Curriculum Vitae
Tarunraj Singh (Professor)

University Address

Department of Mechanical and Aerospace Engineering
State University of New York at Buffalo
1009 Furnas Hall
Buffalo, New York 14260
Tel: (716)-645-1428, Fax: (716)-645-3668
E-Mail: tsingh@eng.buffalo.edu
http://www.mae.buffalo.edu/people/full_time/t_singh.php

Local Address

8550 Quincy Ct.
East Amherst, NY 14051
(716)-570-5158

Research Area: Dynamics and Control, Nonlinear Control, Optimal Control, Flexible Structures, Nonlinear Estimation, Data Assimilation, System Identification, Optimization.

Education: Ph.D. Mechanical Engineering, University of Waterloo, Waterloo, Ontario, Canada, May 1991. Dissertation: "Dynamics and Control of Flexible Arm Robots."

M.E., Mechanical Engineering, Indian Institute of Science, Bangalore, India, Jan., 1988. Project: "Development of a Software Package for the Static Analysis of a Crankshaft using FEM".

B.E., Mechanical Engineering, Bangalore University, Bangalore, India, Jan. 1986.

Employment History:

Professor: August 2005-Present
Mechanical & Aerospace Engineering,
State University of New York at Buffalo, Buffalo, New York.

Associate Professor: September 1999-August 2005
Mechanical & Aerospace Engineering,
State University of New York at Buffalo, Buffalo, New York.

Assistant Professor: September 1993-August 1999.
Mechanical & Aerospace Engineering,
State University of New York at Buffalo, Buffalo, New York.

Assistant Research Engineer: August 1991-August 1993
Aerospace Engineering,
Texas A & M University, College Station, Texas

Research Assistant: Sept. 1988-July 1991
Mechanical Engineering,
University of Waterloo, Waterloo, Canada

Research Engineer: Jan. 1988-Aug. 1988
PSI Data Systems,
Bangalore, India

Honors and Awards:

2017 NAGS Oustanding Teaching Award at the Master's level.

Elected Fellow of AAAS 2011

von Humboldt Fellowship 2011, (von Humboldt Stiftung), at RWTH Aachen, Germany.

Certification of Recognition for Exemplary Service, ASME Buffalo Section, June 2, 2010.

Elected Fellow of ASME, 2010-present.

Inducted into Tau Beta Pi (Engineering honor society) as an Eminent Engineer (2008)

Elected Associate Fellow of AIAA, 2008-present.

NASA Summer Faculty Fellowship, Goddard Space Flight Center (2003).

von Humboldt Fellowship 2001, (von Humboldt Stiftung) at TU Darmstadt, Germany.

Japan Society for the Promotion of Science Short-Term Invitation Fellowship (2000).

SAE 1998 Ralph R. Teetor Educational Award.

Listed in the Marquis Who's Who in America: Science and Engineering, Millennium Edition.

Riefler Award (1998).

Riefler Award (1995).

PDQWL Award, UUP (1994, 1995, 1999,2002).

``Robust Input Shaper Design using Linear Matrix Inequalities'', Thomas Conord, Tarunraj Singh, Finalist for Best Student-Paper Award, 2006 IEEE Conference on Control Applications, Munich, Germany, Oct. 4-6, 2006.

Paper by: Singh, T., Kesavadas, T., Mayne, R., Kim, J-J., Roy, A., entitled "Design of Hardware/ Algorithms for Enhancement of Driver-Vehicle Performance in Inclement Conditions Using a Virtual Environment", was selected as one of the most outstanding technical research papers

published in 2000 and appears in the SAE Transactions-Journal of Passenger Cars-Mechnical Systems.

Best Presentation Award: 1992 AIAA Guidance Navigation and Control Conference for paper entitled "Input-Shaped Control of Three-Dimensional Maneuvers of Flexible Spacecraft"

Best Presentation Award: 1994 American Control Conference for paper entitled "Robust Time-Delay Control of Multimode Systems"

Rated in the top 20 list of paper at the 1997 American Control Conference by the Conference selection committee: Singhose, W., Singh, T., Seering W., "On-Off Control of Flexible Spacecraft with Specified Fuel Usage".

Best Presentation Award: 2002 American Control Conference for paper entitled "Minimax Design of Robust Controllers for Flexible Systems"

Best Presentation Award: 2003 American Control Conference for paper entitled "Minimax Controller Design for Combustion Instabilites"

ASME Faculty Advisor Initiative Fund, (1995).

Faculty of Engineering Scholarship, University of Waterloo. Awarded every semester from Spring 1989-Spring 1991.

Indian Institute of Science, National Fellowship for the duration of graduate school (1986-1988).

National Merit Scholar (1979).

<u>Public Media Coverage:</u>
"Networking: Gigabyte battlefields", Dec. 26, UPI Press International
> http://www.upi.com/Science_News/2005/12/26/Networking-Gigabyte-battlefields/UPI-28891135616569/

"Steering on Wintry Roads", input/output feature article in the April 2005 issue of the ASME Mechanical Engineering magazine based on work sponsored by Honda R & D of Americas and conducted by Tarunraj Singh, T. Kesavadas and Roger Mayne.
http://www.memagazine.org/backissues/membersonly/april05/departments/input_output/input_out.html

Business Week: How your car can coach you during skids, Jan. 27, 2003.
http://www.businessweek.com/magazine/content/03_04/c3817112.htm

WGRZ (NBC Affiliate, Buffalo): Jan. 2003.
Buffalo News: Simulating a skid, Jan. 19, 2003.
University at Buffalo (Reporter): Developing technology to help drivers, Jan. 23, 2003.

Professional Membership and Activities:

Served on NSF panels (CDS&E Feb.) and (CAREER Sept.) 2015.
Guest Editor for Special Issue commemorating Rudolph E. Kalman : ASME Journal for Dynamic Systems Measurement and Control, July 1, 2016-June 30, 2017.
Associate Editor: ASME Journal for Dynamic Systems Measurement and Control, July 1, 2013-June 30, 2016.
Served on a National Science Foundation, Dynamics and Control Panel (2013).
AACC Award Subcommittee for the Control Engineering Practice Award (2011-Present)
Fellow of the American Association for the Advancement of Sciencs (AAAS)
Fellow American Society of Mechanical Engineers (ASME)
Associate Fellow American Institute of Aeronautics and Astronautics (AIAA)
Member American Society of Engineering Education
Consultant to The Center for Industrial Effectiveness

Service Activities for Scientific Journals and Conferences

Session Chair, 1997 Control Applications Conference.
Session Chair, 1998 Control Applications Conference.
Session Chair, 1999 Conference on Control Applications
Technical Committee member, Active Control of Vibration and Noise, International Mechanical Engineering Congress and Exposition 2000.
Session Chair, 2002 American Control Conference.
Session Chair, 2006, Conference on Control Applications.
Session Chair, 2010, American Control Conference
Session Organizer (Command Shaping for Point-to-Point Control) 2008, International Symposium on Flexible Automation.
Associate Editor, 2011 CDC-ECC11
Fusion 2012 Technical Program Committee
Fusion 2013 Technical Program Committee
Associate Editor 2013 American Control Conference

Review Activities for
1) Journal of Astronautical Sciences,
2) Optimal Control: Applications and Methods,
3) ASME Journal of Dynamic Systems, Measurement and Control,
4) ASME Journal of Tribology,
5) ASME Journal of Vibrations and Acoustics,
6) AIAA Journal of Guidance, Control and Dynamics,
7) AIAA Journal,
8) Journal of Vibration and Control,
9) European Journal of Operational Research
10) Structural Engineering and Mechanics,
11) IEEE Transactions on Automatic Control
12) IEEE Transactions on Control Systems Technology,
13) IEEE International Conference on Robotics and Automation,

14) IEEE Transactions on Education,
15) American Control Conference,
16) CSME,
17) ASME Biennial Conference on Mechanical Vibration and Noise.
18) Communications in Nonlinear Science and Numerical Simulations
19) The Swedish Research Council (2004)
20) National Science Foundation (NSF)
21) Control Engineering Practice
22) Journal of Intelligent Material Systems and Structures

Graduate Student Supervision:

Doctoral Dissertation (completed)

1) Liu, Shin-Whar Graduated 7/96. Dissertation Title: "Design of Robust Controllers for Space-craft Maneuvers Using State Sensitivities." Currently: AIDC, Taichung,Taiwan

2) Alli, Hasan Graduated 5/97. Dissertation Title: "On the Optimum Control of the Wave Equation." Currently: Associate Professor, Firat Universitesi, Elazig, Turkey.

3) Al-Masoud, Nidal Graduated 8/02. Dissertation Title: "Active Control of Combustion Instabilities." Currently: Professor, Central Connecticut State University.

4) Kim, Jae-Jun, Graduated 12/03. Dissertation Title: "Point-to-Point Control of Flexible Systems Subject to Friction." Currently: Research Assistant Professor, Naval Postgraduate School, Monetery, California.

5) Tenne, Dirk Graduated date: 4/04. Dissertation Title: "Statistics Based Sampling for Controller and Estimator Design", Currently: Senior Mechanical Engineer, Calypso Medica, Seattle, Washington.

6) Konda Venkata, Umamaheswara Reddy 2/10. Dissertation Title: "Bayesian Inference and Uncertainty Propagation in Dynamical Systems", Currently: Bloomberg, New York, NY.

7) Brown, Brandon 12/12. Dissertation Title: "A Jacobian Singularity Based Robust Controller Design for Structured Uncertainty", Currently: Boeing, Philadelphia, PA.

8) Haggerty, Jennifer, 01/15. Dissertation Title: "Minimum-Time Optimal Output Trnasition Usingh Pre- and Post-Actuated Inputs: Impact of Zeros on the Structure of the Optimal Control Profile", Currently: Sentient Science, Buffalo, NY.

Doctoral Dissertation (in progress)

1) Robinson, John Expected Graduation date: 12/18
2) Souranshu, Nandi, Expected Graudation date: 12/18
3) Oladapo Ogunbodede, Expected Graduation date: 12/19

Master's Thesis (completed)

1) <u>Hartmann, Rolf</u>, Graduated 9/94. Thesis Title: "Robust Fuel and Time Optimal Control of Flexible Space Structures: A Frequency Domain Approach". Currently: Porsche, Stuttgart, Germany.

