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EDUCATION:

PhD - University of Arizona, Tucson, Arizona, 1982
Applied Mathematics
MS - University of Washington, Seattle, Washington, 1979
Aeronautics and Astronautics
BSc - University of Sri Lanka, Peradenia, Sri Lanka, 1977
Honors in Mechanical Engineering

NPS EXPERIENCE:

- July 2008-present, Dean of GSEAS

OTHER EXPERIENCE:

- 2002-2008: Professor of Mathematics, University of Wyoming.
- 2002- 2006: Head of the Mathematics Department, University of Wyoming.
- 1999 - 2002: Head of Science & Technology Branch, SPAWAR Systems Center, San Diego, California.
- 1999: Head of Surveillance Radar Technology, SPAWAR Systems Center, San Diego.
- 1998 – 2002: Civil Service (Scientist), SPAWAR Systems Center.
- 1992 – 1998: Professor in Residence at SPAWAR Systems Center, San Diego (IPA Agreement between US Navy & University of Colorado).
- 1996- 1998: Full Professor of Research, Aerospace Engineering, University of Colorado, Boulder.
- 1991 –1992: Visiting Assistant Professor of Applied Mathematics and Aerospace Engineering, University of Colorado, Boulder.
- 1984 – 1991: Assistant Professor of Aerospace Engineering, University of Southern California, Los Angeles.
- 1982 – 1984: Staff Scientist, ICASE, NASA Langley Research Center.
- 1977 – 1978: Assistant Lecturer Engineering Mathematics, University of Sri Lanka.

RESEARCH INTERESTS:

- Mathematics: Partial Differential Equations, Stochastic Analysis and Functional Analysis
- Applications: Fluid Dynamics, Control Theory, Financial Modeling

AWARDS:

- 1973-77 First class honors in all the examinations in University of Sri Lanka
- 1991 Certificate of recognition for research, Office of Naval Research and American Society for Engineering Education
- 1999 Distinguished publication of the year award, SPAWAR Systems Center, San Diego
- 2007 University of Wyoming Arts & Sciences Extraordinary Meritorious Award for Research

BOARDS/MEMBERSHIPS:

- American Mathematical Society, SIAM, American Physical Society
- Member of Editorial Board: Communications on Stochastic Analysis.
- Member of Editorial Board: Chapman & Hall/CRC, Applied Mathematics and Nonlinear Science Book Series
- Member of Editorial Board: Gordon & Breach Publishers Book Series: Nonlinear Problems in Aviation & Aerospace

PUBLICATIONS:

