

CURRICULUM VITAE

Gangaram S. Ladde

Address: Department of Mathematics and Statistics
University of South Florida
4202 East Fowler Avenue, CMC 342
Tampa Florida 33620-5700 U.S.A.
E-mail: gladde@usf.edu

Telephone: (813) 9742664- Office
(813) 5319214- Home

Date of Birth: March 9, 1940

Marital Status: Married, three children: Anil, Jay and Nathanael and Grand Children: Lincoln, Mia and Benjamin

Citizenship Status: U. S. Citizen

EDUCATION

Ph.D. Mathematics 03 Tw c.2ene2trh()Tj EMCTw c.2nKa ()Tjg-2.8 -24 w1o-2.8 2.8 (nR)01 5/.8 ((Tj EMC)Tj E I/2z)Tj -203

ADMINISTRATIVE EXPERIENCE

2015-Present Director of Statistics Programs
University of South Florida, Tampa

2007-2010 Advisor, Statistics Programs
University of South Florida, Tampa

1983-1987 Graduate Advisor
Graduate Programs in Mathematics
The University of Texas at Arlington

AWARDS AND GRANTS

June 2015-August 2018 US Army Office U. S. Army Grant No: W911NF5-1-0182
Title: Network-centric Stochastic Hybrid Dynamic Time-varying Process
Modeling Methods and Applications
Amount: \$433,857.00
Funding Period: June 2015 to June 15, 2018

March 2012-June 2015 US Army Office U. S. Army Grant No: W911NF2-1-0090
Title: Network Dynamic Processes Under Stochastic Perturbations
Amount: \$1,652,000
Funding Period: March 2012 to June 6 2015

June 2007-March 2010 US Army Office (with A. Korzeniowski) S. Army Grant No: W911NF7-1-0283
Title: Modeling of Network Dynamics
Amount: \$1,051,370.50
Funding Period: 0513.7 0 50.003 5 to 0511k1)-4.1 v]TJ -0.0003 5

Fall 1976 Faculty Research Fellowship, The Research Foundation of State University of New York, Albany, New York.

Fall 1975 Faculty Research Fellowship, ~~T~~Research Foundation of State University of New York, Albany, New York.

Fall 1974

24. Department of Mathematics, Indian Institute of Technology at Delhi, New Delhi 110 016, India: December 18-20, 2001, (i) "Dynamic Processes under Random Environmental Perturbations" and (ii) Dynamic Processes with Pastmemory"
25. Department of Mathematical Sciences, N. E. S. Science College, Nanded, Maharashtra State, India: January-3, 2002, "Dynamic Processes in Biological, physical and Social Sciences with Memory".
26. Department of Mathematics, Indian Institute of Technology Madras, Chennai 600 036, Tamil Nadu State, India: December 26, 2002, "Stochastic Modeling of Inflation-Unemployment Processes".
27. Department of Mathematical Sciences, N. E. S. Science College, Nanded, Maharashtra State, India: January 3, 2003, "Dynamic Processes in Social Sciences with Random Perturbations".
28. Department of Mathematical, Goa University, Panji, India: December 13, 2005: "Hereditary and Stochastic Versus Ordinary Nonhereditary"
29. Department of Mathematics, Mahatma Basweshawar Mahavidyalaya, Lata, Maharashtra State, India: December 27, 2005: "A Few Illustrations in Competitive Processes in Biological, Physical and Social Sciences"
31. Department of Mathematics, Indian Institute of Technology at Bombay, Powai, India: December 29, 2005: "Variational Comparison Theorem: Stochastic Approximations of Dynamic Processes"
32. Department of Mathematics, Morehouse College, Atlanta, Georgia, April 25, 2007: Mathematics Colloquium: Dansby Guest Lecture
33. Department of Chemistry, University of South Florida, Tampa, Florida: March/April 2009.
34. Department of Mathematics, Morehouse College, Atlanta, Georgia: November 19 2012.
35. Department of Mathematics and Statistics, North Carolina State University, Raleigh: March 23, 2015.
36. Department of Mathematics and Statistics, North Carolina State University, Raleigh, NC: April 16, 2017.
37. Faculty of Mathematics, Computer Science and Econometrics, University of Zielona Gora, Zielona Gora, Poland: June 27, 2018.
38. The Linz Institute of Technology, Johannes Kepler University, Linz, Austria: June 27, 2018.

