Dinabandhu Pradhan

CONTACT INFORMATION

Associate Professor
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PERSONAL HOMEPAGE

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DATE OF BIRTH

May 05, 1982

MARTIAL STATUS

Married

CITIZENSHIP

Indian

EXPERIENCES

- **Associate Professor**
  Department of Mathematics and Computing
  Indian Institute of Technology (ISM), Dhanbad, India
  April, 2021-Till date.
- **Assistant Professor**
  Department of Mathematics and Computing
  Indian Institute of Technology (ISM), Dhanbad, India
  December, 2014-April, 2021.
- **Assistant Professor**
  Department of Mathematics
  Indian Institute of Technology, Jodhpur, Rajasthan, India
  September, 2013- December, 2014.
- **Postdoctoral Fellow**
  Department of Computer Science
  University of Saskatchewan, Saskatoon, Saskatchewan, Canada
  September, 2012- August, 2013.
- **Dr. D. S. Kothari Postdoctoral Fellow**
  Department of Computer Science and Automation
  Indian Institute of Science, Bangalore
  January, 2012- August, 2012.
- **NBHM Postdoctoral Fellow**
  Department of Computer Science and Automation
  Indian Institute of Science, Bangalore
  September, 2011- December, 2011.

Education

- Ph.D., Indian Institute of Technology, Delhi, India, 2011.
  - **Thesis was submitted on June 23, 2011 and defended on November 11, 2011**
  - **Title of the Thesis:** Algorithmic Study of Some Graph Problems On Certain Special Graph Classes
- M.Sc., Mathematics, Utkal University, Bhubaneswar, India, 2004.
- B.Sc., Mathematics, Sambalpur University, Burla, India, 2002.

Research Interests

- Graph Theory
- Algorithmic Graph Theory
- Design and Analysis of Algorithms

Research Publications

1. L. Sunil Chandran, Uttam K. Gupta, **D. Pradhan**, List recoloring of planar graphs, **Discrete Applied Mathematics**, 363 (2025) 71–87
   DOI: 10.1016/j.dam.2024.11.031
2. M. A. Henning, P. Maniya, **D. Pradhan**, Paired versus double domination in forbidden graph classes, **Computational and Applied Mathematics**, 44 (2025) 71
   DOI: 10.1007/s40314-024-03025-6
3. D. Bakhshesh, M. A. Henning, **D. Pradhan**, Singleton coalition graph chains, **Computational and Applied Mathematics**, 43 (2024) 85
   DOI: 10.1007/s40314-023-02588-0
4. Uttam K. Gupta, **D. Pradhan**, Strengthening Brooks' chromatic bound on P_6-free graphs, **Discrete Applied Mathematics** 342 (2024) 334–346
   DOI: 10.1016/j.dam.2023.09.031
5. J. Chaudhary, **D. Pradhan**, Roman 3-domination in graphs: Complexity and algorithms, **Discrete Applied Mathematics** 354 (2024) 301–325
   DOI: 10.1016/j.dam.2022.09.017
6. P. Maniya, **D. Pradhan**, Towards the Conjecture on Domination Versus Edge Domination in Graphs, **Bulletin of Malaysian Mathematical Sciences Society**, 47 (2024) 21
   DOI: 10.1007/s40840-023-01626-8
7. D. Bakhshesh, M. A. Henning, **D. Pradhan**, On the coalition number of trees, **Bulletin of Malaysian Mathematical Sciences Society**, 46 (2023) 95
   DOI: 10.1007/s40840-023-01492-4
8. S. Banerjee, J. Chaudhary, **D. Pradhan**, Unique response Roman domination: Complexity and algorithms, **Algorithmica** 85 (2023) 3889–3927
   DOI: 10.1007/s00453-023-01171-7

9. Uttam K. Gupta, S. Mishra, **D. Pradhan**, Cops and robber on subclasses of P_5-free graphs, **Discrete Mathematics**, 346 (2023) 113353
DOI: 10.1016/j.disc.2023.113353

10. **D. Pradhan**, S. Banerjee, J.-B. Liu, Perfect Italian domination in graphs: complexity and algorithms, **Discrete Applied Mathematics**, 319 (2022) 271-295
DOI: 10.1016/j.dam.2021.08.020

11. B. S. Panda, P. Goyal, **D. Pradhan**, Differentiating-total domination: approximation and hardness results, **Theoretical Computer Science**, 876 (2021) 45-58
DOI: 10.1016/j.tcs.2021.05.021

12. S. Paul, **D. Pradhan**, S. Verma, Vertex-edge domination in interval graphs and bipartite permutation graphs, **Discussiones Mathematicae Graph Theory**, 43 (2023) 947-963
DOI: 10.7151/dmgt.2411

13. M. A. Henning, S. Pal, **D. Pradhan**, Hop domination in chordal bipartite graphs, **Discussiones Mathematicae Graph Theory**, (2021)
DOI: 10.7151/dmgt.2403

