# Biographical Scketch, **Hien T. Tran**

## EDUCATION

- Ph.D.　(Mathematics), 1986, Rensselaer Polytechnic Institute
  　　　Dissertation: *Numerical Approximations for Linear Functional Differential Equations with Input and Output Delays*
  　　　Advisor: Professor Andrzej Manitius
- M.S.　(Applied Mathematics), 1982, Rensselaer Polytechnic Institute
- B.S.　(Mathematics), 1980, Old Dominion University

## PROFESSIONAL EXPERIENCE

- 2020 – present　　　Associate Head, Department of Mathematics,
  North Carolina State University, Raleigh, North Carolina.
- 2019 - present　　　Director, Center for Research in Scientific Computation.
- 2017 - 2018　　　Associate Director,
  Center for Research in Scientific Computation.
- 2015 - present　　　Alumni Distinguished Graduate Professor,
  North Carolina State University, Raleigh, North Carolina.
- 2006 – 2016　　　Associate Head, Department of Mathematics,
  North Carolina State University, Raleigh, North Carolina.
- 2005 – 2006　　　Interim Associate Head, Department of Mathematics,
  North Carolina State University, Raleigh, North Carolina.
- 2004 – 2005　　　Co-Director, Graduate Program in Operations Research,
  North Carolina State University, Raleigh, North Carolina.
- 2001 – present　　　Professor, Department of Mathematics,
  North Carolina State University, Raleigh, North Carolina.
- 2000 - 2005　　　Engineering Specialist (Casual), The Aerospace Corporation,
  El Segundo, California.
- 2000 (June, October)　　Visiting Professor, University of the Philippines, Diliman.
- 1997 – present　　　Director, Instructional and Research Laboratory,
  North Carolina State University, Raleigh, North Carolina.
- 1994 – 2001　　　Associate Professor, Department of Mathematics,
  North Carolina State University, Raleigh, North Carolina.
- 1989 – 1994　　　Assistant Professor, Department of Mathematics,
  North Carolina State University, Raleigh, North Carolina.
- 1986 – 1989　　　Visiting Assistant Professor, Division of Applied
  Mathematics, Brown University, Providence, Rhode Island.
- 1982 (summer)　　　Graduate Research Assistant, Institute for Computer
  Applications in Science and Engineering (ICASE), NASA
  Langley Research Center, Hampton, Virginia.

## PUBLICATIONS

### A. Patent

1. *Electron Gun for a Multiple Beam Klystron with Magnetic Compression of the Electron Beams*, US 8,547,006 B1, Oct. 1, 2013, Inventors: R. Ives, H. Tran, T. Bui, A. Attarian, W. Tallis, J. David, V. Forstall, C. Andujar, N. Blach, D. Brown, S. Gadson, E. Kiley, and M. Read.

### B. Books

1. *Cardiovascular and Respiratory Systems: Modeling, Analysis, and Control*, SIAM Frontiers in Applied Mathematics, SIAM Publications, Philadelphia, 2007 (with J.J. Batzel, F. Kappel, and D. Schneditz).

2. *Mathematical and Experimental Modeling of Physical and Biological Processes*, Chapman & Hall/CRC, 2009 (with H.T. Banks).

### C. Book Editing

1. *"Industrial Mathematics: The 1998 CRSC Workshop"*, SIAM Publications, October 2000, 70 pages, (co-editing with P. Gremaud, Z. Li and R. Smith).

2. *American Institute of Mathematics Workshop: Short-term Cardiovascular-Respiratory Control Mechanisms*, (co-editing with J.J. Batzel, F. Kappel, V. Novak and M.S. Olufsen), Journal of Cardiovascular Engineering, No. 1, March 2008, pp. 1-71.

### D. Refereed Journal Articles

1. *"Computation of Closed-Loop Eigenvalues Associated with the Optimal Regulator Problem for Functional Differential Equations"*, IEEE Trans. Automatic Control, AC–30 (1985), pp. 1245–1248, (with A. Manitius).

2. *"Numerical Simulation of a Non-Linear Feedback Controller for a Wind Tunnel Model Involving a Time Delay"*, Optimal Control Applics. & Meths., Vol.7 (1986), pp. 19–39, (with A. Manitius).

3. *"Computation of Eigenvalues Associated with Functional Differential Equations"*, SIAM J. Sci. Statist. Comput., 8 (1987), pp. 222–247, (with A. Manitius, G. Payre and R. Roy).

4. *"Stochastic Models for Subpopulation Emergence in Heterogeneous Tumors"*, Bul. of Math. Biol., Vol. 51, No. 6 (1989), pp. 731–747, (with S. Michelson, K. Ito, and J.T. Leith).

5. *"A Fully-Discrete Spectral Method for Delay-Differential Equations"*, SIAM J. Numer. Anal., 28 (1991), pp. 1121–1140, (with K. Ito and A. Manitius).

6. *"Fast Algorithms for Nonsmooth Compact Fixed Point Problems"*, SIAM J. Numer. Anal., 29 (1992), pp. 1769–1792, (with M. Heinkenschloss and C.T. Kelley).

7. *"Estimation of Variable Coefficients in the Fokker Planck Equations Using Moving Node Finite Elements"*, SIAM J. Numer. Anal., 30 (1993), pp. 1574–1602 (with H.T. Banks and D.E. Woodward).

8. *"Heteroepitaxy of Wide Bandgap Ternary Semiconductors"*, Japanese Journal of Applied Physics, 32 (1993), pp. 133–138 (with K. Bachmann, G. C. Xing, J. S. Scroggs, K. Ito, H. Castleberry, and G. Wood).

9. *"Numerical Approximations for Hereditary Systems with Input and Output Delays: Convergence Results and Convergence Rates"*, SIAM J. Control and Opt., 32 (1994), pp. 1332–1363 (with A. Manitius).

10. *"Molecular Layer Epitaxy by Real-Time Optical Process Monitoring"*, Applied Surface Science 112 (1997), pp. 38-47 (with K.J. Bachmann, C. Hopfner, N. Sukidi, A.E. Miller, C. Harris, D.E. Aspnes, N.A. Dietz, S. Beeler, K. Ito, and H.T. Banks).

11. *"Real-Time Monitoring of Steady-State Pulsed Chemical Beam Epitaxy by p-Polarized Reflectance"*, Journal of Crystal Growth 183 (1998), pp. 323-337 (with K.J. Bachmann, C. Hopfner, N. Sukidi, C. Harris, S. LeSure, N.A. Dietz, S. Beeler, K. Ito, and H.T. Banks).

12. *"A Dispersion Model for the Hepatic Uptake and Elimination of 2,3,7,8-tetrachlorodibenzo-p-dioxin"*, Mathematical and Computer Modeling, Vol. 28 (1), July 1998, pp. 9-29 (with H.T. Banks and C.J. Musante).

13. *"A Complete Steady State Model of Solute and Water Transport in the Kidney"*, Mathematical and Computer Modeling, Vol. 29, 1999, pp. 63-82 (with N.E. Kottler and D.E. Wessell).

14. *"Representation of GaP Formation by a Reduced Order Surface Kinetics Model Using P-Polarized Reflectance Measurements"*, Journal of Applied Physics, Vol. 86, No. 1, July 1999, pp. 674-682 (with S. Beeler and N. Dietz).

15. *"Modeling Instability in the Control System for Human Respiration: Applications to Infant non-REM sleep"*, Applied Mathematics and Computation, 110 (2000), pp. 1-51 (with J.J. Batzel).

16. *"Stability of the Human Respiratory Control System. Part I: Analysis of a Two-Dimensional Delay State-Space Model"*, Journal of Mathematical Biology, 41, 2000, pp. 45-79, (with J.J. Batzel).

17. *"Stability of the Human Respiratory Control System. Part II: Analysis of a Three-Dimensional Delay State-Space Model"*, Journal of Mathematical Biology, 41, 2000, pp. 80-102, (with J.J. Batzel).

18. *"Reduced Order Model Compensator Control of Species Transport in a CVD Reactor"*, Optimal Control Applics. & Meths., 21, 2000, pp. 143-160 (with H.T. Banks and G.M. Kepler).

19. *"Feedback Control Methodologies for Nonlinear Systems"*, Journal of Optimization Theory and Applications, 107 (1), 2000, pp. 1-33 (with S.C. Beeler and H.T. Banks).

20. *"Physiologically Based Pharmacokinetic Modeling of Benzene Metabolism in Mice through Extrapolation from in Vitro to in Vivo"*, Journal of Toxicology and Environmental Health, part A: 2001 Mar., 62 (6), pp. 439-465 (with C.E. Cole and P.M. Schlosser).

21. *"Compensator Control for Chemical Vapor Deposition Film Growth Using Reduced Order Design Models"*, IEEE Trans. on Semiconductor Manufacturing, 2001 Aug., 14 (3), pp. 231-241 (with H.T Banks and G.M. Kepler).

22. *Modeling and Control of Physical Processes using Proper Orthogonal Decomposition"*, Mathematical and Computer Modeling, 33 (1-3), 2001, pp. 223-236 (with H.V. Ly).

23. *"Modeling and Control of High Pressure CVD Reactor using Proper Orthogonal Decomposition"*, Encyclopedia of Materials: Science and Technology, Elsevier Science Ltd., Oxford, England, 2001, pp. 1183-1187 (with H.V. Ly).

24. *"Surface Reaction Kinetics of $Ga_{1-x}In_xP$ Growth during Pulsed Chemical Beam Epitaxy,* Applied Surface Science, 2001, pp. 63-74 (with N. Dietz, S.C. Beeler and J.W. Schmidt).

25. *"Proper Orthogonal Decomposition for Flow Calculation and Optimal Control in a Horizontal CVD Reactor"*, Quarterly of Applied Mathematics 60, 2002, no. 4, pp. 631-656 (with H.V. Ly).

26. *"Modeling and Computation of Propagating Waves from Coronary Stenoses"*, Computational & Applied Mathematics, 21-3, 2002, pp. 1-22 (with H.T. Banks, J.H. Barnes, A. Eberhardt, and S. Wynne).

27. *"A Well-posedness Result for a Shear Wave Propagation Model"*, Int. Series of Numerical Mathematics, Vol. 143, Birkhauser Verlag, 2002, pp. 25-40 (with H.T. Banks and S. Wynne).

28. *"State Estimation and Tracking Control of Nonlinear Dynamical Systems"*, Proc. 8th Int. Conference on Control of DPS (July, 2001, Graz, Austria), Int. Series Num. Math., Birkhäuser, (2002), Vol. 143, pp. 1-24 (with S. C. Beeler and H. T. Banks).

29. *"Proper Orthogonal Decomposition Based Control of Transverse Beam Vibrations: Experimental Implementation"*, IEEE Trans. on Control Systems Technology, 10, 2002, pp. 717-726 (with R.C.H. del Rosario and H.T. Banks).

30. *"Reduced Order Modeling and Control of Thin Film Growth in an HPCVD Reactor"*, SIAM J. Applied Mathematics, 62, 2002, pp. 1251-1280 (with S.C. Beeler, G.M. Kepler and H.T. Banks).

31. *"Development of a Biologically-Based Controlled Growth and Differentiation Model for Developmental Toxicology"*, Journal of Mathematical Biology, 46, 2003, pp. 1-16 (with S.Y. Whitaker and C.J. Portier).

32. *"Modeling of HPA and HPA Linearization Through a Predistorter: Global Broadcasting Service Applications"*, IEEE Trans. on Broadcasting, 49, no. 2, 2003, pp. 132-141 (with T.M. Nguyen, J. Yoh, C.H. Lee, and D.M. Johnson).

33. *"Modeling Cerebral Blood Flow Control during Posture Change from Sitting to Standing"*, J. of Cardiovascular Engineering, 4(1), 2004, pp. 47-58 (with M.S. Olufsen and J.T. Ottesen).

34. *"Design of an Electron Gun using Computer Optimization"*, IEEE Trans. on Plasma Science, 32(3), 2004, pp. 1242-1250 (with B.M. Lewis, M.E. Read and R.L. Ives).

35. *"Modeling and Optimal Regulation of Erythropoiesis subject to Benzene Intoxication"*, Math. Biosc. and Engr., 1(1), 2004, pp. 15-48 (with H.T. Banks, C.E. Cole and P.M. Schlosser).

36. *"Dynamic Multidrug Therapies for HIV: Optimal and STI Control Approaches"*, Math Biosc. and Engr., 1(2), 2004, pp. 223-242 (with B.M. Adams, H.T. Banks and H.D. Kwon).

37. *"Existence-Uniqueness and Monotone Approximation for an Erythropoiesis Age-structured Model"*, J. Math. Anal. and Appl., 289(2), 2004, pp. 530-544 (with A.S. Ackleh, C.E. Cole and K. Deng).

38. *"Reduced-Order Feedback Control of the Kuramoto-Sivashinsky Equation"*, J. of Computational & Applied Mathematics, 173, 2005, pp. 1-19 (with C.H. Lee).

39. *"HIV Dynamics: Modeling, Data Analysis, and Optimal Treatment Protocols"*, Special issue of J. of Comp. and Appl. Math. on "Mathematics Applied to Immunology", 184:10-49, 2005 (with B.M. Adams, H.T. Banks, M. Davidian, H.D. Kwon, E.S. Rosenberg, S.N. Wynne).