2) <u>Fuessel, Dominik</u> Graduated 8/94. Thesis Title: "Optimum Model Size For Complex Design". Currently: Seimens, Regensburg, Germany. (Co- Supervised with Dr. Bloebaum).

3) <u>Call, Robert</u> Graduated 4/95. Thesis Title: "Closed Loop Time-Optimal Control using Radial Basis Function Neural Networks". Currently: Praxair Inc., Tonawanda, New York.

4) <u>Dawes, Clint</u> Graduated 4/95. Thesis Title: "Development of a Software Package for Phase-Plane Analysis". Currently: United Airlines.

5) <u>Balakrishnan, Prasad</u> Graduated 5/95. Thesis Title: "A Fuzzy Logic Control of Anti-Lock Braking System". Currently: EDA, Rochester, New York.

6) <u>Noll, Joachim</u> Graduated 9/95. Thesis Title: "Closed-Loop Time-Optimal Control of a Flexible Structure". Currently: SUN Inc. Germany. (Co-Supervised with Dr. Mook)

7) <u>Crowe, Tom</u> Graduated 9/95. Thesis Title: "Open Loop Control of a Slewing Beam". Currently: Praxair Inc. Tonawanda, New York.

8) <u>Ducourau, Lazare</u> Graduated 10/95. Thesis Title: "Automated Parameter Optimization for Structural and/or Controller Design". Currently: SAGEM, France.

9) <u>Fink, Alexander</u> Graduated 1/97. Thesis Title: "Pressure Control of a Nonlinear Servovalve". Currently: Ph.D student at Technische Hochschule Darmstadt, Institut fur Regelungstechnik.

10) <u>Tenne, Dirk</u>, Graduated 10/98, Thesis Title: "Synthesis of Target-Track Estimators". Currently: Ph.D Student at SUNY at Buffalo.

11) <u>Muench, Dave</u>, Graduated 1/99, Thesis Title: "Implementation of Sliding Mode Control for a Hydraulic Servovalve". Ford , Michigan.

12) <u>Kuo, Yong-Lin</u>, Graduated 5/99, Thesis Title: "Minimax Design of Robust Time-Delay Control for Multi-Mode Systems". (kuo@mail.ntust.edu.tw)

13) <u>Beugnon, Celine</u>, Graduated 1/2000, Thesis Title: Target Tracking and Data Fusion in a Multisensor Environment".

14) <u>Socci, Salvatore</u>, Graduated 1/2000, "Design and Development og a High Flow Single Stage Servovalve", Moog. Inc., Orchard Park, NY.

15) <u>Hindle, Timothy</u>, Graduated 6/2000, "On the Parity Equation Approach for Maneuver Detection in Target Tracking", Honeywell, Phoenix, Arizona.

16) <u>Kim, Jae-Jun</u>, Graduated 6/2000, "Design of Hardware/Algorithm for Enhancemen of Driver/ Vehicle Performance Using a Virtual Environment".

17) <u>Muenchhof, Marco</u>, Graduated 8/2000, "Robust Jerk Limited Control of Flexible Structures", Ph.D Student, TU Darmstadt.

18) <u>Rosso, Carole</u>, Graduated 8/2000, "Active Control of Combustion Instabilities", Alcatel Space Systems.

19) <u>Mosher, Michael</u>, Graduated 8/2000, "Identification, Stability and Control of Magnetorheological Dampers", Taylor Devices.

20) <u>Cao, Yang</u>, Graduated 2/2001, "A Control Approach for Driver Assistance Under Inclement Conditions".

21) <u>Kim, Bumsoo</u>, Graduated 8/2001, "Vehicle Estimation and Control using Global Positioning and Inertial Navigation System", Dresser-Rand.

22) <u>Staehlin, Ulrich</u> Graduated 9/2002, "Closed Loop Input Shaping Controllers". Currently: Ph.D student at Technische Hochschule Darmstadt, Institut fur Regelungstechnik.

23) <u>Ramrath, Lukas</u> Graduated 9/2003, "Repetitive Control for the Rejection of Harmonic Disturbances".

24) <u>Ramamoorthy, Krishnakumar</u> Graduated 1/04, ''Potential Functions for En-Route Air Traffic Management''. Currently: Seagull Technologies, San Jose, California.

25) <u>Douillard, Bertrand,</u> Graduated 9/04, "Design and Implementation of a SLAM Algorithm on an Autonomous Robot".

26) <u>Kased, Rajaey</u>, Graduated 1/05, "Rest-to-Rest Motion of an Experimental Flexible Structure Subject to Friction".

27) <u>Conord, Thomas</u>, Gradauted 9/05, "Linear Matrix Inequalities based Robust Control Synthesis".

28) <u>Yang Wanseok</u>, Graduated 6/06, "Optimal Approach for Autonomous Parallel Parking of Nonholonomic Car-Like Vehicle".

29) <u>Fattey, Michael</u>, Graduated 8/06, "Time-Delay Control of an Undamped Two Mode System".

30) <u>Chen Yi</u>, Graduated 8/06, "Design of Robust Final State Controller".

31) <u>Gopalakrishnan, Jayaram</u>, Graduated 8/06, "Stability Analysis of Distributed Design Systems using Sum of Squares Programming".

32) <u>Konda Venkata, Umamaheswara Reddy</u> 5/07, "Data Assimilation for Dispersion Models", (Won the 3rd prize in the 2007 UB Engineering Poster Competition)

33) <u>Vossler, Matt</u> 8/07, "Deformation-Limited Time-Optimal Control of Flexible Sturctures".

34) <u>Garbi Emilie</u>, 8/07, "Effects of Jetstream 31 Level Cruise Flight Variations on Fuel Consumption".

35) <u>Manyam, Satyanarayana Gupta</u>, 5/08, "Adaptive Sequential Linear Programming for Optimal Control Profiles".

36) <u>Kumar Ravi</u>, 8/09, "Tumor Motion Prediction for Image Fuided Radiation Therapy".

37) <u>Brown Brandon</u>, 9/09, "Global Optimization of Three Dimensional Maneuvers in a Field with Obstacles".

38) <u>Haggerty Jennifer</u>, 1/10, "Minimax Control of Flexbile Structures Using Quadratically Constrained Programming".

39) <u>Rech Max</u>, 1/11, "Uncertainty Characterization for Advection/Diffusion Equations".

40) <u>Kerk, Cheng Kee</u>, 4/11, "Minimax Design of Parallel Multi-Mass Dynamic Vibration Absorbers".

41) <u>Antink, Christoph Bernhard Hoog</u>, 4/11, "Prediction of Tumor Deformation for Image Guided Radiation Therapy".

42) <u>Van Loon, Chris</u>, 5/12, "The Analysis of Optical Flow methods for use with Tumor Motion".

43) <u>Robinson, John,</u> 8/12, "Regenerative Anti-Lock Braking for Electric Motorcycles".

44) <u>Salerno, Eric,</u> 4/13, "Road Network Extraction and Uncertainty Analysis".

45) <u>Sarma, Prathusha</u>, 5/14, "Statistical Models for Visual Search Process".

46) <u>Migeon, Victor,</u> 9/14, "Robust Controller Design for an Artificial Pancreas using Bernstein Polynomials"

47) <u>Asokan, Rajmohan,</u> 8/15, "A Geometric Framework for Parameter Identification in Solid Objects",

48) <u>Chu For, Keelan</u>, 1/6, "Solar Energy Forecasting using a Total Sky Imager".

Master's Project (completed)

1) <u>Kokes, Guy</u> Graduated 11/95. Project title: "Adaptive Fuzzy Logic Control of an Anti-Lock Braking System". Currently: Hughes Missile Systems Company, Arizona.

2) <u>Kim, Dae Young</u> Graduated 10/96. Project title: "Implicit Integration for Nonlinear Transient Analysis Using Automatic Time Step Sizes". Currently: Hyundai Auto.

3) <u>Gerber, Paul</u> Graduated 11/96. Project title: "Position Control of a Cantilever Beam Using a Piezo-Actuator". Currently: Lockheed Martin, Syracuse, New York

4) <u>Nengel, Randolph P.</u> Graduated 1/97. Project title: "A Quick Cost Estimating Method for the Manufacture of Large Industries Chain Links Utilizing a CMAC Neural Network and Expert Knowledge".

5) <u>Baker, Erik</u> Graduated 5/97. Project title: "System Identification Using the Eigensystem Realization Algorithm in a GUI Environment". Currently: Praxair Inc., Tonawandas, New York.

6) <u>Kelemen, Ken</u> Graduated 1/98: "Identification of an Automotive Air-Conditioning System". (Co-Supervised with Dr. Mayne). Currently: Praxair Inc., Tonawandas, New York.

7) <u>Wang, Jiun-Jeng</u> Graduated 7/99: "Input Shaping Time Optimal Control".

8) <u>Smeader, John</u>, Graduates 2/02. Project title: "A Study of Long-Range Neural Network Predictive Ability and its Application to System Modeling and Control". Currently: Praxair, Huston, TX.

9) <u>Kim, Byungki,</u> Graduated 12/02. Project title: Fuel Time Optimal Slosh Control for an Open Container", Currently Hyundai, S. Korea.

10) <u>Lee, Jaisung,</u> Graduated 7/05. Project title: "Optimal Control of a Ducted Fan Model", Currently, Air Force, S. Korea.

11) <u>Rephy, Abdul,</u> Graduated 8/06. Project title: "Modified Approach to Pennestri's Optimal Design of Dynamic Vibration Absorbers".

12) <u>Chung, Ting-Chiun,</u> Graduated 10/08. Project title: "An iPod/iPhone Application for Input Shaper Simulation".

13) <u>Luce, Jason</u> Graduated 12/11. Project title: "Concurrent Controller Design in the Frequency Domain".

14) <u>Liu, Yangbo,</u> Gradauted 05/15. Project title: "Minimax Design of Multiple Tuned Mass Dampers".

Diplomarbeit/Internship (completed)
1) Sobottka, Christian Graduated 12/95. Thesis title: "Optimal Fuzzy Logic Control for an Anti-Lock Braking System of an Automobile". Currently: Bosch, Stuttgart, Germany.

2) Kleyboldt, Henrich Graduated 5/97. Thesis title: "Identification of an Automotive Air-Conditioning System".(Co-Supervised with Dr. Mayne). Currently with Siemens, Munich, Germany.