Keynote Speaker:

1. The International Conference on, "Nonlinear Systems, Modeling, Simulation and Applications", N.E.S. Science College, Nanded, Maharashtra, India: December 29, 2000.
2. 23 rd Annual Conference of Maharashtra Mathematics Teachers Association, Nanded, Maharashtra State,

22. The Second International Conference on, "Neural, Parallel, and Scientific Computations", Morehouse College, Atlanta, Georgia: August 16, 2002.
23. International Conference on, Stochastic Modeling and IV International Workshop on Retrial Queues", Cochin University of Science and Technology, Cochin, Kerala State, India: December-27, 2002.
24. International Conference, "Operations Research for Development", Anna University, Chennai, Tamil Nadu State, India: December 30, 2002
25. The Fourth International Conference on, "Dynamical Systems and Applications", Morehouse College, Atlanta, Georgia: May 21, 2003..
26. An International Workshop on "Stability, Complexity and Robust Control of Dynamic Systems", Santa Clara University, Santa Clara, California: December 6, 2003.
27. Fourth World Congress of Nonlinear Analysts, Orlando, Florida, USA:: July 19, 2004.
28. 23 rd Annual Conference of Maharashtra Mathematics Teachers Association, Maharashtra State, India: December 23, 2001
29. An International Workshop on "Differential Equations and Dynamical Systems", Guelph, Canada: July 29, 2005.
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- City, New York: April, 1976.
3. The International Conference on "Nonlinear Systems and Applications," Arlington, Texas: July, 1976.
 4. The Initiation Ceremony of New York Phi Chapter of Pu Mu Epsilon at Potsdam, New York: October, 1976.
 5. Mathematics Club at SUNY Potsdam, Potsdam, New York: October, 1976.
 6. The International Conference on "Applied Nonlinear Analysis," Arlington, Texas: April, 1978.
 7. Middle School Mathematical Instructional Seminar at J. L. Long Middle School, Dallas, Texas: November, 1979.
 8. Mathematics Personnel Development, Northeast District, Lakewood School, Dallas, Texas: February, 1980.
 9. Research Conference on "Differential Equations and Applications to Ecology Epidemics and Population Problems," Claremont, California: January 1981.
 11. The Vth International Conference on "Trends in Theory and Practice of Nonlinear Differential Equations," Arlington, Texas: June, 1982.
 13. An Interdisciplinary Workshop at the Bishop College, Dallas: December 1982.
 15. Twenty-third Annual Allerton Conference on Communication, Control, and Computing, Monticello, Illinois: October, 1985.
 16. A Conference on "30 Years of Modern Optimal Control," The University of Rhode Island, Kingston, Rhode Island: June, 1988.
 17. Fifteenth NAFEO/DOD Annual Conference, Washington, D.C.: March 28, 1990, Panelist for NAFEO/DOD Educational Seminar.
 18. Second International Conference on "Integral Methods in Science and Engineering (IMS), Arlington, Texas: May 1990.
 19. An International Symposium on "Functional Differential Equations and Related Topics," Kyoto, Japan: August 30-September 2, 1990.
 20. An International Conference on "The Theory and Applications of Differential Equations," Edinburg, Texas: May 15-

35. Special Session on Stochastic Large Scale, and Hybrid Systems, American Mathematical Society Annual Meeting, Atlanta, Georgia: Jo

Mathematical Society's Annual Meeting, Baltimore, Maryland: January 18, 2019.

RESEARCH SUPERVISION

Undergraduate Research Supported by the US Army Research Office RAP:

(a) Honors BA/BS Degree:

1. Andrew J. Reilly: Mathematical Modeling Methods, and Analysis of Native Language Learning Dynamic Processes

2. Ongard Sirisaengtaksin: Multitime-scale Singularly Perturbed Stochastic Systems with Applications 1986.
3. Janusz Golec: Approximations of Solutions of Stochastic Differential Equations 1988.
4. Mailvaganam Kathirkamanayagan: Study of Singularly Perturbed Systems 1988.
5. Michael S. Smith:

283-289. MR 47 #3777.

10. On the classes of Differential Systems with the Desired Behavior, (with S. Bernfeld and V. Lakshmikantham), *Rendiconti del Circolo Matematica di Palermo*, Vol. XXI (1972), pp. 8597. MR 48 #2505.

11.

