



# TAMAL GHOSH, PhD

ASSOCIATE PROFESSOR OF COMPUTER SCIENCE AND ENGINEERING

## PERSONAL INFORMATION

**Official Address:** Room No. 6205, School of Engineering & Technology, Adamas University  
Barasat-Barrackpore Road, Barbaria, Kolkata-700 126, West Bengal, India

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SCOPUS ID: [52163539500](https://orcid.org/52163539500); ORCID: [0000-0002-3225-9450](https://orcid.org/0000-0002-3225-9450); ResearcherID: [HNQ-0122-2023](https://orcid.org/HNQ-0122-2023)

## RESEARCH AND TEACHING INTEREST

Artificial Intelligence and Soft Computing, Data-Driven and Surrogate-Assisted Optimization, Digital Twin and Applications

## RESEARCH EXPERTISE

Nature-inspired and Evolutionary Algorithms, Artificial Intelligence and Soft Computing, Digital Twin applications

## WORK EXPERIENCES

|                 |   |
|-----------------|---|
| 10/2023–Present | Associate Professor, Computer Science and Engineering, Adamas University Kolkata<br>Key Responsibilities: Teaching, Research and Supervision  |
| 01/2023–10/2023 | Associate Researcher, Norwegian University of Science & Technology, Gjøvik, Norway.<br>Project Outline: ML application on Industrial production line (Hexagon Ragasco and Benteler Automotive).                 |
| 01/2021–12/2022 | Researcher (SFI Manufacturing), Norwegian University of Science & Technology, Gjøvik, Norway.<br>Project Outline: Big Data Analysis and Application of ML for the Cyber-Physical System (CPS) factory.          |
| 01/2018–12/2020 | Post-Doctoral Researcher, Norwegian University of Science & Technology, Gjøvik, Norway.<br>Project Outline: Modelling and optimization of process data collected using sensors using meta-heuristic algorithms. |
| 10/2012–12/2017 | INSPIRE-DST Fellow (Grantee No. 120670), Jadavpur University Kolkata, India.<br>Work Description: Worked towards Doctoral thesis and teaching assistant during 2014-16.   |
| 08/2011-10/2012 | Junior Research Fellow, IIITDM Jabalpur, India<br>Work Description: Worked on a SERB-funded project   |
| 08/2008–07/2009 | Lecturer, Dept. of CSE, Aryabhatta Institute of Engg. and Management, West Bengal, India<br>Key Responsibilities: Teaching undergraduate students   |
| 09/2004-07/2008 | Lecturer, Information Technology, EILM, Kolkata, India<br>Key Responsibilities: Teaching undergraduate students   |

## EDUCATION

|           |   |
|-----------|---|
| 2012-2017 | Ph.D. (Engineering), Jadavpur University Kolkata, India                           |
| 2009-2011 | M.Tech (Industrial Engineering & Management), MAKAUT (WBUT) Kolkata, India        |
| 2000-2004 | B.Tech (Computer Science & Engineering), National Institute of Technology Calicut |
| 1997-1999 | Higher Secondary/HSC, West Bengal Council of Higher Secondary Education, India    |
| 1987-1997 | Secondary/SSC, West Bengal Board of Secondary Education, India                    |

## ACADEMIC ROLES SERVED

- ❖ Developed a new course 'Business Intelligence' for the 3<sup>rd</sup> Sem, BCA program, Adamas University
- ❖ Modified a course 'Introduction to Artificial Intelligence', 4<sup>th</sup> Sem, B.Tech program, Adamas University
- ❖ Registration desk member, New admission, Adamas University, 2024-25
- ❖ International Relations Coordinator, Dept. of CSE, Adamas University
- ❖ Faculty Coordinator of B.Tech (CSE) 2022-23 batch
- ❖ BOS Expert, Department of Geography, Adamas University
- ❖ BOS Expert, Department of Mathematics, Adamas University
- ❖ BOS Member, Department of CSE, Adamas University
- ❖ BOS Member, Department of IT, Asansol Engineering, College
- ❖ Empaneled PhD supervisor, at Adamas University
- ❖ NAAC Criteria 2 coordinator, Dept. of CSE, Adamas University, 2023-24
- ❖ Moderator of End-Sem question papers, Adamas University, 2023-24
- ❖ Worked as a reviewer for
  - Arabian Journal of Science and Technology, Springer
  - International Journal of Computer Integrated Manufacturing, T&F
  - Journal of Heuristics, Springer
  - Applied Soft Computing, Elsevier
  - Soft Computing, Springer
- ❖ Worked as an internal examiner for PG dissertation at NTNU, 2022-2023
- ❖ Collaborated in the EU Horizon project called impURE on behalf of NTNU as an ML expert during 2022
- ❖ Attended TEQIP Research Workshop on Product Engineering at WBUT, 2017
- ❖ Technical Coordinator and Organizer of National Conference on Industrial Engineering NCIE 2011, WBUT
- ❖ Attended NPTEL Workshop 2012 (organized by IIT Kanpur and IIIT Jabalpur)
- ❖ Senior Member in technical fest 'TATHVA', NIT Calicut 2004

