

## Dr.Madhumangal Pal

- Present Status
- Research Area
- Publication
- Communication Address
- Hobby

### Communication Address

Permanent Address: Dr. Madhumangal Pal  
Aurobinda Nagar (South), Midnapore, West Bengal, India.  
Email ID: [mmpalvu@gmail.com](mailto:mmpalvu@gmail.com)  
Phone No.: 9932218937 (M)

### Present Status

**Reader** and **Head** in the  
Department of Applied Mathematics with Oceanology and  
Computer Programming

### Editorship in Journal

Editor-in-Chief  
*Journal of Physical Sciences, from volume 10*  
An Annual Publication of Vidyasagar University, Midnapore, India

#### *Member of Editorial Board*

- ❖ International Journal of Computer & System Engineering
- ❖ International Journal of Fuzzy Systems & Rough Systems

### Award received

- ❖ Received University Silver Medal for rank second in B.Sc. (Honours) in the year 1988.
- ❖ Received University Gold Medal for rank first in M.Sc. in the year 1990.
- ❖ Received Computer Division medal from Institution of Engineers (India) in the year 1996 for the best research work published in the Institution journal jointly with Prof. G.P.Bhattacharjee

### Reviewer of the Journals

- ❖ International Journal of Computer Mathematics
- ❖ Fuzzy Sets and Systems
- ❖ Journal of Discrete Mathematics and Theoretical Computer Science
- ❖ Discrete Mathematics
- ❖ Journal of Applied Mathematics and Computing
- ❖ Mathematical Review

❖ Soft Computing

Teaching Interest

- Programming Languages
- Object Oriented Programming Languages
- Data Structure
- Design and Analysis of Algorithms
- Advanced Graph Theory
- Computer Graphics
- Discrete Mathematics
- Numerical Analysis
- Probability and Statistics
- Ordinary Differential Equation
- Operations Research and Optimizations
- Classical Mechanics

Research Interest

- Computational Graph Theory
- Parallel Algorithms
- Genetic Algorithms
- Data Structure
- Fuzzy Matrices
- Fuzzy Correlation and Regression
- Fuzzy Game Theory

Ph.D. Guidance

*Ph.D Awarded*

**1. Sukumar Mondal**

Title of the Thesis: **Some sequential and parallel algorithms on interval, permutation and trapezoid graphs**

Date of Award : 2003

**2. Debasish Bera**

Title of the Thesis: **Development of algorithms for determination of some aspects on interval, permutation and trapezoid graphs**

Date of Award : 2003

**3. Amiya K. Shyamal**

Title of the Thesis: **Matrices of imprecise data and their applications**

Date of Award : 2005

4. **Mrinmoy Hota**  
Title of the Thesis: [Sequential and parallel algorithms on some problems of trapezoid graph](#)  
Date of Award : 2005
5. **Nishi Kanta Jana**  
Title of the Thesis: [A study on correlation of fuzzy sets and of intuitionistic fuzzy sets and their applications](#)  
Date of Award : 2006
6. **Sk.Md. Abu Nayeem**  
Title of the Thesis : [Genetic algorithmic approach to solve some NP-complete problems on graph theory](#)  
Date of Award : 2007
7. **Prabir Kumar Ghosh**  
Title of the Thesis : [Sequential algorithms of some problems on trapezoid graphs](#)  
Date of Submission: 26.04.2007  
Date of Award : 2008

#### *Thesis Submitted*

8. **Swagata Mandal**  
Title of the Thesis : [Some sequential and parallel algorithms on circular-arc graphs](#)  
Date of Submission: 19.02.2007

#### *Registered Scholars*

1. **Susanta Kumar Khan**  
Title of the Thesis : [Intuitionistic fuzzy matrices and their applications](#)
2. **Prasun Kumar Nayek**  
Title of the Thesis : [A study on fuzzy game](#)
3. **Kalyani Maiti (Das)**  
Title of the Thesis : [Sequential and parallel algorithms of some problems on cactus graphs](#)
4. **Sambhu Charan Barman**  
Title of the Thesis : [Sequential and parallel algorithms on intersections graphs](#)
5. **Monoranjam Bhowmick**  
Title of the Thesis : [A study on fuzzy and intuitionistic fuzzy matrices](#)