25. Existence of Solutions of Two Point Boundary Value Problems for Nonlinear Systems, (with S. Bernfeld and V. Lakshmikantham) *Journal of Differential Equations*, Vol. 18 (1975), pp. 103-110. MR 51 #6017.
26. Systems of Differential Inequalities and Stochastic Differential Equations II, *Journal of Mathematical Physics*, Vol. 16 (1975), pp. 894-900. MR 55 #1463.
27. Differential Inequalities and Differential Games III, *Journal of Mathematical Analysis and Applications*, Vol. 51 (1975), pp. 363-376. MR 58 #26077.
28. Variational Comparison Theorem and Perturbations of Nonlinear 1 -Ward $[(J)4.2 (2.4 (om)21 (Td [(53E)2.5$

42.

58. A Stochastic Version of Turing's Cell Morphogenetic Model (with J. V. Robinson), Bio-mathematics and Cell Kinetics (Editor: M. Rotenberg). Elsevier/North-Holland: Biomedical Press, Amsterdam, The Netherlands, (1981), pp. 349-356.
59. Competitive Processes and Comparison Differential Systems II, *Journal of Mathematical and Physical Sciences*, Vol. 15 (1981), pp. 433-454. MR 83g: 34086.
60. Feasibility Constraints on the Elastic Expansions of Model Ecosystems, (with J. V. Robinson), *Journal of Theoretical Biology*, Vol. 97 (1982), pp. 277-287. MR 84d: 92041.
61. The Method of Upper, Lower Solutions and Volterra Integral Equations, (with V. Lakshmikantham and B. G. Pachpatte), *Journal of Integral Equations*, Vol. 4 (1982), pp. 353-360. MR 84c: 45001.
62. Existence and Asymptotic Behavior of Reaction-Diffusion Systems via Coupled Quasilinear Phenomena in Mathematical Sciences (Editor: V. Lakshmikantham), Academic Press, New York, (1982), pp. 619-628. MR 85b: 35026.
63. Existence Theorems for a Class of Functional Differential Systems, *Journal of Mathematical Analysis and Applications*, Vol. 82 (1981), pp. 1-14. MR 85b: 34014

74. On Roughness Effects in a Compressible Lubrication Problem, (with J. Chandrababu), *Developments in Applied Mathematics*, Rensselaer Press, New York, (1983/84), pp. 128-132.
75. Existence of Coupled Quasilinear Solutions of Systems of Nonlinear Reaction-Diffusion Equations, (with V. Lakshmikantham and A.S. Vatsala), *Journal of Mathematical Analysis and Applications*, Vol. 108 (1985), pp. 249-266. MR 86j: 35098.
76. Diagonalization and Stability of Multitime Scale Singularly Perturbed Linear Systems, (with S. G. Rajalakshmi), *Applied Mathematics and Computation*, Vol. 16 (1985), pp. 115-140. MR 86d: 34090.
77. Random Difference Inequalities, (with M. Sambandham), *Trends in the Theory and Practice of Nonlinear Analysis* (Editor: V. Lakshmikantham), Volume No. 11, North-Holland, Amsterdam, (1985), pp. 23-40. MR 87c:39004.
78. System of First Order Partial Differential Equations and Monotone Iterative Technique, (with V. Lakshmi), *Trends in the Theory and Practice of Nonlinear Analysis* (Editor: V. Lakshmi), Volume 10, North-Holland, Amsterdam, (1985), pp. 1-10.

89. Oscillation of Even Order Delay Differential Equations, (with B. G. Zhang), *Journal of Mathematical Analysis and Applications*, Vol. 127 (1987), pp. 14050. MR 88k: 34076.
90. Singular Perturbations of Linear Systems with Multi-parameter and Multiple Time Scales, (with S. G. Rajalakshmi), *Journal of Mathematical Analysis and Applications*, Vol. 129 (1988), pp. 45781. MR 89a: 34062.
91. Near-Optimum Regulators for Stochastic Singularly Perturbed Systems, (with Sirisaengtaksin), *Stochastic Analysis and Applications*, Vol. 6 (1988), pp. 179. MR 89b: 93117.
92. On Multitime Method for Large Scale Filtering, (with J. Chandra and O. Sirisaengtaksin), *International Journal of*