3) Saeck, Julia Graduated 2/98. Thesis title: "Robust Model Predictive Control". Currently: Patenet Attorney Trainee, Heidelberg, Germany.

4) Verlohren, Christoph, Graduated 8/08. Thesis title: "Optimal Control for Nonlinear Systems using Sequential Linear Programming with Higher Order Input Polynomials". Currently: Student at TU Darmstadt.

5) Van der Wijdeven, J, 2002 Report: "Energy-based approach for estimating Coulomb and viscous friction", and :Adaptive pulse amplitude and pulse width control of systems subjet to Coulomb and Viscous friction". Eindhoven University of Technology.

6) van der Maas, Rick, 2014 Report: "Periodic Signal Tracking for Lightly Damped Systems", Eindhoven University of Technology.

7) van Rietschoten, Annemiek, 2014 Report: "State Estimation for Application in Diabetes Control", Eindhoven University of Technology.

Undergraduate Student Supervision (MAE 459)
1) Carriero, Len, Pachucinski, Mike, Zabaldo, Mark, "Design of a Stair Climbing Vehicle" May 1994, (Ranked First at the 1994 Regional ASME Student Design Competition, at the University of Maryland)
2) Oppenheim, Eric, "Flexible Arm Robot Controller"
3) White, Jeffrey, Elmore, Sean, O'Connel, John, "Vertically Displacing Seat Base Design".
4) Ogie, S., Rusin, R., Shultz, M., Stolfo, J., "Human Powered Vehicle Design"
5) Doherty, M., Shera, C., "An Autonomous Solar Powered Vehicle Design"
6) May, J., LaFountain, B., Bornheim, J., Fleishhacker, A., "Human-Powered Vehicle"
7) Porcari, Rich., O'Loughlin Shaun, "Development of a Simulink Model for the VISTA"
8) Tobin, Ryan, "Control of Damping in Microelectromechanical Sensors (MEMS)"

Undergraduate Student Supervision (Presidential Fellows, NASA Fellows, Zimmer Fellows)
Hindle, Timothy and Harder, John, "System Identification of a Hydraulic Actuator Using Labview and Matlab" Spring 1998.

Tuman, Michael, Sandner, Ryan, Laam, Angela, "Design of a Virtual Driving Simulator for Evaluation of Condition Alerting systems" Spring 1999.

Kim, Bumsoo, "Development of software for Communicating Alarms in a Virtual Driving Simulator".

Kased, Rajaey, "Development of GUI for solving Time-Optimal Controllers using Linear Programming".

Haggerty Jennifer, "Development of a human-in-the-loop simulator for multi-link Robots". (won the Annual Sigma Xi Student Research Competition in 2006)

Sow, Souleymane, "Modeling of Volcanic Plumes". 2007 Zimmer Summer Scholarship.

Mahesh, Srivatsa, "Modeling Panic as an Agent Based Simulation". 2009 Zimmer Scholarship.

Dan Snitzer, "Design and Control of a Reaction Wheel based inverted Pendulum", 2011 Zimmer Scholarship.

Keelan Chu For, "Source Localization using Thermopiles", 2011 CSTEP/SUNY LSAMP Summer Research Internsip Program.

Justin Storms, "Design and Fabrication of a Vibration Absorber", CURCA (Center for Undergradaute Research and Creative Activities), 2011.

Eric Barone, "Modeling the Human Eye", Zimmer Scholarship, 2013.

Brian Keil, "Design and Fabrication of a Total Sky Imager", CURCA (Center for Undergradaute Research and Creative Activities), 2013.

Jamie Asbach, "Design and Fabrication of a Total Sky Imager", CURCA (Center for Undergradaute Research and Creative Activities), 2013.

Post-Doctoral Advisees
1) Yang Cheng, Aug. 2004-July 2005 and Jan. 2006- Dec. 2008

2) Dirk Tenne, May 04-May 05

3) Jae-Jun Kim, Jan. 04-Jan. 05

Graduate Committee Assignment
A. Doctoral Dissertation
1) Mason, Paul, Graduated 6/95. Dissertation title: "Improved Estimation via Model Error Quantification".

2) Meyer, Thomas, Graduated 6/95. Dissertation Title: "A Batch Filter/State Estimator for Poorly Modeled Distributed Parameter Systems- Applications to Finite Element Model Updating".

3) Wu, Zaiguang, Graduated 1/96, Dissertation title: "Nonlinear Feedback Strategies in Active Structural Control". (Civil Eng.)

4) <u>Hong, Wien M.</u>, Graduated 6/97. Dissertation title: "A study of Regular and Chaotic Motions of Dynamical Sysems in Low Dimension".

5) <u>Aldraihem, Osama, J.</u>Graduated 9/97. Dissertation title: "Mechanics and Control of Bending and Twisting Vibration of Smart Piezoelectric Laminates".

6) <u>Albassam, Bassam, A.</u>Graduated 9/97, Dissertation title: "Time-Optimal Control Design Synthesis for Nonlinear Systems".

7) <u>Choi, Kyoo-Chul.</u> Graduated 5/05, Dissertation title: "A Closed-Form Algorithm for Covariance Constrained Optimal Estimation".

8) <u>Fosbury, Adam M.</u>, Graduated 8/06, Dissertation title: "Control and Kalman Filtering for Relative Dynamics ofa Formation of Uninhabited Autonomous Vehicles".

9) <u>Lai, Kok-Lam</u>, Graduated 8/06, Dissertation title: "Generalization of the Complex-Step Derivative Approximation".

10) <u>Ferguson, Scott</u>, Graduated 7/08, Dissertation title: "Design of Autonomous Reconfigurable Systems for use in Extreme Operating Environments".

11) <u>Alsuwaidan, Badr N.</u>, Graduated 8/08, "Generalized Multiple Model Adaptive Estimation"

12) <u>Tang, Chin-Pei</u>, Graduated 11/08, "Manipulability-based analysis of cooperative payload transport by robot collectives"

13) <u>Kim, Hakjae</u>, Graduated 01/10, "Nonlinear Filtering using the Complex-Step Derivative Approximation"

14) <u>George, Jemin</u>, Graduated 04/10, "An Adaptive Disturbance Accomodation Approach for Robust Control and Fault Detection in Uncertain Stochastic Systems"

15) <u>Banas William</u>, Graduated 01/13, "Numerically Stable Covariance Intersection for Spacecraft Formation Flying".

16) <u>Gogna, Sumit</u>, Graduated 03/13, "Bridge Health Monitoring for a Beam Bridge using Damage Model and Slope Sensors".

17) <u>Madankan, Reza</u>, Graduated 05/14, "Model-Data Fusion and Adaptive Sensing of Large Scale Systems: Applications to Atmospheric Release Incidents".

18) <u>Peng, Diing-wen</u>, Graduated 05/14, "Optimal Force Generation with Fluid-Structure Interactions".

19) <u>Adurthi, Nagavenkat</u>, Graduated 10/15, "Conjugate Unscented Transform Based Methods for Uncertainty Quantification and Optimal Control".

20) <u>Mercurio, Michael</u>, Graduated 01/17, "Sparse Collocation Methods for Solving High Dimension PDEs in Estimation and Control of Dynamical Systems".

21) <u>Schmid, Matthias</u>, Graduated 05/17, "A new control paradigm for Stochastic Differential Equations".

B. Doctoral Dissertation (External Reader)

1) <u>Wu, Zaiguang</u>, Graduated 12/95, Dissertation title: "Nonlinear Feedback Strategies in Active Structural Control", (Civil Engineering, University at Buffalo).

2) <u>Gupta, Himanshu</u>, Graduated 6/97. Dissertation title: "Active Aerodynamic Control of Structures" (Civil Engineering, University at Buffalo).

3) <u>Rana, Rahul</u>, Graduated 7/04. Dissertation title: "Analysis and Protection of Rotating Machinery under Seismic and Operational Vibrations" (Civil Engineering, University at Buffalo).

4) <u>Narimani, Arash</u>, Graduated 9/04. Dissertation title: "Development of Linear and Nonlinear Isolation Technique for Passive and Semi-active Applications" (Mechanical Engineering, University of Waterloo, Waterloo, Ontario, Canada)

5) <u>Daly, John</u>, Graduated 04/10. Dissertation title: "Output Feedback Bilateral Teleoperation with Force Estimation in the Presence of Time Delays" (Electrical Engineering, University of Waterloo, Waterloo, Ontario, Canada)

6) <u>Lunze, Katrin</u>, Graduated 10/14. Dissertation title: "Blood Glucose Control in Diabetic Gottingen Pigs" (Faculty of Electrotechnik and Intormationtechnik, RWTH Aachen, Germany), Defense on Oct. 30th, 2014.

7) <u>Mendis, Champake</u>, Graduated 10/14. Dissertation title: "Bio-Inspired Algorithms for Data Fusion in Hazardous Threat Detection" (University of Melbourne, Australia).

8) <u>Feng, Yanping</u>, Graduated 1/16. Dissertation title: "Cause and Management of Infrequent Widespread Blue-Green Algal Bloom in Temperate Waters" (University at Buffalo, Civil, Structural and Environmental Engineering).

9) <u>Stefanaki, Aikaterini</u>, Graduated 2/16. Dissertation title: "A Simple Strategy for Dynamic Substructuring and its Application to Soil-Foundation-Structure Interaction" (University at Buffalo, Civil, Structural and Environmental Engineering).

10<u>) van der Maas, Rick</u>, Graduated 3/16. Dissertation title: "Advanced Geometric Calibration and Control for Medical X-ray Systems", (Eindhoven University of Technology, Netherland)

C. Master's Thesis and Project

1) <u>Huang, Tsai-Jeon</u>, Thesis title: "An Approximate Swept Volume Strategy in 2-D Based on Hermite Interpolation for Optimization in Robot Motion Planning"

2) <u>De Pena, Juan</u>, Thesis title: "Robust Attitude Determination"

3) <u>Muthyala, Ganga</u>, "Structural Shape Optimization of Gear Wheels"

4) <u>Foglia, Marc M</u>. "3D Robot Motion Visualization"

5) <u>Hong, Wein</u> "Efficient Move Limit Assignment for Optimization"

6) <u>Holcomb, Mark D</u>. "Active Control Using Piezoceramic Linear Motors"

7) <u>Meinhold, Richard M.</u> "Automatic Design and Analysis of S-Springs"

8) <u>Cummiskey, Daniel P.</u>, "A Comparison of an Automated Machining Center versus Discrete Manufacturing Equipment in an Efficient Manufacturing System"

9) <u>Calamita, James P.</u>, "Modeling and Control of a Fiberglass Beam with Imbedded Self-Sensing Piezoceramic Actuators"

10) <u>Rao, Chikka J.</u>, "The Development of an Objective Rating Method for Electric Motor-Whine"

11) <u>Trost, Kelly</u>, "On Nonlinear Model Correction for Sampex".

