal** (with S. Bandyopadhyay). Computation of All Possible Maximal Cliques of a Weakly Triangulated Graph in Polynomial Time. Proceedings of the Science and Information Conference, ISBN: 978-0-9893193-1-7, Co-sponsored by IEEE and Springer, London, UK, pp. 159–168, 2014.

E.108. **Rajat Kumar Pal** (with S. Bandyopadhyay). The Problem of Computing *k*-Disjoint Maximal Cliques Covering a Maximum Number of Vertices for Weakly Triangulated Graph. Proceedings of the Science and Information Conference, ISBN: 978-0-9893193-1-7, Co-sponsored by IEEE and Springer, London,

UK, pp. 234–241, 2014.

E.109. **Rajat Kumar Pal** (with J. Ghosh, P. Datta, A. Chakrabarty, A. Nandy, L. Dey, and R. K. Samanta). An Endeavour to Find Two Unequal False Coins. Proceedings of the 8th International Conference on Electrical, and Computer Engineering (ICECE 2014), Dhaka, Bangladesh, 2014.

E.110. **Rajat Kumar Pal** (with J. Ghosh, A. Chakrabarty, P. Datta, L. Dey, A. Nandy, and Ranjit Kumar Samanta). The First Algorithm for Solving Two Coins Counterfeiting with $\omega(\Delta H) = \omega(\Delta L)$. Proceedings of the 8th International Conference on Electrical, and Computer Engineering (ICECE 2014), Dhaka, Bangladesh, 2014.

E.111. **Rajat Kumar Pal** (with P. Datta, A. Dutta, R. Majumder, A. Chakraborty, and D. Dhal). A Technology Shift towards Triangular Electrodes from Square Electrodes in Design of Digital Microfluidic Biochip. Proceedings of the 8th International Conference on Electrical, and Computer Engineering (ICECE 2014), Dhaka, Bangladesh, 2014.

E.112. **Rajat Kumar Pal** (with R. Mehera, P. Datta, and A. Chakraborty). A Comprehensive Approach towards Guard Zone Computation Detecting and Excluding the Overlapped Regions. Proceedings of the 8th International Conference on Electrical, and Computer Engineering (ICECE 2014), Dhaka, Bangladesh, 2014.

E.113. **Rajat Kumar Pal** (with R. Mehera, A. Chakraborty, and P. Datta). Advancement in Guard Zone Computation through Detection, and Exclusion of the Overlapped Regions. Proceedings of the International Conference on Information Systems Design and Intelligent Applications (INDIA 2015), University of Kalyani, Kalyani, West Bengal, India, 2015.

E.114. **Rajat Kumar Pal** (with D. Dhal, P. Datta, and A. Chakraborty). Design of a Mixer for Performing Efficient Mixing to Reduce Overall Assay Response Time. Proceedings of the International Conference on Information Systems Design & Intelligent Applications (INDIA 2015), University of Kalyani, Kalyani, West Bengal, India, 2015.

E.115. **Rajat Kumar Pal** (with R. Mehera, A. Chakraborty, and P. Datta). An Innovative Approach towards Detection, and Exclusion of Overlapped Regions in Guard Zone Computation. Proceedings of the 3rd International Conference on Computer, Communication, Control, and Information Technology (C3IT 2015), Academy of Technology, Adisaptagram, Hooghly, West Bengal, India, 2015, IEEE.

E.116. **Rajat Kumar Pal** (with J. Ghosh, A. Nandy, L. Dey, P. Datta, A. Chakraborty, and R. K. Samanta). An Algorithm for Identifying Two Unequal Heavier / Lighter Coins Out of *n* Given Coins. Proceedings of the 3rd International Conference on Computer, Communication, Control, and Information Technology (C3IT 2015), Academy of Technology, Adisaptagram, Hooghly, West Bengal, India, 2015, IEEE.

E.117. **Rajat Kumar Pal** (with S. Mandal, and G. Saha). S-System based Gene Regulatory Network Reconstruction using Firefly Algorithm. Proceedings of the 3rd International Conference on Computer, Communication, Control, and Information Technology (C3IT 2015), Academy of Technology, Adisaptagram, Hooghly, West Bengal, India, 2015, IEEE.

E.118. **Rajat Kumar Pal** (with S. Mandal and G. Saha). Neural Network based Gene Regulatory Network Reconstruction. Proceedings of the 3rd International Conference on Computer, Communication, Control, and Information Technology (C3IT 2015), Academy of Technology, Adisaptagram, Hooghly, West Bengal, India, 2015, IEEE.