40. *"Blood Pressure and Blood Flow Variation during Postural Change from Sitting to Standing: Model Development and Validation"*, J. of Applied Physiology, 99:1523-1537, 2005 (with M.S. Olufsen, J.T. Ottesen, L.M. Ellwein, V. Novak and L.A. Lipsitz).

41. *"Modeling Baroreflex Regulation of Heart Rate during Orthostatic Stress"*, Am. J. of Physiol. Regulatory Integration Comp. Physiol., 291:R1355-1368, 2006 (with M.S. Olufsen, J.T. Ottesen, L.A. Lipsitz, and V. Novak).

42. *"Physiologically Based Pharmacokinetic (PBPK) Modeling of Benzene in Human: A Bayesian Approach"*, Risk Analysis, 26(4), 2006, pp. 925-943 (with K.A. Yokley, K. Pekari, S. Rappaport, V. Riihimaki, N. Rothman, S. Waidvanatha and P.M. Schlosser).

43. *"A State-dependent Riccati Equation-based Estimator Approach for HIV Feedback Control"*, Optim. Control Applic. and Meth., 2006, 27:93-121 (with H.T. Banks, H.D. Kwon, J.A. Toivanen).

44. *"A Delayed Nonlinear PBPK Model for Genistein Dosimetry in Rats"*, Bull. of Math. Biology, 2007, 69:93-117 (with M.G. Zager and P.M. Schlosser).

45. *"Nonlinear Feedback Controllers and Compensators: A State-dependent Riccati Equation Approach"*, J. Comp. Optim. and Appl., Vol. 37, No. 2, pp. 177-218, 2007 (with H.T. Banks and B.M. Lewis).

46. *"Real-time implementation of a Frequency Shaping Controller on a Cantilever Beam"*, Appl. Numer. Math., Vol. 57, Issues 5-7, pp. 778-790, 2007 (with B.M. Lewis).

47. *"Enhanced Features for Design of Traveling Wave Tubes using Christine1D"*, IEEE Trans. Plasma Science, Vol. 35, No. 4, pp. 1056-1064, 2007 (with J.A. David, C.L. Kory, R.L. Ives, and D. Chernin).

48. *"Sensory Irritation Response in Rats: Modeling, Analysis, and Validation"*, Bulletin of Mathematical Biology, No. 2, pp. 555-588, 2008 (with K.A. Yokley and P. Schlosser).

49. *"Sensitivity Analysis and Model Assessment: Mathematical Models for Arterial Blood Flow and Blood Pressure"*, J. of Cardiovascular Engineering, Vol. 8, No. 2, pp. 94-108, 2008 (with L.M. Ellwein, C. Zapata, V. Novak, and M.S. Olufsen).

50. *"Modeling Heart Rate Regulation - Part I: Sit-to-stand Versus Head-up Tilt"*, J. of Cardiovascular Engineering, Vol. 8, No. 2, pp. 73-87, 2008 (with M.S. Olufsen, A.V. Alston, J.T. Ottesen and V. Novak).

51. *"A Respiratory System Model: Parameter Estimation and Sensitivity Analysis"*, J. of Cardiovascular Engineering, Vol. 8, No. 2, pp. 120-134, 2008 (with M. Fink and J.J. Batzel).

52. *"Computer Optimized Design of Electron Guns"*, IEEE Trans. Plasma Science, Vol. 36, Issue 1, Part 2, pp. 156-168, 2008, (with J.A. David, R.L. Ives, T. Bui, and M. Read).

53. *"Computational Design of Asymmetric Electron Beam Devices"*, IEEE Trans. on Electron Devices, Vol. 56, No. 5, pp. 753-761, May 2009 (with R. Ives, A. Attarian, T. Bui, M. Read, J. David, H. Tran, W. Tallis, S. Davis, S. Gadson, N. Blach, D. Brown, and E. Kiley).

54. *"HIV Model Analysis and Estimation Implementation Under Optimal Control Based Treatment Strategies"*, Int. J. of Pure and Appl. Math., 57(3): 357-392, 2009 (with H.T. Banks and J. David).

55. *"A Multicompartment Liver-Based Pharmacokinetic Model for Benzene and its Metabolites in Mice"*, Bull. Math. Biol., 72:507-540, 2010 (with C.E. Cole and P. Schlosser).

56. *"A Comparison of Nonlinear Filtering Approaches in the Context of an HIV Model"*, Math Biosc. and Engr., Vol. 7, No. 2, pp. 213-236, 2010 (with H.T. Banks, S. Hu, and Z.R. Kenz).

57. *"Design of Doubly Convergent Multiple-Beam Electron Guns"*, IEEE Trans. on Plasma Science, Vol. 38, Issue 6, pp. 1337-1344, 2010 (with R.L. Ives, A. Attarian, W. Tallis, C. Andujar, V. Forstall, M. Read, and T. Bui).

58. *"Receding Horizon Control of HIV"*, Opt. Control Appl. and Methods, Vol. 32, No. 6, pp. 681 - 699, 2011 (with J. David and H.T. Banks).

59. *"Modeling Red Blood Cell and Iron Dynamics in Patients with Chronic Kidney Disease"*, Int. J. of Pure and Appl. Math., 75(1): 103-140, 2012 (with H.T. Banks and K.M. Bliss).

60. *"Optimization of Klystron Designs Using Deterministic Sampling Methods"*, IEEE Trans. on Electron Devices, Vol. 62, No. 3, pp. 1032-1036, 2015 (with G. Lankford, M. Read, L. Ives, K. Reppert, K. Cline, and J. Guzman).

61. *"Using Kalman Filtering to Predict Time-Varying Parameters in a Model Predicting Baroreflex Regulation During Head-Up Tilt"*, IEEE Trans. Biomed. Eng. 62(8):1992-2000, 2015, doi: 10.1109/TBME.2015.2409211. Epub 2015 Mar. 5 (with B. Matzuka, J. Mehlsen, and M. Olufsen).

62. *"Stochastic Nonlinear Mixed Effects - A Metformin Case Study"*, J Pharmacokinet. Pharmacodyn. 43(1):85-98, 2016, doi: 10.1007/s10928-015-9456-7. Epub 2015 Nov. 19 (with B. Matzuka, J. Chittenden, and J. Monteleone).

63. *"Feasibility of Parameter Estimation in Hepatitis C Viral Dynamics Models"*, J. Inv. and Ill-Posed Prob., Vol. 25, No. 1, pp. 69-80, 2017 (with J. Arthur and P. Aston).

64. *"Uncertainty Quantification in a Patient-Specific One-Diemnsional Arterial Network Model: EnKF-Based Inflow Estimator"*, ASME J. Verification, Validation and Uncertainty Quantification, 2(1):011002, 2017, doi:10.1115/1.4035918 (with Andrea Arnold, Christina Battista, Daniel Bia, Yanina Zcalo German, Ricardo L. Armentano, and Mette S. Olufsen).

65. *"An Optimal Control Approach to Structured Treatment Interruptions for HIV Patients: A Personalized Medicine Perspective"*, Applied Mathematics 8(7):934-955, 2017 (with Adam Attarian).

66. *"Adaptive Filtering for Hidden Node Detection and Tracking in Networks"*, Chaos, 27(7):073106, 2017, doi:10.1063/1.4990985 (with F. Hamilton, B. Setzer, S. Chavez, A. Lloyd).

67. *"A Physiologically Based Pharmacokinetic (PBPK) Model of Vitamin D"*, J. of Applied Toxicology, 37(12): 1448-1454, 2017. doi:10.1002/jat.3489 (with M.E. Sawyer and M.V. Evans).

68. *"Mathematical and Statistical Model Misspecifications in Modeling Immune Response in Renal Transplant Recipients"*, Inverse Problems in Science and Engineering, 26(2): 1-18, 2017. doi:10.1080/ 17415977.2017.1312363 (with H.T. Banks, R.A. Everett, S. Hu and N. Murad).

69. *"Using Multi-Class Classification Methods to Predict Baseball Pitch Types"*, J. of Sports Analytics, pp. 1-9, 2017, DOI: 10.3233/JSA-170171(with G. Sidle).

70. *"Nonlinear Kalman Filtering for Censored Observations"*, Applied Mathematics and Computation, Vol. 316, pp. 155-166, 2018 (with J. Arthur, A. Attarian and F. Hamilton).

71. *"Acquisition War-Gaming Technique for Acquiring of Future Complex Systems: Modeling and Simulation Results for Cost Plus Incentive Fee Contract"*, Mathematics 2018, 6, 43:1-29, doi:10.3390/math6030043 (with Tien M. Nguyen, Andy T. Guillen, Tung X. Bui and Sumner S. Matsunaga).

72. *"Detection of Bladder Contractions from the Activity of the External Urethral Sphincter in Rats Using Sparse Regression"*, IEEE Transactions on Neural Systems & Rehabilitation Engineering, 26(8):1636-1644, August 2018 (with Erica M. Rutter, Christopher L. Langdale, James A. Hokanson, Franz Hamilton, Warren M. Grill, Kevin B. Flores).

73. *"Personalized Mathematical Model of Endotoxin-Induced Inflammatory Responses in Young Men and Associated Changes in Heart Rate Variability"*, Mathematical Modelling of Natural Phenomena, Vol. 13, No. 5, 20 pages, 2018, DOI: 10.1051/mmnp/2018031 (with M. Olufsen, R. Brady, D. O. Frank-Ito, S. Janum, K. Moller, S. Brix, J.T. Ottesen, J. Mehlsen).

74. *"Immunosuppressant Treatment Dynamics in Renal Transplant Recipients: An Iterative Modeling Approach"*, Discrete and Continuous Dynamical Systems Series B, 24(6):2781-2797, June 2019 (with N. Murad, R.A. Everett, H.T. Banks and E.S. Rosenberg).

75. *"Real-Time Implementation and Analysis of a Modified Energy Based Controller for the Swing-Up of an Inverted Pendulum on a Cart"*, European Journal of Control, 50:176-187, 2019 (with E. Kennedy and E. King).

76. *"Optimal Control of Immunosuppressants in Renal Transplant Recipients Susceptible to BKV Infection"*, Optimal Control, Applications and Methods, 40(2):292-309, March/April 2019 (with Neha Murad and H.T. Banks).

77. *"An Optimal Control Approach for Blood Pressure Regulation during Head-Up Tilt"*, Biological Cybernetics, 113(1-2):149-159, April 2019 (with N.D. Williams, J. Mehlsen and M.S. Olufsen).

78. *"Cardiovascular Dynamics During Head-Up Tilt Assessed via Pulsatile and Non-Pulsatile Models"*, J. Math. Biology, 79(3):987-1014, August 2019 (with N.D. Williams, R. Brady, S. Gilmore, P. Gremaud, J.T. Ottesen, J. Mehlsen and M.S. Olufsen).

79. *"Population Forecasting by Population Growth Models based on MATLAB Simulation"*, Journal of Emerging Investigators, 31 August 2020, Vol. 3, www.emerginginvestigators.org

(a science journal and mentorship program publishing research by middle and high school scientists), 2020 (with Li J. and Li, J.).

80. *"Head Conduction: Mathematical Modeling and Experimental Data"*, Journal of Emerging Investigators, 2 December 2021, Vol.4, www.emerginginvestigators.org (a science journal and mentorship program publishing research by middle and high school scientists), (with Qingyu Zhu and Hong Yang).

81. *"Deep Learning and Regression Approaches to Forecasting Blood Glucose Levels for Type 1 Diabetes"*, Biomedical Signal Processing and Control, 69 (2021) 102923 (with Meng Emily Zhang and Kevin Flores).

82. *"An XGBoost Based Fitted Q Iteration for Finding the Optimal STI Strategies for HIV Patients"*, IEEE Transactions on Neural Networks and Learning Systems, 2022 Jun 2, PMID: 35653445 DOI: 10.1109/TNNLS.2022.3176204 (with Yahe Yu).

83. *"A Database of Chemical Absorption in Human Skin with Machine Learning and Mechanistic Modeling Applications"*, Scientific Data, submitted (with Jessica N Stevens, Alyson K Prockter, Hunter A Fisher, and Marina V Evans).

84. *"Evaluating the Impact of Anatomical and Physiological Variability on Human Equivalent Doses Using PBPK Models"*, Toxicological Sciences, submitted (with Celia Schacht, Annabel Meade, Amanda Bernstein, Bidya Prasad, Paul Schlosser, Hien Tran, and Dustin Kapraun).

85. *"A Machine Learning Based Approach for the Identification of Fake Bills"*, Rose-Hulman Undergraduate Mathematics Journal, submitted . The journal is devoted entirely to papers written by undergraduates on topics related to the mathematical sciences, (with Tianyang Lu and Hongyang Pang).

86. *"A Machine Learning Approach for the Prediction of Hotel Reservation Cancellation"*, Machine Learning with Applications, submitted (with Han Chen).

87. *"A Machine Learning Approach to Predict Credit Card Approval"*, Journal of Emerging Investigators, submitted, www.emerginginvestigators.org (a science journal and mentorship program publishing research by middle and high school scientists), (with Xinyan Xie and Hong Yang).

## E. Refereed Book Chapters

1. *"Linear Quadratic Optimal Control Problem for Linear Systems with Unbounded Input and Output Operators: Numerical Approximations"*, International Series of Numerical Mathematics, Birkhäuser Verlag Basel, Vol. 91 (1989), pp. 171–195, (with K. Ito).

