Jagannathan (Jag) Sarangapani, Ph.D.

University of Missouri Curators' Distinguished Professor
Rutledge-Emerson Endowed Chair of Electrical and Computer Engineering
Professor of Department of Computer Science (courtesy appointment)
Professor of Engineering Management and Systems Engg (courtesy appointment)
Director, Embedded Control Systems and Networking Laboratory
Missouri University of Science and Technology
222 Emerson Electric Co. Hall • 301 West 16th Street • Rolla, MO 65409-0040
Tel: (573) 341-6775; Fax: (573) 341-4532. Email: sarangap@mst.edu; https://ece.mst.edu/people/faculty-directory/jagannathan-sarangapani/
https://scholar.google.com/citations?hl=en&user=RTewL_wAAAAJ

AREAS OF INTEREST: Learning, Adaptation and Neural Network Control, Robotics/Autonomous Systems, Secure Cyber-physical Systems, Diagnostics & Prognostics

EDUCATION:

Doctor of Philosophy in Electrical Engineering (1/92-8/94)
Automation and Robotics Research Institute, University of Texas
Specialization: Learning and Adaptation, Neural Network Control
Awards: University Doctoral Fellowship Recipient (1/92-8/93)
Rudolf Hermanns Graduate Fellowship holder (9/93-8/94)
University Scholars Fellow (1/92-8/94)
NSF Research Grant Scholar (2/92-08/94)
Doctoral Research Award Recipient of Sigma Xi International Research Society (4/94)

Master of Science (9/87-12/89)
University of Saskatchewan at Saskatoon, Canada
Specialization: Embedded Control Systems and Robotics
Awards: University of Saskatchewan Summer Graduate Fellowship holder

Bachelor of Electrical Engineering (7/82-8/86)
Anna University at Madras, India
Specialization: Embedded Systems and Robotics
Awards: University Gold Medalist for being topper (82-86)
National Merit Scholar (82-86)
Won IEEE best student paper contest (85)

PROFESSIONAL EXPERIENCE:

Curators' Distinguished Professor (2023-present)
Rutledge Emerson Endowed Chair (2008-present)
Tenured Full Professor (2005-present)
Interim Director, Intelligent Systems Center (February-July 2021)

- Overseen 55 campus science and engineering faculty's research
- Allocation of space needs for the center faculty for research
- Drafted the vision of the Center for research
- Reported status to the upper administration

Associate Chair of Graduate Studies (June 2014-August 2016)

- Grew the graduate program multifolds
- Applications increased ten-fold (1800 applications)
- Admitted 600 and advised 200 students every semester

Site Director NSF I/UCRC on Intelligent Maintenance Systems (2005-2017)
Tenured Associate Professor (2001-2004)
Director, Embedded Systems and Networking Laboratory
Investigator, Intelligent Systems Center
Dept. of Electrical and Computer Engineering
The University of Missouri-Rolla

Assistant Professor & Director (12/98-01)
(Associate Prof with Tenure 2001)
Intelligent Systems Laboratory
Dept. of Electrical and Computer Engineering
Adjunct Professor of Computer Science
Investigator, Center for Advanced Computing and Networking
6900 North Loop 1604 West
The University of Texas at San Antonio
San Antonio, Texas 78249.

Director & Staff Engineer (3/96-11/98) (Supervised 15 engineers)
Sr. Project Engineer (9/94-2/96)
Systems and Controls Research
Caterpillar Inc, Peoria**.**
Funding levels from Industry and federal agencies: Over 1 mil/year

- Directed a Group to Develop and Implement Embedded Systems for Applications
- Developing control algorithms for tractor type tractor machine.
- Managed advanced retarder control project for off-highway trucks.
- Applied learning-based control work automated loading system-eg. excavators
- Directed a team on rapid prototyping technology
- Directed a team to develop data analysis tools for life prediction.
- Directed a group to develop database architecture (DB2) and tool interface.
- Directed a project on extending engine oil life drain intervals.
- Developed navigation, control, and obstacle Avoidance methods for vehicles using embedded systems, multitasking operating systems, VME and PC 104 platforms.
- Directed diagnostic/prognostic programs using MEMS technologies.
- Developed novel methods to predict life for mechanical components.
- Developed performance models for mechanical components.
- Demonstrated an expert system for intelligent failure diagnosis/prognosis.
- Participated in a group to better control Electro-hydraulic Systems
- Developed and implemented novel path planner for Autonomous Systems
- Worked on obstacle detection systems and developed new techniques
- Developed novel diagnostic and prognostic algorithms for intelligent vehicle health monitoring using object-oriented architecture
- Assembled an intelligent health monitoring system