- 1. "Nonlinear Aerodynamics of Conical Delta Wings," Ph.D. Thesis, August, 1982, University of Arizona, A.R. Seebass, Advisor
- 2. "A Finite Area Method for Nonlinear Supersonic Conical Flows," Co-author A.R. Seebass, ICASE Report 83-21, AIAA Journal, Vol. 22, February 1984, pp. 226-233
- 3. "A Note on the Solid Boundary Condition for Euler Equations," ICASE-NASA Langley Re-search Center, Internal Report, No. 23, 1983
- 4. "Shock-Free Cross Flow Over Supersonic Conical Wings," Bulletin of the American Physical Society, Vol. 28, No. 9, November 1983, AF2: p. 1359
- 5. "Delta Wings with Shock-Free Cross Flow," Quarterly of Applied Mathematics, October 1985, pp. 275-286, Math. Reviews, 87a:76079
- 6. "Theory of Harmonic Grid Generation," Presented at the Grid Methods Workshop at ICASE/NASA Langley, September 1983, ICASE Report No. 84-12, Complex Variables, Vol. 10, pp. 359-369, 1988 (Co-author P. Smith), Math. Reviews, 90e:65034
- 7. "Group Action on Unstable Manifolds," Presented at the 3rd Workshop on Nonlinear Evolution Equations and Dynamical Systems (June 20 – July 5, 1985), Lecce, Italy, Appendix of the book: Invariant Manifold Theory for Hydrodynamic Transition, John Wiley and Sons
- 8. Invariant Manifold Theory for Hydrodynamic Transition, Monograph, John Wiley and Sons, 1990. This book has been reviewed in Journal of Fluid Mechanics (by J.F. Tolland), September 1991, in Romanian Journal of Mathematics, Volume XXXVII, No 3, 1992, in Mathematica, 38, 1991 and in Math. Reviews, July 1992, 92g:35181
- 9. "Analysis of Regularized Navier Stokes Equations-I," Presented at the SIAM Meeting, Denver, Colorado, October 11 – 16, 1987. Co-author Y.R. Ou, Quarterly of Applied Mathematics, Vol. 49, No. 4, December 1991, pp. 651-685, Math. Reviews, 93d:35123
- 10. "Analysis of Regularized Navier Stokes Equations-II," Presented at the SIAM Meeting, Denver, Colorado, October 11 – 16, 1987. Co-author Y.R. Ou, Quarterly of Applied Mathematics, Vol. 49, No. 4, December 1991, pp. 687-728, ICASE Report 89-14, Math. Reviews, 93d:35123
- 11. "Invariant Manifold Theorems for the Navier Stokes Equations," Presented at the Oberwolfach Workshop on Theory and Numerical Methods for Navier Stokes Equations. September 18-24, 1988, Oberwolfach, West Germany; and at the 13th IMACS World Conference on Computations and Applied Mathematics, Dublin 1991. (Peer reviewed) Paper is in the book: Computational and Applied Mathematics II: Differential Equations, Elsevier Publishers, Edited by W.F. Ames and P.J. Van der Houwen
- 12. "An Optimal Control Problem in Exterior Hydrodynamics," Presented at the SIAM Annual Meeting, San Diego, California, July 17-21, 1989 and also in the Workshop on New Trends in the Optimal Control of Distributed Parameter Systems, August 4-14, 1989 University of Minnesota. (Peer reviewed) Paper is in the book Distributed Parameter Systems: New Trends and Applications, edited by G. Chen et al., Marcel Dekker Publishers, 1991, pp. 385-417, Math. Reviews 92e:76018
- 13. "On the Acceleration of Viscous Fluid through an Unbounded Channel," Presented at the SIAM Annual Meeting, San Diego, California, July 17-21, 1989, in Journal of Mathematical Analysis and Applications, Vol. 168, No. 1, 1992, pp. 255-283, Math. Reviews 93e:76017
- 14. "Upper Semi-Continuous Global Attractors for Viscous Flows," Joint author Y.R. Ou, Presented at the SIAM annual meeting, San Diego, California, July 11-21, 1989. ICASE Report No. 90-2; Dynamical Systems and Applications, Vol. 5, No. 1, pp. 59-80, 1996
- 15. "On Mathematical Aspects of Harmonic Grid Generation," (Peer reviewed paper) in Numerical Grid Generation: Mathematical Aspects, edited by J. Castillo, SIAM series on Frontiers in Applied Mathematics, 1991, pp. 131-151. Math. Reviews, 92h:65148
- 16. "Active Control of Viscous Flow Past a Cylinder." Bulletin of the American Physical Society, Vol. 36, No. 10, 1991, AJ4:P2626
- 17. "An Optimal Control Problem in Exterior Hydrodynamics," Proceedings of the Royal Society of Edinburgh, Series 121A, 1992, pp. 5-32. Math. Reviews, 93e:49031
- 18. "Dynamic Programming of the Navier-Stokes Equations," in Systems and Control Letters, Vol. 16, No. 4, 1991, pp. 299-307. Math. Reviews, 92g:49028
- 19. "Existence of Optimal Controls for Viscous Flow Problems," Co-author H. Fattorini, PAM Report No. 117, Proceedings of the Royal Society of London Series A, Vol. 439, 1992, pp. 81-102. Math. Reviews, 93h:49014
- 20. "Necessary and Sufficient Conditions for Optimal Controls in Viscous Flow," Co-author H. O. Fattorini, PAM Report No. 118, Proceedings of the Royal Society of Edinburgh, Series A, Vol. 124A, 1994, pp. 211-251. Math. Reviews, 95c:49033
- 21. "Dynamic Programming of the Navier-Stokes Equations: Presented at the International Conference on Control and Estimation of Distributed Parameter Systems," Vorau, Austria, July 1990. International Series of Numerical Mathematics, Vol. 100, 1991, pp. 303-315. Math. Reviews, 93a:49017
- 22. "Pontryagin Maximum Principle and Dynamic Programming for viscous Hydrodynamics," Presented at the Binational Workshop on Optimization and Nonlinear Analysis, Haifa, Israel, March 21-27, 1990. (Peer reviewed) paper is in the book Optimization and Nonlinear Analysis, edited by A. Ioffe, M. Marcus and S. Reich, Pitman Series 244, John Wiley and Sons, 1992, pp. 286-297. Math. Reviews, 93g:76039
- 23. "Theory of Harmonic Grid Generations-II," in Applicable Analysis, Vol. 44, No. 1/2, 1992, pp. 127-149