E.119. **Rajat Kumar Pal** (with P. K. Bhattacharjee and S. Roy). Advance Artificial Intelligence based Mutual Authentication Technique with Four Entities in 4-G Mobile Communications. Proceedings of the International Conference on Soft Computing and Machine Intelligence (ISCMI 2014), pp.139–145, 26-27 Sep. 2014.

E.120. **Rajat Kumar Pal** (with P. K. Bhattacharjee and S. Roy). Mutual Authentication Technique with Four

Entities using Fuzzy Neural Network in 4G Mobile Communications. Proceedings of the National Conference on Advances in Engineering, Technology and Management (AETM 2015), e-ISSN: 2278-0661, p-ISSN: 2278-8727, pp. 69–76, 2015.

E.121. **Rajat Kumar Pal** (D. Dhal, P. Datta, A. Chakraborty, and S. Roy). An Impressive Approach for Incorporating Parallelism in Designing DMFB with Cross Contamination Avoidance. Proceedings of the 19th International Symposium on VLSI Design and Test (VDAT 2015), pp. 1–6, IEEE, 2015.

E.122. **Rajat Kumar Pal** (with R. Mehera, A. Chakraborty, and P. Datta). A Cost-Optimal Algorithm for Guard Zone Computation Including Detection and Exclusion of Overlapping. Proceedings of the 19th International Symposium on VLSI Design and Test (VDAT 2015), pp. 1–6. IEEE, 2015.

E.123. **Rajat Kumar Pal** (with A. Khan and G. Saha). A Novel Technique for Reduction of False Positives in Predicted Gene Regulatory Networks. Proceedings of the 12th International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics, ISBN: 9788890643798, pp. 212–217, 2015.

E.124. **Rajat Kumar Pal** (with A. Khan, P. Datta, and G. Saha). Gene Regulatory Networks Using Bat Algorithm Inspired Particle Swarm Optimization. Proceedings of the IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE), pp. 387–390, IEEE, 2015.

E.125. **Rajat Kumar Pal** (A. Khan and G. Saha). A Swarm Intelligence based Scheme for Reduction of False Positives in Inferred Gene Regulatory Networks. Proceedings of the IEEE Congress on Evolutionary Computation (CEC), pp. 40–47, IEEE, 2016.

E.126. **Rajat Kumar Pal** (with P. Datta, A. Dutta, R. Majumder, A. Chakraborty, and D. Dhal). Enhancement of Mixing Operation through New Movement Strategies in Digital Microfluidic Biochips. Proceedings of the 2nd IEEE International Conference Devices for Integrated Circuit (DevIC 2017), 2017.

E.127. **Rajat Kumar Pal** (with A. Khan and G. Saha). Quantum Computing Based Inference of GRNs. Proceedings of the International Conference on Bioinformatics and Biomedical Engineering, pp. 221–233, Springer, Cham, 2017.

E.128. **Rajat Kumar Pal** (with A. Chakraborty and P. Datta). Design Optimization at the Fluid-Level Synthesis for Safe and Low-Cost Droplet-Based Microfluidic Biochips. Proceedings of the 31st International Conference on VLSI Design and 17th International Conference on Embedded Systems (VLSID 2018), pp. 127–132, IEEE, 2018.

E.129. **Rajat Kumar Pal** (with S. K. Roy, D. K. Ghosh, and B. B. Chaudhuri. Affine Differential Local Mean ZigZag Pattern for Texture Classification. Proceedings of the IEEE Region 10 Conference (TENCON 2018), pp. 0488–0493, IEEE, 2018.

E.130. **Rajat Kumar Pal** (with T. N. Mandal, A. Dutta Banik, K. Dey, and R. Mehera). Algorithms for Minimizing Bottleneck Crosstalk in Two-Layer Channel Routing. Proceedings of the 2nd International Conference on Computational Advancement in Communication circuit and System (ICCACCS 2018), 2018.

E.131. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). A Capacity-Aware Wash Optimization for Contamination Removal in Programmable Microfluidic Biochip Devices. Proceedings of the 32nd International Conference on VLSI Design and 18th International Conference on Embedded Systems (VLSID 2019), pp. 413–418, IEEE, 2019.