Research Assistant (1/92-8/94)
Automation and Robotics Research Institute,
The University of Texas at Arlington, Fort Worth, Texas

- Implemented adaptive methods for nonlinear systems on embedded systems
- Developed novel nonlinear controllers for robotics and automation
- Developed and Implemented Intelligent controllers: Neural, Fuzzy and Artificial Intelligence based technology on Embedded Microprocessor systems
- Developed path planner and control techniques for autonomous systems
- Implemented various control techniques using Embedded Systems

Research Associate and Industrial Consultant (1/90-12/91)
Department of Mechanical and Industrial Engineering
The University of Manitoba, Winnipeg, Canada

- Developed a Microprocessor based controller in a Multi-tasking Environment for a Flexible Manufacturing Systems
- Implemented novel controllers for Industrial Processes such as Lathe and Milling Operations
- Designed, developed and Implemented an Intelligent Machine Vision approach for Automatic Inspection of Printed Circuit Boards for Northern Telecom Inc., (Bell Northern Research), Canada

- Implemented a knowledge based approach
- Implemented a combined knowledge based with a neural network approach
- Taught Digital Control Class for undergraduate students
- Supervised undergraduate thesis work control systems and expert system projects
- Undertaken several knowledge based system projects for manufacturing applications

Research Assistant (9/87-12/89)
Department of Electrical Engineering
The University of Saskatchewan at Saskatoon, Canada

- VAX System Manager(9/88-12/89)
- Taught and graded undergraduate control and electronics courses.
- Supervised undergraduate labs

Project Engineer (7/86-8/87)
Engineers India Limited, New Delhi India

- Worked in automating the power plant by supervisory control.
- Developed various software for; operator communication, equipment health monitoring, plant performance, transformer tap change control, load sharing
- Load shedding
- Examined software for communication protocols for Local Area Networks
- Worked on PLC design and implementation
- Implemented supervisory control of gas pipe lines using VAX 11/780 through Satellite communication.
- Developed software for SCADA

Programming Languages Developed : EXPA-Natural language
Computer Experience **:** VAX 11/750, UNIX, DOS
Software Experience **:** Software for CRS plus, Excalibur Robot, PUMA Robot, ASEA Robot, Image processing software, Micro logic for simulation of digital circuits, Auto Cad, Lotus 123, Scribe, Telegraph, Ms Word.

AWARDS/HONORS:

- Honorable mention in academic analytics (2025)
- Elevated to Curators' Distinguished Professor (less than 10% of the faculty)
- Included as one of the World's top 2% scientist list (2019-2024) https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3
- Fellow, Asia-Pacific Artificial Intelligence Association (2021, Invited)
- The University of Missouri Presidential Award for Excellence (teaching, research, and service): Sustained Career (2021)
- Best Associate Editor, IEEE Trans of SMC-Systems (2020)
- Fellow, National Academy of Inventors (2018) (International)
- IEEE Control System Society's Transition to Practice Award (Only one per year - 2018)
- Fellow, IEEE, USA (2016) (only *one-10th of 1 percent of the* total IEEE voting membership is awarded)
- Fellow, Institute of Engineering Technology, UK (2015)
- Fellow, Institute of Measurement and Control, UK (2014)
- University of Missouri Leadership Development Program (2013-2014)
- Intelligent Systems Center (ISC) Distinguished Investigator Research Award (2012, 2017)
- Engineers Make a Difference Award in 2008 (local)
- Boeing Pride Achievement Award 2007
- Faculty Excellence Award 2005-2006, 2006-2007