14. S. Banerjee, M. A. Henning, **D. Pradhan**, Perfect Italian domination in cographs, accepted in **Applied Mathematics and Computation**, 391 (2021) 125703
DOI: 10.1016/j.amc.2020.125703

15. H. N. Kumar, **D Pradhan**, Y. B. Venkatakrishnan, Double vertex-edge domination in graphs: complexity and algorithms, **Journal of Applied Mathematics and Computing**, 66 (2021) 245–262
DOI:10.1007/s12190-020-01433-5

16. Uttam K. Gupta, **D. Pradhan**, Borodin–Kostochka's conjecture on (P_5, C_4)-free graphs, **Journal of Applied Mathematics and Computing**, 65 (2021) 877–884
DOI:10.1007/s12190-020-01419-3

17. **D. Pradhan**, S. Pal, An $O(n + m)$ time algorithm for computing a minimum semitotal dominating set in an interval graph, **Journal of Applied Mathematics and Computing**, 66 (2021) 733-747
DOI: 10.1007/s12190-020-01459-9

18. A. Jha, **D. Pradhan**, S. Banerjee, Algorithm and hardness results on neighborhood total domination in graphs, **Theoretical Computer Science**, 840 (2020) 16–32.
DOI:10.1016/j.tcs.2020.05.002

19. M. A. Henning, **D. Pradhan**, Algorithmic aspects of upper paired-domination in graphs, **Theoretical Computer Science**, 804 (2020) 98–114.
DOI: 10.1016/j.tcs.2019.10.045.

20. M. A. Henning, S. Pal, **D. Pradhan**, Algorithm and hardness results on hop domination in graphs, **Information Processing Letters**, 153 (2020) 105872
DOI: 10.1016/j.ipl.2019.105872.

21. M. A. Henning, S. Pal, **D. Pradhan**, The semitotal domination problem in block graphs, **Discussiones Mathematicae Graph Theory**, (2019) DOI:10.7151/dmgt.2254.

22. S. Banerjee, M. A. Henning, **D. Pradhan**, Algorithmic results on double Roman domination in graphs, **Journal of Combinatorial Optimization**, 39 (2020) 90–114. DOI: 10.1007/s10878-019-00457-3.

23. S. Banerjee, J. Mark Keil, **D. Pradhan**, Perfect Roman domination in graphs, **Theoretical Computer Science**, 796 (2019) 1-21. DOI: 10.1016/j.tcs.2019.08.017.

24. Anupriya Jha, **D. Pradhan**, and S. Banerjee, The secure domination problem in cographs, **Information Processing Letters**, 145 (2019) 30-38. DOI: 10.1016/j.ipl.2019.01.005.

25. **D. Pradhan** and B. S. Panda, Computing a minimum paired-dominating set in strongly orderable graphs, **Discrete Applied Mathematics**, 253 (2019) 37-50. DOI:10.1016/j.dam.2018.08.022.

26. S. Pal, **D. Pradhan**, The strong domination problem in block graphs and proper interval graphs, **Discrete Mathematics, Algorithms and Applications**, (2019) DOI: 10.1142/S1793830919500630.

27. **D. Pradhan** and Anupriya Jha, On computing a minimum secure dominating set in block graphs, **Journal of Combinatorial Optimization**, 35 (2018) 613-631. DOI:10.1007/s10878-017-0197-y.

28. J. Mark Keil, Joseph B. Mitchell, **D. Pradhan**, and M. Vatshelle, An algorithm for the maximum weight independent set problem on outerstring graphs, **Computational Geometry: Theory and Applications**, 60 (2017) 19-25. DOI:10.1016/j.comgeo.2016.05.001.

29. **D. Pradhan**, On the complexity of minimum outer-connected dominating set problem in graphs, **Journal of Combinatorial Optimization**, 31 (2016) 1-12. DOI:10.1007/s10878-013-9703-z .

30. B. S. Panda and **D. Pradhan**, A linear time algorithm to compute a minimum restrained dominating set in proper interval graphs, **Discrete Mathematics, Algorithms and Applications**, 7(2) (2015) 1550020 DOI:10.1142/S1793830915500202.

31. B. S. Panda, S. Paul, and **D. Pradhan**, Hardness results, approximation algorithms and exact algorithms for liar's domination problem in graphs, **Theoretical Computer Science**, 573 (2015) 26-42. DOI:10.1016/j.tcs.2015.01.041.

32. J. Mark Keil and **D. Pradhan**, Computing a minimum outer-connected dominating set for the class of chordal graphs, **Information Processing Letters**, 113 (2013) 552-561. DOI: 10.1016/j.ipl.2013.05.001.

33. B. S. Panda and **D. Pradhan**, A linear time algorithm for computing a minimum paired-dominating set in convex bipartite graphs, **Discrete Applied Mathematics**, 161 (2013) 1776-1783.
DOI: 10.1016/j.dam.2012.04.014.