E.132. **Rajat Kumar Pal** (with A. Dutta, R. Majumder, and D. Dhal). Structural and Behavioural Facets of Digital Microfluidic Biochips with Hexagonal-Electrode-Based Array. Proceedings of the 32nd International Conference on VLSI Design and 18th International Conference on Embedded Systems (VLSID 2019), pp. 239–244, IEEE, 2019.

E.133. **Rajat Kumar Pal** (with A. Dutta, R. Majumder, and D. Dhal). Structural Modelling, Design Automation, and a Generalized Routing Technique for Digital Microfluidic Biochips with Hexagonal

Electrodes. Proceedings of the IEEE Region 10 Symposium (TENSYMP 2019), pp. 337–342, IEEE, 2019.

E.134. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). A Design Optimization for Pin-Constrained Paper-based Digital Microfluidic Biochips Integrating Fluid-Control Co-Design Issues. Proceedings of the 33rd International Conference on VLSI Design and 19th International Conference on Embedded Systems (VLSID 2020), pp. 213–218, IEEE, 2020.

E.135. **Rajat Kumar Pal** (with S. Chowdhury, D. Dhal, and G. Saha). Incorporating Multiple Assay Operations and Cross Contamination Avoidance in Digital Microfluidic Biochips with Reduced Number of Pins. Proceedings of the IEEE Region 10 Symposium (TENSYMP 2020), pp. 102–105, 2020.

E.136. **Rajat Kumar Pal** (with A. Khan and G. Saha). Mitigating the Effects of External Perturbations on a Gene Regulatory Network using Feedback Controller. Proceedings of the IEEE Congress on Evolutionary Computation (CEC), Glasgow, United Kingdom, pp. 1–8, doi: 10.1109/CEC48606.2020. 9185685, 2020.

E.137. **Rajat Kumar Pal** (with A. Khan, A. Dutta, and G. Saha). A Hybrid Methodology for the Reverse Engineering of Gene Regulatory Networks. Proceedings of the IEEE Congress on Evolutionary Computation (CEC), Glasgow, United Kingdom, pp. 1–8, doi: 10.1109/CEC48606.2020.9185866, 2020.

E.138. **Rajat Kumar Pal** (with S. Jana and A. K. Maji). A Novel Search Tree based 3D Sudoku Solver. Proceedings of the 3rd International Conference on Computing and Communication Systems (I3CS), 2020.

E.139. **Rajat Kumar Pal** (with S. Jana, A. Dey, and A. K. Maji). A Novel Neighbourhood Genetic Algorithm based Sudoku Solver. Proceedings of the 3rd International Conference on Computing and Communication Systems (I3CS), 2020.

E.140. **Rajat Kumar Pal** (with R. Majumder, A. Datta, and D. Dhal). An Effective Comparative Study among the Different Geometry of Electrodes in Performing the Tasks in Digital Microfluidic Biochips. Proceedings of the 3rd International Conference on Computing and Communication Systems (I3CS), 2020.

E.141. **Rajat Kumar Pal** (with A. Datta, R. Majumder, and D. Dhal). A Novel Droplet Routing Algorithm with Behavioural Performances in Hexagonal Electrode based DMFB. Proceedings of the 24th International Symposium on VLSI Design and Test (VDAT 2020), 2020.

E.142. **Rajat Kumar Pal** (with S. Chakraborty and M. Chakraborty). Generation of Simple Symmetric Connected Random Graphs. Proceedings of the International Conference on Computational Intelligence, Data Science and Cloud Computing (IEM-ICDC 2020), 2020.

E.143. **Rajat Kumar Pal** (with S. Datta, S. Chakraborty, and M. Chakraborty). Algorithm to Generate All Spanning Tree Structures of a Complete Graph. Proceedings of the International Conference on Computational Intelligence, Data Science and Cloud Computing (IEM-ICDC 2020), 2020.

E.144. **Rajat Kumar Pal** (with P. Dey, A. Khan, and G. Saha). Computational Reconstruction of Gene Regulatory Networks using Half-Systems incorporating False Positive Reduction Techniques. Proceedings of the 2nd International Conference on Mathematical Modelling, Computational Intelligence Techniques and Renewable Energy (MMCITRE 2020), 2020.

E.145. **Rajat Kumar Pal** (with S. Dasgupta, M. Ghosh, A. Khan, and G. Saha). A Computational Approach for Disease Diagnosis using Information Embedded in the Relationships between Micro RNA and their Target Messenger RNA. Proceedings of the 2nd International Conference on Mathematical Modelling, Computational Intelligence Techniques and Renewable Energy (MMCITRE 2020), 2020.

