

Dinabandhu Pradhan

CONTACT INFORMATION

Professor

Department of Mathematics & Computing
Science Block, Third Floor
Indian Institute of Technology (ISM), Dhanbad
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PERSONAL HOMEPAGE

<https://www.sites.google.com/site/dpradhan1/>

DATE OF BIRTH

May 05, 1982

MARTIAL STATUS

Married

CITIZENSHIP

Indian

PROFESSIONAL EXPERIENCES

- **Professor**
Department of Mathematics and Computing
Indian Institute of Technology (ISM), Dhanbad, India
April, 2026-Till date.
- **Associate Professor**
Department of Mathematics and Computing
Indian Institute of Technology (ISM), Dhanbad, India
April, 2021-April, 2026.
- **Assistant Professor**
Department of Mathematics and Computing
Indian Institute of Technology (ISM), Dhanbad, India
December, 2014-April, 2021.
- **Assistant Professor**, Mathematics and Statistics
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

• Published/Accepted in Journals :

1. **D. Pradhan**, V. Sharma, R. Škrekovski, A remark on a result on odd colorings of planar graphs, **Discrete Mathematics**, 349 (2026) 115014
DOI: [10.1016/j.disc.2026.115014](https://doi.org/10.1016/j.disc.2026.115014)
2. M. A. Henning, P. V. Maniya, **D. Pradhan**, Disjunctive domination in maximal outerplanar graphs, **Discrete Applied Mathematics**, 385 (2026) 24–61
DOI: [10.1016/j.dam.2025.12.056](https://doi.org/10.1016/j.dam.2025.12.056)
3. U. K. Gupta, M. A. Henning, P. V. Maniya, **D. Pradhan**, Secure domination in P_5 -free graphs, **Discrete Mathematics**, 349 (2026) 114905
DOI: [10.1016/j.disc.2025.114905](https://doi.org/10.1016/j.disc.2025.114905)
4. F. Foucaud, P. V. Maniya, K. Paul, **D. Pradhan**, Locating-dominating partitions for some classes of graphs, **Discrete Mathematics**, 349 (2026) 114886
DOI: [10.1016/j.disc.2025.114886](https://doi.org/10.1016/j.disc.2025.114886)
5. M. A. Henning, P. Maniya, **D. Pradhan**, Domination number versus packing number in graphs, **Discussiones Mathematicae Graph Theory**, (2026)
DOI: [10.7151/dmgt.2624](https://doi.org/10.7151/dmgt.2624)
6. L. S. Chandran, U. K. Gupta, **D. Pradhan**, List recoloring of planar graphs, **Discrete Applied Mathematics**, 363 (2025) 71–87
DOI: [10.1016/j.dam.2024.11.031](https://doi.org/10.1016/j.dam.2024.11.031)
7. 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](https://doi.org/10.1007/s40314-024-03025-6)

8. U. 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](https://doi.org/10.1016/j.dam.2023.09.031)
9. 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](https://doi.org/10.1016/j.dam.2022.09.017)
10. 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](https://doi.org/10.1007/s40314-023-02588-0)
11. 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](https://doi.org/10.1007/s40840-023-01626-8)
12. 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](https://doi.org/10.1007/s00453-023-01171-7)
13. U. 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](https://doi.org/10.1016/j.disc.2023.113353)
14. 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](https://doi.org/10.7151/dmgt.2411)
15. M. A. Henning, S. Pal, **D. Pradhan**, Hop domination in chordal bipartite graphs, **Discussiones Mathematicae Graph Theory**, 43 (2023) 825–840
DOI: [10.7151/dmgt.2403](https://doi.org/10.7151/dmgt.2403)
16. 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](https://doi.org/10.1007/s40840-023-01492-4)
17. **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](https://doi.org/10.1016/j.dam.2021.08.020)
18. M. A. Henning, S. Pal, **D. Pradhan**, The semitotal domination problem in block graphs, **Discussiones Mathematicae Graph Theory**, 42 (2022) 231–248
DOI: [10.7151/dmgt.2254](https://doi.org/10.7151/dmgt.2254)
19. 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](https://doi.org/10.1016/j.tcs.2021.05.021)