Journal

- 105 Itô-Type systems of Stochastic Integral Differential Equations (with S. Sathananthan, Integral Methods in Science and Engineering, (Editors: A. HajiSheikh, Constantin Corduneanu, John L. Fry, Tseng Huang, and

- Computations, Vol. 1 (1995), pp. 254-6.
122. Numerical Treatment of Random Population Models, (with S. Sathananthan and R. Pirapakaran), Proceedings of Neural, Parallel and Scientific Computations, Vol. 1 (1995), pp. 257-267.
 123. Itô-type Stochastic Differential Systems with Abstract Volterra Operators (with Zephyrinus C. Okonkwo). *Dynamic Systems and Applications*, Vol. 6 (1997), pp. 464-468.
 124. Application of Neural Network Methodology for Approximation of Certain Extremum Problems (with N. G. Medhin and M. Sambandham), Computational Methods and Neural Networks: Parallel, Systolic and Neurocomputing (Editors: M. P. Bekakos and M. Sambandham), Dynamic Publishers, Atlanta, GA (1999), pp 267-287.
 125. Convergence and Stability Analysis of Large Scale Parabolic Systems under Markovian Structural Perturbations (with M. J. Anabtawi and S. Sathananthan) *International Journal of Applied Mathematics*, Vol. 2 (2000), pp. 578-585.
 126. Convergence and Stability Analysis of Large Scale Parabolic Systems under Markovian Structural Perturbations (with M. J. Anabtawi and S. Sathananthan) *International Journal of Applied Mathematics*, Vol. 2 (2000), pp. 87-111.
 127. Convergence and Stability Analysis of System of Partial Differential Differential Equations under Markovian Structural Perturbations I: Vector Lyapunovlike Functions (with M. J. Anabtawi) *Stochastic Analysis and Applications*, Vol. 18 (2000), pp. 493-524.
 128. Convergence and Stability Analysis of System of Partial Differential Differential Equations under Markovian Structural Perturbations II: Vector Lyapunovlike Functionals (with M. J. Anabtawi) *Stochastic Analysis and Applications*, Vol. 18 (2000), pp. 676-696.
 129. Large Scale Integrable Differential Systems under Structural Perturbations (with S. Sathananthan and S. Suthanaran) *Communications in Applied Analysis*, Vol. 4 (2000), pp. 459-474.
 130. Stability and Convergence of Stochastic Approximation Procedures under Markovian Structural Perturbations (with Bonita A. Lawrence), *Dynamic Systems and Applications* Vol. 10 (2001), pp. 143-175.
 131. Block Systems of Parabolic Differential Inequalities and Comparison Theorems (with M. J. Anabtawi), *Proceedings of Dynamic Systems and Applications* (Editors: G. S. Ladde and M. Sambandham), Vol. 3, Dynamic Publishers, Inc., Atlanta, Georgia (2001), pp. 23-34.
 132. Problem Solving Process, *The Bulletin of the Marathwada Mathematical Society*, Vol. 2 (2001), pp. 90-104.
 133. Qualitative Analysis of Discrete Iterations and Automata Networks, *Proceedings of Neural, Parallel, and Scientific Computations*, Vol. 2 (2002), pp. 251-256.
 134. Stability of Large Scale Distributed Parameter Systems (with Sung Li), *Dynamic Systems and Applications* Vol. 11 (2002), pp. 313-323.
 135. Hybrid Systems: Convergence and Stability Analysis of Large Scale Approximation Schemes, *International Journal of Hybrid Systems*, Vol. 2 (2002), pp. 232-262.
 136. A Few Recent Advancement in the Study of Hybrid Systems, *Proceedings of ICNPA 2002: IVth International Conference on Nonlinear Problems in Aviation and Aerospace* (Editor: Seenita Sivasundaram), Eu.