12) <u>Wen, Jung</u>, "On Nonlinear Model Correction for Sampex".

13) <u>Norman, David</u>, "Implementation of a General Identification and Control Methodology".

14) <u>Hudnut, Steven</u>, "The Effect of Interlaminar Filler MAterial on the Damping Properties of Carbon Fiber-Epoxy Composites".

15) <u>Liu, Chia-Shih</u>, "A Distance Calculation Strategy for Moving Polyhedra in Three Dimensions".

16) <u>Mathew, George</u>, "TQM Approach to Continuous Quality Improvement in a Service Organization"

17) <u>Zhang, Chunda,</u>"On the Robustness of Minimum Model Error Attitude Determination by Multiple Shooting"

18) <u>Roddiwig, Axle</u>, "Nonlinear System Identification for Automotive Durability"

19) <u>Bradbury, Eugene,</u>"Computer Based Demonstration of VIbration Principles and Phenomena"

20) <u>Weston, Keith, W.</u>"Comparative Analysis: Sintered Versus Cast Magnets in a Hydraulic Servovalve Application"

21) <u>Hacker, Kurt,</u>"The Applications of Game Theoretic Principles to Facilitate Robust Design".

22) <u>Bui, Huy, A.</u>"The Implementation of Programmable Logic Controllers"

23) <u>Kim, Yun-Sik</u>, "Investigation of the Covariance Constraint in the Minimum Model Error Algorithm"

24) <u>Weber, Peter J.</u>, "Implementation of the Transfer Matrix Method to Rotordynamics Problems"

25) <u>Choi, Kyoochul</u>, "On the Robustness of MME for Nonlinear Model Identification".

26) <u>Kolodziej, Jason</u>, "On the Application of the Minimum Model Error Algorithm for Control System Design".

27) <u>Liu, Jingzhi</u>, "The use of a Virtual Environment for Automobile Crash Simulation by Modeling Ocuupant Dynamics".

28) <u>Roy, Abhijeet</u>, ''Development of a Virtual Driving Environment for Inclement Weather Conditions".

29) <u>Johnston, David</u>, "A Study into using Thermohydrodynamic Lubrication Analysis, Bearing Frequency Dependent Stiffness and Damping Properties, and Air Seals in the Modeling of High Speed Compressor Rotors."

29) <u>Chanron, Vincent,</u> "A Study of Convergence in Decentralized Design".

30) <u>Chug, Randy</u>, "Model-Error Control Synthesis for Spacecraft Attitude Maneuvers"

31) <u>Lai, Kok-Lam</u>, "In-Space Autonomous Spacecraft Alignment Calibration"

32) <u>Tang, Chin-Pei</u>,"Manipulability-Based Analysis for Payload Transport by Robot Collectives"

33) <u>Kappagantula, Kalyan</u>, "Linearizing assumptions and control design for spacecraft formation flying maneuvers

34) <u>Fergeson, Scott</u>, "An approach to the design of flexible systems using linear state-feedback control"

35) <u>Natarajan, Arun</u>, Spacecraft Attitude Maneuvers with Input Saturation using Model Error Control Synthesis"

36) <u>Mathe, Garth</u>, "Aircraft Attitude and Gyroscope Drift Estimation using Three Axis Magnetomenter and Ground Reference Position Data"

37) <u>Minase, Jayesh</u>, "Unscented Filter for GPS Attitude Estimation"

38) <u>Schifferle, Paul</u>, "In-Flight Simulation Capability of a Variable Stability Helicopter in the Longitudional Axis"

39) <u>Lee, Leng-Feng</u>, "Decentralized Motion Planning within an artificial Potential Framework (APF) for cooperative Payload Transport by Multi-Robot Collective"

40) <u>Fosbury, Adam,</u> ``Control of Relative Attitude Dynamics of a Formation Flight Using Model Error Control Synthesis''.

41) <u>Kim Son-Goo</u> ``Kalman Filtering for Relative Spacecraft Attitude and Position Estimation''.

42) <u>Hass, Brian Michael</u> ``Sensitivity Study: The Affects of Beacon Location Errors on a Vehicle's Position and Attitude Estimation for a Vision-Based Navigation System''

43) <u>Kumar, Anjani</u> ``Design of Colored noise Extended Kalman Filter for Vision based Navigation Applications''

44) <u>George, Jemin</u> ``A Kalman Filter approach for Model Error Control Synthesis''

45) <u>Centinello, Frank</u> ``Analysis of the NED and ECEF Covariance Propagation for the Bavigational Extended Kalman Filter''

46) <u>Goh Shu Ting</u> ``Unscented Kalman Filtering for Relative Attitude and Position Estimation''

47) <u>Baheta Ankur . R.,</u> "Development of an Anatomy Identification Skill Set for Laparoscopic and Robotic Minimally Invasive Procedures"

48) <u>Kumar, Amrish</u>, Kinesthetics Mapping of RoSS:Robotic Surgical Simulator using Inverse Kinematics

49) <u>Pothedar, Srikanth</u>, (Electrical Engineering) Software tool to Investigate the Impact of plug-in hybrid Electric Venicles on the Electric Utility Grid.

50) <u>Narayanan, M. S.</u>, Analysis of Parallel Manipulator Architectures for use in Masticatory Motion Case Study.

51) <u>Iyer, Subramaniam</u>, Time Optimal Trajectory Generation for a Differential Drive Robot.

52) <u>Miller, Patrick</u>, Output Synchronization for Teleoperation of Robot Manupulators.

53) <u>Lin, Chen</u>, A Global-Local Approach for Optimal Trajectory Generation, Aug. 2009

54) <u>Li Xinyan</u>, A General Methodology and Framework for Creating Haptically Enabled Fine Motor Skill Training System, Aug. 2009

55) <u>Missel, Jonathan</u>, Design Development and Control of Mobile Biaxial Inverted Pendulum, Aug. 2009

56) <u>Ali Asad Abbas</u>, Polynomial Chaos based Approach for State Limited Robust Control of Systems with Parametric Uncertainties, Aug. 2009.

57) <u>Duffney Jacob E.,</u> The design and use of a transducer array to measure deformaed shapes of a radial variable reluctance motor, Jan. 2010.

58) <u>Tripathy, Sumit</u>, Role of Symbolic Computation in Linear and Model-Based Controller Development, Aug. 2010.

59) <u>Llinares, Richard</u>, Constrained Relative Attitude Determination for Two Vehicle Formations, Jan. 12, 2011

60)<u>Marschke, Jeremy</u>, Generalized Multiple Model Adaptive Attitude Estimation Without Rate Gyros, April 27, 2011

61) <u>Lee, Taewook</u>, L1-Norm Minimizaation based Source Term Estimation, April 30, 2012.

62) <u>Kalur Aniketh</u>, A Gating Based Approach for Space-Object Identification, May 20, 2015.

63) <u>Sharma, Apoorv</u>, Transfer printing of stretchable electronic circuits on conformal surfaces, May 20, 2015.

64) <u>Siwach, Gaurav</u>, Additive manufacturing of Conformal Sensors, 10/01/2015

Grant Support:

Funded

"Uncertainty Characterization and Robust control of Blood Glucose in Type 1 Diabetic Patients", REU Supplement, PI, NSF, Apr. 1, 2017 – Dec. 31, 2017, $ 8,000.

"Modeling ambient air pollution using optimal sensor placement and multiscale spatiotemporal data fusion", PI: Enki Yoo, Co-PIs: Tarunraj Singh, Wenyao Xu, Lina Mu, RENEW Institute, Jan. 15, 2017-Jan. 15, 2018, $35,000.

"Development of a multisensory system for continuous monitoring of blood glucose level", PI: Jun Xia, Co-PIs: Tarunraj Singh, Lucy Mastrandrea, Innovative Micro-Programs Accelerating Collaboration in Themes (IMPACT), Feb. 15, 2016-Feb. 13, 2017, $ 35,000.

"Forecasting the Respiratory Health Burden of Climate Change and Air Quality in New York State", Civic Engagement and Public Policy Research Initiative, PI: Jessica Castner, Co-PI: Tarunraj Singh, 2015-2016, $5,000.

"Uncertainty Characterization and Robust control of Blood Glucose in Type 1 Diabetic Patients", PI, NSF, Sept. 1, 2015 – Aug. 30, 2018, $ 260,000.

"Integrated Context-aided Estimation/Inferencing and Sensor Resource Management for Naval Applications.", PI: Tarunraj Singh, Co-PIs: Puneet Singla, James Llinas, John Crassidis, NAVSUP Fleet Logistics Center, July 1, 2014-June 30, 2015, $ 149,954.

"Forecasting output of Solar Farms", NYPA, PI: Tarunraj Singh, $150,000, May 1, 2014, April 30, 2015. Affiliate Partner to NCAR's DOE grant: "A Public-Private-Academic Partnership to Advance Solar Power Forecasting".

"Uncertainty Propagation Methods for Networked Complex Systems", NSF, PI: Rahul Rai (25%), Co-PIs: Tarunraj Singh (25%), Puneet Singla (25%), Abani Patra (25%), $ 410,643 for three years, Aug. 1, 2013- July 31, 2016.

"Application of DDDAS Ideas to the Computation of Volcanic Plume Transport," AFOSR's Dynamic Data Driven Applications Systems Program, PI: Abani Patra (25%), Co-PIs: Puneet Singla (15%), Bruce Pitman (15%), Tarunraj Singh (15%), Marcus Bursik (15%), Matthew Jones (15%) $492,485 for three years, Sep. 2011–Aug. 2014.

"IDR COLLABORATIVE RESEARCH: Characterizing uncertainty in the motion of

volcanic plumes advected by windfields," NSF's Dynamic System Program in collaboration with researchers at University of Alaska, Fairbanks, PI: Bruce Pitman (20%), Co-PIs: Puneet Singla (20%), Abani Patra (20%), Tarunraj Singh (20%), Marcus Bursik (20%), $537,704 for three years, Sep. 2011–Aug. 2014.