- 24. Editor and Contributing author, *Optimal Control of Viscous Flow*, SIAM Frontiers in Applied Mathematics Series, 1998 (<http://www.siam.org/catalog/mcc11/ot59.htm>)
- 25. "On the non-smooth verification technique for the dynamic programming of viscous flows," Presented at the Workshop on Variational Methods, IMA, University of Minnesota, April 13-19, 1991. IMA preprint No: 850.
- 26. "Active control of viscous flow past a cylinder: Mathematical Theory, Computation and Experiment-I," Presented at the APS Meeting, November 1991, and in the National Fluid Dynamics Conference of ASME 1992. Co-authors Y.R. Ou, E. Hendricks, D. Ladd and D. Park, *Russian-American Aviation Journal: Actual problems in aviation and aerospace*, Vol. 1, 1996, pp. 5-15. (http://www.kcn.ru/tat_en/science/ans/journals/rasj.html)
- 27. "Active control of viscous flow past a cylinder: Mathematical Theory, Computation and Experiment-II," Presented at the APS Meeting, November 1991, and in the National Fluid Dynamics Conference of ASME 1992. Co-authors Y.R. Ou, E. Hendricks, D. Ladd and D. Park. *Russian-American Aviation Journal: Actual problems in aviation and aerospace*, Vol. 2, 1996, pp. 7-18. (http://www.kcn.ru/tat_en/science/ans/journals/rasj.html)
- 28. "Optimal chattering controls for viscous flow," Co-author H. Fattorini, PAM Report No. 127, Presented at the 40th Anniversary SIAM Meeting, Los Angeles, July 1992, IMA Report No. 1095; *Nonlinear analysis, Theory, Methods and Applications*, Vol. 25, No. 8, pp. 763-797, 1995
- 29. "Minimum-Energy Surface profile of Solder Joints for Non-Circular Pads," Co-authors S.K. Patra and Y.C. Lee, Presented at the ASME Winter Annual Meeting, November 9-13, 1992, in *ASME Journal of Applied Mechanics*, Vol. 62, pp. 390-397, 1995
- 30. "Relaxation in semi-linear infinite dimensional systems modeling fluid flow control problems," Co-author H.O. Fattorini, Presented at the IMA Workshop on Control and Optimal design of Distributed parameter systems, November 1992. Paper is a (peer reviewed) book chapter in *Control and Optimal Design of Distributed Parameter Systems*, edited by J. Lag-nese, D.L. Russell and L. White, IMA-Vol. 70, Springer-Verlag, 1995
- 31. "Stochastic Optimal Control Theory of Turbulence," Proceedings of the Sixth ONR Propulsion Meeting, Boulder, Colorado, 1993, pp. 88-92, edited by Gabriel D. Roy
- 32. "Optimal Feedback Control of Hydrodynamics: A Progress Report," Invited lecture at IMA Workshop on Flow Control, November 1992. Paper is a (peer reviewed) book chapter in *Flow Control*, edited by M. Gunzburger, Springer-Verlag, 1995, pp. 257-274
- 33. "Stochastic Optimal Control and Nonlinear Filtering of Turbulence," *Bulletin of the American Physical Society*, Vol. 38, No. 12, 1993, G15:p2276
- 34. "Stochastic Optimal Control Theory for the Navier-Stokes equations with Complete and partial Observations," International Conference Vistas in Modern Applied Mathematics, Goa, India, December 13-16, 1993, paper in preparation