152. Large Scale Stochastic Hereditary Systems Under Markovian Structural Perturbations III: Qualitative Analysis, *Journal of Applied Mathematics and Stochastic Analysis*, Vol. 2006 (2006), Article ID 24643, 10 pages: JAMSA/24643.
153. Dynamic Processes Under Random Environmental Perturbations (with A. G. Ladde) *Bulletin of the Marathwada Mathematical Society*, Vol. 8, No. 2 (2007), pp. 96-123.
154. Using Frequency Analysis to Determine Wetland Hydroperiod (with Lisa Der, Nirzhar Saha, Mark Ross, and P. Wang), *Neural, Parallel, and Scientific Computations* Vol. 16 (2008), pp. 17-34.
155. Dynamic Modeling of Root Water Uptake Using Soil Moisture Data (with Nirzhar Saha and Mark Ross), *Neural, Parallel, and Scientific Computations*, Vol. 16 (2008), pp. 105-124.
156. Modeling Hybrid Network Dynamics under Random Perturbations (with Andrzej Korzeniowski), *Nonlinear Analysis: Hybrid Systems*, Vol. 3 (2009), pp. 143-149.
157. Stochastic Modeling and Statistical Analysis on the Stock Price Processes (with Ling Wu), *Nonlinear Analysis: Theory and Methods*, Vol. 71(2009), pp. e1208-1208.
158. Collective Behavior of Multi-Agent Network Dynamic Systems Under Internal and External Random Perturbations (with J. Chandra) *Nonlinear Analysis: Real World Applications*, Vol. 11 (2010), pp. 1330-1344.
159. Determinant Functions and Applications to Stochastic Differential Equations (A. G. Ladde) *Applications in Applied Analysis*, Vol. 14 (2010), pp.409-434.
160. Energy Function Method for Solving Nonlinear Differential equations (Roger D. Kirby and A. G. Ladde), *Dynamical Systems and Applications*, Vol. 19 (2010), pp. 335-352.
161. Development of Nonlinear Stochastic Models by using Stock Price data and Basic Statistics (with Ling Wu), *Neural, Parallel and Scientific Computations*, Vol. 18 (2010), pp. 269-282.
162. Random Networks with Interacting Nodes (with Korzeniowski), *Neural, Parallel and Scientific Computations*, Vol. 18 (2010), pp. 333-342.
163. Stochastic Laplace Transform with Applications (Roger D. Kirby, and A. G. Ladde), *Communications in Applied Analysis*, Vol. 14 (2010), pp. 373-392.
164. Generalized Variational Comparison Theorems and Nonlinear Iterative Process under Random Parametric Perturbations (with M. Sambandham) *Communications in Applied Analysis*, Vol. 14 (2010), pp. 273-300.
165. Stochastic Modeling Analysis and Applications (with Anil G. Ladde) *International Encyclopedia of Statistical Sciences*, (Edited: Miodrag Lovric), Springer, 2010, pp. 1525-1531.
166. Stabilization of Stochastic Systems under Markovian Switching (with S. Sathanantha, Carlos Beane and L. H. Keel), *Nonlinear Analysis: Hybrid Systems*, Vol. 4(2010), pp. 804-817.
167. A Twoscale Network Dynamic Model for Human Mobility Processes (with Divine Wanduku) *Mathematical Biosciences*, Vol. 229(2011), pp. 11-5.
168. Stochastic Hybrid Systems with Nonhomogeneous and Boundary Jumps (D. P. Siu), *Nonlinear Analysis: Hybrid Systems* Vol. 5(2011), pp.59-602.