"Synthesis of Road Networks by Data Conflation", Air Force Research Laboratory, Rome, NY. PI: Tarunraj Singh, Co-PI: Puneet Singla, 10/1/2010-9/30/2013, $149,959.00

"A Multiresolution Approach for Modeling and Forecasting of Geospatial Activities," 2008 NGA University Research Initiatives (NURI) Program, PI: Puneet Singla (UB), Co-PI: Tarunraj Singh (UB), Peter Scott (UB), *Option Year Extension,*10/1/10-9/30/11, $150,000.00

"RAPID RESEARCH: Particle Trajectories in Volcanic Plumes: Tracking the 2010 Eyjafjallajokull Plume", NSF, PI: Marcus Bursik, Co-PI: Matt Jones, Tarunraj Singh, Puneet Singla, Abani Patra, Bruce Pitman, Tracy Greg, 6/1/2010-5/31/2011, $76,525.

"Image Guided Tracking of Tumor Motion for Conformal Radiation Therapy", NSF, PI: Puneet Singla, Co-PI: Tarunraj Singh, 10/1/2009-9/31/2012, $299,688.

"IR&D Data Assimilation for CB Plume Dispersion modeling", 2008, CUBRC, PI Tarunraj Singh, Co-PI Peter Scott, 8/25/08-12/21/08, $44,394.30

"A Multiresolution Approach for Modeling and Forecasting of Geospatial Activities," 2008 NGA University Research Initiatives (NURI) Program, PI: Puneet Singla (UB), Co-PI: Tarunraj Singh (UB), Peter Scott (UB), 10/1/08-9/30/10, $298,597.00

"Enhancement of Breast Cancer Radiotherapy by Image-Guided Tracking of Tumor Motion", UB 2020 Interdisciplinary Research Development Fund (IRDF), PI, Puneet Singla, Co-PIs: Tarunraj Singh, Matthew Podgorsak, 7/1/2008-6/30/09, $32,000.00.

"SilverBullet Context Program", PI, James Llinas, Co-PIs: Tarunraj Singh, John Crassidis, Stuart Shapiro, 1/1/2008-12/31/2008, $ 179,000.00

"Modeling of WARP Motor", PI, Andres Soom, Co-PIs: Tarunraj Singh, Gary Dargush, 1/1/2008-12/31/2008, $ 150,000.00

"Blending Chem-Bio Dispersion Forecast with Sensor Data'', DTRA, PI Tarunraj Singh, Co-PI Peter Scott, 9/28/06-9/27/08, $1,700,000.00

"A Proposal for Research, Design and Validation of Fusion-Based Techniques for Tracking of Ground-Based Objects", Overwatch Inv. (CUBRC flowthrough). PI Tarunraj Singh, Co-PI John Crassidis, $199,034.00, 10/1/05-12/31/06.

"Data Assimilation for Chem-Bio Dispersion'', CUBRC, PI Tarunraj Singh, Co-PI Peter Scott, 2/1/06-6/1/06, $14,509.00

"Multiattribute Decision Making in Centralized and Decentralized Design", NSF, PI Kemper Lewis, Co-PI: Tarunraj Singh, 9/1/03-8/30/06, $ 25,000. Supplement to the original grant.

"Innovative Fusion Capabilities: Tracking, Networking, and Visualization", NIMA, PI: Tarunraj Singh, Co-PIs: Rakesh Nagi, other investigators: Rajan Batta, T. Kesavadas, Bharat Jayaraman, Jim Llinas. 9/15/03-8/14/05, $1,065,676.

"Multiattribute Decision Making in Centralized and Decentralized Design", NSF, PI Kemper Lewis, Co-PI: Tarunraj Singh, 9/1/03-8/30/06, $360,000.

"Distributed Fusion Tracking Analysis Tool and Novel Methods in Ground Target Tracking", CMIF-CUBRC IRAD, Principal Investigator: Tarunraj Singh, $ 38,516, Jan. 1, 2002-Dec. 31, 2002.

"Ground Target Tracking", NIMA/Sarnoff, Principal Investigator: Chris Rump, co-principal Investigator: Tarunraj Singh, $82,000 , April 1, 2001, May1, 2002.

"Development of a Virtual Driving Simulator Integrated with Geographic Information System", NCGIA, Principal Investigator: . Dr. T. Kesavadas, co-principal Investigator: Tarunraj Singh, $ 5,200, Jan. 1, 2000- June 20, 2000, .

"Design of Hardware/Algorithms for Enhancement of Driver-Vehicle Performance in Inclement Conditions Using a Virtual Environment", *Honda*, Principal Investigator: Tarunraj Singh, co-principal Investigators: Drs. T. Kesavadas, R. Mayne. $25,000, Nov. 98 - Oct. 99.

"Multi-Target Tracking via Adaptive alpha-beta, and alpha-beta-gamma filters", *Office of Naval Research.*$39,960. Principal Investigator: Tarunraj Singh, Co-principal Investigator: Dr. James Llinas (Phase II), Oct. 98 - Sept. 99.

"Fusion Process Management", National Security Agency, $30,000, Principle Investigator: Tarunraj Singh, Co-Principle Investigator: Dr. James Llinas. May99-Aug. 99.

"Identification of Factors Affecting Drivers' Responses to Adverse Condition Alerting Systems", Center for Transportation Injury Research, $74,275, Co-PI with Ann Bisantz of Industrial Engineering. June 99-June 00.

"Design of Sliding-Mode Controllers for an Electrohydraulic Valve", Moog Inc., $15,560. principal Investigator: Tarunraj Singh. One student supported. Aug. 98-Dec.98.

"Neural Network Identification of the Dynamics of a Distillation Column", Praxair Inc., $10,286, principal Investigator: Tarunraj Singh. One student supported. May 98- Sept 98.

"Multi-Target Tracking via Adaptive alpha-beta, and alpha-beta-gamma filters", *Office of Naval Research.*$42,000. principal Investigator: Tarunraj Singh, Co-principal Investigator: Dr. James Llinas.Feb. 98 - Sept. 98. Two students supported. Jan 98 - Sept. 98.

"Analysis and Compensation of Hydraulic Control Valve Flow Forces", Moog Inc., $14,628.

principal Investigator: Tarunraj Singh, Co-principal Investigator: Dr. Abani Patra. Two Students supported. Nov. 97 - April 98.

"System Identification of an Air-Conditioning System", *Delphi Harrison Thermal Systems*, $26,811. principal Investigator: Tarunraj Singh, Co-principal Investigator: Dr. Roger Mayne. Two students supported. Dec. 96 - May 97.

"Real-Time Set Point Optimization for the MPC Controller", "On-Line Model Updating for the Set Point Optimizer", *Praxair Inc.* $25,454. principal Investigator: Tarunraj Singh (with Dr. D. J. Mook). One student supported. Aug. 96- April 97.

Riefler Award $500.00 for the presentation of papers at the *1998 IEEE Conference on Control Applications*, Trieste, Italy, September 1-4, 1998.

Riefler Award $650.00 for the presentation of the paper "On the Fuel/Time Optimal Control of Undamped Flexible Space Structures", at the Third European Control Conference, Sept 5-8, 1995, Rome, Italy.

New York State/United University Professional development and quality of working life committee. $170, for the presentation of research paper "Robust Time-Delay Control of Multimode Systems" at the 1994 American Control Conference

Office of the Provost, SUNY at Buffalo, $228,000 (equipment grant), "Acquisition of a High Performance Parallel Computer for School of Engineering and Applied Sciences," co-principal Investigator with nineteen assistant professors of the SEAS.

"Interface for Web-Based Simulation and Optimization", Educational Technology Faculty Development Grant, $4,500.00. Co-principal Investigators: Ashish Gupta, Tarunraj Singh, Kemper Lewis.

Patent

1. Singh, T. , "Jerk Limited Time Delay Filter", U. S. Patent Number 7,152,083.

Book

1. Singh, T., "Optimal Reference Shaping for Dynamical Systems: Theory and Applications", Taylor & Francis, CRC Press. Published October, 2009.

Publication in Refereed Scientific Journals
A. In Print or Accepted

1. Al Ba'ba'a, Hasan, Nouh, Mostafa, and Singh, Tarunraj, "Pole Distribution in Finite Phononic Crystals: Understanding Bragg-effects through Closed-form System Dyanmics", Accepted for publication in the *Journal of Acoustical Society of America*.

2. Al Ba'ba'a, Hasan, Nouh, Mostafa, and Singh, Tarunraj, "Formation of Local Resonance Band Gaps in Finite Acoustic Metamaterials: A Closed-form Transfer Function Model", Accepted for publication in the *Journal of Sound and Vibration*.

3. Adurthi, N., Singla, P. and Singh, T., "Conjugate Unscented Transformation: Applications to Estimation and Control", Accepted for publication in *Journal of Dynamic Systems, Measurement and Control*.

4. Mukherjee, A., Rai, R., Singla, P., Singh, T. and Patra, A., "Comparison of Linearization and Graph Clustering Methods for Uncertainty Quantification of Large Scale Dynamical Systems", *International Journal for Uncertainty Quantification*, Vol. 7, No. 1, 2017, pp 23-56. Doi: 10.1615/Int.J.UncertaintyQuantification.2016017192

5. Van der Maas, R., Singh, T., and Steinbuch, M., "Periodic Signal Tracking for Lightly Damped Systems", *Journal of Dynamic Systems, Measurement and Control*, Vol. 139, No. 6, June 2017. Doi: 10.1115/1.4035454

6. Pouget, S., Bursik, M., Singla, P., and Singh, T., "Sensitivity Analysis of a one-dimensional model of a volcanic plume with particle fallout and collapse behavior", *Journal of Volcanology Geothermal Research*, 326, Oct., 2016, pp 43-53. Doi:10.1016/j.jvolgeores.2016.02.018

7. Niri, Ehsan Dehghan, Singh, Tarunraj, "Unscented Transformation based Estimation of Parameters of Nonlinear Models using Heteroscedastic Data", *Pattern Recognition*. Vol. 55, 2016, pp 160-171, Doi: 10.1016/j.patcog.2016.02.009

8. Lee, Taewook, Singla, P., Singh, T., and Gunatilaka, A., "Sparse Approximation based Maximum Likelihood Approach for Estimation of Radiological Terms", *IEEE Transactions on Nuclear Science*. Vol. 63, No.2, 2016, pp 1169-1187. Doi:10.1109/TNS.2016.2520255

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12. Madankan, R., Pouget, S., Singla, P., Bursik, M., Dehn, J., Patra, A., Pavolonis, M., Pitman, E.B., Singh, T., and Webley, P., "Computation of Probabilistic Hazard Maps and Source Parameter Estimation for Ash Transport and Dispersion", *Journal of Computational Physics*. Vol. 271, 2014, pp 39-59. http://dx.doi.org/10.1016/j.jcp.2013.11.032

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19. Singh, T., "Pole-Zero, Zero-Pole Cancelling Input Shapers", *ASME Journal of Dynamic Systems, Measurement and Control,* Vol. 134, No. 1, Jan. 2012.