- 35. "On the Robustness of the Navier-Stokes Global Attractor," Co-author Y.R. Ou, In the Proceedings of the 14th IMACS World Congress on Computational and Applied Mathematics-II, edited by W.F. Ames, pp. 868-871, 1994
- 36. "On Hamilton-Jacobi equations in infinite dimensions," in Proceedings of the International Conference on Nonlinear problems in Aviation and Aerospace, edited by S. Sivasundaram, ERAU, 1996
- 37. "Nonlinear Filtering of Stochastic Navier-Stokes equations," in T. Funaki and W.A. Woyczynski, editors, *Nonlinear Stochastic PDEs: Burgers Turbulence and Hydrodynamic Limit*, Springer-Verlag, pp. 247-260, 1995
- 38. "Nonlinear Filtering of Stochastic Reacting and Diffusing Systems," Co-author, S. Hobbs, in N. Gretskey, J. Goldstein and J.J. Uhl, editors, *Probability and Modern Analysis*, Marcel Dekker, 1996
- 39. "Infinite Dimensional Nonlinear Kalman Filters and Feedback Controllers for Combustion," Proceedings of the Seventh ONR Propulsion Meeting, Buffalo, New York, 1994, pages 60-66; Edited By Gabriel D. Roy and Peyman Givi
- 40. "Optimal and time optimal control problems with state constraints in fluid mechanics and combustion," Presented at the Seminar in Applied and Computational Mathematics, North Carolina State University-Raleigh, November 1995, Co-author H.O. Fattorini, *Applied Mathematics and Optimization*, Vol. 38(2), 1998, pp. 159-192
- 41. "Nonlinear Filtering of Semilinear Stochastic PDEs," Co-author S. Hobbs, Presented at the SIAM Annual Meeting, 1995, and at University of North Carolina Statistics Department, paper in preparation, 1995
- 42. "Deterministic and stochastic control of viscous flow with linear, monotone and hyper viscosities," Presented at the Kempner Colloquium, April 1995, University of Colorado-Boulder, Tulane University and Louisiana State University, *Applied Mathematics and Optimization*, Vol. 41(2), pp. 255-308, 2000
- 43. "Optimal control of aero-thermodynamics: basic research and industrial utilization," Proceedings of the Eighth ONR Propulsion Meeting, San Diego, California, October 1995, pp. 88-96, edited by Gabriel D. Roy and Forman Williams
- 44. "Electromagnetic control of fluid flows," Co-author S. S. Ravindran, Proceedings of the Society of Engineering Sciences Meeting, New Orleans, Louisiana, October 30 – November 2, 1995, pp. 579-580, edited by David Hui and Stathis Michaelides
- 45. "H-infinity-control theory of fluid dynamics," Presented at the Mathematics Colloquiums at SDSU, UNM, NIST, Washington University and Engineering-Mathematics Seminar UCSD, Co-author, V. Barbu, Proceedings of The Royal Society of London, Series A, pp. 3009-3033, Vol. 356, No. 1979, November 1998
- 46. "Nonlinear filtering theory of turbulence by Stochastic Calculus approach," Co-author G. Kallianpur, paper in preparation
- 47. "Nonlinear filtering theory of turbulence by white noise calculus," Co-author G. Kallianpur, Submitted to *Systems & Control Letters*, 2001