E.146. **Rajat Kumar Pal** (with S. Jana, N. Dutta, and A. K. Maji. A Novel Time-Stamp based Audio Encryption Scheme using Sudoku Puzzle, Proceedings of the 2nd International Conference on Frontiers in Computing and Systems (COMSYS 2021), 2021.

E.147. **Rajat Kumar Pal** (with S. Chakraborty and M. Chakraborty). Generation of Non-Isomorphic Connected Graphs by Successive Edge Removals from a Complete Graph. Proceedings of the International Conference on Computational Intelligence, Data Science and Cloud Computing (IEM-ICDC 2021), 2021.

E.148. **Rajat Kumar Pal** (with R. Sinha and R. K. De). A Model for Optimal Assignment of Non-Uniquely Mapped NGS Reads in DNA Regions of Duplications or Deletion. Proceedings of the 2nd IEEE International Conference on Intelligent Technologies (CONIT 2022), Hubballi, Karnataka, India, 2022.

E.149. **Rajat Kumar Pal** (with K. Mukherjee and S. Pandit). An Ultra-Low Power (86 nW) Low-Voltage (0.6 V) Self-Biased Instrumentation Amplifier for Bio-Medical Applications. Proceedings of the IEEE International Conference of Electron Devices Society Kolkata Chapter (EDKCON 2022), Science City, Kolkata, India, Nov. 26-27, 2022.

E.150. **Rajat Kumar Pal** (with S. Jana, E. Sen Sharma, A. Khan, and A. K. Maji Maji). Generating a Suitable Hash Function using Sudoku for Blockchain Network. Proceedings of the 3rd International Conference on Frontiers in Computing and Systems (COMSYS 2022), Ropar, Punjab, India, Dec. 19-21, 2022.

E.151. **Rajat Kumar Pal** (with K. Mukherjee and S. Pandit). Further Improved 230 nW Ultra-Low Power 1-nA Current Reference Circuit with an Extremely Low Line Sensitivity (0.0004%/V) and 140 ppm/C Temperature Coefficient. Proceedings of the 3rd International Conference on Frontiers in Computing and Systems (COMSYS 2022), pp. 357-367, Ropar, Punjab, India, Dec. 19-21, 2022.

E.152. **Rajat Kumar Pal** (with S. Roy, R. Saha, S. Sarkar, R. Mehera, and S. K. Bandyopadhyay). An Enhanced Encoder-Decoder based Model with Proper Hyperparameter Tuning for Medical Image Segmentation Task. Poster Paper Presented in the Professor Arun Kumar Choudhury Birth Centenary Symposium (AKC 100), University of Calcutta, Jan. 8-9, 2023.

E.153. **Rajat Kumar Pal** (with J. Pratihar, A. Dey, A. Khan, and P. Banerjee). An Architecture for Solving a Fuzzy Transportation Problem Using Computing with Words. Poster Paper Presented in the Professor Arun Kumar Choudhury Birth Centenary Symposium (AKC 100), University of Calcutta, Jan. 8-9, 2023.

E.154. **Rajat Kumar Pal** (with S. Jana, A. Khan, and A. K. Maji). ML-based Sudoku Solver. Poster Paper Presented in the Professor Arun Kumar Choudhury Birth Centenary Symposium (AKC 100), University of Calcutta, Jan. 8-9, 2023.

E.155. **Rajat Kumar Pal** (with S. Roy, S. Sarkar, R. Mehera, and S. K. Bandyopadhyay). Image Classification using Reinforcement Learning. Poster Paper Presented in the Professor Arun Kumar Choudhury Birth Centenary Symposium (AKC 100), University of Calcutta, Jan. 8-9, 2023.

E.156. **Rajat Kumar Pal** (with H. Khatun and C. Changdar). Multi-Conveyance Fuzzy TSP by Genetic Algorithm: COA Defuzzification Method. Poster Paper Presented in the Professor Arun Kumar Choudhury Birth Centenary Symposium (AKC 100), University of Calcutta, Jan. 8-9, 2023.

E.157. **Rajat Kumar Pal** (with S. Roy, S. Mondal, A. Shaw, S. Maity, and M. Maiti). Sustainable Routing with Optimal Campaigning Time Allocation using a Hybridized Algorithm. Poster Paper Presented in the Professor Arun Kumar Choudhury Birth Centenary Symposium (AKC 100), University of Calcutta, Jan. 8-9, 2023.