## COURSES TAUGHT

- Flexible Automation and Artificial Intelligence (TØL 4204), NTNU, Norway, Fall 2021, Fall 2022 (MSc)
- Open-Source Software (CSE 102), Adamas University Kolkata, Fall 2023 (BCA)
- Disruptive Technology Innovation (GEE 11012), Adamas University Kolkata, Summer 2024 (B.Tech)
- Introduction to Artificial Intelligence (CSE 11112), Adamas University Kolkata, Summer 2024 (B.Tech)
- Machine Learning (CSE 21816), Adamas University Kolkata, Winter 2023, Summer 2024 (PhD)
- Introduction to Programming (CSE 11001), Adamas University Kolkata, Summer 2024 (B.Tech)
- Programming Language 1 (JavaScript) (CSE 22757), Adamas University Kolkata, Summer 2024 (MSc)
- Business Intelligence (CSE11457), Adamas University Kolkata, Fall 2024 (BCA)
- Foundation of Computing Science (CSE21844), Adamas University Kolkata, Fall 2024 (M.Tech)
- Applied Computing Lab (CSE22845), Adamas University Kolkata, Fall 2024 (M.Tech)
- Computer Vision (CSE21851) Adamas University Kolkata, Summer 2025 (M.Tech)

## DISSERTATION / THESIS GUIDANCE

- Also Guiding One B.Tech Final Project and one BCA Final Project.
- Currently Guiding PhD Thesis based on Novel Metaheuristics Algorithms. (Candidate: Mr. Komal Pal).
- Currently Guiding PhD Thesis based on Novel Reinforcement Algorithms. (Candidate: Mr. Abhisek Chatterjee).
- S. Kar, H. K. Dutta, S. Sutradhar, (2024) [Development of MCDM-Based Web Applications](#). B.Tech Dissertation, CSE, Adamas University. **(completed)**
- Y. Kaushik, (2022) [Modeling and RSM Based Multi-Objective Optimization of Product Production Inside CP Factory](#). Master Thesis, MSUMA, NTNU. **(Completed)**

## RESEARCH GRANT PROPOSAL WRITING

- Submitted a short project proposal on the digital twin creation of a product inspection-cum-sorting facility for MSME enterprises. Seed Funding of Adamas University (Estimated funding 170K INR) (2024)

- Drafted a regional project on the digitalization of the local small-scale food industry to achieve food grading and price segregation to achieve a zero-waste value chain. RFF Inlandet Flyttekomune (Estimated funding: 200K NOKS) funding. Possible partners Hoff As, Toten Mat Pakkeri. (2023)
- Drafted a national project on digitalization in the Oil and Electric Field, part of Norway-China cooperation. The scope of the project was expensive equipment maintenance using digital twin and machine learning diagnosis and prognosis (Estimated funding: 10M NOKS). NTNU, Shanghai University, Changzhou University, Trønder Energi karft AS, Jianshu Petroleum are the partners. (2019)

## LIST OF PUBLICATIONS

### Refereed Journals:

#### ABDC and SCI:

- T Ghosh, K Martinsen, PK Dan, (2019). “Development and Correlation Analysis of Non-Dominated Sorting Buffalo Optimization NSBUF II Using Taguchi's Design Coupled Gray Relational Analysis and ANN”, *Applied Soft Computing*, 85, no. 105809. ISSN: 1568-4946. <https://doi.org/10.1016/j.asoc.2019.105809> (IF 6.725) **ABDC rank C, Q1**
- M Chattopadhyay, S Sengupta, T Ghosh, PK Dan, S Mazumdar, (2013). “Neuro-Genetic Impact on Cell Formation Methods of Cellular Manufacturing System Design: A Quantitative Review and Analysis”, *Computers & Industrial Engineering*, 64(1), pp. 256–272, ISSN: 0360-8352. <https://doi.org/10.1016/j.cie.2012.09.016> (IF 5.431) **ABDC rank A, Q1\***
- S Sengupta, T Ghosh, PK Dan, (2011). “Fuzzy ART K-Means Clustering Technique: a hybrid neural network approach to cellular manufacturing systems”, *International Journal of Computer Integrated Manufacturing*, 24(10), pp. 927-938, ISSN: 0951-192X. (IF 3.205) <https://doi.org/10.1080/0951192X.2011.602362> **ABDC rank B, Q1**