## Publications

### *Publication of Books*

1. **Madhumangal Pal**, *ForTran 77 with Numerical and Statistical Analysis*, Asian Books Pvt. Ltd., First Published in 2002, 2ed 2004.
2. **Madhumangal Pal**, *U.G.Mathematics*, Asian Books Pvt. Ltd., First Published in 2004.
3. **Madhumangal Pal**, *Numerical Analysis for Scientists and Engineers: Theory and C Programs*, Narosa Publishing House and Alpha Science International, Oxford, U.K., First Published in December, 2006.
4. **Madhumangal Pal and Anita Pal**, *Degree Engineering Mathematics, Volume–I*, New Central Book Agency (P) Ltd., Kolkata, 2008.
5. **Madhumangal Pal**, *A Course on Classical Mechanics*, Narosa Publishing House, New Delhi, 2008.

### *Publications in International Journals*

1. **Madhumangal Pal** and G. P. Bhattacharjee, Sequential and parallel algorithms for computing the center and the diameter of an interval graph, *Intern. J. Computer Mathematics*, Vol. 59, No. 1+2 (1995) 1-13.
2. **Madhumangal Pal** and G. P. Bhattacharjee, Parallel algorithms for determining edge-packing and efficient edge domination sets in an interval graph, *Parallel Algorithms and Applications*, Vol. 7, (1995) 193-207.
3. **Madhumangal Pal** and G. P. Bhattacharjee, A sequential algorithm for finding a maximum weight k-independent set on interval graphs, *Intern. J. Computer Mathematics*, 60 (1996) 205-214.
4. **Madhumangal Pal** and G. P. Bhattacharjee, An optimal parallel algorithm to color an interval graph, *Parallel Processing Letters*, 6, No. 4 (1996) 439-449.
5. **Madhumangal Pal** and G. P. Bhattacharjee, A data structure on interval graphs and its applications, *Journal of Circuits, System and Computers*, Vol. 7, No. 3 (1997) 165-175.
6. **Madhumangal Pal** and G. P. Bhattacharjee, An optimal parallel algorithm for all-pairs shortest paths on interval graphs, *Nordic J. Computing*, 4 (1997) 342-356.