- Outstanding Counselor Award for St. Louis (06, 07) and Region 5 in 2006 and Outstanding IEEE Student Branch Award (06, 07)
- Teaching Commendation Award in 2005, Commended for Teaching Excellence in 2006-2007, 2012-2013, 2013-2014
- Outstanding Teaching Award in 2014-2015, 2015-2016, 2017-2018
- Caterpillar Research Excellence Award (2001)
- The University of Texas Presidential Award for Research Excellence (2001)
- NSF CAREER Award (2000)
- UTSA Faculty Research Award (2000)
- Received **"**Patent Award**"** from Automation and Robotics Research Institute (Dec.96)
- Twentieth Century Award for Achievement—International Biographical Center, Cambridge, UK.
- Several Best Paper/session Awards in 2004, 2000

OTHER AWARDS:

- Recipient of **University Gold Medal** for being University Topper during undergraduate degree program
- Recipient of **Papu Subbarao Medal** for the best machine design (May 86)
- Awarded **Gold Medal** for being a State Ranker (Dec. 80)
- Received **Silver Medal** from International Rotary Foundation for being best student (Dec. 80)

EDITORIAL: **(**a) **Editorial Board,** Springer Journal on Intelligent Industrial Systems (2017-present)
(b) Series Co-Editor, IET Control Series UK (2010-2013)
(c) **Associate Editor**, UK Royal Institute Transactions on Measurement and Control (2010-2015)
(d) **Associate Editor**, IEEE Transactions on Control Systems Technology (2004-2009)
(e) **Associate Editor**, IEEE Transactions on Neural Networks (2005-2009) (2019-
(f) **Associate Editor**, IEEE Journal on Systems Engineering (2007-2010)
(g) **Editorial Board Member and Steering Committee**, International Journal of Automatic Control and Systems Engineering (ASCE)
(h) **Chair and Member**, Technical Committee on Intelligent Control (2011-2015)
(i) **Vice Chair**, CIS Tech Committee on Adaptive Dynamic Programming and RL (2013)
(j) **Editor**, Discrete Dynamics in Nature and Society (2013-)
(k) **Editorial board**, The Scientific World Journal now Complexity (2013-2015)
(l) **Associate Editor**, IEEE Transactions on Systems, Man, and Cybernetics (2017-2021)
(m) **Editorial Board**, Sensors Journal (2020-)

Mentoring Junior Faculty: Dr. Sarangapani has mentored several junior faculties resulting in a number of NSF Career and Young Investigator Awards for them. His former doctoral students won NSF Career Awards.

Research Grants: (September 98-Todate):
Total Funding from all sources (99-todate):

Total	**$47,079,404**
My Share:	**$13,783,478**

Summary: My shared credit **$510,499K/year** for the past 27 years (99-todate).

No.	Title/PIs/Number	Agency	Years of Support	My Share
112.	Human-Machine Teaming using Multiagent Reinforcement Learning for	ARL/DAC	2024-2027	100%