#### Only SCI:

- T Ghosh, K Martinsen. (2021). “A Collaborative Beetle Antennae Search Algorithm Using Memory-Based Adaptive Learning”, *Applied Artificial Intelligence*, 35(6), pp. 440-475, ISSN: 1087-6545. <https://doi.org/10.1080/08839514.2021.1901034> (IF 1.172) **Q3**
- D Bhattacharjee, T Ghosh, P Bhola, K Martinsen and PK Dan. (2022). “Eco-designing and improving the performance of plugin hybrid electric vehicle in rolling terrain through multi-criteria optimisation of powertrain”, *Proc IMechE Part D: Journal of Automobile Engineering*. Vol. 236, No. 5, pp. 1019-1039, <https://doi.org/10.1177/09544070211027531> (IF 1.484) **Q2**
- T Ghosh, Y Wang, K Martinsen, K Wang. (2020). “A Surrogate-Assisted Optimization Approach for Multi-Response End Milling of Aluminium Alloy AA3105”, *International Journal of Advanced Manufacturing Technology*, 111, pp. 2419–2439, ISSN: 02683768 <https://doi.org/10.1007/s00170-020-06209-6> (IF 3.226) **Q1**
- D Bhattecharjee, T Ghosh, P Bhola, K Martinsen, PK Dan. (2019). “Data-Driven Surrogate Assisted Evolutionary Optimization of Hybrid Powertrain for Improved Fuel Economy and Performance”, *Energy*, 183, pp. 235-248. ISSN 0360-5442. <https://doi.org/10.1016/j.energy.2019.06.115> (IF 7.147) **Q1**
- T Ghosh, K Martinsen. (2019). “Generalized approach for multi-response machining process optimization using machine learning and evolutionary algorithms”, *Engineering Science and Technology, an International Journal*, 23(3), pp. 650-663, ISSN 2215-0986. <https://doi.org/10.1016/j.jestch.2019.09.003> (IF 4.360) **Q1**
- T Ghosh, K Martinsen, (2019). “CFNN-PSO: An Iterative Predictive Model for Generic Parametric Design of Machining Processes.” *Applied Artificial Intelligence*, 33(11), pp. 951-978. ISSN: 1087-6545. <https://doi.org/10.1080/08839514.2019.1661110> (IF 1.172) **Q3**
- T Ghosh, B Doloi, PK Dan, (2017). “Utilization-based Grouping Efficiency and Multi-Criteria Decision Approach in Designing Manufacturing Cells”, *Proc IMechE Part-B: Journal of Engineering Manufacture*, 231(3), pp. 505-522. ISSN: 0954-4054. <https://doi.org/10.1177/0954405416629583> (IF 2.601) **Q1**
- T Ghosh, B Doloi, PK Dan, (2016). “Applying soft-computing techniques in solving dynamic multi-objective layout problems in cellular manufacturing system”, *International Journal of Advanced Manufacturing Technology*, 86(1), pp.237-257, ISSN: 0268-3768. <https://doi.org/10.1007/s00170-015-8070-6> (IF 3.226) **Q1**