2. *"Numerical Studies of the Linear Quadratic Control Problem for Retarded Systems with Delay in Control"*, Progress in Systems and Control Theory, Birkhäuser, Boston, 1991, pp. 307–324.

3. *"Modeling of Flow Dynamics and its Impact on the Optimal Reactor Design Problem"*, Identification and Control in Systems Governed by Partial Differential Equations, SIAM Publications, 1993, pp. 1–13 (with J. S. Scroggs and K. J. Bachmann).

4. *"Mathematical Issues in Optimal Design of a Vapor Transport Reactor"*, IMA Volumes in Mathematics and its Applications, Vol. 68, Flow Control (Max D. Gunzburger, ed.), (1994), pp. 197–218 (with K. Ito and J. S. Scroggs).

5. *"Optimal Control of Thermally Coupled Navier-Stokes Equation"*, Optimal Design and Control (Max D. Gunzburger et al., editors), Birkhäuser, (1995), pp. 199–214 (with K. Ito and J.S. Scroggs).

6. *"Modeling and Control of Advanced Chemical Vapor Deposition Processes"*, Mathematics of Microstucture Evolution (ed. by L.Q. Chen, et al), SIAM/TMS (1996), pp. 327-344 (with H.T. Banks, K. Ito, J.S. Scroggs, N. Dietz and K. Bachmann).

7. *"Reduced Order Based Compensator Control of Thin Film Growth in a CVD Reactor"*, Proc. Int. Conf. on Optimal Control of Complex Dynamic Structures (Oberwolfach, June 4-10, 2000), Int. Series Num. Math., Birkhäuser, (2001), Vol. 139, pp. 1-17 (with H.T. Banks).

8. *"Optimal Control Theory"* in Encyclopedia of Theoretical Ecology, A. Hastings and L. Gross, editors, University of California Press, pp. 519-523, 2012.

9. *"Application of the Unscented Kalman Filtering to Parameter Estimation"*, in Mathematical Modeling and Validation in Physiology (ed. by J. Batzel, M. Bachar and F. Kappel), Springer-Verlag Berlin Heidelberg, (2013), pp. 75-88 (with A. Attarian, J. Batzel, and B. Matzuka).

10. *"Baseball Pitch Classification: A Bayesian Method and Dimension Reduction Investigation"*, IAENG Transactions on Engineering Sciences, Special Issue of the Int. Multiconference of Engineers and Computer Scientists 2013 and World Congress on Engineering 2013 (ed. by Sio-Iong Ao, Alan Hoi-Shou Chan, Hideki Katagiri and Li Xu), (2014), pp. 393-399 (with A. Attarian, G. Danis, J. Gronsbell, G. Iervolina, L. Layne, and D. Padgett).

11. *"A Dynamic Feature Selection Based LDA Approach to Baseball Pitch Prediction"*, Lecture Notes in Artificial Intelligence, 9441, Trends and Applications in Knowledge

Discovery and Data Mining (ed. Xiao-Li Li, Tru Cao, Ee-Peng Lim, Zhi-Hua Zhou, Tu-Bao Ho, David Cheung, Hiroshi Motoda), PAKDD 2015 Workshops: BigPMA, VLSP, QIMIE, DAEBH, May 19-21, 2015, Ho Chi Minh City, Viet Nam, pp. 125-137, (with P. Hoang, M. Hamilton, J. Murray, and C. Stafford).

12. *"Real-Time Stabilization of a Single Inverted Pendulum Using a Power Series Based Controller"*, Transactions on Engineering Technologies, Int. MultiConference of Engineers and Computer Scientists, Springer, (ed. by Gi-Chul Yang, Oscar Castillo, Xu Huang, Sio-Iong Ao), ISBN 978-981-10-0550-3, 2016, pp. 1-14 (with Emese A. Kennedy).

13. *"War-Gaming Applications for Achieving Optimum Acquisition of Future Space Systems"*, book chapter in "Simulation and Gaming" (ed. by Dragan Cvetkovic), ISBN 978-953-51-3800-6, doi:10.5772/intechopen.69391, 2018 (with Tien M. Nguyen, Andy T. Guillen, Tung X. Bui and Sumner S. Matsunaga).

14. *"Hepatitis C Viral Dynamics Using a Combination Therapy of Interferon, Ribavirin, and Telaprevir: Mathematical Modeling and Model Validation"*, book chapter in "Hepatitis C - From Infection to Cure" (ed. by Imran Shahid), INTECH, April 2018, DOI: 10.5772/intechopen.72268 (with P. Aston, A. Cassenote, C. J. Mendes-Correa, K. Cranfield, H. O'Farrell, P. Hoang, G. Lankford and A. Segurado).

15. *"A Moving Horizon State Estimator for Real-Time Stabilization of a Double Inverted Pendulum"*, in: D. Marc Kilgour, et al. (eds) Recent Developments in Mathematical, Statistical and Computational Sciences, Springer Proceedings in Mathematics and Statistics, Vol. 343, p. 3 - 14, The V AMMCS International Conference, Waterloo, Canada, August 18-23, 2019, (with A. Bernstein and E. King).

16. *"Benchmarking Virtual Reinforcement Learning Algorithms to Balance a Real Inverted Pendulum"*. In: Arai, K. (eds) Intelligent Systems and Applications. IntelliSys 2021. Lecture Notes in Networks and Systems, vol 296. Springer, Cham. (with Dylan Bates), https://doi.org/10.1007/978-3-030-82199-9-17.

17. *"Ensemble UNet++ for Locating the Exponential Growth Virus Samples"*. In: Arai, K. (eds) Intelligent Systems and Applications. IntelliSys 2021. Lecture Notes in Networks and Systems, vol 296. Springer, Cham. https://doi.org/10.1007/978-3-030-82199-9-31 (with Yahe Yu and Ruian Ke).

18. *"Airplane Detection and Classification Based on Mask R-CNN and YOLO with Feature Engineering"*. In: Arai, K. (eds) Intelligent Systems and Applications. IntelliSys 2022.

Lecture Notes in Networks and Systems, vol 543. Springer, Cham. (with Adam Attarian, Minxuan Luo, Yangyang Luo, Xingfei Xu, Chunxiao Yi, Yahe Yu, and Fa Zhang), https://doi.org/10.1007/978-3-031-16078-3-52.

## F. Refereed Proceedings Papers

1. *"Numerical Simulation of Linear and Nonlinear Feedback Controllers for a Wind Tunnel Model Involving a Time Delay"*, Proc. 7th Annual Conference on Information Sciences and Systems, Johns Hopkins University, 1983 (with A. Manitius).

2. *"Computation of Closed Loop Eigenvalues Associated with the Optimal Regulator Problem for Functional Differential Equations"*, Proc. 22nd IEEE Conference on Decision and Control, IEEE Control Systems Society, 1983, pp. 38–45, (with A. Manitius).

3. *"Numerical Approximations for Linear Functional Differential Equations with Input and Output Delays"*, Proc. 24th IEEE Conference on Decision and Control, IEEE Control Systems Society, 1985, pp. 1428–1432 (with A. Manitius).

4. *"Stochastic Models of Subpopulation Emergence in Heterogeneous Tumors"*, Proc. 12th IMACS World Congress on Scientific Computation, Paris, France, July, 1988 (with S. Michelson, K. Ito and J.T. Leith).

5. *"Linear Quadratic Regulator Problems for Infinite Dimensional Linear Systems with Delays in Control"*, Proc. 27th IEEE Conference on Decision and Control, IEEE Control Systems Society, 1988, pp. 2012–2017 (with K. Ito).

6. *"Finite Dimensional Approximations for Functional Differential Equations with Input and Output Delays"*, Proc. 29th IEEE Conference on Decision and Control, IEEE Control Systems Society, 1990, pp. 1631–1632 (with A. Manitius).

7. *"Optimal Control of Fluid Flow in a Vertical Chemical Vapor Deposition Reactor"*, Proc. 31st IEEE Conference on Decision and Control, IEEE Control Systems Society, 1992, pp. 3405–3409 (with J. S. Scroggs).

8. *"Gasdynamics and Transport in a High-Pressure Reactor Under Microgravity Conditions"*, Proc. 2nd IEEE Mediterranean Symposium on New Directions in Control and Application, IEEE Publications, 1994, pp. 427–433 (with H. T. Banks, K. Ito, J. S. Scroggs, K. Bachmann, H. Castleberry and S. Feichter).

9. *"High Pressure Vapor Transport of Binary and Ternary Compound Semiconductors"*, Sixth International Symposium on Experimental Methods for Microgravity Materials Science (R.A. Schiffman and J.B. Andrews eds), TMS Publications, 1994, pp. 93–100 (with S. Fiechter, R.H. Castleberry, G. Wood, K.J. Bachmann, K. Ito and J.S. Scroggs).

10. *"High Pressure Vapor Transport of ZnGeP$_2$: I, Parameter Evaluation"*, International Symposium on Experimental Methods for Microgravity Materials Science, R. Schiffman eds, TMS Publications, 1995, pp. 57–66 (with S. Fiechter, R.H. Castleberry, N. Dietz, K.J. Bachmann, H.T. Banks, K. Ito, and J.S. Scroggs).

11. *"High Pressure Vapor Transport of ZnGeP$_2$: II, Three-Dimensional Simulation of Gas-dynamics under Microgravity Conditions"*, International Symposium on Experimental Methods for Microgravity Materials Science, R. Schiffman eds, TMS Publications, 1995, pp. 67–72 (with J.S. Scroggs, H.T. Banks, K. Ito, S. Ravindran, K.J. Bachmann, R.H. Castleberry, and N. Dietz).

12. *"The Human Respiratory Control System and Periodic Breathing"*, Proc. of 32nd Annual Technical Meeting of the Society of Engineering Science, 1995, pp. 623–624, (with J.J. Batzel).

13. *"RFI Modeling of Satellite Communications"*, Proceedings - IEEE Military Comm. Conference MILCOM 2000;1:256-260. (with J. Yoh, T.M. Nguyen, D.M. Johnson, and C.H. Lee).

14. *"Reduced Order Based Compensator Control of Thin Film Growth in a CVD Reactor"*, Proc. Volume for the Oberwolfach Conference on "Control of Complex Structures", 2000, 17 pages, (with H.T. Banks).

15. *"Feedback Control of Thin Film Growth in an HPCVD Reactor via Reduced Order Models"*, Proc. of the 40th IEEE Conf. on Decision and Control, 2001, pp. 1577-1582 (with H.T. Banks, S.C. Beeler and G.M. Kepler).

16. *"User-Friendly, Economical, 3D Charged Particle Code with Adaptive Meshing"*, 28th IEEE Int. Conf. Plasma Sci. and 13th IEEE Int. Pulsed Power Conf., 2001, pp. 17-22 (with R.L. Ives, T. Bui, W. Vogler, J.F. Remacle, M.S. Shephard, M.W. Beal, D.F. Kapraun).

17. *"SCATTER - A New Computer Code for Modeling Reflected Electrons from Surfaces"*, Proc. Third IEEE Int. Conf., Vacuum Electronics Conference, IEEE, 2002, pp. 134-135 (with D. Kapraun, R.L. Ives, W. Vogler and T. Bui).

18. *"Beam Optics Analysis - 3D Finite Element Charged Particle Code with Adaptive Meshing"*, Proc. Third IEEE Int. Conference, Vacuum Electronics Conference, IVEC 2002, pp. 160-161 (with T. Bui, W. Vogler, R.L. Ives, M.S. Shephard, O. Klaas, J. Remacle and D.F. Kapraun).

19. *"Survey on Diversity and Combining Techniques for Signals Operating at Low SNR: Evolution toward Combined Coding-Diversity Schemes"*, Proc. of the 20th AIAA Int.

Comm. Satellite Systems Conference and Exhibit, AIAA 2002-1858, 7 pages (2002) (with T.M. Nguyen, H.H. Nguyen, Lubo B. Jocic, and B.M. Lewis).

20. *"Human Respiration Control System: Dynamics and Stability Analysis"*, Proc. VTIC 2002, 15 pages (with J.J. Batzel).

21. *"Diversity and Combining Techniques for 2G and 3G PCS Systems"*, 20th Int. Communication Satellite Systems Conference, Proc. of the 20th AIAA Int. Comm. Satellite Systems Conference and Exhibit, AIAA 2002-1859, 15 pages (2002) (with T.M. Nguyen, J. Yoh, H.H. Nguyen and Brian M. Lewis).

22. *"From Concept to Real-time Implementation: POD Based Reduced Order Control of a Cantilever Beam"*, Proc. Sixteenth Int. Symposium on: Mathematical Theory of Networks and Systems, MTNS, 2004, 24 pages (with B.M. Lewis).

23. *"Dynamic Multidrug Therapies for HIV: Feedback and Structured Treatment Interruption Control Approaches"*, Proc. Seventeenth Int. Symposium on: Mathematical Theory of Networks and Systems, MTNS, 2006, 9 pages (with B.M. Lewis).

24. *"Subset Selection for Parameter Estimation in an HIV Model"*, Proc. in Applied Mathematics and Mechanics, ICIAM 2007, 2 pages (with M. Fink and A. Attarian).