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22. George, J., Crassidis, J. L., Singh, T. and Fosbury, A. M., "Anomaly Detection Using Context-Aided Target Tracking", *ISIF Journal of Advances in Information Fusion*, Vol. 6, No. 1, June 2011, pp 39-56.

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2. S. Nandi, and T. Singh, "Chance Constraint based design of Input Shapers", To be presented at the 2017 IEEE Conference on Control Technology and Applications, Kohala Coast, Hahaii, Aug. 27-30, 2017.

3. S. Nandi, T. Singh, L. Mastrandrea and P. Singla, "Optimal Meal Time after Bolusing for Type 1 Diabetes Patients under Meal Uncertainties", Presented at the 2017 American Control Conference, Seattle, WA, May 24-26, 2017.

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106.   Muenchhof, M., Singh, T., "Jerk Limited Time Optimal Control of Structures", Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition, Nov. 11-16, New York, NY.

107.   Masoud, N. Al., Singh, T., "Optimal Actuator/Sensor Placement for Control of Combustion Instabilities", Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition, Nov. 11-16, New York, NY

108.   Nitin Gupta, Ann M. Bisantz and Tarunraj Singh, "Investigation of Factors Affecting Driver Performance Using Adverse Condition Warning Systems", Annual Meeting of the Human Factors and Ergonomics Society, Surface Transportation Technical Group October 8-12, 2001, Minneapolis.

109.   Muenchof, M., Hindle, T., Singh, T., "Modeling and Control of Pantograph and Contact Wire for High Speed Train", Proceedings of the International Mechanical Engineering Congress and Exposition, Orlando, Florida, Nov. 5-10, 2000.

110.   Saeck, J., Singh, T., "Automated Design of Model Predictive Controllers", Proceedings of the 2000 American Control Conference, June 28-30, Chicago, Illinois.

111.   Tenne, D., Singh, T., "Optimal Design of alpha-beta-gamma Filters", Proceedings of the 2000 American Control Conference, June 28-30, Chicago, Illinois.

112.   Al-masoud, N., Singh, T., "Discrete Time Point-to-Point Control of Flexible Structures", Proceedings of the 2000 American Control Conference, June 28-30, Chicago, Illinois.

113.   Kolodziej, J., Singh, T., "Target Tracking via a Dynamic Circular Filter/Linear $\alpha-\beta$ Filters in 2-D", Proceedings of the 2000 American Control Conference, June 28-30, Chicago, Illinois.

114.   Hindle, T., Singh, T., "Desensitized Minimum Power/Jerk Control Profiles for rest-to-rest Maneuvers", Proceedings of the 2000 American Control Conference, June 28-30, Chicago, Illinois.

115.   Beugnon, C., Singh, T., "Minimax Filtering in the presence of Parameter Uncertainties", Proceedings of the 2000 American Control Conference, June 28-30, Chicago, Illinois.

116.   Beugnon, C., Singh, T., Llinas, J., "Adaptive Track Fusion in a Multisensor Environment", Presented at the 3rd International Fusion2000 Conference in Paris, July 10-13, Paris, France.

117.   Singh, T., Kesavadas, T., Mayne, R., Kim, J-J., Roy, A., "Design of Hardware/Algorithms for Enhancement of Driver-Vehicle Performance in Inclement Conditions Using a Virtual Environment", Presented at the SAE 2000 World Congress, March 6-9, Detroit, MI, SAE Technical Paper Series 2000-01-0322.

118.   Kelemen, K., Singh, T., Mayne, R., "Modeling of an Automotive Air-Conditioning System", Presented at the SAE 2000 World Congress, March 6-9, Detroit, MI. SAE Technical Paper Series 2000-01-1269.

119.   Tenne, D., Singh, T., "Analysis of $\alpha-\beta-\gamma$ Filters", Proceedings of the 1999 IEEE International Conference on Control Applications, Aug. 22-26, Hawaii.

120.   Kokes, G., Singh, T., "Adaptive Fuzzy Logic Control of an Anti-Lock Braking System", Proceedings of the 1999 IEEE International Conference on Control Applications, Aug. 22-26, Hawaii.

121.   Tenne, D., Singh, T., "Formally Derived Characterization of the Performance of $\alpha-\beta-\gamma$ Filters", Fusion 99, The second International Conference on Information Fusion, July 6-8, Sunnyvale, California.

122.   Hindle, T. A., Singh, T., "Robust Minimum Power/Jerk Control of Maneuvering Structures", Third World Congress of Structural and Multidisciplinary Optimization, May 17-21, 1999, Niagara Falls, NY.

123.   Bauer, A., Patra, A. K., Olewnicki, J., Singh, T., "Shape Optimization on a Spool in a Four- Way Hydraulic Servo-Valve Using hp Adaptive Finite Element Methods", Third World Congress of Structural and Multidisciplinary Optimization, May 17-21, 1999, Niagara Falls, NY.

124.   Fink, A., Singh T., "Discrete Sliding Mode Controller for Pressure Control with an Electrohydraulic Servovalve", Proceedings of the *1998 IEEE Conference on Control Applications*, Trieste, Italy, September 1-4, 1998.

125.   Alli, H., Singh, T., "Passive Control of Cranes", Proceedings of the *1998 IEEE Conference on Control Applications*, Trieste, Italy, September 1-4, 1998.

126.   Aldraihem, O., Singh, T., Wetherhold, R., "Optimal Size and Location of Piezoelectric Actuator/Sensors: Practical Considerations", Presented at the *1997 International Mechanical Engineering Congress and Exposition*, Dallas, Texas, November, 16-21, 1997.

127. Rana, R., Gupta, H., Singh, T., "Application of Controllability Measure for Actuator Placement in a Civil Engineering Structure", Proceedings of the *1997 Conference on Control Applications*, October 5-7, 1997, Hartford, CT.

128. Fink, A., Singh, T., "Saturating Controllers for Pressure Control with an Electro-hydraulic Valve", Proceedings of the *1997 Conference on Control Applications*, October 5-7, 1997., Hartford, CT

129. Aldraihem, O., Singh, T., Wetherhold, R., "Realistic Determination of the Optimal Size and Location of Piezoelectric Actuator/Sensor", Proceedings of the *1997 Conference on Control Applications*, October 5-7, 1997, Hartford, CT.

130. Albassam, B. A., Mook, A. J., Singh, T., "Simultaneous Control of Orbit and Attitude Maneuvers for the GRO Satellite", Presented at the *AAS/AIAA Astrodynamics Specialist Conference*, Sun Valley, Idaho, Aug. 4-7, 1997.

131. Singhose, W., Singh, T., Seering W., "On-Off Control of Flexible Spacecraft with Specified Fuel Usage", Proceedings of the *1997 American Control Conference*, June 4-6, Albuquerque, NM.

132. Sobottka, C, Singh, T, "Optimal Fuzzy Logic Control for an Anti-Lock Braking System", Proceedings of the *1996 IEEE International Conference on Control Applications*, Sept. 15-18, Dearborn, MI.

133. Alli, H., Singh, T., "On the Feedback Control of the Wave Equation", Proceedings of the *1996 IEEE International Conference on Control Applications*, Sept. 15-18, Dearborn, MI.

134. Aldraihem, O., Wetherhold, R., Singh, T, "Distributed Control of Laminated Beams: Timoshenko Theory vs. Euler-Bernoulli Theory", Presented at the *1996 IEEE International Conference on Control Applications*., Sept. 15-18, Dearborn, MI

135. Aldraihem, O., Wetherhold, R., Singh, T., "A Comparison of the Timoshenko Theory and the Euler-Bernoulli Theory for Control of Laminated Beams", Proceedings of the *International Mechanical Engineering Congress & Exposition: The Winter Annual Meeting of ASME, Adaptive Structures and Materials Systems*, Atlanta, GA, Nov 17-22, 1996.

136. Liu, S-W., Singh, T., "Fuel/Time Optimal Control of Spacecraft Maneuvers", Proceedings of the *1996 AIAA Guidance, Navigation and Control Conference*, July 29-31, San Diego, CA.

137. Liu, S-W., Singh, T., "Robust Time-Optimal Control of Flexible Spacecraft with Structural Uncertainty", Proceedings of the *1996 AIAA Guidance, Navigation and Control Conference*, July 29-31, San Diego, CA.

138.   Ducourau, L., Singh, T., Mayne, R. W., "Automated Parameter Optimization for Structural and Controller Design", Proceedings of the *CSME Mechanics in Design Conference*, May 6-9, 1996, Toronto, Canada.

139.   Noll, J., Singh, T., Mook, J., "Time-suboptimal Control of a Flexible Structure", Proceedings of the *4th IEEE Conference on Control Applications*, Sept. 28-29, 1995, Albany, N.Y.

140.   Alli, H., Singh, T., "Frequency Domain Approach to Solve the Time-Optimal Control of a Distributed Parameter System", Proceedings of the *15th ASME Biennial Conference on Mechanical Vibration and Noise*, Sept. 17-21, 1995, Boston, MA.

141.   Hartmann, R., Singh, T., "On the Fuel/Time Optimal Control of Undamped Flexible Space Structures", Proceedings of the *Third European Control Conference*, Sept 5-8, 1995, Rome, Italy.

142.   Liu, S-W., Singh, T., "Application of Sliding-Mode Control to an Aircraft with Pitching Moment Nonlinearity", *AIAA Guidance, Navigation and Control Conference*, of Aug 7-10, 1995, Baltimore, Maryland.