## SCOPUS:

- D Bhattacharjee, S Mandol, T Ghosh, (2025). "Meta-model-based optimization of rule-based energy management in second-hand plug-in hybrid electric vehicles", *Data Science and Management*, ISSN 2666-7649, <https://doi.org/10.1016/j.dsm.2024.12.003>.
- T Ghosh, (2020). "Optimal Design of Manufacturing Cells Considering Machine Usage Percentage", *Journal of Advanced Manufacturing Systems*, 19(3), pp. 411-423, ISSN: 1793-6896. <https://doi.org/10.1142/S0219686720500201>, Q3
- T Ghosh. (2019). "Generalized Utilization-Based Similarity Coefficient for Machine-Part Grouping Problem in Cellular Manufacturing", *Management and Production Engineering Review*, 10(4), ISSN: 2080-8208, <https://doi.org/10.24425/mper.2019.131449> Q2
- T Ghosh, B Doloi, PK Dan, (2016). "An Immune Genetic algorithm for an inter-cell layout problem in cellular manufacturing system", *Production Engineering-Research and Development*, 10(2), pp.157-174, ISSN: 09446524. <https://doi.org/10.1007/s11740-015-0645-4> Q1
- T Ghosh, S Sengupta, M Chattopadhyay, PK Dan, (2011). "Metaheuristics in Cellular Manufacturing: A State-of-the-art Review", *International Journal of Industrial Engineering Computations*, 2(1), pp. 87-122, ISSN: 1923-2926. <https://doi.org/10.5267/j.ijiec.2010.03.005> Q2
- T Ghosh, S Sengupta, PK Dan, (2010). "A hybrid heuristic-based clustering algorithm to design manufacturing cell", *Management and Production Engineering Review*, 1(4), pp. 26-37. ISSN 2082-1344. Q2
- T Ghosh, M Modak and PK Dan. (2011). "SAPFOCS: a metaheuristic-based approach to part family formation problems in group technology", *International Journal of Management Science and Engineering Management*, 6(3), pp. 231-240. ISSN 1750-9661. <https://doi.org/10.1080/17509653.2011.10671167>
- T Ghosh, K Martinsen, (2020). "Deploying NSBA algorithm for Bi-Objective Manufacturing Cells Considering Percentage Utilization of Machines", *International Journal of Intelligent Systems Technologies and Applications*, 19(3), pp. 257-279, ISSN: 1740-8865. <https://dx.doi.org/10.1504/IJISTA.2020.108082> Q4
- T Ghosh, T Chakraborty, PK Dan, (2012). "An Effective AHP-based Metaheuristic Approach to Solve Supplier Selection Problem", *International Journal of Procurement Management*, 5(2), pp. 140-159, ISSN: 1753-8432. <https://doi.org/10.1504/IJPM.2012.045647> Q2
- S Sengupta, T Ghosh, PK Dan, (2011). "A Hybrid Neural Network Approach to Cell Formation in Cellular Manufacturing", *International Journal of Intelligent Systems Technologies and Applications*, 10(4), pp. 360-376, ISSN: 1740-8865. <https://doi.org/10.1504/IJISTA.2011.045484> Q4
- 

## Other:

- T Ghosh, K Martinsen, (2020). "Deep-Learning Assisted Iterative Multi-Objective Optimization of Yarn Production Process", *International Journal of Experimental Design and Process Optimization*, 6(3), pp. 234 - 252, ISSN: 2040-2252.
- T Chakraborty, T Ghosh, PK Dan, (2010). "Application of analytic hierarchy process and heuristic algorithm in solving vendor selection problem", *Business Intelligence Journal*, 4(1), pp. 167-177. ISSN 1918-2333.

Book Chapter:

- PK Dan, T Ghosh, S Sengupta, (2012). "Application of Soft-Computing Methods in Cellular Manufacturing", DP Davim (Ed.), *Computational Methods for Optimizing Manufacturing Technology: Models and Techniques*, IGI-Global, Hershey, PA, USA, pp. 1-43, 2012, ISBN: 9781466601284.

Conferences:

## Published/Peer-reviewed/Presented:

- Y Kaushik, T Ghosh, (2022). "PSO-Based Improved Surface Roughness Measuring Approach of Manufactured Product Within CP Factory Using T6 6068 Aluminium", 7<sup>th</sup> International Congress on Information and Communication Technology, London, UK, LNNS Springer, pp 163–172.
- T Ghosh. (2022). "An Industrial Application of Cellular Manufacturing Using African Buffalo Optimization", IWAMA 2021, Shanghai, China, Lecture Notes in Electrical Engineering (LNEE) Vol. 80, pp. 1-7, Springer.
- T Ghosh, K Martinsen. (2020). "NSGA III for CNC End Milling Process Optimization", SoMMA 2019, Trivandrum, India, Communications in Computer and Information Science, Springer.

- B. Chen, K. Wang, X. Gao, Y. Wang, S. Chen, T. Zhang, K. Martinsen, T. Ghosh. (2020). "A New Fault Identification Method Based on Combined Reconstruction Contribution Plot and Structured Residual", IWAMA 2019. Plymouth UK. Lecture Notes in Electrical Engineering. vol. 634.
- X. Gao, S. Chen, K. Wang, Y. Wang, W. Xie, J. Yuan, K. Martinsen, T. Ghosh. (2020). "Collaborative Fault Diagnosis Decision Fusion Algorithm Based on Improved DS Evidence Theory", IWAMA 2019. Plymouth, UK. Lecture Notes in Electrical Engineering. vol. 634. (NSD Level 1)
- T Ghosh, K Martinsen. (2020). "Machine Learning-based Heuristic Technique for Multi-Response Machining Process". IIRTS 15<sup>th</sup>-18<sup>th</sup> Oct 2019, Koszalin, Poland, LNME Springer (NSD Level 1)
- T Ghosh, K Martinsen, PK Dan. (2019). "Data-Driven Beetle Antennae Search Algorithm for Electrical Power Modeling of a Combined Cycle Power Plant". WCGO 8<sup>th</sup>-10<sup>th</sup> July 2019, Metz, France, AISC 991, pp. 906–915. (NSD Level 1)