34. B. S. Panda and **D. Pradhan**, Minimum paired-dominating sets in chordal bipartite graphs and perfect elimination bipartite graphs, **Journal of Combinatorial Optimization**, 26 (2013) 770–785.
DOI: 10.1007/s10878-012-9483-x.

35. **D. Pradhan**, Algorithmic aspects of k-tuple total domination in graphs, **Information Processing Letters**, 112 (2012) 816-822.
DOI: 10.1016/j.ipl.2012.07.010.

36. Gerard J. Chang, B. S. Panda, and **D. Pradhan**,Complexity of distance paired-domination problem in Graphs, **Theoretical Computer Science** 459 (2012) 89-99.
DOI: 10.1016/j.tcs.2012.08.024.

37. **D. Pradhan**, Complexity of certain functional variants of total domination in chordal bipartite graphs, **Discrete Mathematics, Algorithms and Applications**, 4 (3)(2012) 1250045
DOI: 10.1142/S1793830912500450.

38. B. S. Panda and **D. Pradhan**, Acyclic matchings in subclasses of bipartite graphs, **Discrete Mathematics, Algorithms and Applications**, 4(4) (2012) 1250050
DOI: 10.1142/S1793830912500504.

39. B. S. Panda and **D. Pradhan**, Locally connected spanning trees in cographs, complements of bipartite graphs and doubly chordal graphs, **Information Processing Letters**, 110 (2010) 1067-1073.
DOI: 10.1016/j.ipl.2012.07.010.

Sponsored Research Project

- Received "**Core Research Grant**" from Anusandhan National Research Foundation (ANRF), Department of Science and Technology, New Delhi.
  - The grant is approved for the project entitled as "**The Game of Cops and Robbers and its Variations: Theory and Bounds**".
  - Amount of 27,85,882 INR for 2024-2027.
- Received "**Research Proposal Grant**" from National Board for Higher Mathematics (NBHM), Department of Atomic Enery, Mumbai.
  - The grant is approved for the project entitled as "**Coloring graphs with at most $\Delta - 1$ colors**".
  - Amount of 15,82,400 INR for 2023-2026.
- Received "**MAThematical Research Impact Centric Support (MATRICS)**" from Science and Engineering Research Board (SERB), Department of Science and Technology, New Delhi.

  - The grant is approved for the project entitled as "**Roman domination in graphs and its variations: theory and algorithms**".
  - Amount of 6,60,000 INR for 2019-2022.

- Received "**2014 Young Scientist Grant**" from Science and Engineering Research Board (SERB), Department of Science and Technology, New Delhi.
  - The grant is approved for the project entitled as "**Study of various graph domination problems on restricted graph classes**".
  - Amount of 17,67,200 INR for 2015-2018.

Awards/Scholarships

- Selected for Dr. D. S. Kothari Postdoctoral Fellowship, India 2011.
- Selected for NBHM Postdoctoral Fellowship, India 2011.
- Received Senior Research Fellowship from Council of Scientific and Industrial Research(CSIR), New Delhi, India, January 2008-December 2010.
- Received Junior Research Fellowship from Council of Scientific and Industrial Research(CSIR), New Delhi, India, January 2006-December 2008.
- Qualified in CSIR-UGC (NET) examination for award of junior research fellowship and eligibility for lectureship, June 2005.
- Qualified in CSIR-UGC (NET) examination for award of junior research fellowship and eligibility for lectureship, December 2004.
- Qualified in Graduate Aptitude Test for Engineering (GATE), 2005.

Review Duty

- Reviewer for Workshop on Algorithms and Computation (WALCOM)-2012
- Reviewer for International Workshop on Combinatorial Algorithms (IWOCA)-2012
- Reviewer for Journal of Combinatorial Optimization, Springer.
- Reviewer for European Journal of Operation Research, Elsevier.
- Reviewer for Computational and Applied Mathematics, Springer.
- Reviewer for Discrete Applied Mathematics, Elsevier.
- Reviewer for Information Processing Letters, Elsevier.
- Reviewer for Mathematical Reviews, Americal Mathematical Society.
- Reviewer for Conference on Algorithms and Discrete Applied Mathematics (CALDAM)-2015, CALDAM-2016, CALDAM-2017
- Reviewer for Theoretical Computer Science, Elsevier.
- Reviewer for Electronic Journal of Combinatorics.
- Reviewer for Acta Mathematica Scinica.

Administrative Experience

- Member, DFSC (Department Faculty Search Committee), 2019-Till date.
- Member, DUGC, Department of Applied Mathematics, 2018-till date.
- Member, Faculty Search Committee, 2018-till date.
- Faculty-in-Charge, Training and Placement, Department of Applied Mathematics, August, 2017-Till date.
- Warden, Sapphire Hostel, February, 2017- Till date.
- Warden, Jasper Hostel, October, 2016- February, 2017.
- Tabulator, Exam Section, IIT(ISM) Dhanbad, 2015-till date.