143.   Singh, T., Alli, H., "Exact Time-Optimal Control of the Wave Equation", *AIAA Guidance, Navigation and Control Conference,* of Aug 7-10, 1995, Baltimore, Maryland.

144.   Hartmann, R., Singh, T., "Fuel/Time Optimal Control of Flexible Space Structures", *AIAA Guidance, Navigation and Control Conference*, of Aug 7-10, 1995, Baltimore, Maryland.

145.   Call, R., Singh, T., "Closed-Loop Time-Optimal Control using Radial Basis Function Based Neural Network", *AIAA Guidance, Navigation and Control Conference*, of Aug 7-10, 1995, Baltimore, Maryland.

146.   Singh, T., "Exact Fuel/Time Optimal Control of the Benchmark Two-Mass/Spring System", 1995 American Control Conference, June 21-23, 1995, Seattle, Washington.

147.   Fuessel, D., Singh, T., Bloebaum, C. L., "Optimum Model Size for Minimum Residual Vibration", A*IAA Structures, Structural Dynamics and Materials Conference*, April 10-13, 1995, New Orleans, LA.

148.   Singh, T., Vadali, S. R., "Robust Time-Optimal Control of Flexible Structures: A Frequency Domain Approach", *AIAA Guidance, Navigation and Control Conference*, Aug 1-3, 1994, Scottsdale, Arizona.

149.   Vadali, S, Carter, M., Singh, T., Abhyankar N., "Near-Minimum-Time Maneuvers of Large Structures: Theory and Experiment", *AIAA Guidance, Navigation and Control Conference*, of Aug 1-3, 1994, Scottsdale, Arizona.

150. Singh, T., Vadali, S. R., "Robust Time-Delay Control of Multimode Systems", *1994 American Control Conference*, June 29-July 1, 1994, Baltimore, Maryland. (Best Presentation Award).

151. Carter, M., Vadali, S., Singh, T., "Near Minimum-Time Maneuvers of Large Space Structures Using Parameter Optimization", *AIAA Guidance, Navigation and Control Conference*, August 1993.

152. Singh, T., Heppler, G. R., "Shaped-Input Control of a System with Multiple Modes", *2nd International Conference on Dynamics and Control of Structures in Space*, Sept. 6-10, 1993.

153. Singh, T., Vadali, S. R., Junkins, J. L., "Robust Control of Linear Systems with Uncertain Parameters Using Time-Delayed Inputs", *2nd International Conference on Dynamics and Control of Structures in Space*, Sept. 6-10, 1993.

154. Singh, T., Vadali, S. R., Junkins, J. L., "Robust Time-Delay Control of Linear Systems", Presented at the *Ninth VPI&SU Symposium on Dynamics and Control of Large Structures*, May 10- 12, 1993, Blacksburg.

155. Vadali, S. R., Krishnan, S., Singh, T., "Attitude Control of Spacecraft using Neural Networks", Presented at the *AAS/AIAA Spaceflight Mechanics Meeting*, at Pasadena, California, Feb 22-24, 1993.

156. Vadali, S. R., Singh, T., Kurdila, A. J., Junkins, J. L., "Neural Network Based Control of Large Structures", Presented at the *North American Conference on Smart Structures and Materials*, at Albuquerque, New Mexico on 25 Jan, 1993.

157. Singh, T., Vadali, S. R., "Input-Shaped Control of Three-Dimensional Maneuvers of Flexible Spacecraft", Presented at the *1992 AIAA Guidance Navigation and Control Conference* at Hilton Head Island, South Carolina, on August 10, 1992. (Best Presentation Award).

158. Vadali, S. R., Singh, T., Carter, T., "Computation of Near-Minimum-Time Maneuvers of Flexible Structures by Parameter Optimization", Presented at the *1992 AIAA Guidance Navigation and Control Conference* at Hilton Head Island, South Carolina, on August 10, 1992.

159. Singh, T., Golnaraghi, M. F., Dubey, R. N., "Generalised Control Scheme Based on the Sliding-mode and Shaped-input Concepts forRigid/Flexible Arm Robots", Presented at the *Eighth VPI&SU Symposium on Dynamics and Control of Large Structures*,May 6-8, 1991, Blacksburg.

160. Singh, T., Golnaraghi, M. F., Dubey, R. N., "Effects of Joint Flexibility on the Motion of a Flexible Arm Robot", Presented at the *SIAM Conference on Dynamical Systems* at Orlando, Florida, May 7-11, 1990.

161.   Singh, T., Dubey, R. N., Golnaraghi, M. F., "Sliding-Mode control of a single-link Flexible Arm Robot", Presented at the *1990 CSME Mechanical Engineering Forum*, Toronto.

162.   Singh, T., Dubey, R. N., Golnaraghi, M. F., "Variable Structure control of a Flexible Arm Robot", Presented at the *American Control Conference* May 23-25, 1990, San Diego.

Abstract Papers and Presentation

1. H. Al Ba'ba'a, M. Nouh and T. Singh, "An analytical model for band gap behavior in lumped elastic metamaterials", Presented at the SPIE10710, Health Monitoring of Structural and Biological Systems 2017, March, 2017, doi:10.1117/12.2260012. Portland, Oregon.

2. R. Asokan, M. Majji, and T. Singh, "Stereovision Technologies for Geometric Modeling of Solid Objects: Advanced Manufacturing Applications", Presented at the New Horizons in Digital and Additive Manufacturing Conference, Buffalo, NY, March 16-17, 2015.

3. J. McGreevy, T. Singh and M. Majji, "Weather Based Irradiance Modeling of the Solar Strand at the University at Buffalo", Presented at the American Meteorological Society's Sixth Conference on Weather, Climate, and the New Energy Economy, part of the 95th American Meteorological Society Annual Meeting, Phoenix, Arizona, January 4-8, 2015.

4. S. Pouget, M. Bursik, R. Stephen, J. Sparks,, A. Hogg, C. Johnson, T. Singh, M. Pavlonis, "Gravity current model of the volumetric growth of volcanic clouds: remote assessment with satellite imagery estimation of mass ruption rate", AGU, San Francisco, 9-13 December, 2013.

5. A. Patra, R. Madankan, E. R. Stefanescu, S. Pouget, D. Morton, P. Singla, M. Bursik, J. Dehn, M. Jones, M. Pavlonis, E. B. Pitman, T. Singh, P. Webley, "A Framework for Uncertainty Quantification for Volcanic Ash Disperson Phenomena", AGU, San Francisco, 9-13 December, 2013.

6. S. Pouget, M. Bursik, P. Webley, J. Dehn, M. Pavalonis, T. Singh, P. Singla, A. Patra, B. Pitman, R. Stefanescu, R. Madankam, D. Morton, and M. Jones, " Estimation of Eruption Source Parameters from Plume Growth Rate", European Geosciences Union General Assembly 2013, Vienna, Austria 07-12 April, 2013.

7. A. Patra, P. Singla, M. Bursik, B. Pitman, M. Jones, and T. Singh, "Uncertainty Analysis of Dynamical Systems – Application to Volcanic Ash Transport," 2012 SIAM Conference on Uncertainty Quantification, Raleigh, NC, April 2–April 5, 2012.

8. Invited participant, NSF/NCAR International Workshop on Source Term Estimation (STE) for Estimating the Atmospheric Radiation Release from the Fukushima Daiichi Nuclear Power Plant, Feb. 22-23, 2012, NCAR, Boulder, Colorado. "Polynomial Chaos based Minimum Variance Approach for Characterization of Source Parameters" (presentation), "Characterizing Number, Strength and Location of Stationary Radiological Sources", (Poster).

9. M. I. Bursik, S. A. Carn, K. G. Dean, A. K. Patra, M. J. Pavolonis, E. B. Pitman, P. Singla, T. Singh, P. Webley, "Ensemble modeling of the Eyjafjallajokull plume of 15-20 April 2010," American Geophysical Union, Fall Meeting 2010, abstract #V41E-2324.

10. "Tumor Motion and Deformation Estimation for Intensity Modulated Radiation Therapy" 10th International Conference on Complexity in Acute Illness in Bonn, Germany, 9-11 Sept., 2011. (Poster)

11. U. Konda, P. Singla, T. Singh, and P. Scott, "Uncertainty Evolution in Doubly Stochastic Models using Polynomial Chaos", Presented at the IUTAM Symposium on Nonlinear Stochastic Dynamics and Control, Maye 10- 14, 2010.

12. Reddy , K.V. Umamaheswara, Cheng, Yang, Singh, Tarunraj and Scott, Peter, "Source Estimation in CBRN Incidents Using Convex Optimization", Chemical and Biological Defense Physical Science and Technology (CBD PS&T) Conference, New Orleans, LA, November 17-21, 2008. (**Student Scholarship Award**).

13. Terejanu, G., Cheng, Y., Singh, T., and Scott, P., "Comparison of SCIPUFF Plume Prediction With Particle Filter Assimilated Prediction for Dipole 26 Data", Chemical and Biological Defense Physical Science and Technology (CBD PS&T) Conference, New Orleans, LA, November 17-21, 2008. (**Student Scholarship Award**).

14. Singla, P., and Singh, T., "A Review of Polynomial Window Functions", 44th Annual Technical Meeting Society of Engineering Science, College Station, Texas, Oct. 21-24, 2007.

15. Muenchhof, M., Singh, T., "Robust Feedback/Feedforward Control of Flexible Structures", Keynote Speakers Mini Symposium on Nonlinear Dynamics and Control, Fourteenth U.S. National Congress of Theoretical and Applied Mechanics, Virginia Tech ,June 23-28, 2002.

16. Tenne, D., Singh, T., Llinas, J., "Stability and Performance Analysis of $\alpha-\beta-\gamma$ Fiters", *1999 IRIS National Symposium on Sensor and Data Fusion*, May 24-28, Johns-Hopkins University/Applied Physice Laboratory, Laurel, MD.

17. Singh, T., Kesavadas, T., Mayne R., "Driver-Vehicle Performance Enhancement in Inclement Conditions", *The Honda Initiation Grant Symposium 1999*, May20, 1999, Dublin, Ohio.

18. Llinas, J., Singh, T., "Adaptive Data Fusion Processing: Thoughts and Perspectives", *Thirty- Second Asilomar Conference on Signals, Systems, and Computers*, Nov. 1-4, 1998, Pacific Grove, CA.