	Construction Applications, PI			
111.	Learning enabled Collaborative Autonomy for Networked CPS, Co-PI (subcontract from USC)	AFOSR	2024-2027	41%
110.	Safe and Resilient Deep Learning based Optimal Adaptive Tracking with Adversaries	ONR	2024-2029	100%
109.	Center for Durable and Resilient Infrastructure, Dr. Dr. Maria Konsta-Gdoutos**,** UT Arlington Lead, Theme Leader on Health Monitoring, Co-PI	DoT, Tier 1	2023-2027	5% of $587K per year for 5 years
108.	A Secure Heterogenous Testbed for Learning and Adaptation Research of Complex Networked Dynamical Systems, PI	ONR	2023-2024	50%
107.	Leader-follower UAV Swarms using Deep Reinforcement Learning, PI	ARO	Sept 2022-Sept 2025	100%
106.	Human Robot Swarm Integration (Co-PI; PI Dr. Zawodniok)	Army Research Lab	Sept 2022-March. 2025	50%
105.	Deep-learning based Leader-Follower Robotic Swarms, PI	Army Research Office (ARO)	Sept. 2021-Sept. 2024	100%
104.	Deep Neural Network Control of Complex Dynamic Systems, PI	Office of Naval Research (ONR)	April 2021-March 2026	100%
103.	RFID In Plant Tracking and Part DNA	Honeywell	2020-2021	100%
102	A Doctoral Program in Big Data, Machine Learning, and Analytics for Security and Safety" (PI: Sanjay Madria, Co-PI: Sajal Das, Nadella)	Dept of Education Supplement	2020-2023	10%
101.	MRI: Development of an Advanced Materials Additive Manufacturing (AM2) System for Research and Education, Co-PI, PI: Frank Liou, Co-PI: Joe Newkirk; Undergrad REU	NSF	2016-2021 (with no cost extension)	25% ($16,000)
100.	Planning Grant: Engineering Research Center for Integrative Manufacturing and Remanufacturing Technologies (iMart) to Spur Rural Development (PI: Frank Liou, Co-PIs: A. Leuking, Carolyn Seepersad, Oscar Suarez)	NSF	2019-2024 (with no cost extension)	5%
99.	RFID based Asset Tracking and Evolvable DNA	Honeywell	2019-2020	100%
98.	RFID based Asset Tracking and Evolvable DNA (Co-PI Tauritz)	Honeywell	2019	50%
97.	A Doctoral Program in Big Data, Machine Learning, and Analytics for Security and Safety" (PI: Sanjay Madria, Co-PI: Sajal Das, Z. Yin, Yanjie Fu)	Dept of Education	2018-2023	20%

96.	System theoretic principles and decentralized sensor network and control algorithms for dynamic data driven and situational awareness and response applications	AFOSR (Subcontract from USF) FA9550-17-1-0303	2017-2018	100%
95.	MRI: Development of an Advanced Materials Additive Manufacturing (AM2) System for Research and Education, Co-PI, PI: Frank Liou, Co-PI: Joe Newkirk	NSF	2016-2021 (with no cost extension)	25% ($220,254)
94.	Investigation of Advanced Concepts in Smart Factory Data Collection, Analysis & Communication for Manufacturing Processing Monitoring	Boeing	2016-2017	100%
93	IMS Center Membership I	Boeing	2016-2017	100%
92	IMS Center Membership	Boeing	2015-2016	100%
91.	Eager/Cyber Manufacturing: Cyber-Enabled Additive Manufacturing of Advanced Materials (Co-PI; PI: Frank Liou)	NSF	2015-2017	40% ($58,703)
90.	IMS Membership I and II (Co-PI; PI: Maciej Zawodniok)	TDA	2015-2016	10% ($8,000)
89.	Investigation of Advance Concepts in Passive Tags with Sensors with Data Communication, Security and Prognosis Applications	Boeing	2015	100%
88.	IMS Center Membership II	Boeing	2015-2016	100%
87.	IMS Center Membership I	Boeing	2014-2015	100%
86.	Event Triggered Control of Networked Control Systems by using Adaptive Dynamic Programming	NSF	2014-2019	100%
85.	IMS Membership I and II (Co-PI; PI: Maciej Zawodniok)	Technical Data Analysis	2014-2015	10% ($7,800)
84.	Investigation of Advance Concepts in Passive Tags with Sensors and Data Communication and Prognosis Applications	Boeing	2014	100%
83.	IMS Boeing Memberships II	Boeing	2014	100%
82.	IMS Membership, C0-PI	TDA	2013-2014	10% ($1,200)
81.	IMS Membership	Boeing	2013-2014	100%
80.	Investigation of Passive Tags with Sensors and Prognosis of Structural Health	Boeing IMS second membership	2013	100%
79.	IMS Membership	TDA/Navair	2012-2013	33% $4,000
78.	"A Doctoral Program in Security and Privacy in Mobile Social Network Space", Co-PI (PI: Madria) with Zhaozheng Yin, Dan Lin and Sriram Chellappan	Dept of Education	2012-2016	10% ($54,442)
77.	I/UCRC: Collaborative Research on Coupled Models for Prognostics and Health Management, PI	NSF	2012-2014	50% ($25,000)