25. *"Computer Optimized Gun Designs"*, Infrared and Millimeter Waves, Proc. of the 14th International Conf. on Terahertz Electronics, IEEE, 2006, pp. 150-150 (with R.L. Ives, Thuc Bui, J. David and M. Read).

26. *"Computer Optimization of Electron Gun Designs"*, Infrared and Millimeter Waves, Proc. of the 15th International Conf. on Terahertz Electronics, IEEE, 2007, pp. 152-153 (with R.L. Ives, M. Read, Thuc Bui and J. David).

27. *"Computer Optimized Design of Electron Guns"*, Proc. of the IEEE Int. Vacuum Electronics Conference, IEEE, 2008, pp. 453-454 (with R.L. Ives, Thuc Bui, M. Read, J. David and A. Attarian).

28. *"Implementation of Computer Optimization for Design of Electron Guns"*, Proc. of the 9th IEEE Int. Vacuum Electronics Conf., 2008, 2 pages (with R.L. Ives, T. Bui, A. Attarian, M. Read, M. Posth, and J. David).

29. *"Implementation of Computer Optimization for Design of Electron Guns*, Proc. of 33rd Int. Conf. on Infrared, Millimeter and Terahertz Waves, 2008, pp. 1-2 (with R.L. Ives, T. Bui, A. Attarian, S. Dais, S. Gadson, W. Tallis, M. Read and M. Posth).

30. *"Modeling Cerebral Blood Flow and Regulation"*, Proc. IEEE EMBC Conf, Sept. 2009, DOI 10.1109/IEMBS.2009.5334057, pages 2410-2413, 2009 (with M.C. Aoi, P. Gremaud, V. Novak and M.S. Olufsen).

31. *"Real-Time Implementation of Reduced Order Compensators on a Cantilever Beam"*, Proc. of the 2011 Int. MultiConference of Engineers and Computer Scientists, March 2011, 6 pages (with B.M. Lewis).

32. *"An SDRE-Based Approach for HIV Feedback Control and Control of Thin Film Growth in a CVD Reactor"*, Proc. of the 18th IFAC World Congress, August 28 - September 2, 2011, pp. 9601-9606 (with H.T. Banks, S.C. Beeler, Hee-Dae Kwon, B.M. Lewis, and J.A. Toivanen).

33. *"Global Sensitivity and Identifiability Analysis Applied to a Model Predicting Baroreflex Regulation During Head-up Tilt"*, Proc. of the 1st Int. Wksp. on Innovative Simulation for Healthcare (Eds. W. Backfrieder, A. Bruzzone, F. Longo, V. Novak and J. Rosen), ISBN 978-88-97999-13-3, September 19-21, 2012, Vienna, Austria, pp. 81-86 (with C. H. Olsen, J. Mehlsen, J. Ottesen, and M. S. Olufsen).

34. *"A Kalman Filtering Based Approach for the Modeling of the Cardiovascular Regulation System"*, Proc. of the 1st Int. Wksp. on Innovative Simulation for Healthcare (Eds. W. Backfrieder, A. Bruzzone, F. Longo, V. Novak and J. Rosen), ISBN 978-88-97999-13-3, September 19-21, 2012, Vienna, Austria, pp. 107-112 (with B. Matzuka, J. Mehlsen, M. Olufsen, and N. Williams).

35. *"A Comparison of Feature Selection and Classification Algorithms in Identifying Baseball Pitches"*, Proc. of the Int. MultiConference of Engineers and Computer Scientists 2013, Lecture Notes in Engineering and Computer Science (Eds. S. I. Ao, O. Castillo, C. Douglas, D. D. Feng and Jeong-A Lee), March 13-15, 2013, Hong Kong, pp. 263-268 (with A. Attarian, G. Danis, J. Gronsbell, and G. Iervolino).

36. *"Cardiovascular Dynamics During Head-up Tilt Assessed via a Pulsatile and Nonpulsatile Model"*, In Proceedings of the 3rd International Conference on Simulation and Modeling Methodologies, Technologies and Applications - Vol. 1: BIOMED, (SIMULTECH 2013) ISBN 978-989-8565-69-3, pp. 673-680. DOI: 10.5220/0004624006730680 (with N. Williams and M.S. Olufsen).

37. *"An Optimal Control Approach to Modeling Head-up Tilt"*, Proc. of the Int. Wksp. on Innovative Simulation for Healthcare (Eds. W. Backfrieder, A. Bruzzone, M. Frascio, F. Longo and V. Novak), ISBN 978-88-97999-26-3; September 25-27, 2013, Athens, Greece, pp. 97-102 (with N.D. Williams and M.S. Olufsen).

38. *"Applying Machine Learning Techniques to Baseball Pitch Prediction"*, In Proceedings of the 3rd International Conference on Pattern Recognition Applications and Methods - Volume 1: ICPRAM (Eds. M. De Marsico, A. Tabbone and A. Fred), ISBN: 978-989-758-018-5; pp. 520-527, DOI: 10.5220/0004763905200527 (with M. Hamilton, P. Hoang, L. Layne, J. Murray, D. Padget, C. Stafford).

39. *"Real-Time Implementation of a Power Series Based Nonlinear Controller for the Balance of a Single Inverted Pendulum*, Proc. of the Int. MultiConference of Engineers and Computer Scientists 2015 Vol I, IMECS 2015, March 18-20, 2015, Hong Kong, pp. 237-241, ISBN: 978-988-19253-2-9 ISSN: 2078-0958 (Print); ISSN: 2078-0966 (Online) (with Emese Kennedy).

40. *"RFI Modeling and Prediction Approach for SATOPS Applications"*, Sensors and Systems for Space Applications VIII (Eds. Khanh D. Pham and Genshe Chen), Proc. of SPIE Vol. 9469, 94690D, CCC code: 0277-786X/15/ doi: 10.1117/12.2177955, SPIE Defense, Security & Sensing, April 20-24, 2015, Baltimore, 12 pages, (with Tien M. Nguyen, Zhonghai Wang, Amanda Coons, Charles C. Nguyen, Steven A. Lane, Khanh D. Pham, Genshe Chen and Gang Wang).

41. *"Swing-up of an Inverted Pendulum on a Cart Using a Modified Energy Based Approach"*, Proc. of the 2016 IAENG Int. Conf. on Control and Automation, Hong Kong, March 16-18, 2016, pp. 185-190, ISBN 978-988-19253-8-1; 978-988-14047-6-3 (with Emese Kennedy).

42. *"RFI Modeling and Prediction Approach for SATOPS Applications: RFI Prediction Models"*, Sensors and Systems for Space Applications IX (Eds. Khanh D. Pham and Genshe Chen), Proc. of SPIE Vol. 9838, 98380I, CCC code: 0277-786X/16/ doi: 10.1117/12.2223518, SPIE Defense, Security & Sensing, April 17-21, 2016, Baltimore, 15 pages, (with Tien M. Nguyen, Zhonghai Wang, Amanda Coons, Charles C. Nguyen, Steven A. Lane, Khanh D. Pham, Genshe Chen and Gang Wang).

43. *"Real-Time Implementation of a LQR-Based Controller for the Stabilization of a Double Inverted Pendulum"*, Proceedings of the International MultiConference of Engineers and Computer Scientists 2017 Vol. I, IMECS 2017, March 15-17, 2017, Hong Kong, pp. 245-250, ISBN: 978-988-14047-3-2 (with A. Bernstein).

44. *"War-Gaming Application for Future Space Systems Acquisition: MATLAB Implementation of War-Gaming Acquisition Models and Simulation Results"*, Sensors and Systems for Space Applications X (Eds. Khanh D. Pham and Genshe Chen), Proceedings of SPIE, Vol. 10196, 1019609-1, SPIE Defense + Security, 2017, Anaheim, 10 pages (with P. Vienhage, H. Barcomb, K. Marshall, W.A. Black, A. Coons, T. M. Nguyen, A. T. Guillen, J. Yoh, J. Kizer, B. A. Rogers).

45. *"Ensemble Kalman Filtering for Inverse Optimal Control"*, Proc. of the International MultiConference of Engineers and Computer Scientists 2018 Vol II IMECS 2018, March 14-16, 2018, Hong Kong, pp. 526-530, ISBN: 978-988-14048-8-6 (with A. Arnold).

46. *"A Relaxed Projection Control in the Context of Inverse Optimal Control for Discrete Nonlinear Systems"*, 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton), September 2019, p. 1045 - 1051, (with E. King), https://doi.org/10.1109/ALLERTON.2019.8919882.

## F. Technical Reports

1. *"A Numerical Method for the Integration of Rapidly Oscillatory Functions"*, (with K. Ito), Tech. Report LCDS/CCS # 88–7, Division of Applied Mathematics, Brown University, Providence, RI, 1988 .

2. *"Assessment of the Reduction in Transmitted Power for Future SGLS and USB Services"*, (with T.M. Nguyen, J.K. Kreng, A. Marthur, D.R. Konold and G.T. Takahashi), Aerospace Report No. TOR-2001(1570)-3, The Aerospace Corporation, El Segundo, California.

## PRESENTATIONS

## A. Plenary Talks

1. International Conference on Mathematical and Theoretical Biology, "Dynamic Multidrug Therapies for HIV: Optimal and STI Control Approaches", January 23-27, 2012, Pune, India.

2. China-Japan-Korea Int. Conf. on Mathematical Biology, "Modeling Techniques for Complex Biological Systems: Sensitivity, Identifiability, Filtering and Optimal Control", May 22-25, 2012, Busan, Korea.

3. 15th Int. Symp. on Mathematical and Computational Biology (BIOMAT), "Modeling Techniques for Complex Biological Systems", November 01-07, 2015, Indian Institute of Technology, Roorkee, India.

4. Mathematical Conference "Summer Meeting 2016", "Modeling Techniques for Complex Biological Systems: Sensitivity, Identifiability, Filtering and Optimal Control", July 23-24, 2016, Vietnam National University, University of Science, Ho Chi Minh City, Vietnam.

## B. Invited Talks at Meetings

1. Fourth International Conference on Control of Distributed Parameter Systems; (60 minutes invited talk), July 1988, Vorau, Austria.

2. Brown/INRIA NSF Cooperative Workshop on *"Computational Aspects of Identification and Control of Distributed Parameter Systems"*; (30 minutes invited talk) August 1988, Brown University, Providence, Rhode Island.

3. Conference on the Numerical Solution of Volterra and Delay Equations; (30 minutes invited talk) May 1990, Arizona State University, Tempe, Arizona.

4. Second Conference on Computation and Control; (30 minutes invited talk), August 1990, Montana State University, Bozeman, Montana.

5. 1992 AMS-IMS-SIAM Summer Research Conference on Control and Identification of Partial Differential Equations; (30 minutes invited talk), July 1992, Mount Holyoke College.

6. Third SIAM Conference on Control and Its Applications; (30 minutes invited talk in an invited minisymposium), April 1995, St. Louis, Missouri.

7. Society of Engineering Science 32nd Annual Technical Meeting; (30 minutes invited talk in an invited minisymposium), Nobember 1995, New Orleans, Lousiana.

8. 1996 SIAM Annual Meeting; (30 minutes invited talk in an invited minisymposium), July 1996, Kansas City, Missouri.

9. International Conference on Differential Equations and Dynamical Systems, (30 invited talk in an invited minisymposium) "Modeling and Control of the Human Respiratory and Cardiovascular System", August 1997, University of Waterloo.

10. Mathematics of the Life Sciences Meeting; (1 hour invited talk) "A Dispersion Model for the Hepatic Uptake and Elimination of 2,3,7,8-tetrachlorodibenzo-p-dioxin", January 1998, Texas Tech University.

11. Mathematical Theory of Networks and Systems Meeting; (30 minutes invited talk in an invited minisymposium) "A Dispersion Model the Hepatic Uptake and Elimination of 2,3,7,8-tetrachlorodibenzo-p-dioxin", Padova (Italy), July 1998.

12. 1999 SIAM Annual Meeting; (30 minutes invited talk in an invited minisymposium), "Modeling and Feedback Control of Chemical Vapor Deposition Reactors by the Proper Orthogonal Decomposition Method", May 1999, Atlanta, Georgia.

13. Workshop on Proper Orthogonal Decomposition and Its Applications; (45 minutes invited talk), "Reduced Order Based Compensator Control of Thin Film Growth in a Chemical Vapor Deposition Reactor", May 2000, Graz, Austria.

14. 2000 SIAM Annual Meeting; (30 minutes invited talk in an invited minisymposium), "Model Reduction and Feedback Control of Nonlinear Infinite Dimensional Systems", July 2000, Rio Grande, Puerto Rico.

15. The Third Asian Mathematical Conference; (40 minutes invited lecture), "The Human Respiratory Control System: Models, Applications, and Analysis", October 2000, The University of the Philippines, Manilla, Philippines.

16. Workshop on Cardiovascular-Respiratory Control Modeling, (45 minutes invited talk), "The Human Respiration Control System: Models, Applications, and Analyses", June 14-16, 2001, Special Research Center for Optimization and Control, University of Graz, AUSTRIA.

17. Eighth Conference on Control of Distributed Parameter Systems, (45 minutes invited talk), "Reduced Order Modeling and Control of Thin Film Growth in an HPCVD Reactor", July 15-21, 2001, Special Research Center for Optimization and Control, University of Graz, AUSTRIA.