7. **Madhumangal Pal**, Efficient algorithms to compute all articulation points of a permutation graph, *The Korean J. Computational and Applied Mathematics*, Vol. 5, No. 1 (1998) 141-152.
  8. **Madhumangal Pal**, A parallel algorithm to generate all maximal independent sets on permutation graphs, *Intern. J. Computer Mathematics*, 67 (1998) 261-274.
  9. Mrinmoy Hota, **Madhumangal Pal** and T.K.Pal, An efficient algorithm to generate all maximal independent sets on trapezoid graphs, *Intern. J. Computer Mathematics*, 70 (1999) 587--599.
  10. Sukumar Mondal, **Madhumangal Pal** and Tapan K. Pal, An optimal algorithm for finding depth-first spanning tree on permutation graphs, *Korean J. of Computational and Applied Mathematics*, 6 (3) (1999) 493-500.
  11. Debasis Bera, **Madhumangal Pal** and T.K.Pal, An optimal parallel algorithm for computing cut vertices and blocks on permutation graphs, *Intern. J. Computer Mathematics*, 72(4) (1999) 449--462.
  12. **Madhumangal Pal**, S. Mondal, D. Bera and T.K.Pal, An optimal parallel algorithm for computing cut vertices and blocks on interval graphs, *Intern. J. Computer Mathematics*, 75(1) (2000) 59--70.
  13. Mrinmoy Hota, **Madhumangal Pal** and T.K.Pal, An efficient algorithm for finding a maximum weight  $k$ -independent set on trapezoid graphs, *Computational Optimization and Applications*, 18 (2001) 49-62.
  14. Debasis Bera, **Madhumangal Pal** and T.K.Pal, A parallel algorithm for computing all hinge vertices on interval graphs, *Korean J. of Computational and Applied Mathematics*, 8(2) (2001) 295--309.
  15. Amiya K. Shyamal and **Madhumangal Pal**, Distances between interval-valued intuitionistic fuzzy sets, *Electronic BUSEFAL, LISTIC-eBUSEFAL*, #86, Article No. 1, 2001.
  16. Sukumar Mondal, **Madhumangal Pal** and Tapan K. Pal, An optimal algorithm to solve 2-neighbourhood covering problem on interval graphs, *Intern. J. Computer Mathematics*, 79(2) 189--204 (2002).
  17. Debasis Bera, **Madhumangal Pal** and T.K.Pal, An efficient algorithm for generate all maximal cliques on trapezoid graphs, *Intern. J. Computer Mathematics*, 79 (10) (2002) 1057--1065.
  18. Sukumar Mondal, **Madhumangal Pal** and Tapan K. Pal, An optimal algorithm for solving all-pairs shortest paths on trapezoid graphs, *International J. Computational Engineering Science*, 3(2) (2002) 103--116.
  19. **Madhumangal Pal**, Susanta K. Khan and Amiya K. Shyamal, Intuitionistic fuzzy matrices, *Notes on Intuitionistic Fuzzy Sets*, 8(2) (2002) 51--62.
  20. Nishi Kanta Jana and **Madhumangal Pal**, Partial and multiple correlation coefficients on interval-valued intuitionistic fuzzy sets, *Notes on Intuitionistic Fuzzy Sets*, 8(2) (2002) 63--72.
  21. Debasis Bera, **Madhumangal Pal** and T.K.Pal, An efficient algorithm for finding all hinge vertices on trapezoid graphs, *Theory of Computing Systems*, 36(1) (2003) 17--27.
- DOI: 10.1007/s00224-002-1004-3.

22. Sukumar Mondal, **Madhumangal Pal** and T.K.Pal, An optimal algorithm to solve the all-pairs shortest paths problem on permutation graph, *J. Mathematical Modelling and Applications*, 2(1) (2003) 57--65.
23. Debasis Bera, **Madhumangal Pal** and T.K.Pal, An optimal PRAM algorithm for a spanning tree on trapezoid graphs, *J. Applied Mathematics and Computing*, 12(1-2) (2003) 21--29.
24. Nishi Kanta Jana and **Madhumangal Pal**, Multiple correlation on fuzzy sets, *The Journal of Fuzzy Mathematics*, 11(2) (2003) 251--258.
25. Sukumar Mondal, **Madhumangal Pal** and T.K.Pal, Optimal sequential and parallel algorithms to compute a Steiner tree on permutation graphs, *International J. Computer Mathematics*, 80(8) (2003) 937--943.
26. Anita Saha and **Madhumangal Pal**, Maximum weight  $k$ -independent set problem on permutation graphs, *International J. of Computer Mathematics*, 80(12) (2003) 1477--1487.
27. Amiya K. Shyamal and **Madhumangal Pal**, Two new operators on fuzzy matrices, *J. Applied Mathematics and Computing*, 15 (1-2) (2004) 91--107.
28. Mrinmoy Hota, **Madhumangal Pal** and Tapan K. Pal, Optimal sequential and parallel algorithms to compute all cut vertices on trapezoid graphs, *Computational Optimization and Applications*, 27 (2004) 95--113.
29. Anita Saha, **Madhumangal Pal** and Tapan K. Pal, An optimal parallel algorithm to find all-pairs shortest paths on circular-arc graphs, *J. Applied Mathematics and Computing*, 17 (1-2) (2005) 1--23.
30. Anita Saha, **Madhumangal Pal** and Tapan K. Pal, An optimal parallel algorithm to find 3-tree spanner of interval graph, *International J. Computer Mathematics*, 82(3) (2005) 259--274.
31. Nishi Kanta Jana and **Madhumangal Pal**, Correlation and entropy of interval-valued fuzzy sets, *The Journal of Fuzzy Mathematics*, 13(1) (2005) 251--258.
32. Sk. Md. Abu Nayeem and **Madhumangal Pal**, Genetic algorithm to solve the  $p$ -centre and  $p$ -radius problem on a network, *Intern. Journal of Computer Mathematics*, 82(5) (2005) 541--550.
33. Anita Saha and **Madhumangal Pal**, An algorithm to find a minimum feedback vertex set of an interval graph, *Advanced Modeling and Optimization (An Electronic International Journal)*, 7(1) (2005) 99--116.
34. Sk. Md. Abu Nayeem and **Madhumangal Pal**, Shortest path problem on a network with imprecise edge weight, *Fuzzy Optimization and Decision Making*, 4 (2005) 293-312.
35. Anita Saha, **Madhumangal Pal** and Tapan K. Pal, An efficient PRAM algorithm for maximum weight independent set on permutation graphs, *Journal of Applied Mathematics and Computing*, 19 (1-2) (2005) 77-92.
36. Prabir K. Ghosh and **Madhumangal Pal**, An algorithm to find a maximum matching of a trapezoid graph, *Journal of the Korea Society for Industrial and Applied Mathematics-IT Series*, 9(2) (2005) 13-20.
37. Swagata Mandal and **Madhumangal Pal**, An optimal algorithm to solve 2-neighbourhood covering problem on circular-arc graphs, *Journal of Advanced Modelling and Application*, 8(1) (2006) 1-17.