E.158. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). Simplest Way to Diagnose Neural Disorders at Home (Received an award of ***Outstanding Innovative Scientific Model***). 5th Regional Science and Technology Congress 2022-23, Under the Aegis of Department of Science and Technology and Biotechnology, Government of West Bengal, Region 4, Maulana Azad College, Kolkata, India, Jan. 4-

5, 2023. Also, Presented in the 30th West Bengal State Science and Technology Congress 2022-23 and Received an award of ***Outstanding Innovative Scientific Model***, Organised by the Department of Science and Technology and Biotechnology, Government of West Bengal, Kolkata, Science City, Kolkata, India, Feb. 28 – Mar. 1, 2023.

E.159. **Rajat Kumar Pal** (with R. Majumder, A. Datta, and R. Bhattacharya). A Hybrid BAT Algorithm for Scheduling Droplet Mixing Operations in Digital Microfluidic Biochips. Proceedings of the 27th International Symposium on VLSI Design and Test (VDAT 2023), Sep. 29 – Oct. 1, 2023.

E.160. **Rajat Kumar Pal** (with D. Ganguly, K. Chatterjee, and K. S. Ray). Parallel Communicating One-Way Reversible Finite Automata System. Proceedings of the 4th International Conference on Frontiers in Computing and Systems (COMSYS 2023), Oct. 16-17, 2023.

E.161. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). Resource-aware Integration of Online Testing and Residue Removal for Cyber-Physical P-DMFBs. Proceedings of the 8th International Conference on Computers and Devices for Communication (CODEC 2023), Dec. 14-16, 2023.

E.162. **Rajat Kumar Pal** (with S. Jana, M. Sen, A. Khan, and A. K. Maji). Analysing the Effectiveness of Different Machine Learning Approaches towards Solving Sudoku Puzzle. Proceedings of the 2nd International Conference on Data, Electronics and Computing (ICDEC 2023), Dec. 15-16, 2023.

E.163. **Rajat Kumar Pal** (with P. Datta and A. Chakraborty). A Testable and Fault-Tolerant Synthesis for Paper-based Digital Microfluidic Biochips Using Swarm Optimization. Proceedings of the 2nd International Conference on Data, Electronics and Computing (ICDEC 2023), Dec. 15-16, 2023.

E.164. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). A New Era in Parkinson's Disease Screening at Home (Received an award of ***Outstanding Paper***). 6th Regional Science and Technology Congress 2023-24, Under the Aegis of Department of Science and Technology and Biotechnology, Government of West Bengal, Region 6 (KMC Area), Ballygunge Science College, University of Calcutta, India, p. 170, Dec. 21-22, 2023.

E.165. **Rajat Kumar Pal** (with S. Roy, U. Roy, and D. Sinha). A Child-Friendly Approach to Smartphone Regulation. 6th Regional Science and Technology Congress 2023-24, Under the Aegis of Department of Science and Technology and Biotechnology, Government of West Bengal, Region 6 (KMC Area), Ballygunge Science College, University of Calcutta, India, p. 187, Dec. 21-22, 2023.

E.166. **Rajat Kumar Pal** (with S. Roy and R. Mehera). Study and Impact Analysis of the Hyperparameter Tuning Methods on the Performance of the Encoder-Decoder-based Deep-Net Models, Proceedings of the National Seminar on Mathematical Applications in Data Science and Artificial Intelligence (NSMADAI 2023), Guwahati University, p. 14, Dec. 22, 2023.

E.167. **Rajat Kumar Pal** (with A. Datta and R. Majumder). Reinforcement Learning based Droplet Routing Technique in Hexagonal Digital Microfluidic Biochips using Dueling Network. Proceedings of the 37th International Conference on VLSI Design and 23rd International Conference on Embedded Systems (VLSID 2024), Jan. 6-10, 2024.

E.168. **Rajat Kumar Pal**. Graph as a Tool for Solving Problems (Invited Talk), One-Day 4th National Seminar on Advanced Computation, Algorithm, and Security (ACAS 2024), Department of Computer Science, Vidyasagar University, Paschim Midnapore, West Bengal, India, Mar. 1, 2024.