76.	MRI: Development of an Open-source Dual Probe Atomic Force Microscope, Co-PI, PI: Doug Bristow	NSF	2012-2015	15% ($47,406)
75.	DURIP: A Heterogeneous Secure Networking Test-Bed to Counter Explosives, Co-PI (PI: Sriram Chellappan)	ARO	2012-2013	20% ($49,800)
74.	Invention of Advance Concepts in Wireless Sensors with Flexible High and Low Storage Memory and Temperature/Humidity Sensing Capabilities and Initiation of Condition Based Maintenance for Diagnosis and prognosis of Plant Machinery: IMS second membership	Boeing	2012-2013	100%
73.	NSF I/UCRC Membership	Boeing	2012-2013	100%
72.	NSF I/UCRC memberships	Boeing, Kalscott	2011-2012	86% ($44,720)
71.	Collaborative: Design of Accelerated Prognostics and Health Management, Co-PI	NSF	2011-2013	50% ($25,000)
70.	Industry/University Cooperative Research Center for Intelligent Maintenance Systems: Five Year Renewal Phase II, PI	NSF	2011-2017	100%
69.	Agile Systems Engineering: Experiential and Active Learning Approach—Co-PI; PI: Dagli, Co-PI-Chandrasekhara, Corns, Gaurdiola, Sarangapani, Zawodniok, Chellappan	DoD-SERC from Stevens Institute	2011-2012	5% ($6,000)
68.	Adaptive dynamic programming based control of networked control system	NSF	2011-2016	100%
67.	Digital Part Marking and Container Health Monitoring	Boeing	2011	100%
66.	NSF IMS Memberships—Boeing I & II, Kalscott and AVETEC	Various	2011-2012	100%
65.	Secure Network Protocol	Boeing	2010-2011	50% ($12,500)
64.	Unintended Emission Detection and Identification, PI	Army Research Laboratory	2010-2014	100%
63.	Human-the-loop with Detectors and Embedded Mobile Sensor Fusion Center for Detection, PI; Co-PI: Jeff Dalton of AVETEC	Army Research Laboratory	2010-2014	100%
62.	Localization and Tracking of Explosive Threats using Multi-modal Sensors, PI;	Army Research Laboratory	2010-2014	90% ($581,514)
61.	System Integration, PI; Co-PI Levent Acar	Army Research Laboratory	2010-2014	10% ($3,288)
60.	Cognitive Network and Protocols using Missouri S&T Mote, Co-PI;	Army Research	2010-2014	33% ($148,530)

	PI Maciej Zawodniok	Laboratory		
59.	Design of Hardware Platform for Multimodal Sensor Detection, Co-PI; PI-Maciej Zawodniok	Army Research Laboratory	2010-2014	33% ($98,969)
58.	Malicious Device Identification Through Statistical Pattern Modeling, Co-PI; PI-Ivan Guardiola	Leonard Wood Institute/Army Research Laboratory	2010-2011	10% ($8,135)
57.	NSF REU Supplement for Smart Engines, PI	NSF	2010-2011	50% ($3,000)
56.	A Systematic Methodology for Data Validation and Verification for Prognostics Applications, Co-PI, PI:Zawodniok	NSF	2010-2012	50% ($24,999)
55.	Agile Systems Engineering: Experiential and Active Learning Approach, Co-PI; PI: Dagli, Co-PI-Chandrasekhara, Corns, Guardiola, Sarangapani	DoD/SERC (subcontract from Stevens Institute of Technology)	2010-2011	4% ($7942)
54.	Fault Detection, Isolation, Energy Monitoring and Prognostics	Boeing	2010	100%
53.	IMS Membership	AVETEC	2010-2011	100%
52.	NSF REU Site Supplement	NSF	2010	10% ($2,002)
51.	I/UCRC Memberships—Boeing I and II	Boeing	2009-2010	100%
50.	Smart Engines: Fuel Flexible Engine Control using Adaptive Neural Network Critics, PI	NSF	2009-2012	60% ($198,000)
49.	Condition-based Maintenance on Motors	Boeing	2009	100%
48.	NSF I/UCRC Supplement—parameter based prognostics	NSF	2009-2010	50% ($24,999)
47.	NSF I/UCRC on Intelligent Maintenance Systems Center Memberships	Caterpillar Chevron	2008-2009	100%
46.	Networked Zeolite-Capacitive Sensors for Distributed and Ubiquitous Detection of Chemical/Biological Threats, Co-PI	Army Lab/LWI	2008-2009	19% ($100,000)
45.	NSF I/UCRC Supplement: Bio immune system engineering	NSF	2008-2009	100%
44.	NSF I/UCRC Memberships	Boeing and AVETEC	2008-2009	100%
43.	Network Enabled Manufacturing: Power Utility Monitoring and Bearing Prognostics	Boeing	2008	100%
42.	NSF REU Site: Research and Training Experience for Undergraduates in the Area of Sensor Computing, Co-PI (PI: Madria) with Sriram Chellappan	NSF	2008-2012	10% ($30,000)