38. Prasun K. Nayak and **Madhumangal Pal**, Solution of rectangular interval games using graphical method, *Tamsui Oxford Journal of Mathematical Sciences*, 22(1) (2006) 95-115.
39. Swagata Mandal and **Madhumangal Pal**, Maximum weight independent set of circular-arc graph and its application, *Journal of Applied Mathematics and Computing*, 22 (3 extra) (2006) 161-174.
40. Amiya K. Shyamal and **Madhumangal Pal**, Interval-valued fuzzy matrices, *Journal of Fuzzy Mathematics*, 14(3) (2006) 583-604.
41. P.K.Ghosh and **Madhumangal Pal**, An optimal algorithm to solve 2-neighbourhood covering problem on trapezoid graphs, *Advanced Modeling and Optimization*, 9(1) (2007) 15-36.
42. Anita Saha, **Madhumangal Pal** and T.K.Pal, Selection of programme slots of television channels for giving advertisement: A graph theoretic approach, *Information Sciences*, 177 (12) (2007) 2480-2492.
43. P.K.Ghosh and **Madhumangal Pal**, An efficient algorithm to solve connectivity problem on trapezoid graphs, *J. Applied Mathematics and Computing*, 24(1-2) (2007) 141-154.
44. Swagata Mandal, Anita Pal and **Madhumangal Pal**, An optimal algorithm to find centres and diameter of a circular-arc graph, *Advanced Modeling and Optimization*, 9(1) (2007) 155-170.
45. N.K.Jana and **Madhumangal Pal**, Correlations and information energy on interval-valued fuzzy sets, *Journal of Fuzzy Mathematics*, 15 (2) (2007) 331-344.
46. Swagata Mandal and **Madhumangal Pal**, An optimal algorithm to compute all hinge vertices on circular-arc graphs, *Arab Journal of Mathematics and Mathematical Sciences*, 1(1) (2007) 16-27.
47. Amiya K. Shyamal and **Madhumangal Pal**, Triangular Fuzzy Matrices, *Iranian Journal of Fuzzy Systems*, 4(1) (2007) 75-87.
48. Sk. Md. Abu Nayeem and **Madhumangal Pal**, Genetic algorithmic approach to find the maximum weight independent set of a graph, *Journal of Applied Mathematics and Computing*, 25 (2007) (1-2) 217-229.
49. Amiya K. Shyamal and **Madhumangal Pal**, Distance between intuitionistic fuzzy sets and interval-valued intuitionistic fuzzy sets, *International Journal of Mathematical Sciences*, 6(1) (2007) 71-84.
50. S.C.Barman, Sukumar Mondal and Madhumangal Pal, An efficient algorithm to find nest-to-shortest path on trapezoidal graph, *Advances in Applied Mathematical Analysis*, 2(2) (2007) 97-107.
51. Sk. Md. Abu Nayeem and **Madhumangal Pal**, The p-center problem on fuzzy networks and reduction of cost, *Iranian Journal of Fuzzy Systems*, 5(1) (2008) 1-26.
52. Kalyani Das and **Madhumangal Pal**, An optimal algorithm to find maximum and minimum height spanning trees on cactus graphs, *Advanced Modeling and Optimization*, 10 (1) (2008) 121-134.
53. Prabir K. Ghosh and **Madhumangal Pal**, An efficient algorithm to compute a Steiner set and Steiner tree on trapezoid graphs, *Tamsui Oxford Journal of Mathematical Sciences*, 24 (1) (2008) 11-24.