18. Pluralism in Distributed Parameter Systems, (30 minutes contributed talks), "Reduced Order Modeling and Control of Thin Film Growth in an HPCVD Reactor", University of Twenty, July 2-6, 2001, THE NETHERLANDS.

19. 2001 SIAM Annual Meeting, (30 minutes talk in an invited minisymposium), "Reduced Order Modeling and Control of Thin Film Growth in an HPCVD Reactor", July 9-13, 2001, San Diego.

20. 2001 SIAM Annual Meeting, (30 minutes talk in an invited minisymposium), "Modeling, Control, and Experiments: A Physical Laboratory", July 9-13, 2001, San Diego.

21. 2001 SIAM Annual Meeting, (30 minutes talk in an invited minisymposium), "The Human Respiration Control System: Models, Applications, and Analyses", July 9-13, 2001, San Diego.

22. SIAM-SEAS 2002 Annual Conference, (30 minutes invited talk), "Modeling and Computation of Propagating Waves from Arterial Stenoses", April 19-20, 2002, Western Carolina University, Cullowhee, North Carolina.

23. VTIC2002 Conference, (30 minutes invited talk), "The Human Respiration Control System: Models, Applications, and Analyses", May 10-11, 2002, George Mason University, Fairfax, Virginia.

24. VTIC2002 Conference, (30 minutes invited talk), "Survey on Diversity and Combining Techniques for Signals Operating at Low SNR: Evolution Toward Combined Coding-Diversity Schemes", May 10-11, 2002, George Mason University, Fairfax, Virginia.

25. ESMTB 5th Conference, (30 minutes invited talk), "Modeling and Computation of Propagating Waves from Arterial Stenoses", July 2-6, 2002, Milano, Italy.

26. Second Workshop on Cardiovascular-Respiratory and Metabolic Control Modeling, (45 minutes invited talk), "Modeling Cerebral Blood Flow Control during Posture Change from Sitting to Standing", June 11-14, 2003, University of Graz, AUSTRIA.

27. Fifth International Congress on Industrial and Applied Mathematics, (30 minutes invited talk), "Modeling and Computation of Propagating Waves from Arterial Stenoses", July 7-11, 2003, Sydney, AUSTRALIA.

28. Thirty-third Annual Lloyd Roeling/University of Louisiana at Lafayette Mathematics Conference, (45 minutes invited talk), "Modeling Cerebral Blood Flow Control during Posture Change from Sitting to Standing", October 24-26, 2003, University of Louisiana at Lafayette.

29. Sixteenth International Symposium on: Mathematical Theory of Networks and Systems, (30 minutes invited talk), July 5-9, 2004, BELGIUM.

30. International Conference on Scientific Computing, (30 minutes invited lecture), "Understanding Mechanisms behind Cerebral Blood Flow Regulation - Mathematical Modeling and Model Validation", Nanjing, China, June 4-8, 2005.

31. SIAM Annual Meeting, (30 minutes talk in an invited minisymposium), "Understanding Mechanisms behind Cerebral Blood Flow Regulation - Mathematical Modeling and Model Validation", New Orleans, Louisiana, July 2005.

32. SIAM Conference on Control and its Applications, (30 minutes talk in an invited minisymposium), "Real-time Implementation of Reduced Order Compensators on a Cantilever Beam", New Orleans, Louisiana, July 2005.

33. Seventeenth International Symposium on: Mathematical Theory of Networks and Systems, (30 minutes invited talk), "Dynamic Multidrug Therapies for HIV: Feedback and Structured Treatment Interruption Control Approaches", Kyoto (Japan), July 24-28, 2006.

34. Int. Conf. on Nonlinear Analysis & Engineering Mechanics Today, (30 minutes invited talk), "Control of Beam Vibration: Methodology and Experimental Implementation", Institute of Applied Mechanics, Ho Chi Minh City (Vietnam), December 11-14, 2006.

35. Pre-Conference Workshop on Parameter Estimation Methods in Physiological Modeling, BMES 2007 Annual Fall Meeting, September 26-29, 2007, Los Angeles, California. Gave a special one-hour lecture on Parameter Estimation Techniques in Physiological Modeling: An Introduction.

36. 2008 ASME Int. Mechanical Engineering Congress & Exposition, (20 minutes invited talk), "Reduced Order Modeling and Control of Thin Film Growth in a HPCVD Reactor", Boston, Massachusetts, October 31-November 6, 2008.

37. Istanbul Conference on Mathematical Methods and Modeling in Life Sciences and Biomedicine, (45 minutes invited talk), "Nonlinear Filtering and Estimation, August 17-21, 2009, Sile, Istanbul, Turkey.

38. The International Conference on "Mathematical Biology", Indian Institute of Science, Bangalore, (30 minutes invited talk), "Nonlinear Filtering and Parameter Estimation for Complex Biological Systems ", July 4-7, 2011, Bangalore, India.

39. London Mathematical Society - EPSRC Durham Symposium "Mathematics of Data Assimilation", Durham, (30 minutes invited talk), "Parameter Estimation in Complex Biological Systems", August 1-11, 2011, Durham, United Kingdom.

40. 2nd Istanbul Conf. on Mathematical Methods and Modeling in Life Sciences and Biomedicine, Sile, (40 minutes invited talk), "On Sensitivity and Identifiability of Nonlinear ODE Models and Applications in HIV Dynamics", August 15-19, 2011, Istanbul, Turkey.

41. The 18th IFAC World Congress, (30 minutes invited talk), "An SDRE-Based Approach for HIV Feedback Control and Control of Thin Film Growth in a CVD Reactor", August 28 - September 2, 2011, Milano, Italy.

42. International Conference in Mathematics and Applications, (30 minutes invited talk), "On Sensitivity and Identifiability of Nonlinear ODE Models and Applications in HIV Dynamics", December 17-19, 2011, Bangkok, Thailand.

43. Int. Workshop on Innovative Simulation for Healthcare, (30 minutes invited talk), "A Kalman Filtering Based Approach for the Modeling of the Cardiovascular Regulation System", September 19-21, 2012, Vienna, Austria.

44. STEM Conference 2012, Virginia Military Institute, (30 minutes invited talk), "N.C. State Research Experiences for Undergraduates in Mathematics: Modeling and Industrial Applied Mathematics", October 1-3, 2012, Lexington, VA.

45. Applied Inverse Problem Conference, (invited session),"Feasibility of Parameter Estimation in Hepatitis C Viral Dynamics Models", July 1-5, 2013, KAIST, Daejeon, Korea.

46. 27th IFIP TC7 Conference on System Modelling and Optimization, (invited session), "A Stochastic Approach to Nonlinear Mixed Effects Modeling: Applications to Phar-

macokinetics Modeling of Metformin", June 29 - July 3, 2015, SophiaTech Campus, Sophia Antipolis,, France.

47. UGPN Interdisciplinary Doctoral Seminar 2015, (invited lecture), "Modeling Techniques for Biological Systems: Sensitivity, Identifiability, Filtering and Optimal Control", July 20-25, 2015, University of Surrey, Guildford, United Kingdom.

48. The 8th Int. Congress on Industrial and Applied Mathematics (ICIAM), (invited session), "A Stochastic Approach to Nonlinear Mixed Effects Modeling: Applications to Pharmacokinetics Modeling of Metformin", August 10-14, 2015, Beijing, China.

49. Fall Western AMS Sectional Meeting, (invited lecture), "Optimal Design of a Doubly Convergent Multiple Beam Electron Gun", October 24-25, 2015, California State University, Fullerton, CA.

50. Tutorial Workshop on Parameter Estimation for Biological Models, (invited tutorial talk), "Introduction to Mixed-Effects Modeling", July 28-31, 2016, North Carolina State University, Raleigh, NC.

51. SIAM Conference on Applied Mathematics Education, (invited lecture), "REU in Mathematics at NC State: Modeling and Industrial Mathematics", September 30-October 2, 2016, Philadelphia, PA.

52. Fall Southeastern AMS Sectional Meeting, (invited lecture), "A Stochastic Approach to Nonlinear Mixed Effects Modeling: Applications to Pharmacokinetics Modeling of Metformin", November 12-13, 2016, North Carolina State University, Raleigh, NC.

53. SPIE Defense + Security, (invited lecture), "War-Gaming Applications for Future Space Systems Acquisition: MATLAB Implementation of War-Gaming Acquisition Models and Simulation Results", April 9 - 13, 2017, Anaheim, CA.

54. 2017 Duke TiP Summer Program, (invited lecture), "Mathematics of Diseases, Physics and Sports", Duke University, July 17, 2017.

55. The IV Int. AMMCS Interdisciplinary Conference, (invited lecture), "An Optimal Control Approach to Structured Treatment Interruptions for HIV Patients", August 20-25, 2017, Waterloo, Canada.

56. MBI Workshop: Control of Diseases, (invited lecture), "An Optimal Control Approach to Structured Treatment Interruptions for HIV Patients: A Personalized Medicine Perspective", October 30 - November 3, 2017, The Ohio State University.

57. 2018 HICSS, Invited Symposium on "Enterprise Decision Support Systems and Data Analytics Tools for Resilient Business and Acquisition Strategies Assessment and Development", (invited lecture), "Acquisition Wargaming Simulation Results", January 3 - 6, 2018, Kona, Hawaii.

58. SIAM Conference on Uncertainty Quantification, (invited lecture), "Nonlinear Kalman Filtering for Censored Observations", April 16-19, 2018, Garden Grove, CA.

59. The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, (invited lecture), "GameTheory Application for Contract Optimization", July 5 - July 9, 2018, Taipei, Taiwan.

60. V Int. Conf. on Applied Mathematics, Design and Control, (invited lecture), "Ensemble Kalman Filtering for Inverse Optimal Control", November 7 - 9, 2018, Buenos Aires, Argentina.

61. Vietnam-USA Joint Mathematical Meeting, (60 minutes invited lecture), "Modeling, Machine Learning and Control: Real-World Applications", June 10 - 13, 2019, Quy Nhon, Vietnam.

62. The V Int. AMMCS, (invited lecture), "Proximal Point Approach for Moving Horizon Estimation: Real-Time Application to the Stabilization of a Double Inverted Pendulum", August 18-23, 2019, Waterloo, Canada.

63. 2022 JMM Virtual, (invited lecture), "A Machine Learning Approach for Detecting Exponential Virus Growth", April 6 - 9, 2022.

64. 2023 AMS Spring Southeastern Sectinal Meeting, (invited lecture), "Kalman Filter Based Approach for Inverse Problems with Censored Observations", March 18-19, Georgia Tech.

65. 2023 SIAM Southeast Atlantic Section Annual Meeting, (invited lecture), "Reinforcement Learning in a Digital Twin Framework for the Stabilization of an Inverted Pendulum", March 25-26, Virginia Tech.

66. 2023 ICIAM Tokyo, (invited lecture), "Reinforcement Learning in a Digital Twin Framework for the Stabilization of an Inverted Pendulum", August 20 - 25, 2023, Waseda University, Tokyo, Japan.

67. 2023 SEARCDE, (invited lecture), "Ensemble Kalman Filter Based Inflow Estimator for a One-Dimensional Arterial Network", November 18-19, Florida A&M University.

**C. University and Research Centers**

1. Institute for Computer Applications in Science and Engineering (ICASE), NASA Langley Research Center, Hampton, Virginia, 1984 (title "Computation of Eigenvalues Associated with Functional Differential Equations").

2. University of North Carolina at Chapel Hill, Department of Mathematics, November 17, 1989 (title "Estimation of Variable Coefficients in the Fokker-Planck Equations Using Moving Finite Elements").

3. University of Southern California, Center for Applied Mathematical Sciences, Department of Mathematics, March 6, 1990 (title "Estimation of Variable Coefficients in the Fokker-Planck Equations Using Moving Finite Elements").

4. North Carolina State University, Department of Statistics and Biomathematics, 1991 (title "Modeling Subpopulation Emergence in Heterogeneous Tumors Using the Fokker-Planck Equation in Two Space Dimensions).

5. North Carolina State University, Operations Research Graduate Program, 1991 (title "Feedback Controller Design for a Wind Tunnel Model Involving a Time Delay").

6. North Carolina State University, Department of Statistics and Biomathematics, seminar 1995 (title "A Complete Steady State Model of Solute and Water Transport in the Kidney").

7. Texas Tech University, Department of Mathematics Colloquium Talk, 1995 (title "The Human Respiratory Control System and Periodic Breathing").

8. Karl-Franzens-Universität Graz, Institut für Mathematik Colloquium Talk, May, 1996 (title "The Human Respiratory Control System and Periodic Breathing").

9. Karl-Franzens-Universität Graz, Institut für Mathematik Colloquium Talk, January, 2000 (title "Inertial Manifolds Based Feedback Control for Liquid Film Flows").

10. Karl-Franzens-Universität Graz, Institut für Mathematik Seminar Talk, May, 2000 (title "Modeling, Control, and Experiments: A Physical Laboratory").

11. University of The Philippines, Manila, Department of Mathematics, Colloquium Talk, June, 2000 (title "Reduced Order Based Compensator Control of Thin Film Growth in a Chemical Vapor Deposition Reactor").

12. University of The Philippines, Manila, Department of Mathematics, Colloquium Talk, June, 2000 (title "Modeling and Computation of Propagating Waves from Coronary Stenoses").