- 48. "Optimal control of aero-thermodynamics: H-infinity-breakthrough, stochastic control and the prospectives of RNG," in Proceedings of the Ninth ONR Propulsion Meeting, Washington, DC, September 1996, edited by Gabriel D. Roy and K. Kailasanath
- 49. "Advances in optimal control of aero-thermodynamics," 32nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, AIAA paper 96-3090
- 50. "The stochastic magneto-hydrodynamic system," Co-author, P. Sundar, Infinite Dimensional Analysis, Quantum Probability and Related Topics, Vol. 2, No. 2, 1999, pp. 241-265
- 51. "Ergodic Control of Navier-Stokes Equation," Co-author, P. Sundar, book chapter in Nonlinear Problems in Aerospace, edited by S. Sivasundaram, Gordon & Breach Publishers, 2000, pp. 349-357
- 52. "Impulse Control of Stochastic Navier-Stokes Equation, Co-author, J.L. Menaldi, Nonlinear Analysis, Theory, Methods and Applications, 52(2), (2003), pp. 357-381
- 53. "Stochastic 2-D Navier-Stokes equation," Co-author J.L. Menaldi, Applied Mathematics and Optimization, 46, 2002, pp. 31-53
- 54. "Flow Invariance Preserving Feedback Controllers for the Navier-Stokes Equation," Co-author V. Barbu, Journal of Mathematical Analysis and Applications, Vol. 255, 2001, pp. 281-307
- 55. Optimal Control of Turbulence, Monograph. Author S. S. Sritharan, Current contract with Gordon & Breach Publishers, to be completed in 2007.
- 56. "M-accretive quantization of the vorticity equation," Co-author V. Barbu, in Semi-groups of Operators: Theory and Applications, edited by A. V. Balakrishnan, Birkhauser, Boston, 2000, pp. 296-303
- 57. "The Euler-Stokes splitting of the optimal control problem for the Navier-Stokes equation," Co-author V. Barbu, submitted to SIAM Journal of Control and Optimization, December 1999
- 58. "Optimal stopping time and impulse control problems of stochastic Navier-Stokes equation," Co-author J.L. Menaldi, Chapter 21 of Stochastic Partial Differential Equations and Applications, edited by G. Da Prato and L. Tubaro, Marcel Dekker, Inc., pp. 389-404.
- 59. "Navier-Stokes equation with hereditary viscosity," Co-author V. Barbu, ZAMP, 54(3) (2003), pp. 449-461.
- 60. "Remarks on impulse control problems for stochastic Navier-Stokes equations," Co-author J.L. Menaldi in Differential Equations and Control Theory, edited by S. Aizicovici and N. Pavel, Marcel-Dekker, 2001, pp. 245-255
- 61. "Viscosity solutions of dynamic programming equations for optimal control of Navier-Stokes equations," Co-authors F. Gozzi and A. Swiech, Archive for Rational Mechanics and Analysis, 163, 2002, 4, pp. 295-327.
- 62. "Fluid-magnetic splitting methods for magneto-hydrodynamics," Co-author C. Popa, Mathematical Methods and Models in Applied Sciences, 13(6) (2003), pp. 893-917.
- 63. "Exact controllability magneto-hydrodynamic equations," Co-authors V. Barbu and C. Popa, T. Havarneanu, Communications on Pure and Applied Mathematics, Vol. LVI, (2003), pp. 732-783.
- 64. Stochastic Partial Differential Equations of Fluid Dynamics, Monograph in preparation, Co-authors P.L. Chow and J.L. Menaldi
- 65. "Feedback stabilization of the magneto-hydrodynamic system," Co-author V. Barbu, Semi-groups of Operators: Theory and Applications, edited by C. Kubrusly, N. Levan, M. da Silveira, Optimization Software, Inc., New York, 2003, pp. 45-53