#### Unpublished/Peer-Reviewed/Presented:

- D Ghosh, T Ghosh, B Doloi, P Das, (2015). "Optimization of Influential Process Parameters of Abrasive Waterjet Cutting of Glass", (COPEN-9), IIT Bombay, 10<sup>th</sup> – 12<sup>th</sup> December 2015.
- T Ghosh, B Doloi, PK Dan, (2014). "A Novel Cell Formation Technique in Cellular Manufacturing System Based on Various Production Factors", (AIMTDR-2014), IIT Guwahati, India, 12<sup>th</sup>-14<sup>th</sup> December 2014.
- T Ghosh, PK Dan, (2012). "Modelling of Optimal Design of Manufacturing Cell Layout Considering Material Flow and Closeness Rating Factors (AIMTDR-2012), Jadavpur University, India, 14<sup>th</sup>-16<sup>th</sup> December 2012.
- S Sengupta, T Ghosh, PK Dan, M Chattopadhyay, (2011). "Hybrid fuzzy-art based k-means clustering methodology to cellular manufacturing using operational time", (ICOEGC 2011), RVCE Bangalore, India, 3<sup>rd</sup>-5<sup>th</sup> February 2011.

#### Manuscripts Under Preparation / Submitted:

- Bhattacharjee, D; Mandal, S; Ghosh, T. "A Surrogate-Assisted Optimization of Rule-Based Energy Management System in a Plugin Hybrid Electric Vehicle for Both Charge Sustaining and Charge Depleting Mode," IEEE Intelligent Transportation Systems Transactions. (Under Review)
- Ghosh, T. "Modeling of product quality measure based on image features within cyber-physical learning factory.", Int. J. of Quality Engineering and Technology (Under Review)
- Ghosh T. "Digital Twin of a Quality Assurance System to Accomplish Zero Defect Manufacturing: proposition and Illustration". Production Planning and Control (Under Review)
- Ghosh, T. "Zero-Error Patient Care Framework Using Digital Twin: A Proposition", Health and Technology (Under Review)

\*(Q ranks are Web of Science ranking)

## SOFTWARE/PROGRAMMING SKILLS

- ❖ High-level languages: C, C++, Java, Python, R, Hadoop (big data)
- ❖ Math Tools: MATLAB, MINITAB
- ❖ High-Level Documentation Tool: Latex, Tex
- ❖ Math. Programming Tool: CPLEX, AMPL, LINDO, and Gurobi
- ❖ Industrial software: ROCKWELL ARENA, PRIMAVERA, SAP R3 (PP, MM, SD), FlexSim, AnyLogic, RoboDK
- ❖ Graphics Manipulation Tools: Adobe Photoshop CS, Adobe Illustrator, GIMP, X-FIG, MS Visio
- ❖ Operating Systems: Linux, Windows, Android, Raspbian (for Raspberry Pi)

## AWARDS AND HONORS

- ❖ Awarded Adamas Achievers Award (Category: Associate Professor)– Adamas University (2024)
- ❖ Awarded SFI research grant – IVB Faculty, NTNU I Gjøvik Norway (2021)
- ❖ Awarded a short research grant for 4 months–Jyväskylä University Finland (2018)
- ❖ Awarded a short research grant for 2.5 months– INESC TEC Porto, Portugal (2018)
- ❖ Awarded Inspire-DST Fellowship for Doctoral Study – DST, Govt. of India (2012)
- ❖ Awarded University Gold Medal from WBUT (For 1st Rank in Masters) (2011)
- ❖ Awarded 2nd Best Paper – FOSET ACADEMIC MEET, Kolkata (2011)

## **PROFESSIONAL MEMBERSHIPS**

- ❖ Member of the IAENG Society of Industrial Engineers. (Member ID: 109681)
- ❖ Member of the Soft Computing Research Society (SCRS)

## **LANGUAGE KNOWN**

English – read/write/speak (fluent)

Hindi – read/write/speak (fluent)

Bengali – Native Speaker

Norwegian – Beginner

## **PROFESSIONAL REFERENCES**

Available on request