E.169. **Rajat Kumar Pal** (with R. Majumdar and P. Datta). Checkpoint-Aware Droplet Routing Avoiding Cross-Contamination on Cyber-Physical Cross-Referencing DMFBs, Proceedings of the the International Conference on Intelligent Electrical Systems and Industrial Automation (IESIA 2024), Institute of Engineering and Management, Kolkata, India, Apr. 5-7, 2024.

E.170. **Rajat Kumar Pal** (with S. Roy, S. Podder, and R. Mehera). Root-Cause-Failure-Analysis (RCFA): A Rule-based Chatbot to Facilitate Road Accident Investigation, Proceedings of the the First International

Conference on Advanced Computing and Systems (AdComSys 2024), Department of Computer Science and Technology & Computer Science and Information Technology (CST and CSIT), University of Engineering & Management Kolkata, June 26-27, 2024.

E.171. **Rajat Kumar Pal** (with P. Dey, A. Khan, and G. Khan). MiRNN: A mutual information augmented recurrent neural network framework for reconstruction of gene regulatory networks. Proceedings of the IEEE World Congress on Computational Intelligence (IEEE WCCI 2024), Pacifico Yokohama, Yokohama, Japan, 30 Jun. – 5 Jul. 2024.

E.172. **Rajat Kumar Pal** (with H. Khatun, A. Khan, and R. Mehera). Supervised Machine Learning Methods and Its Application on Automated Telecom Fraud Detection, Accepted for presentation in the International Conference on Smart Systems and Wireless Communication (SSWC 2024) to be held in JIS College of Engineering, Kalyani, West Bengal, India, during November 29-30, 2024.

E.173. **Rajat Kumar Pal** (with R. Majumdar, P. Datta, and A. Chakraborty). Codesign for Broadcast Addressing Biochip towards Tamper-Resistance and Enhanced Reliability. Proceedings of the 38th International Conference on VLSI Design and 24rd International Conference on Embedded Systems (VLSID 2025), Jan. 4-8, 2025.

F. Solution Reports / Disclosures towards Patents

F.1. A Perfect Graph based Modelling in Developing a Sorting Algorithm. Invention ID: IN-800353, Intellectual Ventures, 150, Beach Road, #08-06, Gateway West, Singapore 189720, 2009.

F.2. An Algorithm for Computing a Guard Zone of a Three-Dimensional Simple Solid Object that finds Applications in designing 3D Integrated Circuits. Invention ID: IN-800733, Intellectual Ventures, 150, Beach Road, #08-06, Gateway West, Singapore 189720, 2010. Co-Inventor: Ranjan Mehera.

F.3. US Patent Number: 8,640,068. "Methods and Systems Configured to Compute a Guard Zone of a Three-Dimensional Object". Patent Awarded: January 2014. Co-Inventor: Ranjan Mehera.

F.4. Korea Patent Number: 10-1534121. "Methods and Systems Configured to Compute a Guard Zone of a Three-Dimensional Object". Patent Awarded: July 2015. Co-Inventor: Ranjan Mehera.

F.5. Japan Patent Number: 5,726,330. "Methods and Systems Configured to Compute a Guard Zone of a Three-Dimensional Object". Patent Awarded: May 2015. Co-Inventor: Ranjan Mehera.

F.6. US Patent Number: 9,390,213. "Methods and Systems Configured to Compute a Guard Zone of a Three-Dimensional Object". Patent Awarded: July 2016. Co-Inventor: Ranjan Mehera. (Divisional Patent)

F.7. U.S. Patent Number: 9,715,514. "*k*-ary Tree to Binary Tree Conversion through Complete Height Balanced Technique". Patent Awarded: July 2017. Co-Inventor: Angana Chakraborty and Novarun Deb.

F.8. WIPO Publication Number: WO2013186588A2; "*k*-ary Tree to Binary Tree Conversion through Complete Height Balanced Technique". PCT Filed: October 19, 2012; PCT Number: PCT/IB2012/002095. Co-Inventor: Angana Chakraborty, Novarun Deb. (Pending)

F.9. India Patent Document Number: 0019/KOL/2011. "Methods and Systems Configured to Compute a Guard Zone of a Three-Dimensional Object". Patent Application Filed: January 2011. Co-Inventor: Ranjan Mehera. (Pending)

F.10. Indian Patent No. 201931034812. "Drug Design Approach for Genetic Disorder". Patent Application Filed: 29th August 2019. Patent Awarded: 16th October 2023. Co-Inventors: Goutam Saha and Abhinandan Khan.