13. Karl-Franzens-Universität Graz, Institut für Mathematik Colloquium Talk, October 12, 2004 (title "Dynamics of Cerebral Blood Flow Regulation: Modeling and Parameter Estimation").

14. University of the Philippines, Diliman, Workshop on Applied Mathematics, February 7-18, 2005. Gave 4 one-hour lectures on Mathematical Modeling.

15. Institute of Mathematics, Hanoi, Vietnamese Academy of Science and Technology, Colloquium Talk, June 8, 2005 (title "Dynamic Multidrug Therapies for HIV: Optimal and STI Control Approaches").

16. Instiute of Mechanics, Hanoi, Colloquium Talk, June 9, 2005 (title "Real-time Implementation of Reduced Order Compensators on a Cantilever Beam").

17. An Ovide Arino Biomathematics Summer School in Graz (Austria), July 24-August 5, 2005. Gave 5 one-hour lectures on the topics of System and Optimal Control Theory.

18. Summer School on Mathematical Techniques Modeling Physiological Systems, Sarajevo (Bosnia), September 10-22, 2006. Gave 5 one-hour lectures on the topics of Control Theory.

19. University of Southern California, Department of Mathematics, February 23, 2007 (title "HIV Model Analysis under Optimal Control Based Treatment Strategies").

20. Duke University, Department of Mathematics, February 26, 2007 (title "HIV Model Analysis under Optimal Control Based Treatment Strategies").

21. Biomedical Modeling and Cardiovascular-Respiratory Control: Theory and Practice, Summer School and Workshop, July 22 - August 4, 2007, Schloss Seggau, Graz (Austria). Gave 5 one-hour lectures on the topics of Parameter Estimation Techniques.

22. International Biomedical Modeling School and Workshop, Tata Institute of Fundamental Research, National Center for Biological Sciences, Bangalore, India, February 27-March 2, 2008. Was invited to give five 45-minute lectures on Model Validation and Parameter Identification and Applications.

23. Euro Summer School Lipari, Sicily (Italy), September 13-26, 2009. Was invited to give four 50-minutes lectures on Estimation and Filtering.

24. University of Surrey (England), Department of Mathematics, October 22, 2010 (title "Nonlinear Filtering and Parameter Estimation for Complex Biological Systems").

25. University of Waterloo (Canada), Department of Applied Mathematics, November 1, 2010 (title "Nonlinear Filtering and Parameter Estimation for Complex Biological Systems").

26. Indian Statistical Institute, July 8, 2011 (title "HIV Modeling and Optimal Structured Treatment Strategies").

27. Seoul National University, Department of Mathematics, May 16, 2012 (title "Nonlinear Filtering and Estimation").

28. Inha University, Department of Mathematics, May 16, 2012 (title "Modeling Techniques for Complex Biological Systems: Sensitivity, Identifiability, Filtering and Optimal Control).

29. Vietnam National University Hanoi, October 8 - 26, 2012. Was invited to teach a 2-week special topics course on modeling techniques for biological systems (lectured 2.5 hours/day for 5 days/week to 35 undergraduate students from Vietnam).

30. University of Sao Paulo, Department of Infectious Diseases, School of Medicine, February 28, 2013, (title "Model Validation and Optimal Treatment").

31. University of Natural Sciences (Vietnam National University Ho Chi Minh City), November 5 - 12, 2013. Was invited to teach a 2-week special topics course on modeling techniques for biological systems (lectured 2.5 hours/day for 5 days/week to 40 undergraduate/graduate students from Vietnam).

32. Mathematical Biosciences Institute, The Ohio State University, CTW: Molecular to Systems Physiology, May 5 - 9, 2014, (title "A Stochastic Approach to Nonlinear Mixed Effects Modeling").

33. Vietnam National University, University of Science, Hanoi, Department of Mathematics, May 13, 2015, (title "NC State Research Experiences for Undergraduates: Modeling and Industrial Applied Mathematics").

34. Vietnam National University, University of Natural Sciences, Ho Chi Minh City, Department of Mathematics, March 14, 2016, (title "Modeling Techniques for Complex Biological Systems").

35. Vietnam National University, University of Natural Sciences, Ho Chi Minh City, Department of Mathematics, July 15 - 22, 2016, mini tutorial course "MATLAB for Solving Inverse Problems", (gave 2 two-hour lectures to 30 undergraduate and graduate students from Vietnam).

36. Vietnam Institute for Advanced Study in Mathematics, VNU - Hanoi University of Science, SEAMS School on Mathematical Modeling in Biology, March 8 - 15, 2017, mini course "Mathematical Modeling Techniques for Biological Systems" (gave 7 one-hour and 30 minutes invited lectures to 50 international students).

37. VNU-HCM University of Science, Faculty of Mathematics and Computer Science, May 16-19, 2017, mini course "Mathematical Modeling Techniques for Biological Systems", (gave 8 one-hour lectures to 20 undergraduate/graduate students).

38. VNU-HCM University of Science, Faculty of Mathematics and Computer Science, March 6-7, 2018, mini course "An Introduction to Machine Learning", (gave 4 one-hour lectures to 30 undergraduate/graduate students).

39. University of Verona, seminar talk, May 2, 2018, "Ensemble Kalman Filtering for Inverse Optimal Control".

40. University of Verona, seminar talk, May 3, 2018, "Predicting The Next Pitch: Using Machine Learning to Analyze MLB Pitch Behavior".

41. VNU-HCM University of Science, Faculty of Mathematics and Computer Science, July 16-18, 2018, mini course "An Introduction to Machine Learning", (gave 6 one-hour and thirty minutes lectures to 25 undergraduate/graduate students).

42. TMA Solutions, Ho Chi Minh City, Vietnam, June 18, 2019, "Modeling, Machine Learning and Control: Real-World Applications".

43. VNU-HCM University of Science, Faculty of Mathematics and Computer Science, June 17-21, 2019, mini course "An Introduction to Machine Learning: Methodology and Practical Implementation", (gave 8 two-hour and thirty minutes lectures to 50 undergraduate/graduate students and practitioners).

44. University of Graz, Department of Mathematics and Scientific Computing, 2021 Fall semester, lecture series "Machine Learning: Mathematical Foundation and Applications", (gave 5 90-minutes lectures to graduate students).

45. University of Graz, Department of Mathematics and Scientific Computing, 2023 Fall semester, lecture series "Machine Learning: Mathematical Foundation and Applications", (gave 5 90-minutes lectures to graduate students).

## D. Special Sessions/Meetings

1. $22^{nd}$ IEEE Conference on Decision and Control; December 1983, San Antonio, Texas.

2. $24^{th}$ IEEE Conference on Decision and Control; invited session "Numerical Methods for Control", December 1985, Fort Lauderdale, Florida.

3. $27^{th}$ IEEE Conference on Decision and Control; invited session "Control of Distributed Parameter Systems", December 1988, Austin, Texas.

4. 28$^{\text{th}}$ IEEE Conference on Decision and Control; invited session "Distributed Parameter Control of Dynamical Systems", December 1989, Tampa, Florida.

5. The ULAM Mathematics Conference; April 1991, Palm Beach Atlantic College, West Palm Beach, Florida.

6. 30$^{\text{th}}$ IEEE Conference on Decision and Control; invited session "Control and Approximation of Distributed Parameter Systems", December 1991, Brighton, United Kingdom.

7. 31$^{\text{th}}$ IEEE Conference on Decision and Control; invited session "Control of Fluid Flow", December 1992, Tucson, Arizona.

8. 2nd IEEE Mediterranean Symposium on New Directions in Control and Automation; invited session "Modeling, Estimation and Control of Infinite Dimensional Systems", June 1994, Chania, Crete, Greece.

9. AFOSR MURI's Kickoff Meeting; "Modeling and Control of Advanced Chemical Vapor Deposition Processes: The Control of Defects in Mixed III-V Compound Heterostructures", September 1995, Arlington, Virginia.

10. 1995 SIAM Annual Meeting; contributed presentation "Modeling and Optimal Reactor Design for a High Pressure Transport Reactor", October 1995, Charlotte, North Carolina.

11. 1996 AFOSR Grantees/Contractors meeting in Dynamics and Control; "Modeling, Optimization and Control of Advanced Chemical Vapor Deposition Processes", February 1996, Pasadena, California.

12. 1996 SIAM Annual Meeting; panel discussion "Industrial Applied Mathematics", July 1996, Kansas City, Missouri.

13. 2nd International Conference on the Numerical Solution of Volterra and Delay Equations; contributed talk "Modeling Variable Delay in the Control System for Human Respiration", May 1996, Arizona State University.

14. 1997 SIAM Annual Meeting; panel discussion "Industrial Projects at NCSU", July 1997, Stanford University.

15. Joint AMS&MAA Meeting; NSF organized poster session "Instructional Laboratory for Mathematics Majors", January 1998, Baltimore, MD.

16. 1999 Annual Review of the 1994 MURI Research Centers on Intelligent Design & Manufacturing in Electronics & Materials Processing "Control Methodologies for High Pressure OMCVD Reactor", May 1999, University of Southern California, CA.

### E. Contributed Talks

1. 20th International Communication Satellite Systems Conference, "Survey on Diversity and Combining Techniques", Montreal, Canada, May 13-17, 2002.

2. 20th International Communication Satellite Systems Conference, "Diversity and Combining Techniques for 2G and 3G PCS Systems", Montreal, Canada, May 13-17, 2002.

3. The 2011 IAENG Int. Conference on Control and Automation, (30 minutes talk), "Real-Time Implementation of Reduced Order Compensators on a Cantilever Beam", March 16-18, 2011, Hong Kong, China.

4. 2013 IAENG Int. Conf. on Data Mining and Applications, "A Comparison of Feature Selection and Classification Algorithms in Identifying Baseball Pitches", March 13-15, 2013, Hong Kong, China.

5. Int. Wksp. on Innovative Simulation for Healthcare, "An Optimal Control Approach to Modeling Head-up Tilt", September 25-27, 2013, Athens, Greece.

6. Third Int. Conf. on Pattern Recognition Applications and Methods, "Applying Machine Learning Techniques to Baseball Pitch Prediction", March 3-6, 2014, Angers, France.

7. Int. MultiConference of Engineers and Computer Scientists, "Real-Time Implementation of a Power Series Based Nonlinear Controller for the Balance of a Single Inverted Pendulum", March 18-20, 2015, Hong Kong, China.

8. Int. MultiConference of Engineers and Computer Scientists, "Swing-Up of an Inverted Pendulum on a Cart Using a Modified Energy Based Approach", March 16-18, 2016, Hong Kong, China.

9. Int. MultiConference of Engineers and Computer Scientists, "Real-Time Implementation of a LQR-Based Controller for the Stabilization of a Double Inverted Pendulum", March 15-17, 2017, Hong Kong, China.

10. Int. MultiConference of Engineers and Computer Scientists, "Ensemble Kalman Filtering for Inverse Optimal Control", March 14-16, 2018, Hong Kong, China.

11. Int. Conf. on Applied Mathematics and Computational Methods in Engineering, "Ensemble Kalman Filtering for Inverse Optimal Control", April 28-30, 2018, Venice, Italy.

## GRANTS

### A. External

- *The Control of the Purity and Stoichiometry of Compound Semiconductors by High Pressure Vapor Transport*, (Klaus J. Bachmann (PI), Department of Materials Science and Engineering, Ivan O. Clark (Co-PI), NASA Langley Research Center, K. Ito, J.S. Scroggs, and H.T. Tran), Office of Space Science and Applications, NASA, January 1, 1992 to December 31, 1994, amount $573,290 (the request includes 2 summer months/year support for H.T. Tran).

- *Rapid Thermal Processing of Semiconductors at High Vapor Densities*, (H. T. Banks (PI), Klaus J. Bachmann, Gerald Lucovsky, Department of Physics, K. Ito, J.S. Scroggs, and H.T. Tran), Advanced Research Project Agency, September 1, 1994 to August 31, 1995, amount $422,000 (the request includes 2 summer months (first year) and 1 summer month (second year) for H.T. Tran).

- *Real-Time Monitoring and Control of Integrated Chemical Vapor Deposition Processes*, (H. T. Banks (PI) and Klaus J. Bachmann, Gerald Lucovsky, K. Ito, J.S. Scroggs, and H.T. Tran ), Advanced Research Projects Agency, December 1, 1994 to November 30, 1995, amount $378,800 (equipment grant).

- *Modeling and Control of Advanced Chemical Vapor Deposition Processes: The Control of Defects in Mixed III-V Compound Heterostructures* (H. T. Banks (PI), Klaus J. Bachmann (Co-PI), G. Lucovsky, K. Ito, J.S. Scroggs, and H.T. Tran), ARPA/AFOSR in the MURI program, June 1, 1995 to May 30, 2000, amount $5,000,000 (the request includes 1 summer month (first year) and 2 summer months (years 2-5) for H.T. Tran).

- *Forecasting & Control Modeling for Inventory Planning Problems* (B.G. Fitzpatrick (PI), H.T. Tran (Co-PI)), IBM, May 16, 1995 to August 15, 1995, amount $30,025 (0.5 summer month for H.T. Tran).