- 66. "Cybernetics of Cyber-Defense," Magazine Article in the SPAWAR SSC-SD, OUTLOOK, June 23, 2001, pp. 3-4. (This is not a peer-reviewed article).
- 67. "Exact Controllability for the three-dimensional Navier-Stokes equations with the Navier-slip boundary conditions," Co-authors T. Havarneanu and C. Popa, Indiana University Mathematical Journal, Vol (54), No.5, (2005), pp. 1303-1350.
- 68. "Bellman equation for the optimal feedback control of stochastic Navier-Stokes equations," Co-authors F. Gozzi and A. Swiech, Communications on Pure and Applied Mathematics, 58(5), pp. 671-700 (2005).
- 69. "Optimal Stopping Problem for the Stochastic Navier-Stokes Equation and Infinite Dimensional Variational Inequalities", co-author V. Barbu, Nonlinear Analysis, Theory, Methods and Applications, Vol 64, (2006), pp.1018-1024.
- 70. "Exact Internal Controllability for Magneto-Hydrodynamic Equations in Multi-connected Domains", Co-authors T. Havarneanu and C. Popa, Advanced in Differential Equations, Vol. 11, No. 8, (2006), pp. 893-929.
- 71. "Exact Internal Controllability for two-dimensional Magneto-Hydrodynamic Equations", Co-authors T. Havarneanu and C. Popa, Accepted SIAM Journal of Control and Optimization, 2004.
- 72. Controllability Theory of Fluid Dynamics and MHD, Monograph, Current contract with Springer-Verlag, Expected completion date December 2007, Co-Authors C. Popa and T. Havarneanu.
- 73. "Controllability & Observability Theory of Certain Parabolic Integro-Differential Equations", Co-authors K. Sakthivel and K. Balachandran, Computers and Mathematics with Applications, Vol. 52, (2006), 1299-1316.
- 74. "Exact Internal Controllability of Two-dimensional Navier-Stokes Equations with Navier-Slip Boundary Conditions", Co-Authors C. Popa and T. Havarneanu, Systems & Control Letters, Volume 55, Issue 12, December 2006, 1022-1028.
- 75. "Local Controllability for the Magnetohydrodynamic Equations Revisited", Co-Authors V. Barbu, T. Havarneanu and C. Popa. Advances in Differential Equations, 10(5) (2005), 481-504.
- 76. "Exact Controllability of Nonlinear Diffusion Equations Arising in Reactor Dynamics", Co-authors: K. Sakthivel and K. Balachandran, Accepted for Publication in Nonlinear Analysis: Real World Applications, 2007.

- 77. “Stochastic Navier-Stokes Equations: Solvability, Control and Filtering”, in Stochastic Partial Differential Equations and Applications-VII, Edited by G. Da Prato and L. Tubaro, Chapman & Hall/CRC, (2006), pp.273-280.
- 78. “Large Deviations for Two-dimensional Stochastic Navier-Stokes Equations”, Co-author P. Sundar, Stochastic Processes, Theory and Applications, Vol. 116, Issue 11, (2006), 1636-1659.
- 79. “A Problem of Hyperbolic-Elliptic Type Conservation Laws on Manifolds that Arises in Delta Wing Aerodynamics”, Co-author Jingling Guan (submitted for publications) 2006.
- 80. “Stochastic Navier-Stokes Equations with Artificial Compressibility”, Co-authors U. Manna and J. L. Menaldi, Communications on Stochastic Analysis, Vol.1, No.1, (2007), 123-139.
- 81. “Lyapunov Functionals and Local Dissipativity for the Vorticity Equation in L^p and Besov spaces”, Co-author U. Manna, Differential and Integral Equations, Vol. 20, No. 5, (2007), 581-598.
- 82. “Stochastic Tidal Dynamics Equation”, Co-author U. Manna, submitted for publication (2007).