### *Forthcoming*

54. Prasun K. Nayak and **Madhumangal Pal**, Intuitionistic fuzzy bi-matrix games, to appear in *Notes on Intuitionistic Fuzzy Sets*.
55. S.C.Barman, Sukumar Mondal and **Madhumangal Pal**, The k-neighbourhood covering problem on interval graphs, to appear in *International Journal of Computer Mathematics*.
56. Sk. Md. Abu Nayeem and **Madhumangal Pal**, PERT on a network with imprecise edge weights, to appear in *The Journal of Fuzzy Mathematics*.
57. Monoranjan Bhowmik and **Madhumangal Pal**, Some results on intuitionistic fuzzy matrices and circulant intuitionistic fuzzy matrices, to appear in *International Journal of Mathematical Sciences*.
58. Monoranjan Bhowmik and **Madhumangal Pal**, Generalized intuitionistic fuzzy matrices, to appear in *Far East Journal of Mathematical Sciences*.
59. Prasun K. Nayak and **Madhumangal Pal**, Linear programming technique to solve two person matrix games with interval pay-offs, to appear in *Asia-Pacific Journal of Operational Research*.

### *Publications in Indian Journals*

1. G. P. Bhattacharjee, K. Dutta, C. Barman, **Madhumangal Pal**, Certain strategies for designing parallel algorithms, *J. Assam Science Society*, 36 (2) (1994) 61--76.
2. **Madhumangal Pal** and G. P. Bhattacharjee, A linear time algorithm for the  $k$ -connected steiner subgraph problem on an interval graph, *Maeer's Mit Pune Journal*, Vol. III, No. 11 (1994) 50-52.
3. **Madhumangal Pal** and G. P. Bhattacharjee, An optimal parallel algorithm for computing all maximal cliques of an interval graph and its applications, *J. of Institution of Engineers (India)*, Vol. 76, (1995) 29-33.
4. Kalyani Maity, **Madhumangal Pal** and T.K.Pal, An optimal algorithm to find all-pairs shortest paths problem on weighted cactus graphs, *V.U.J. Physical Sciences*, 6 (2000) 45-57.
5. **Madhumangal Pal**, Intuitionistic fuzzy determinant, *V.U.J. Physical Sciences*, 7 (2001) 65-73.
6. Anita Saha, T.K.Pal and **Madhumangal Pal**, Minimum fill-in on cactus graphs, *V.U.J. Physical Sciences*, 7 (2001) 87-93.
7. Amiya K. Shyamal and **Madhumangal Pal**, Distances between intuitionistic fuzzy matrices}, *V.U.J. Physical Sciences*, 8 (2002) 81-91.
8. Susanta K. Khan and **Madhumangal Pal**, Intuitionistic fuzzy tautological matrices, *V.U.J. Physical Sciences*, 8 (2002) 92--100.
9. Nishi Kanta Jana and **Madhumangal Pal**, A fuzzy set approach to select teachers, *V.U.J. Physical Sciences*, 9 (2003-2004) 82--100.
10. Nishi Kanta Jana and **Madhumangal Pal**, Correlation of interval numbers, *Acta Cinecia Indica*, Vol. XXX M, No. 3. (2004) 579--584.

