Curriculum Vitae

Dr. Vetrivel V

🏛 | **Professor**
Department of Mathematics
Indian Institute of Technology, Madras
Chennai, INDIA
✉ | vetri@iitm.ac.in
🌐 | `https://home.iitm.ac.in/vetri/home.html`

Area of Research

Nonlinear Analysis, Optimization, Monotone Operators

Academic Positions

- Head, Department of Mathematics, IIT Madras, 2020–2023

- Professor (HAG), Department of Mathematics, IIT Madras, since July 2016

- Professor, Department of Mathematics, IIT Madras, 2006–2016

- Associate Professor, Department of Mathematics, IIT Madras, 2000–2006

- Assistant Professor, Department of Mathematics, IIT Madras, 1998–2000

- Assistant Professor, Department of Mathematics, IIT Kharagpur, 1995–1998

- Lecturer, Department of Mathematics, IIT Kharagpur, 1992–1995

Major Administrative Roles

- OBC Liaison Officer, IIT Madras, 2005–2013

- Member, Grievance Committee

- Member, Recruitment Committee for Faculty and Non-teaching Staff, IIT Madras

- Faculty Council Member, IITM Research Park, since July 2019

- President, Staff Club, IIT Madras

- Vice-President, Forum for Interdisciplinary Mathematics

- Steering Committee Member, IDDD in Quantitative Finance, 2022

Major Academic MOUs

- Institute Champion for the MOU between IIT Madras and ISI Chennai Chapter

- Institute Champion for the MOU between IIT Madras and the University of Obuda, Hungary

Ph.D. Students Supervised

1. Kanchan Mittal, Bilevel and Quasi Optimization Problems: Stability and Convergence Analysis, 2024 (Postdoctoral Fellow, Taiwan)

2. Kuntal Som, On Set-Valued Optimization Problems: Existence, Well-Posedness and Robustness, 2021 (Assistant Professor, IIT Jodhpur)

3. Soumitra Dey, Algorithmic Approaches to Variational Inclusions and Fixed Point Problems, 2020 (Postdoctoral Fellow, Germany)

4. Bhupendra Singh, Some results on Rotation Symmetric Bent Functions and Complementary Symmetric Boolean Functions, 2019. (Scientist, DRDO)

5. Asrifa Sultana, Fixed Points of contractive and multivalued mappings, IIT Madras 2015. (Associate Professor, IIT Bhilai)

6. M. Panchatcharam, GPU Accelerated Finite Pointset Method for Flow Problems, IIT Madras, 2013 (Associate Professor, IIT Tirupati)

7. I. Jeyaraman, Linear Complementarity Problems over Symmetric cones, IIT Madras, 2011. (Associate Professor, NIT Trichy)

8. A. Chandrashekaran, Standard and semidefinite linear complementarity problems, IIT Madras 2010 (Assistant Professor, Central University of Tamilnnadu)

9. K. Selvanayagam, Optimal control of film casting processes, IIT Madras, 2009. (Senior Research Scientist, LMS-Siemens Technologies, Chennai)

10. R. Balaji, On Semidefinite Linear Complementarity Problems, IIT Madras, 2005 (Professor, IIT Madras)

11. S. Mohan Kumar, Modeling and Simulations of Incompressible Flow Through Porous Obstracles in a Closed and Open Channel, IIT Madras, 2005 (Vice President, Research, BNY Mellon, Pune)

12. Joydeep Dutta, Optimality and Duality for Inequality Constrained and Cone Constrained Programs, IIT Kharagpur, 1998. (Professor, Dept of Economics, IIT Kanpur)

13. Sugato Gangopadhyay, On Units of Group Rings, IIT Kharagpur, 1998. (Professor, Dept. of Computer Science, IIT Roorkee)

Postdoctoral Fellows Mentored

- Dr. Pankaj Gautam, IIT Madras, 2022-2023 (Assistant Professor, Dept. of Applied Mathematics & Scientific Computing, IIT Roorkee)

- Dr. Gourav Kumar, IIT Madras, since 2024

- Dr. Sonali Sharma, IIT Madras, since 2024

Research Publications

1. S Sharma, V Vetrivel, Extended Horizontal Tensor Complementarity Problem, to appear in Journal of Optimization Theory and Applications, 2025

2. P Gautam and V Vetrivel, Degenerate preconditioned backward-backward splitting for inclusion problem, Optimization, 2025.

3. K. Mittal, V Vetrivel and JC Yao, Bregman Golden Ratio and Self-Adaptive Algorithms for Equilibrium Problems to appear in Journal of Nonlinear convex Analysis, 2025.