- *Modeling, Validation and Control of Advanced Chemical Vapor Deposition Processes* (H.T. Banks (PI), K.J. Bachmann and H.T. Tran), AFOSR, June 1, 1996 to May 30, 1999, amount $99,999 (1 graduate student for H.T. Tran).

- *Instructional Laboratory for Undergraduate Mathematics Majors* (H.T. Tran (PI), H.T. Banks (Co-PI)), NSF, May 1, 1997 to April 30, 1999, amount $25,000 (equipment).

- *1995 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (PI), B. Fitzpatrick (Co-PI)), NSA, June 1, 1995 to May 31, 1996, amount $17,000 (no summer salary).

- *1996 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (PI), F. Reitich (Co-PI) and J.S. Scroggs (Co-PI)), NSA, May 1, 1996 to April 30, 1997, amount $20,000 (no summer salary).

- *1997 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (PI), F. Reitich (Co-PI) and J.S. Scroggs (Co-PI)), NSA, July 1, 1997 to June 30, 1998, amount $20,000 (no summer salary).

- *1998 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (Co-PI), F. Reitich (Co-PI) and J.S. Scroggs (PI)), NSF, August 15, 1997 to July 31, 1998, amount $45,802 (1/2 summer salary for H.T. Tran).

- *1999 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (Co-PI), P.A. Gremaud (Co-PI), Z. Li (Co-PI), and R. Smith (PI)), NSA, October 1, 1998 to September 30, 1999, amount $30,000 (no summer salary).

- *2000 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (Co-PI), P.A. Gremaud (Co-PI), Z. Li (Co-PI), and R. Smith (PI)), NSF, May 1, 2000 to April 30, 2001, amount $40,000 (no summer salary).

- *2001 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (Co-PI), P.A. Gremaud (Co-PI), Z. Li (Co-PI), and R. Smith (PI)), NSF, May 1, 2001 to April 30, 2002, amount $40,000 (no summer salary).

- *2002 Industrial Mathematics Modeling Workshop for Graduate Students* (H.T. Tran (Co-PI), P.A. Gremaud (Co-PI), Z. Li (Co-PI), and R. Smith (PI)), NSF, May 1, 2002 to April 30, 2003, amount $40,000 (no summer salary).

- *Mathematical Models for Developmental Toxicology*, (H.T. Tran (PI)), NIEHS, October 1, 1999 to August 31, 2000, amount $32,000 (graduate student's stipend).

- *Viscoelastic Modeling of Acoustic Energy from Coronary Stenoses* (H.T. Tran (PI)), MedAcoustics, September 1, 1998 to December 31, 2000, amount $50,000.

- *Combined Turbo and Trellis Coded Modulation* (H.T. Tran (PI)), The Aerospace Corporation, December 1, 1999 to September 1, 2000, amount $26,000.

- *Development of Improved Physiologically Based Kinetics Models for Genistein and Benzene* (H.T. Tran (PI)), Chemical Industry Institute of Toxicology, September 1, 1998 to August 31, 2005, amount $152,500 (graduate students' support).

- *Diversity Techniques for Combined Turbo Coded and CDMA Systems*, (H.T. Tran (PI)), The Aerospace Corporation, 02/01/2001-09/01/2001, amount $16,000.

- *Development of Algorithms & Computational Codes for Backscattered Electrons Calculations*, (H.T. Tran (PI)), Calabazas Creek Research, Inc., 07/01/2001-06/30/2003, $50,000.

- *Southeast Conference on Applied Mathematics*, (P. Gremaud (PI) and H.T. Tran (Co-PI)), NSF, ARO, and NIEHS, 06/01/2001-05/31/2002, amount $20,000.

- *Mathematical Models and Computational Issues in Toxicology and Genomics*, (H.T. Tran (PI)), NIEHS, 01/09/2002-12/31/2003, amount $25,000 (conference).

- *Modeling, Estimation and Feedback Control in Nonlinear Dynamics for HIV Infections*, (H.T. Banks (PI), Co-PIs: M. Davidian (NCSU), S.E. Holte (Fred Hutchinson Cancer Research Center), and H.T. Tran), NIH, 07/01/02-06/30/06, $1,535,216 (1 summer month for H.T. Tran).

- *US Austria-Denmark Cooperative Research: Modeling and Control of the Cardiovascular-Respiratory System*, (PI: M. Olufsen, co-PI: H.T. Tran), NSF, 09/01/04 - 08/30/07, amount $34,380 (international travel).

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, co-PI: H.T. Tran), NSA, 05/19/2005 - 05/16/2006, amount $75,000 (no summer salary).

- *Optimization Algorithms for Designing Traveling Wave Tube*, (H.T. Tran (PI)), NRL (subcontract from Calabazas Creek Research, Inc.), 06/01/04 - 05/31/05, amount $20,000.

- *Computer Optimized Design of 3D Charged Particle Devices*, (H.T. Tran (PI)), DOE - SBIR/STTR - Phase I (subcontract from Calabazas Creek Research, Inc.), 07/01/06 - 03/31/07, amount $32,000.

- *Mathematical and Statistical Modeling to Inform Design of HIV Clinical Trials*, (PI: H.T. Banks, Co-PIs: H.T. Tran and M. Davidian), NIH/NIAID, 07/01/06 - 06/30/11, amount $3,495,847 (one summer month).

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSA, 05/02/2006 - 05/01/2008, amount $160,000 (no summer salary).

- *REU Site: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSF, 05/15/2006 - 04/30/2011, amount $735,337 (half summer month).

- *Modeling of Autoregulation and Blood Flow in the Cerebral Vasculature*, (PI: M. Olufsen, Co-PI: P. Gremaud, Co-I: H.T. Tran), NSF, 08/01/2006 - 07/31/2009, amount $221,050.

- *S-STEM: Research Scholars Program in Mathematics*, (PI: L. Helminck, Co-PIs: H.T. Tran, H.T. Banks, and N. Medhin), NSF, 10/01/2006 - 09/30/2011, amount $500,000 (half summer month).

- *Short-term Cardiovascular-respiratory Control Mechanisms Workshop*, (PI: M. Olufsen, Co-PIs: H.T. Tran, F. Kappel, and V. Novak), American Institute of Mathematics, fully funded participation costs for 32 participants.

- *Computer Optimized Design of 3D Charged Particle Devices*, (H.T. Tran (PI)), DOE - SBIR/STTR - Phase II (subcontract from Calabazas Creek Research, Inc.), 07/01/07 - 06/30/09, amount $250,000.

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSA, 05/01/2008 - 04/30/2009, amount $371,966.

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSA, 07/07/2010 - 07/06/2012, amount $389,200 (half summer month).

- *REU Site: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSF, 05/01/2011 - 04/30/2015, amount $480,000 (half summer month).

- *Modeling Autonomic Regulation of the Cardiovascular System*, (PI: M.S. Olufsen, Co-PI: H.T. Tran), NSF, 10/01/2010-09/30/2015, $250,000 (half summer month).

- *UBM-Group: Integrated Undergraduate Training in Mathematics and Life Sciences at NCSU*, (PI: H.T. Tran, Co-PIs: A. Helminck, A. Lloyd, J. Gilliam), NSF, 08/01/2011-07/31/2016, $240,000.

- *System Approaches to Drug Discovery and Development in Oncology*, (PI: H.T. Tran, Co-PIs: M. Zager (Pfizer), B. Hendriks (Merrimack Pharmaceuticals), G. Derks (University of Surrey)), American Institute of Mathematics, fully funded participation costs for 30 participants, February 6-10, 2012.

- *S-STEM: Research Scholars Program in Mathematics*, (PI: L. Helminck, Co-PIs: H.T. Tran), NSF, 05/01/2012 - 04/30/2018, amount $600,000 (half summer month).

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSA, 09/14/2012 - 09/30/2013, amount $197,617 (half summer month).

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSF, 04/01/2015 - 03/31/2018, amount $450,000 (a quarter summer month).

- *Radio Interference Modeling and Prediction*, (PI: H.T. Tran), Catholic University of America, 09/23/2014 - 03/23/2015, amount $20,000.

- *AFSCN Upgrade Based on Smart Antenna and Cognitive Satellite Radio*, (PI: H.T. Tran), Intelligent Fusion Technology, 10/17/2014 - 08/17/2015, amount $45,000.

- *Research Experience Undergraduates: Modeling and Industrial Applied Mathematics*, (PI: L. Helminck, Co-PI: H.T. Tran), NSA, 4/22/2015 - 4/21/2016, amount $125,000, funded (a quarter summer month).

- *RTG: Parameter Estimation Methodologies for Mechanistic Biological Models*, (PI: A. Lloyd, Co-PIs: H.T. Banks, K. Gross, M. Olufsen, and H.T. Tran), NSF, 08/15/2013-07/31/2021, amount $2,500,000.

- *VIPER: Viral Interdiction Through Population Engineering and Restructuring*, (PI: H.T. Tran), US ARMY, 04/12/2017-04/11/2022, amount $4,047,800.

- *Forecasting Air and Water Pollution in Vietnam with Real Data by Machine Learning and Inverse Problem Approaches*, (Senior Investigator: H.T. Tran), Vingroup Innovation Foundation, 11/01/2020 -10/31/2024, amount $323,610.

- *Conference: 40th Southeastern-Atlantic Regional Conference on Differential Equations*, (Co-PI: Hien Tran), NSF, DMS-2220907, 08/01/2022, 07/31/2023, amount $41,360.

- *Mathematical Modeling for Optimal Control of BK Virus Infection in Kidney Transplant Recipients*, (PI: H.T. Tran), NIH (Duke University), 07/01/2023 -06/30/2025, amount $189,360.

- *High Efficiency Gyrotron Technology Development*, (PI: H.T. Tran), DoE - SBIR - Phase I (subcontract fromCalabazas Creek Research, Inc.), 02/01/2024 - 10/31/2024, amount $20,981.

## B. Internal

- *Analyzing Field Studies of Insect Dispersal Using the Fokker-Planck Equation in Two Space Dimension*, Faculty Research and Professional Development Fund, NCSU, January 1, 1991 to December 31, 1991, $3,500.


## RESEARCH INTERESTS

- *Development of reduced order based models* and *nonlinear feedback control methodologies:* This work has won the best graduate student paper by B.M. Lewis at the SIAM-SEAS 2002 Annual Conference.

- *Mathematical modeling of biological and physiological systems:* Including modeling and stability analysis of the human respiratory control system (*this work won the best graduate student paper (by J.J. Batzel) at the SIAM Southeastern Conference on Differential Equations, Clemson University, 1996*), modeling the uptake and elimination of toxical chemicals (genistein and benzene) in human body (joint work with CIIT - *this work won best graduate student papers (by M. Zager) at the Toxicology Meeting, Research Triangle Park, 2000 and (by C. Cole) at the SIAM Southeast Regional Meeting, The University of Georgia, 2000*), and modeling the dynamic process of organogenesis based on branching process models of cell kinetics (joint work with NIEHS). Current interests include developing mathematical models and computational methods for optimal dynamic multidrug therapies for human immunodeficiency virus of type 1 (HIV) infection and hepatitis C virus, modeling short-term cardiovascular-respiratory regulation, and machine learning with applications to medicine (part of this work won the Berkeley-Madonna poster prize by E. Zhang at the 2020 SMB Annual Meeting) and sports analytics.

- *Shape Optimization Design for Electron Devices.* This is a joint work with Calabazas Creek Research, Inc. This work won best student poster award by A. Attarian at the AMS/MAA Joint Math Meetings, New Orleans, 2007.

## POSTDOCTORAL SUPERVISION (and current locations if known)

- Hung Van Ly, 1996–1997 (California State University, Fullerton).

- Grace M. Kepler, 1998–2000 (Laboratory of Computational Immunology, Boston University).

- Shannon Wynne, 1999–2000.

- Hee-Dae Kwon, 2003–2004 (Inha University, Incheon, South Korea).

- Andrea Arnold, 2014–2017 (Worcester Polytechnic Institute)

- Franz Hamilton, 2015–2018 (Applied Physics Lab, John Hopkins University)

- Thuy Le, 2023–2025 (NC State University).

## GRADUATE ADVISEES (and current locations)

- **PhD Students (31):** C.J. Musante, 1998 (VP and Head of Quantitative Systems Pharmacology , Pfizer), J.J. Batzel, 1998 (research scientist, University of Graz, Austria), S.C. Beeler, 2000 (research scientist, Lockheed Martin), S.Y. Whitaker, 2000

(CEO of Delta Decisions of DC), C.E. Cole, 2001 (Professor, Director of NMS Engagement and Strategic Initiatives, Meredith College), S. Gray, 2001 (SAS), M. Zager, 2003 (Associate Research Fellow, Pfizer), B.M. Lewis, 2003 (Group Leader, MIT Lincoln Laboratory), Karen Yokley, 2005 (Professor, Elon University), John David, 2007 (Jackson-Hope Distinguished Professor of Natural Science, Virginia Military Institute), April Alston, 2009 (Advanced Analytics Lab, SAS), Dennis Frank, 2010 (Associate Professor, department of surgery, Duke University), Karen Bliss, 2011 (Senior Manager of Education and Outreach, Society for Industrial and Applied Mathematics (SIAM)), Adam Attarian, 2012 (Senior Data Scientist, Pacific Northwest National Laboratory), Megan Sawyer, 2013 (Professor, Southern New Hampshire University), Brett Matzuka, 2014 (qPharmetra, LLC), Emese Kennedy, 2015 (Senior Program Mentor, College of IT at Western Governors University), Phuong Hoang, 2015 (Senior Data Scientist, Kaiser Permanente), George Lankford, 2016 (Founder and CEO of NeoMax), Glenn Sidle, 2017 (Senior Research Scientist, Accuray), Nikki Smith, 2017 (Space and Naval Warfare (SPAWAR) Systems Center - Atlantic), Amanda Bernstein, 2018 (postdoctoral fellow, U.S. EPA), Owen Hailey, 2019 (SAS), Ethan King, 2020 (Data Scientist, Pacific Northwest National Laboratory), Yahe Yu, 2020 (Assistant Professor, Dalian University of Technology, China), Annabel Meade, 2021 (Staff Scientist, Applied Research Associates (ARA)), Nicholas Myers, 2021 (researcher fellow, CRSC), Dylan Bates, 2021 (Special Lecturer, Coker University), Meng (Emily) Zhang, 2021 (Data Scientist, United Healthcare), Yvonne Niyonzima, 2022 (Associate Scientist, Integrated Drug Development at Certara), Celia Schacht, 2023 (ORISE Postdoctoral Fellow, Center for Computational Toxicology and Exposure, U.S. E.P.A.)