19. Llinas, J., Singh, T., Chen, Wang, and Tenne, D., "Fuzzy mathematics and logic for Multisource Data Association and Target Tracking". Presented at the *Natl symp on sensor and data fusion (nssdf)*, Atlanta Ga, 3/31/98-4/3/98

20. Singh, T., Hartmann, R., "Fuel/Time Optimal Control of the Two-Mass/Spring System", *Society of Engineering Science, 31st Annual Technical Meeting*, Oct. 10-12, 1994, College Station, Texas.

Book Chapter

1. Webley, P, Patra, A., Bursik, M., Pitman, E. B., Dehn, J., Singh, T., Singla, P., Jones, M. D., Madankan, R., Stefanescu, E. R., Pouget, S., "Building an uncertainty Modeling Framework for Real-time VATD", Chapter in book Natural Hazard Uncertainty Assessment: Modeling and Decision Support, American Geophysical Union, 2016, ISBN: 978-1-119-02786-7

2. Garcia, J., Singh, T., and Tenne, D., "Ground target tracking applications. Design examples for military and civil domains", Chapter in book *Context Enhanced Information Fusion* by Springer, 2015.

3. Garcia, J., Molina, J. M., Singh, T., Crassidis, J. and Llinas, J., "Research Opportunities in Contextualized Fusion Systems: The Harbor Surveillane Case", Lecture Notes in Computer Science, 2011, Volume 6692/2011, pp 621-628. DOI: 10.1007/978-3-642-21498-1_78

4. Narayanan, A., Singh, T., Mayne, R. W., "On Automating the Parameter Optimization of Structural Systems for Dynamic Behavior", *Structural Dynamic Systems: Computational Techniques and Optimization*, Editor: C. T. Leondes, Gordon and Breach, International Series in Engineering, Technology and Applied Sciences, Vol. 7, 1998, ISBN #90-5699-642-8.

5. Singh, T., Heppler, G. R., "Shaped-Input Control of a System with Multiple Modes", Proceedings of the *2nd International Conference on Dynamics and Control of Structures in Space*, Sept. 6-10, 1993, Editors: C. L Kirk and P. C. Hughes, Computational Mechanics Publication: Southampton, 1993.

6. Singh, T., Vadali, S. R., Junkins, J. L., "Robust Control of Linear Systems with Uncertain Parameters Using Time-Delayed Inputs", Proceedings of the *2nd International Conference on Dynamics and Control of Structures in Space*, Sept. 6-10, 1993, Editors: C. L Kirk and P. C. Hughes, Computational Mechanics Publication: Southampton, 1993.

Invited Presentations at Universities and Laboratories

1. "Forecasting in a World where Uncertainties are the only Certainty", IEEE Buffalo section meeting, May 4, 2017.

2. "Coping with Uncertainties in Vibration Control and Radiotherapy", College of Engineering, University of Georgia, April 12, 2013.

3. "Will Asteroid 2004 MN4 Strike Earth? How Data Fusion can Improve Forecasting", ASME Buffalo Section Seminar, April, 26, 2012.

4. "Tumor Motion Prediction for Radiation Therapy", University of Glasgow, Nov. 17, 2011.

5. "Tumor Motion Prediction for Radiation Therapy", Colloquium RWTH Aachen, Nov. 10, 2011.

6. "Data Assimilation for Forecasting Plume Dispersion", Institute for Geoinfomatics, University of Muenster, Nov. 8, 2011.

7. "Application of Polynomial Chaos in Estimation and Control", Section for Automatic Control, Department of Electronic Systems, Faculty of Engineering and Science, Aalborg University, Nov. 1, 2011.

8. "What can Kalman do for you", Section for Automatic Control, Department of Electronic Systems, Faculty of Engineering and Science, Aalborg University, Oct. 31, 2011.

9. "Tumor Motion Predication for Radiation Therapy" at the UNIVERSITÄT ZU LÜBECK,   Graduate School for Computing in Medicine and Life Sciences, on October 20, 2011.

10. "Taming Vibrations", Faculty of Engineering of the University of Udine Oct. 14, 2011.

11. "Application of Polynomial Chaos in Estimation and Control" at the Interdisciplinary Center for Scientific Computing, Ruprecht-Karls-Universitat Heidelberg, Heidelberg Germany, on Sept. 26, 2011.

12. "Tumor Motion Predication for Radiation Therapy" at the GSI Helmholtz Center for Heavy Ion Research, Darmstadt, Germany on Sept. 23, 2011.

13. "Taming Vibrations" at the Fraunhofer-Institut für Betriebsfestigkeit und Systemzuverlässigkeit LBF, Darmstadt, Germany on Sept. 23, 2011.

14. "Data Assimilation: Using Models and Data to Reduce Forecasting Errors", UBThisSummer Lecture Series 2011, June 8, 2011.

15. "Tumor Motion Prediction for Radiation Therapy", Department of Mathematics, Royal Institute of Technology, Stockholm, Sweden, Nov. 26, 2010.

16. "Application of Polynomial Chaos for Estimation and Control", Aerospace Engineering, Texas A & M University, March 25, 2010.

17. "Uncertainty Characterization and Propagation of Puff-Based Dispersion Models", DTRA/NSF Algorithm Workshop, Charleston, SC, Aug. 17-19, 2009.

18. "Convex Programming in Controller Design for Flexible Structures", New Jersey Institute of Technology, NJ, May. 6, 2009.

19. "An Overview of Advanced Estimation Algorithms", Universidad Carlos III de Madrid, Invited speaker at the *2nd International Seminar on New Issues of Artificial Intelligence*. Feb. 2-6, 2009.

20. "Convex Programming in Controller Design for Flexible Structures", University of Vigo, Spain, Feb. 3, 2009.

21. "Minimax Control of Flexible Structures", GE Global Research, John F. Welch Technology Center, Bangalore, India, June 13, 2006.

22. "Minimax Control of Flexible Structures", Helmholtz-Institute for Biomedical Engineering, RWTH Aachen, Aachen, Germany, June 9, 2006.

23. "Minimax Control of Flexible Structures", Institute for Robotics and Cognitive Systems, Universität zu Lübeck, Lübeck, Germany, June 2, 2006.

24. "Target Tracking", Universidad Carlos III de Madrid, Departamento de Informática, Madrid Spain, May 17-18, 2006. (Short Course).

25. "Minimax Control of Flexible Structures", Naval Postgraduate School, Monterey, California, August 12, 2005.

26. " Robust Vibration Control of Quiescent-to-Quiescent Maneuvers of Flexible Structures subject to Structured Uncertainties", MAE-GSA (Mechanical & Aerospace Engineering-Graduate Student Association) Seminar, University at Buffalo, Buffalo, New York, Feb. 10, 2005.

27. "Minimax Control of Flexible Structures", University of Waterloo, Waterloo, Canada, Oct. 18, 2004.

28. "Desensitized Optimal Control of Slewing Flexible Structures", Indian Institute of Technology, New Delhi, India, July 22, 2004.

29. "Minimax Control of Flexible Structures", University of British Columbia, Vancouver, Canada, April 23, 2004.

30. "Minimax Control of Flexible Structures" Robotics and Controls Colloquium, Robotics and Controls Colloquium, University of Washington, Seattle, Nov. 7, 2003.

31. "Minimax Control of Flexible Structures", Kirtland Airforce Base, Albuquerque, New Mexico, Aug. 11, 2003.

32. "Robust Vibration Control of Slewing Structures", Cornell University, Ithaca, NY, Oct. 25, 2002.

33. "Robust Vibration Control of Slewing Structures", University of Rochester, Rochester, NY, Oct. 11, 2002.

34. "Robust Control of Residual Vibration of Point-to-point Motion of Underdamped Systems", NASA Glenn Research Center, Cleveland, OH, May 30, 2002.

35. "Control of Hard Disk Drives", Departamento de Mecanica, Ciudad Universitaria, Madrid, Spain, 22 June, 2001.

36. "Control of Flexible Structures: Illustration of Slewing and Regulation Problems", Mechatronik Seminar, Technical University of Darmstadt, Darmstadt, Germany, 11 June, 2001.

37. "Attitude Control of Slewing Flexible Spacecraft", Alcatel Space Industries, Cannes, France, 23 May, 2001.

38. "Vibration Control of Maneuvering Structures via Desensitized Controllers", Systems and Control Group, Mechanical Engineering, Technische Universiteit Eindhoven, Eindhoven, Holland, 15 May, 2001.

39. "Robust Vibration Control of Slewing Stuctures", Dept. of Control Engineering, Aalborg University, Aalborg, Denmark, 24 April, 2001.

40. "Robust Vibration Control of Slewing Structures", IBM Zurich Research Lab, Zurich, Switzerland, 29 Feb., 2001.

41. "Vibration Control of Maneuveriung Structures via Desensitized Controllers", Systems and Control Seminar, Institute for System Theiry and Processes, University of Stuttgart, Stuttgart, Germany, 27 Feb., 2001.

42. "Robust Vibration Control of Slewing Structures", Almaden IBM Research Center, San Jose, California, May 5, 2000.

43. "Robust Control of Slewing Flexible Structures", Tohoku University, January 7, 2000.

44. "Desensitized Optimal Control of Slewing Structures", Winter 1999, Robotics and Controls Colloquium, University of Washington, March 5, 1999.

45. "Desensitized Control of Slewing Flexible Structures", The Catholic University of America, Sept. 26, 1997.

46. "Robust Control of Slewing Flexible Structures", Universidad Carlos III De Madrid, June 5, 1997.

47. "Automated Structural Control Optimization", Universidad Carlos III De Madrid, June 6, 1997

48. "Robust Control of Slewing Flexible Structures", Polytechnika Rzeszowska, June 13, 1997.

49. "How Darth Vader would fly the Mariner 10", Techniche Hochschule Darmstadt, Institut fur Regelungstechnik, June 23, 1997.

50. "Robust Time-Optimal Control: A Frequency Domain Approach", University of Waterloo, May 6, 1994.

51. "Robust Time-Delay Control", Jet Propulsion Lab, February 23, 1993.

52. "Robust Time-Delay Control", SUNY at Buffalo, March 1993.

53. "Robust Time-Delay Control", U. S. Naval Postgraduate Institute, Monterey, CA, July, 1992.