4. K. Mittal, V Vetrivel and JC Yao, Well posedness for Split Quasi-Equilibrium Problems, to appear in Journal of Nonlinear convex Analysis, 2025.

5. Kuntal Som and V Vetrivel, Results on Existence of l-minimal and u-minimal solutions in Set Valued Optimization: A brief survey, Convex Optimization: Theory, Algorithms and Applications, Springer Proceedings in Mathematical Sciences, 2025 p. 225-245

6. K. Mittal, P. Gautam and V Vetrivel, Forward-Backward-Forward dynamics for Bilevel Equilibrium Problem, Annals of Operations Research, 2024.

7. K. Mittal, V. Vetrivel, Stability Analysis of Perturbed Set-Valued Equilibrium Problem. Optimization, 2024.

8. A. Bakiya, V. Vetrivel, K. Kamalanand and A. Anitha, Enhancing EMG Signal classification using Convolution Neural Network Optimized with Fractional Order Bat Algorithm. International Journal of Advances in Engineering Sciences and Applied Mathematics, 16, p.372-383, 2024.

9. A. Bakiya, V. Vetrivel, K. Kamalanand, A. Anitha, S. Aswath, M. Valliammai, and S. Sridevi, Artificial Bee-Optimized CNN for Osteoporosis Detection using Leg X-ray Images. 10th International Conference on Bio Signals, Images, and Instrumentation (ICBSII), pp. 1-5. IEEE, 2024.

10. K. Mittal, P. Gautam and V. Vetrivel, Finite convergence and sharp minima for quasi-equilibrium problems, Journal of Optimization Theory and Applications, 2024.

11. S. Dey, V. Vetrivel and Hong-Kun Xu, Well-posedness for the split equilibrium problem. Optimization Letters, 18, p. 977-989, 2023.

12. P. Gautam, K. Som, V. Vetrivel, Parameterized Douglas-Rachford dynamical system for monotone inclusion problems. Applied set-valued analysis and optimization, 5 (1), 19-29, 2023

13. K. Som and V. Vetrivel, Global well-posedness of set-valued optimization with application to uncertain problems. Journal of Global Optimization, 88 (8), 511-539, 2022.

14. K. Som and V. Vetrivel, A note on pointwise well-posedness of set-valued optimization problems, Journal of Optimization Theory and Applications, 192, 628-647, 2022.

15. K. Som and V. Vetrivel, Pointwise well-posedness of a set-valued optimization problem at a weak solution. The Journal of Analysis, 31, 187–199, 2023.

16. K. Som and V. Vetrivel, On robustness for set-valued optimization problems. Journal of Global Optimization 79, 905–925, 2021.

17. H. K. Xu, S. Dey, and V. Vetrivel, Notes on the neural network approach to inverse variational inequalities. Optimization, 70(5-6), 901-910, 2021.

18. S. Dey, V. Vetrivel, and H. K. Xu, A neural network method for monotone variational inclusions. Journal of Nonlinear and Convex Analysis, 20(11), 2387-2395, 2019.

19. S. Dey and V. Vetrivel, On Approximate solution to Inverse Quasi-Variational Inequality Problem. Sci. Math. Japonica, 81(3), 301-306, 2019.

20. B. Mandal, B. Singh, S. Gangopadhyay, S. Maitra and V. Vetrivel, On Nonexistence of bent – negabent rotation symmetric Boolean functions. Discrete Appl. Math. 236, 1-6, 2018.

21. A. Sultana and V. Vetrivel, Best Proximity Points of Contractive Mappings on a Metric Space with a Graph and Applications, Applied General Topology, 18, 13-21, 2017.

22. A. Sultana, V. Vetrivel, An Extension of Set-Valued Contraction Principle for Mappings on a Metric Space with a Graph and Application. Numerical Functional Analysis and Optimization, 38, 1060-1068, 2017.

23. D. Aussel, Asrifa Sultana and V. Vetrivel, On the existence of projected solutions of quasi-variational inequalities and generalized Nash equilibrium problem. Journal of Optimization Theory and Applications 170, 818-837, 2016.

24. Asrifa Sultana, V Vetrivel, Fixed Points for Contractive Mappings on a Metric Space with a Graph: A survey. Journal of Orissa Mathematical Society, 35, 111-127, 2016.

25. Asrifa Sultana and V Vetrivel, On the existence of best proximity points for generalized contractions. Applied General Topology, Vol. 15, 55-63, 2014.