20. 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](https://doi.org/10.1007/s12190-020-01433-5)
21. **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](https://doi.org/10.1007/s12190-020-01459-9)
22. U. 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](https://doi.org/10.1007/s12190-020-01419-3)
23. S. Banerjee, M. A. Henning, **D. Pradhan**, Perfect Italian domination in cographs, **Applied Mathematics and Computation**, 391 (2020) 125703 (SCI)
DOI: [10.1016/j.amc.2020.125703](https://doi.org/10.1016/j.amc.2020.125703)
24. 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](https://doi.org/10.1016/j.tcs.2020.05.002)
25. 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](https://doi.org/10.1016/j.tcs.2019.10.045)
26. 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](https://doi.org/10.1007/s10878-019-00457-3).
27. M. A. Henning, S. Pal, **D. Pradhan**, Algorithm and hardness results on hop domination in graphs, **Information Processing Letters**, 153 (2020)
DOI: [10.1016/j.ipl.2019.105872](https://doi.org/10.1016/j.ipl.2019.105872).
28. 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](https://doi.org/10.1016/j.tcs.2019.08.017).
29. A. 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](https://doi.org/10.1016/j.ipl.2019.01.005).
30. **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](https://doi.org/10.1016/j.dam.2018.08.022).
31. S. Pal, **D. Pradhan**, The strong domination problem in block graphs and proper interval graphs, **Discrete Mathematics, Algorithms and Applications**, 11 (2019) 1950063 (Scopus, ESCI)
DOI: [10.1142/S1793830919500630](https://doi.org/10.1142/S1793830919500630).

32. **D. Pradhan** and A. 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](https://doi.org/10.1007/s10878-017-0197-y).
33. J. Mark Keil, J. B. Mitchell, **D. Pradhan**, and M. Vatschelle, 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](https://doi.org/10.1016/j.comgeo.2016.05.001).
34. **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](https://doi.org/10.1007/s10878-013-9703-z).
35. 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 (**Scopus, ESCI**)
DOI: [10.1142/S1793830915500202](https://doi.org/10.1142/S1793830915500202)
36. 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](https://doi.org/10.1016/j.tcs.2015.01.041)
37. 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](https://doi.org/10.1016/j.ipl.2013.05.001)
38. 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](https://doi.org/10.1016/j.dam.2012.04.014).
39. 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](https://doi.org/10.1007/s10878-012-9483-x).
40. **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](https://doi.org/10.1016/j.ipl.2012.07.010)
41. G. 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](https://doi.org/10.1016/j.tcs.2012.08.024)
42. **D. Pradhan**, Complexity of certain functional variants of total domination in chordal bipartite graphs, **Discrete Mathematics, Algorithms and Applications**, 4 (3)(2012) 1250045 (**Scopus, ESCI**)
DOI: [10.1142/S1793830912500450](https://doi.org/10.1142/S1793830912500450).

43. B. S. Panda and **D. Pradhan**, Acyclic matchings in subclasses of bipartite graphs, **Discrete Mathematics, Algorithms and Applications**, 4(4) (2012) 1250050 (Scopus, ESCI)
DOI: [10.1142/S1793830912500504](https://doi.org/10.1142/S1793830912500504).
44. 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](https://doi.org/10.1016/j.ipl.2012.07.010)

• Papers published in Conference Proceedings :

1. S. Banerjee, Anupriya Jha, **D. Pradhan**, Algorithmic aspects of neighborhood total domination in graphs, Colonge-Twente Workshop(**CTW**)-2018.
2. J. Mark Keil, Joseph B. Mitchell, **D. Pradhan**, and M. Vatshelle, An algorithm for the maximum weight independent set problem on outerstring graphs, Proc. of Canadian Conference on Computational Geometry (**CCCG**) 2015.

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 Energy, Mumbai.
 - The grant is approved for the project entitled as “**Coloring graphs with at most $\Delta - 1$ colors**”.
 - Amount of **17,33,600** 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.

PH.D. SUPERVISION

- Completed- 05, Ongoing-05

CONFERENCE
ATTENDED:

- Paper Presentation, Combinatorics-2024, Riva Marina Resort, Carovigno, Italy, 2024
- Invited Talk, 37th RMS 2022, SSNCE, Madras during Dec 06-08, 2022.
- Paper presentation, 42nd Australasian Conference on Combinatorial Mathematics and Combinatorial Computing (ACCMCC), University of New South Wales, Sydney, Australia during Dec 09-13, 2019.
- Paper Presentation, CTW-2018, CNAM, Paris, June 18-20, 2018.
- Participated in the **International Conference on Discrete Mathematics (ICDM)** held during December 15 – 18, 2006 at the Department of Mathematics, Indian Institute of Science, Bangalore, India.
- Participated in the **National Workshop on Some Recent Directions in Graph Theory** held during May 26 – 28, 2008 at the Department of Mathematics, Indian Institute of Technology, Kharagpur, India.
- Participated in the **Pre-Conference Instructional Workshop on Discrete Mathematics** held during June 2 – 5, 2008 at the Department of Studies in Mathematics, University of Mysore, Mysore, India.
- Participated in the **International Conference on Discrete Mathematics (ICDM)** held during June 6 – 10, 2008 at University of Mysore, Mysore, India.
- Participated in the **International Conference on Graph Theory and its Applications** held during December 11 – 13, 2008 organized by Department of Mathematics, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Ettimadai, Coimbatore, India.
- Participated in the **Pre-Conference Workshop on Discrete Mathematics** held during January 6 – 10, 2009 organized by Centre for Mathematical Sciences, Banasthali University, Banasthali, India.
- Participated in the **International Jubilee Conference on Discrete Mathematics (JCDM)** held during January 11 – 13, 2009 organized by Centre for Mathematical Sciences, Banasthali University, Banasthali, India.
- Participated in the **Instructional Workshop on Graph Theory and its Applications** held during December 17 – 23, 2009 organized by Institute of Mathematics and Applications, Bhubaneswar, India.
- Participated in the **International Conference on Recent Trends in Graph Theory and Combinatorics (ICRGTC)**, a satellite conference of International Congress of Mathematicians (ICM), 2010, held during August 12 – 15, 2010 at Department of Mathematics, Cochin University of Science and Technology, Cochin, India.
- Participated in the **Workshop on Algorithm and Computation (WALCOM)-2011**, held during February 18 – 20, 2011 at Indian Institute of Technology, Delhi, India.

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, American 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.

TEACHING EXPERIENCE

- Teaching at IIT(ISM), Dhanbad
 - Theory of Computation (MCD 508)
(2021,2024)
 - Engineering Mathematics-II (NMCI 102, MCI 102)
(2024,2022,,2020,2019,2018,2017,2016,2015,2014)
 - Graph Algorithms (MCO 403)
(2024,2023)

- Graph Theory (MCD 502)
(2023,2022,2021,2019,2018)
- Advanced Data Structures and Algorithms (MCC 531)
(2023,2022,2021,2020,2019)
- Advanced Data Structures and Algorithms-LAB (MCC 536)
(2023,2022,2021,2020,2019)
- Design and Analysis of Algorithms (AMC 15101)
(2018,2017,2016,2015)
- Design and Analysis of Algorithms-LAB (AMC 15201)
(2018,2017,2016,2015)
- Teaching at IIT Jodhpur
 - Design and analysis of algorithms (21003)
(2013,2014)

ADMINISTRATIVE EXPERIENCE

- **Member, DPGC**, Department of Mathematics & Computing, September 2024-Till date.
- **Coordinator**, JAM-2024, September 14, 2023- September 13, 2024
- **Member**, PG-admissions committee, IIT (ISM) Dhanbad, November 25, 2021-September 13, 2024
- **Time Table Incharge** Department of Mathematics & Computing, June 2022-June 2024.
- **Member, DFSC** (Department Faculty Search Committee), 26 July 2019-30 November 2020.
- **Member, DUGC**, Department of Mathematics & Computing, 01 June 2018-June 2022.
- **Member, Faculty Search Committee** (Dept. Theoretical Computer Science group), 08 July 2018-till date.
- **Faculty-in-Charge, Training and Placement**, Department of Mathematics & Computing, August, 2017-Till date.
- **Warden, Sapphire Hostel**, 01 February 2017- 30 June 2019.
- **Warden, Jasper Hostel**, 01 October 2016- 31 January 2017.
- **Tabulator, Exam Section**, IIT(ISM) Dhanbad, 2015-2018.
- Course Coordinator for different first courses of B. Tech. (Common) and Course Coordinator for I M. Tech. (Data Analytics)

REFERENCES

Prof. B. S. Panda Department of Mathematics Indian Institute of Technology, Delhi Hauz Khas, New Delhi-110016 India Email: bspanda@maths.iitd.ac.in Phone: +91-11-26591448	Prof. L. Sunil Chandran Department of Computer Science and Automation Indian Institute of Science, Bangalore Bengaluru-560012 India Email: sunil@iisc.ac.in +91-80-22932907
Prof. J. Mark Keil Department of Computer Science University of Saskatchewan, Canada Email: keil@cs.usask.ca Phone: +1-306-966-4894	Prof. Michael A. Henning Department of Pure and Applied Mathematics University of Johannesburg, South Africa Email: mahenning@uj.ac.za +27-079-7478461