11. Amiya K. Shyamal and **Madhumangal Pal**, Distance between fuzzy matrices and its application to network analysis, *Acta Cinecia Indica*, Vol. XXXI M, No. 1. (2005) 199--204.
12. **Madhumangal Pal** and Amiya K. Shyamal, Distance between fuzzy matrices and its applications-I, *Journal of Natural and Physical Sciences*, 19(1) (2005) 39--58.
13. Susanta K. Khan and **Madhumangal Pal**, Some operations on intuitionistic fuzzy matrices, *Acta Cinecia Indica*, Vol. XXXII M, No. 2. (2006) 515-524.
14. Swagata Mandal and **Madhumangal Pal**, A sequential algorithm to solve next-to-shortest path problem on circular-arc graphs, *Journal of Physical Sciences*, 10 (2006) 201-217.
15. Prasun K. Nayak and **Madhumangal Pal**, Solution of rectangular fuzzy games, **OPSEARCH**, 44(3) 2007 211-226.

### *Publications in Seminer/Conference/Symposium Proceedings*

16. **Madhumangal Pal** and G. P. Bhattacharjee, An optimal parallel algorithm to solve all-pair shortest path problem on an interval graph, *In Proceedings: 3rd National Seminar on Theoretical Computer Science*, Kharagpur, India, June (1993) 309--318.
17. **Madhumangal Pal** and G. P. Bhattacharjee, An improved algorithm for finding the maximum weight  $k$ -independent set on an interval graph, *In Proceedings: 5th National Seminar on Theoretical Computer Science*, Bombay, India, August 1-4, (1995) 95-104.
18. **Madhumangal Pal**, An efficient parallel algorithm for computing a maximum - weight independent set of a permutation graph, *Proceedings: 6th National Seminar on Theoretical Computer Science*, Banasthali Vidyapith, Rajasthan, India, August 5-8 (1996) 276-285.
19. Mrinmoy Hota, **Madhumangal Pal** and T.K.Pal, Efficient sequential and parallel algorithms to compute a minimum clique cover and a maximum independent set on trapezoid graphs, *In Proceedings: Recent Trends in Mathematical Sciences*, Indian Institute of Technology, Kharagpur, December 20--21 (2000) 413--422.
20. Sk. Md. Abu Nayeen and **Madhumangal Pal**, Computation of maximum weight independent set of a graph using genetic algorithm, in *Proc. Forty Eight Congress of The Indian Society of Theoretical and Applied Mechanics* (An international meet), BIT, Mesra, Ranchi, December 18-21 (2003) 27-35.
21. **Madhumangal Pal** and Nishikanta Jana, An overview of properties of simple and partial corelations of intuitionistic fuzzy sets, *Proc. of National Symposium on ``Analysis, Manifolds and Mathematical Sciences''*, Org. by M.C.Chaki Centre for Mathematics and Mathematical Sciences, Kolkata, 5-7 February 2003, 107-114.
22. **Madhumangal Pal** and Amiya K. Shyamal, Two new operators on fuzzy matrices, *Proc. of National Symposium on ``Analysis, Manifolds and*