26. S.Gangopadhyay, B. Singh and V.Vetrivel, Investigations on cubic rotation symmetric bent functions. Electronic Notes in Discrete Mathematics 56, 15- 19, 2016.

27. M.Panchatcharam, Axel Klar, S. Tiwari, S. Sundar and V.Vetrivel, GPU computing for mesh free particle method. International Journal of Numerical Analysis and Modelling, Series B. 4, 394-412, 2013.

28. A. Sultana and V. Vetrivel, Fixed points of Mizoguchi-Takahashi contraction on a metric space with a graph and applications. Journal of Mathematical Analysis and Applications, 417, 336-344, 2014.

29. A. Chandrashekaran, T. Parthasarathy and V. Vetrivel, Solving Strongly Monotone Linear Complementarity Problem. International Game Theory Review, 15(4), 2013.

30. I.Jeyaraman, K.C. Sivakumar and V.Vetrivel, Stein Linear Programs over Symmetric Cones, International Game Theory Review, 15(4), 2013.

31. I.Jeyaraman and V.Vetrivel, On the Lipschitzian Property in Linear Complementarity Problems over symmetric cones, Linear Algebra Appl., 435, 842-851, 2011.

32. B. Jayaram, K. Narayana and V. Vetrivel, Fuzzy inference system based contrast enhancement. 7Th conference of the European Society for Fuzzy Logic and Technology, EUSFLAT 2011, Aix-les-Bains, France, July 18-22, 2011.

33. I. Jeyaraman and V.Vetrivel, Jordan Quadratic SSM Property and its relation to copositive linear transformations on Euclidean Jordan Algebras. Linear Algebra Appl. Vol. 433, 390-400, 2010.

34. A. Chandrashekaran, T. Parthasarathy, and V.Vetrivel, On the P2' and P2-Properties in the semidefinite linear complementarity problem. Linear Algebra Appl. 432, 134-143, 2010.

35. K.Selvanayagam, Thomas Goetz, S.Sundar and V.Vetrivel, Optimal control of film casting processes. Int. J. Numerical Methods in Fluids, 59, 1111-1124, 2009.

36. K.Selvanayagam, Thomas Goetz, S.Sundar and V.Vetrivel, Optimal die shape for film casting. Applied Mathematics Letters. 22, 1598-1603, 2009.

37. R. Balaji, T. Parthasarathy, D.S. Raman and V. Vetrivel, On the Lipschitz Continuity of the Solution Map in Semidefinite Linear Complementarity Problems. Mathematics of Operations Research, 30(2), 462-471, 2005.

38. R. Balaji, T.Parthasarathy and V.Vetrivel, On the Lipschitzian GUS – Property of Linear Maps in Semidefinite Linear Complementarity Problems, in "Operations Research with Economic and Industrial Applications: Emerging Trends" Eds. S.R.Mohan and S.K.Neogy, Anamaya Publishers, NewDelhi, Chapter 13, 181-187, 2005.

39. S. Mohan Kumar, S. Sundar and V.Vetrivel, Navier Stokes-Brinkmann model for incompressible flow over a porous layer. Proceedings of the International Workshop on Modeling and Simulation. Narosa, 283-293, Narosa, 2005.

40. J. Dutta and V.Vetrivel, On Approximate Minima in Vector Optimization, Numerical Functional Analysis and Optimization, 22, 845-859, 2002.

41. J. Dutta and V.Vetrivel, Mathematical Programming with a class of Non-Smooth Functions. Journal of Systems Science and Complexity, 15(1), 52-60, 2002.

42. V.Vetrivel and J. Dutta, Motzkin Type Alternative Theorem and Set-Valued Optimization, The Journal of Analysis, 9, 137-147, 2001.

43. V.Vetrivel and S.Nanda, A Remark on Gwinner's Existence Theorem on Variational Inequality Problem, International Journal of Mathematics and Mathematical Sciences, 24(8), 573-575, 2000.

44. V.Vetrivel, and J.Dutta, Necessary Optimality Conditions with Non-smooth Invex Functions, in Non-Smooth/Non-Convex Mechanics: Modeling, Analysis and Numerical Methods, Eds. D.Y. Gao, R.W. Ogden and G.E. Stavroulakis, Kluwer Academic Publishers, Boston, London, Chapter 20, p. 427-446, 2000.

45. J. Dutta and V.Vetrivel and S.Nanda, On Saddle Points and Optima for Non-smooth and Non-convex Programs, Optimization, 42, 71-83, 1997.