- **MS Students (10):** Martin J. O'Connell, 1991, Daniel E. Wessell, 1993, Nina E. Kottler, 1993, David M. Hunkins, 1993, Nanchieh J. Chiu, 1994, Joe W. Schmidt, 1999, Koren Atwater, 2000, Daisy Sudparid, 2014, Mary Lewis, 2016, Natalie Cody, 2021.

## AWARDS

- Best Paper Award for the paper entitled *"Ensemble Kalman Filtering for Inverse Optimal Control"*, The 2018 IAENG Int. Conference on Control and Automation, Hong Kong, March 14-16, 2018.

- Awarded Certificate of Merit for the paper entitled *"Real-Time Implementation of a LQR-Based Controller for the Stabilization of a Double Inverted Pendulum"*, The 2017 IAENG Int. Conference on Control and Automation, Hong Kong, March 15-17, 2017.

- Best Paper Award for the paper entitled *"Swing-Up of an Inverted Pendulum on a*

*Cart Using a Modified Energy Based Approach"*, The 2016 IAENG Int. Conference on Control and Automation, Hong Kong, March 16-18, 2016.

- Awarded Certificate of Merit for the paper entitled *"Real-Time Implementation of a Power Series Based Nonlinear Controller for the Balance of a Single Inverted Pendulum"*, The 2015 IAENG Int. Conference on Control and Automation, Hong Kong, March 18-20, 2015.

- Awarded Certificate of Merit for the paper entitled *"A Comparison of Feature Selection and Classification Algorithms in Identifying Baseball Pitches"*, The 2013 IAENG Int. Conference on Data Mining and Applications, Hong Kong, March 13-15, 2013.

- Awarded Certificate of Merit for the paper entitled *"Real-Time Implementation of Reduced Order Compensators on a Cantilever Beam"*, The 2011 IAENG Int. Conference of Control and Automation, Hong Kong, March 16-18, 2011.

- Received the IEEE and The Aerospace Corporation service award in recognition and appreciation of the valued service and contribution as conference Poster session chair and Modeling & Simulation track chair (IEEE VTC fall 2004, September 26-29, 2004, Los Angeles, California).

- Received the 2003 Spot Award from the Aerospace Corporation for contributions to the development of the software package SASS (SATCOM Architecture Simulation Software) for the Missile Defense National Team to evaluate SATCOM architectures supporting sensor netting and internodal connectivity.

- Received the Inventor's Award from The Aerospace Corporation for the invention entitled "A Multiple Antenna Combining Technique for Weak Signals with Random Angle-of-Arrivals" (2002).

- Received the 2001 Team Achievement Award from The Aerospace Corporation for contributions to the development of analytical tools useful for assessing the impact of IMT-2000 (3rd generation personal mobile communications systems) on DoD (Department of Defense) satellites.

- Award for best graduate student paper at the Applied Mathematics Day at Cornell University, May 1983.

- Ralph Ernest Huston Prize, Rensselaer Polytechnic Institute, May, 1982. Awarded to the first- or second-year graduate student in the Department of Mathematical Sciences who has demonstrated unusual promise and ability as a teacher.

- Outstanding Graduate in Mathematics Award, Old Dominion University, May 1980.

- Member of Phi Kappa Phi, Phi Theta Kappa and Alpha Chi Honor Societies.

## PROFESSIONAL ACTIVITIES

### A. Editorial Board

- Associate Editor of Mathematics of Computation and Data Science

### B. Events Organized or Chaired

- Co-organizer of an invited minisymposium entitled, *"Numerical Methods in Control"* at the 1990 SIAM Annual Meeting (Chicago, July 16–20).

- Local Conference Organizing Committee: *Numerical Optimization Methods in Differential Equations and Control*, North Carolina State University, Raleigh, NC (July 15–17, 1991).

- Co-chairperson of a special session *"Stabilizability of Distributed Parameter Systems"* at the $31^{\text{st}}$ IEEE Conference on Decision and Control (Tucson, December 16–18, 1992).

- Co-chairperson of a special session *"Stability of Delay Systems"* at the $33^{\text{rd}}$ IEEE Conference on Decision and Control (Orlando, December 14–16, 1994).

- Organize special session *Control and Optimization Design Arising in Industrial Processes*, AMS Southeastern, (Greensboro, November 17-18, 1995).

- Organize a panel discussion *"Industrial Applied Mathematics"*, SIAM Annual Meeting, (Kansas City, July 22–26, 1996).

- Organize and chair 1995, 1996, 1997, 1998; co-organize 1999 and 2000; Industrial Mathematics Modeling Workshop for Graduate Students, NCSU, (August 7–16, 1995, August 5–13, 1996, August 4–12, 1997, July 27–August 3, 1998, July 26–August 3, 1999, and July 24–August 1, 2000).

- Organizing Committee: *SIAM-SEAS Meeting*, NCSU, (April 4–5, 1997).

- Organizing Committee and Local Chair: *SIAM Southeast Regional Mathematics in Industry Workshop*, NCSU, (October 10-12, 1999).

- Organizing Committee: *Southeast Conference on Applied Mathematics*, P.A. Gremaud (Chair), D. Estep (Colorado State University), J. Pelesko (Georgia Institute of Technology), and H.T. Tran, November 9-11, 2001.

- *Mathematics in Toxicology*, Invited Minisymposium (co-organizing with M. Zager), SIAM Life Sciences Conference, March 6-8, 2002, Boston, Massachusetts.

- *Computational Modeling in Biosystems*, Invited Session (co-organizing with H.T. Banks), Mathematical Modelling & Computing in Biology and Medicine, ESMTB 5th Conference, Milano, Italy, July 2-6, 2002.

- *Modeling and Control of Physiological Processes*, Invited Minisymposium (co-organizing with M. Olufsen), SIAM Life Sciences Conference, July 11-14, 2004, Portland, Oregon.

- Member of the technical program committee, organizer and track co-chair for IEEE VTC fall 2004, September 26-29, 2004.

- Track co-chair and member of the technical program committee for IEEE VTC fall 2005.

- *Cardiovascular and Respiratory Control Models*, Invited Minisymposium (co-organizing with M. Olufsen), SIAM Conference on Control and Its Applications, July 11-14, 2005, New Orleans, Louisiana.

- *Cardiovascular and Respiratory Control Models*, Invited Minisymposium (co-organizing with M. Olufsen), SIAM Conference on Control and Its Applications, July 11-14, 2005, New Orleans, Louisiana.

- *Estimation and Control in Biological Systems*, Invited Minisymposium (co-organizing with H.T. Banks), SIAM Conference on Control and Its Applications, July 11-14, 2005, New Orleans, Louisiana.

- *Modeling Cardiovascular Dynamics*, Invited Minisymposium (co-organizing with M. Olufsen), SIAM Conference on Control and Its Applications, July 11-14, 2005, New Orleans, Louisiana.

- *Modeling Cardiovascular Dynamics*, Invited Minisymposium (co-organizing with M. Olufsen), SIAM Conference on Control and Its Applications, July 11-14, 2005, New Orleans, Louisiana.

- *Parameter Estimation Workshop*, (co-organizing with M. Olufsen, F. Kappel, and J.J. Batzel), 2007 Annual Fall Meeting Biomedical Engineering Society, September 26-29, 2007, Los Angeles, California.

- *Cardiovascular Engineering: Short-term Cardio-Respiratory Regulation: Mathematical Modeling and Clinical Applications*, Invited Minisymposium (co-organizing with J.J. Batzel), 2007 Annual Fall Meeting Biomedical Engineering Society, September 26-29, 2007, Los Angeles, California.

- *Mathematical Modeling of Human Cardiovascular/Respiratory Systems*, Invited Minisymposium (co-organizing with M. Olufsen), SIAM Conf. on the Life Sciences, August 4-7, 2008, Montreal, Quebec, Canada.

- Session Chair at the 2011 IAENG Int. Conf. on Control and Automation, (Hong Kong, China, March 16-18, 2011).

- Session Chair at the 2013 IAENG Int. Conf. on Data Mining and Applications, (Hong Kong, China, March 13-15, 2013).

- *Modeling and Inverse Problems of Complex Biological Systems*, Invited Minisymposium (co-organizing with P. Aston), SIAM Conf. on the Life Sciences, August 4-7, 2014, Charlotte, North Carolina.

- *Modeling Techniques for Complex Biological Systems*, Invited Minisymposium (organizer), The 8th Int. Congress on Industrial and Applied Mathematics, August 10 - 14, 2015, Beijing, China.

- Session Chair at the 2017 IAENG Int. Conf. on Control and Automation, (Hong Kong, China, March 15-17, 2017).

- Session Chair at the 2018 IAENG Int. Conf. on Control and Automation, (Hong Kong, China, March 14-16, 2018).

- *Optimal Control and Differential Games: Recent Developments in Theory and Applications*, Special Session (co-organizer), 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, July 5-9, 2018, Taipei, Taiwan.

- *Triangle Computational and Applied Mathematics Symposium (TriCAMS)*, TriCAMS Leadership Team, TriCAMS 2022 Local Organizing Committee, North Carolina State University, September 17-18, 2022.

- *Triangle Computational and Applied Mathematics Symposium (TriCAMS)*, TriCAMS Leadership Team, Duke University and NC Central University, November 10-12, 2023.

- *40th Southeastern-Atlantic Regional Conference on Differential Equations*, Local Organizing Committee, North Carolina State University, November 12-13, 2022.

- *Applications of Machine Learning to Analyzing Time-Series and Imaging Data*, Invited Minisymposium (co-organizing with K. Flores and R. Murray), ICIAM 2023 Tokyo, August 20-25, 2023, Waseda University, Tokyo, Japan.

- *Scientific Committee Member*: Summer School on Control Theory with Modeling Applications to Physiology and Medicine (Graz, Austria, July 24-August 5, 2005); Summer School on Mathematical Techniques in Modeling Physiological Systems (Sarajevo, Bosnia, September 10-22, 2006); International Conference on Nonlinear Analysis and Engineering Mechanics Today (Institute of Applied Mechanics, Ho Chi Minh City, Vietnam, December 11-13, 2006); Summer School and Workshop on Biomedical Modeling and Cardiovascular-Respiratory Control: Theory and Practice (Schloss Seggau, Austria, July 22 - August 4, 2007); Istanbul Conference on Mathematical Methods and Modeling in Life Sciences and Biomedicine (Sile, Istanbul, Turkey, August 17-21, 2009); International Conference on Differential Equations and Applications (Institute of Mathematics, Hanoi, August 17-20, 2022).

## C. Tenure and Promotion Reviewing

- The tenure and promotion case of a faculty member at Worcester Polytechnic Institute, 2022.

- The tenure and promotion case of a faculty member at Rowan University, 2022.

- The tenure and promotion case of a faculty member at University of Lousiana, 2022.

- The full professor promotion case of a faculty member at Indian Institute of Technology Roorkee, 2018.

- The tenure and promotion case of a faculty member at King Saud University, 2015.

- The tenure and promotion case of a faculty member at Dickinson College, 2014.

- The tenure and promotion case of a faculty member at Case Western Reserve University, 2012.

- The full professor promotion case of a faculty member at University of Alabama in Huntsville, 2009.

## D. External Dissertation Reviewing

- External evaluator of a Ph.D. dissertation in the department of mathematics at Indian Institute of Technology Roorkee, 2023.

- External evaluator of a Ph.D. dissertation in the department of mathematics at Indian Institute of Technology Roorkee, 2022.

- External evaluator of a Ph.D. dissertation in the School of Natural and Computational Sciences at Massey University, 2021.

- External evaluator of a Ph.D. dissertation in the department of electrical engineering at Indian Institute of Technology Kharagpur, 2020.

- External evaluator of a Ph.D. dissertation in the department of electrical engineering at Indian Institute of Technology Kharagpur, 2019.

- External evaluator of a Ph.D. dissertation in the department of mathematics at Indian Institute of Technology Roorkee, 2016.

- External evaluator of a Ph.D. dissertation in the department of mathematics at Indian Institute of Technology Guwahati, 2014.