169. Global Stability of Two-scale Network Human Epidemic Dynamic Model (with Divine Wanduku), *Neural, Parallel and Scientific Computations*, Vol. 19 (2011), pp. 650.
170. A Multivariate Stochastic Hybrid Model with Switching Coefficients and Jump Process and Distribution (with D. P. Siu), *Journal of Probability and Statistics*, Volume 2011 ID 720614, 20 pages, 2011. Doi:10.1155/2011/720614.
171. Fundamental Properties of a Two-scale Network Stochastic human Epidemic Dynamic Model (with Divine Wanduku), *Neural, Parallel and Scientific Computations*, Vol. 19 (2011) pp. 229270.
172. Stochastic Fractional Differential Equations: Modeling, Method and Analysis (Claude Pedjeu), *Chaos, Solitons and Fractals: Nonlinear Sciences and Non-equilibrium and Complex Phenomena*, Vol. 45 (2012), pp. 279-293.
173. Global Properties of a Two-scale Network Stochastic Delayed human Epidemic Dynamic Model (with Divine Wanduku), *Nonlinear Analysis: Real World Applications*, Vol. 13 (2012), pp. 794816.
174. Generalized Network Externality Function (with Arnut Paothong), *Economic Analysis and Policy*, Vol. 42, (2012), pp. 363387.
175. A Class of Higher Order Stochastic Differential Equations (Jean Claude Pedjeu), *Dynamical Systems and Applications*, Vol. 21 (2012), pp. 60630.
176. Global Stability of Two-scale Network SIR Delayed Epidemic Dynamic Model (Divine Wanduku), *Proceedings of Dynamic Systems and Applications*, Vol. 6 (2012), pp. 437-441.
177. Multi-Type Consumer Interactions under Local Network Externality (with Arnut Paothong), *American Journal of Algorithm and Computing*, (2013) 1:1637, doi:10.7726/ajac.2013.1002.
178. Numerical Methods for Stochastic Fractional Differential Equations (with Jean Claude Pedjeu), *Neural, Parallel and Scientific Computations*, Vol. 21 (2013), pp. 1-?.
179. An Epidemiological Growth Model: Derivation, Properties and Parameter Estimation (with R. M. Thurman), *Neural, Parallel and Scientific Computations*, Vol. 21 (2013), pp. 543-552.
180. Fundamental Properties of Solutions of Stochastic equations And Method of Variation Constants Parameters (Tadesse Zerihun), *Dynamical Systems and Applications*, Vol. 22 (2013), pp. 434-458.
181. Adaptive Expectations and Dynamic Models for Network Goods (with Arnut Paothong), *Economic Analysis and Policy*, Vol. 43 (2013), pp. 353-373.
182. Agent-Based Modeling simulation under Local Network Externality (with Arnut Paothong), *Journal of Economic Interaction and Coordination*, Vol. 9 (2014), pp. 1-26.
183. Method of Generalized Variation of Constants Formula: Relative Stability (Tadesse Zerihun), *Communications in Applied Analysis*, Vol. 18 (2014), pp. 537-562.
184. Second Order State and Covariance Estimation for Nonlinear Stochastic Systems (Olusegun M. Otunuga), *Dynamical Systems and Applications*, Vol. 22 (2014), pp. 89-96.
185. Multi-Cultural Dynamics on Social Networks under External Random Perturbations (Gloria Chandra), *International*

Journal of Communications, Network and System Science, Vol. 7 (2014), pp. 181-95.
DOI:10.4237/ijcns.2014.76020.

186. Stochastic Modeling of Energy Commodity Spot Price Processes with Delay in Volatility (Olusegun M. Otunuga), *American International Journal of Contemporary Research*, Vol. 4 (2014), pp.-20.
187. Option Pricing with a Levy Type Stochastic Dynamic Model for Stock Price Process under Semi-Markovian Structural Perturbations (Patrick Assonken), *International Journal of Theoretical and Applied Finance*, Vol. 18 (2015), pp 72.
188. Threshold Network Dynamic Systems and Applications, *Mathematics in Engineering, Science and Aerospace*, Vol. 7, No. 2, (2016), pp 287-311.
189. Dynamic and Static Processes,

1. Network Dynamic Processes under Stochastic Perturbations, Contract Number W911NF12-1-0090, US Army Research Office, Research Triangle Park, North Carolina 27707, USA, August 31, 2015, pp.88.
2. Network-centric Stochastic Hybrid Dynamic Time Event Processes Modeling, Methods and Analysis, 0090

Atlanta, Georgia, 1996.

4. *Proceedings of Dynamic Systems and Applications* (with N. G. Medhin and M. Sambandham) Vol. 3, Dynamic Publishers, Inc., Atlanta, Georgia, 2001.
5. *Proceedings of Neural, Parallel, and Scientific Computations* (with M. P. Bekakos, G. Medhin and M. Sambandham), Vol. 2, Dynamic Publishers, Inc., Atlanta, Georgia, 2002.
6. *Proceedings of Dynamic Systems and Applications* (with N. G. Medhin and M. Sambandham) Vol.4, Dynamic Publishers, Inc. Atlanta, Georgia, 2004.
7. *Proceedings of Dynamic Systems and Applications* (with N. G. Medhin, Chuang Peng and M. Sambandham) Vol.5 Dynamic Publishers, Inc. Atlanta, Georgia, 2008.
8. *Proceedings of Neural, Parallel, and Scientific Computations* (with M. P. Bekakos, G. Medhin and M. Sambandham) Vol. 3, Dynamic Publishers, Inc., Atlanta, Georgia, 2010.
9. *Proceedings of Dynamic Systems and Applications* (with N. G. Medhin, Chuang Peng and M. Sambandham) Vol.6, Dynamic Publishers, Inc. Atlanta, Georgia, 2012.