46. R. K. Sharma, S.Gangopadhyay and V.Vetrivel, On Units in ZS_3, Communications in Algebra, 25, p. 2285-2299, 1997.

47. J. Dutta, V.Vetrivel and S.Nanda, Semi-Invex Functions and Their Subdifferentials, Bulletin of Australian Mathematical Society, 56, 385-393, 1997.

48. P. Bhattacharyya and V.Vetrivel, Fixed Point Theorems for Multifunctions. Journal of Mathematical and Physical Sciences 30, 187-192, 1996.

49. V.Vetrivel, Existence of Ky Fan's Best Approximation for Set valued Maps. Indian Journal of Pure and Applied Mathematics, 27, 173-175, 1996.

50. S. Basha and V. Vetrivel, Common Fixed Point Theorems. Acta Scientiarum Mathematicarum (szeged), 62, 279-288, 1996.

51. P. Bhattacharyya and V.Vetrivel, Applications of Lassonde's Fixed Point Theorem. Journal of Mathematical and Physical Sciences, 29, 19-31, 1995.

52. P. Bhattacharyya and V. Vetrivel, An Existence Theorem on Generalized Quasi-Variational Inequality Problem. Journal of Mathematical Analysis and Applications, 188, 610-615, 1994.

53. V.Vetrivel, P.Veeramani and P.Bhattacharyya, Some Extensions of Fan's Best Approximation Theorem Numerical Functional Analysis and Optimization, 13, 397-402, 1992.

54. V.Vetrivel, P. Veeramani and P. Bhattacharyya, On Some Fixed Point Theorems for Nonexpansive Mappings Journal of Mathematical and Physical Sciences, 26, 165-174, 1992.

Sponsored Projects

- FIST Project, DST-SERB, Rs. 1,60,00,000 (2023–2026)

- TARE Project, DST SERB, Rs. 10,50,000 (2022–2025)

- FIST-DST Meet, Rs.5,00,000 during 2022.

- MATRICS Project under DST, during 2018-2021.

- Research Scholars Meet, DST-SERB, Rs.5,97,000 during 2010.

- Non-smooth Calculus and Proximal Bundle Methods, sponsored by DST-SERB, -Rs. 5,03,000 during 2002-2005.

- "Optimization with set functions", IIT Madras (New faculty Scheme, 1999. Rs.1,00,000 during 1999.

National-Level Roles

- Mathematics Course Coordinator, IIT PAL, 2017

- Member, SERB Expert Committee for Physical and Mathematical Sciences, since 2018

- External Senate Member, IIT Palakkad for the year 2024-2025

Reviewer for Journals

- AMS Mathematical Review

- Annals of Operations Research

- Proceedings of American Mathematical Society

- Indian Journal of Pure and Applied Mathematics

- Bulletin of Calcutta Mathematical Society.

- Journal of Analysis.

- Applied Mathematics Letters

- Computers and Mathematics with Applications.

- Journal of Optimization Theory and Applications

- Linear Algebra and Applications

- Bull. Calcutta Mathematical Society

- Indian Journal of Mathematics

Workshops Organized

- Workshop on 'Industry Meets Maths' - deliberations on projects and opportunities in Mathematics as part of ICSR 50 celebrations, in 2023.

- National Symposium on Mathematical Methods and Applications (NSMMA 2012), IIT Madras, 22nd December, 2012

- National Meet of Research Scholars in Mathematical Sciences, sponsored by Dept. of Sci. & Tech., India, 11–15 October 2010, IIT Madras

- National Symposium on Mathematical Methods and Applications (NSMMA 2006) at IIT Madras on 22nd December 2006

- Coordinator, Refresher Course on Optimization: Algorithms and Applications sponsored by University Grants Commission, India, during 11-21 December 2002 at IIT Madras.

- Convener, Local Organizing Committee, Third International Conference on Operations Research and Game Theory with Economic and Industrial Applications, held at IIT Madras, 3-7 Jan 2000.

- Coordinator, Mathematical Olympiad Problems Co-ordinators' Camp at IIT Kharagpur, in 1996.

Professional Visits

- Visiting Assistant Professor, University of Washington, Seattle, USA, 2000.

- Visiting Fellow, ICTP, Trieste, Italy, March 2004.

- Guest speaker at the workshop held in University of Kwazulu, Pietermaritzberg, South Africa, October, 2010.

- Visiting Fellow, University of Koblenz, Germany, 2018.

- Visiting Fellow, University of Hangzhou, China 2018.

- Sun Yat-Sen University, Taiwan, 2025

Personal Details

- **Date of Birth:** 26th March 1964

- **Marital Status:** Married