- Mathematical Sciences*", Org. by M.C.Chaki Centre for Mathematics and Mathematical Sciences, Kolkata, 5-7 February 2003, 115-123.
23. Anita Saha, **Madhumangal Pal** and Tapan K. Pal, Selection of optimal programme slots in television channels, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 62-67.
  24. Swagata Mandal and **Madhumangal Pal**, An optimal parallel algorithm to find cut-vertices and bridges on circular-arc graphs, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 56-61.
  25. Nishikanta Jana and **Madhumangal Pal**, An electronic election process: fuzzy set and intuitionistic fuzzy set approach, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 38-43.
  26. Amiya K. Shyamal and **Madhumangal Pal**, Matrices of interval numbers with applications, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 26-31.
  27. Kalyani Maity, **Madhumangal Pal** and Tapan Kumar Pal, An optimal algorithm to find minimum dominating set on cactus graphs, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 74-79.
  28. Susanta K. Khan and **Madhumangal Pal**, More results on interval-valued intuitionistic fuzzy matrices, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 32-37.
  29. Sk. Md. Abu Nayeem and **Madhumangal Pal**, Genetic algorithmic approach to determine the minimum weight dominating set of a graph, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 68-73.
  30. Prabir K. Ghosh and **Madhumangal Pal**, An efficient algorithm to find a maximum matching on trapezoid graphs, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 80-85.
  31. Mrinmoy Hota, **Madhumangal Pal** and T.K.Pal, An efficient algorithm to compute the diameter of a trapezoid graph, *Proc. of National Seminar on "Recent Advances on Applied Mathematics and its Applications"*, Vidyasagar University, Midnapore-721102, during 18-19 March (2004) 50-55.
  32. Prabir K. Ghosh and **Madhumangal Pal**, An efficient algorithm to find feedback vertex set on trapezoid graphs, in *Proc. National Seminar on Mathematics and its Applications*, Bengal Engineering and Science University, Shibpur, Howrah, March 27 (2004) 39-49.

### *Publications in Edited Books*

1. Sukumar Mondal, **Madhumangal Pal** and Tapan K. Pal, Efficient algorithms to solve disjoint cliques problem on interval graphs, in S.Nanda (Ed.) *Fuzzy Logic and Optimization*, Narosa Publishing House, New Delhi, (2006) 101-112.
2. Amiya K. Shyamal and **Madhumangal Pal**, Convergence and adjoint of interval-valued intuitionistic fuzzy sets, in S.Nanda (Ed.) *Fuzzy Logic and Optimization*, Narosa Publishing House, New Delhi, (2006) 89-100.
3. N.K.Jana and **Madhumangal Pal**, Some operators defined over interval-valued intuitionistic fuzzy sets, in S.Nanda (Ed.) *Fuzzy Logic and Optimization*, Narosa Publishing House, New Delhi, (2006) 113-124.
4. Susanta K. Khan and **Madhumangal Pal**, Some operations on interval-valued intuitionistic fuzzy matrices, in S.Nanda (Ed.) *Fuzzy Logic and Optimization*, Narosa Publishing House, New Delhi, (2006) 125-135.
5. Anita Saha, **Madhumangal Pal** and T.K.Pal, Selection of maximum viewer programme slots in television channels in fuzzy environment, in D.Chakraborty, S.Nanda and D.Dutta Mazumdar (Eds.) *“Fuzzy logic and Technology Management”*, Indian Institute of Technology, Kharagpur, during 21--22 May 2004, 234-243.
6. Susanta Khan and **Madhumangal Pal**, Complex fuzzy matrices, in D.Chakraborty, S.Nanda and D.Dutta Mazumdar (Eds.) *“Fuzzy logic and Technology Management”*, Indian Institute of Technology, Kharagpur, during 21--22 May 2004, 38-43.
7. Amiya Kr. Shyamal and **Madhumangal Pal**, Distance between fuzzy matrices and its application, in D.Chakraborty, S.Nanda and D.Dutta Mazumdar (Eds.) *“Fuzzy logic and Technology Management”*, Indian Institute of Technology, Kharagpur, during 21--22 May 2004, 44-50.
8. Nishi Kanta Jana and **Madhumangal Pal**, Partial and multiple correlation and information energy on inter valued fuzzy sets, in D.Chakraborty, S.Nanda and D.Dutta Mazumdar (Eds.) *“Fuzzy logic and Technology Management”*, Indian Institute of Technology, Kharagpur, during 21--22 May 2004, 51-55.
9. Prasun Kr. Nayak and **Madhumangal Pal**, Solution of rectangular  $M \times N$  fuzzy games, in D.Chakraborty, S.Nanda and D.Dutta Mazumdar (Eds.) *“Fuzzy logic and Technology Management”*, Indian Institute of Technology, Kharagpur, during 21--22 May 2004, 145-151.

### Hobby

Reading, Writing and Traveling.