41.	NSF I/UCRC on Intelligent Maintenance Systems Center Memberships	Boeing, Caterpillar, Chevron, Honeywell, 21st Century Systems	2007-2008	100%
40.	RFID Application to Virtual Enterprises	Boeing	2007-2008	100%
39.	IED Localization using Spatial Diversity of Wireless Sensor Networks	Army Research Lab/LWI	2007-2008	100%
38.	Wireless Head Set for Ramp Operations	Air Force Research Lab (AFRL)	2007-2008	100%
37.	Secure and Adaptable Energy Efficient Sensor Networks for Infrastructure Monitoring, Co-PI	DOEducation Co-PI	2007-2010	25% ($102,000)
36.	NSF I/UCRC Memberships	AvETEC, Boeing	2007	100%
35.	Supply Chain Management	Boeing	2007	100%
34.	Network Enabled Manufacturing	Boeing	2007	100%
33.	Development and validation of advanced energy management control algorithms for short or long term storage, Co-PI	Sandia	2006-2007	10% ($1,000)
32.	Chemical Management using RFID	Avchem/NSF	2006-2007	100%
31.	RFID Hardware Integration	AFRL	2006-2008	100%
30.	NSF I/UCRC Center Membership fees, PI	Caterpillar, Chevron, Boeing, Festo, Honeywell, 21st Century Systems	2006-2007	70% ($147,700)
29.	Robust adaptive critic NN controllers for nonlinear dynamic systems, PI	NSF	2006-2010	100%
28.	NSF I/UCRC on Intelligent Maintenance Systems	NSF	2006-2011	100%
27.	Hydrualic Pump Prognostics	Caterpillar	2006-2006	100%
26.	Katrina SGER: Dynamic Programming based monitoring of structural health and communication infrastructure, PI (Co-PI Dr. Saygin)	NSF	2006-2007	50% ($27,850)
25.	Caterpillar Electronics University Research Award: Network Management Protocol, Co-PI	Caterpillar	2006-2007	50% ($25,000)
24.	Development and validation of advanced energy management control algorithms for short or long term storage, Co-PI (with PI: Crow, Co-PIs: McMillin, Liu)	Sandia Labs	2006-2007	10% ($143,086)
23.	Real-time Locating System Evaluation	Boeing	2006-2006	100%
22.	NSF I/UCRC Center Membership fees, PI	Caterpillar, Chevron,	2005-2006	70% ($147,700)

		Boeing, Festo, Honeywell, 21st Century Systems		
21.	Real-time Locating System Evaluation (Contract #1050990), PI	Boeing	2005-2005	50% ($2,400)
20.	Planning Grant: NSF Industry University Cooperative Center, PI (EEC-0531580) (with Drs. Leu and Saygin)	NSF	2005-2006	50% ($5,000)
19.	Development and validation of advanced energy management control algorithms for short or long term storage, Co-PI (with PI: Crow, Co-PIs: McMillin, Liu)	Sandia Labs	2005-2006	10% ($291,251)
18.	Wireless Sensor Networks for In-quality process monitoring, PI	Air Force Research Laboratory	2005-2007	50% ($164,913)
17.	Research Experiences for Undergraduate Students Supplement for ECS#0327877, PI (with Dr. Drallmeier as the Co-PI)	NSF	2004-2005	50% ($3,000)
16.	Shop floor management using Auto-ID technologies in Network Centric Environments, Co-PI (PI: Ming Leu, Co-PI: several) (Overall award $8.5 Million)	Air Force Research Laboratory	2004-2006	50% ($139,927)
15.	Facts Device Interactions, Co-PI (with PI: Crow, Co-PI: McMillin, Liu)	Sandia Labs	2004-2005	100% of $57,343 Plus 10% of $244,600 $81,803
14.	Wireless test bed for mobile computing research, Co-PI, (PI: Madria; Co-PI: McMillin, Ercal and Subramanya) (MRB: $16.5K, UMR: $16.5K)	NSF	2003-2005	25% ($16,750)
13.	Multidisciplinary research and training in secure wireless adhoc and sensor networks (PI) (with Rao, Wunsch, Miller, Madria, Kapila, Erickson) (UMR Match : $126,000)	Dept. of Education	2003-2006	20% ($92,654)
12.	Adaptive neural architectures for emission control of engines (PI) (ECS#0327877) (with Dr. Drallmeier)	NSF	2003-2006	65% ($327,600)
11.	Adaptive traffic management schemes for the Internet	Research Board	2002-2003	100%
10.	Research Experiences for Undergraduate Students Supplement	NSF	2002-2003	100%
9.	Equipment donation (appx. value)	Motorola, Inc	2001	100%

8.	CAREER: Sensor-based adaptive control of complex distributed systems (ECS#9985739, ECS#0296191)	NSF	2000-2005	100%
7.	Equipment Supplement (with $10K match) (ECS#0216191)	NSF	2000-2005	100%
6.	Bioengineering Materials (Co-PI) (with Drs. Huang and Singh)	Subcontract from UT Austin (NSF)	2000-2001	33% ($32,340)
5.	Develop. of an intelligent controller for a golf swing machine using MEMS Technologies (#26-57100-01)	Techathlon, Inc	2000-2001	100%
4.	Microsensor-based autonomous robots for MARS Greenhouse operation (#26-4315-01)	TSGC/NASA	1999-2002	100%
3.	Develop. of an intelligent controller for a golf swing machine using MEMS technologies	Techathlon, Inc	1999-2000	100%
2.	Adaptive traffic rate control (#14-7519-01)	Faculty Research Award	2000	100%
1.	Grant Development	Research and Development	1999 and 2000	100%

Other Funded Projects (1994-1998):

Total Funding: My share (1994-1998) **$4,225,000**

No.	Title/PIs/Number	Agency	Years of Support	My Share
1.	Autonomous Mining Truck---backup loading	Decatur, Caterpillar	1994-1995	100%
2.	Data Analysis Tool Development for Diagnostics/Prognostics	Parts & Services	1995-1998	100%
3.	Condition based monitoring, fault symptom analysis, and Prognostics	Parts & Services	1995-1998	100%
4.	Obstacle avoidance for autonomous trucks	Machine Research Board	1996-1997	100%
5.	Engine diagnostics and prognostics	Decatur	1996-1997	100%
6.	Embedded blade control of autonomous dozer	Decatur	1997-1998	100%

Classes Taught:

Teaching at UMR/Missouri S&T

Semester	Course Information	No. of Students
Fall 2024	EE 5320 Neural Network Control and Applications EE 6370 Adaptive Control	14 7
Spring 2024	EE 6335 Discrete-time Neural Network Control	7
Fall 2023	EE 6320/MAE 6420 Nonlinear Control Systems	9
Spring 2023	EE 6310 Optimal Control & Estimation	3

Fall 2022	EE 5320 Neural Network Control and Applications EE 6350 Neural Network Ctrl of Nonlinear Continuous-time Systems	9 10
Spring 2022	Sabbatical	
Fall 2021	EE 5320 Neural Network Control and Applications EE 6370 Adaptive Control	11 9
Spring 2021	EE 5325 Applied Nonlinear Control EE 6310 Optimal Control and Estimation	7 4
Fall 2020	EE 5320 Neural Network Control and Applications EE 6350 Neural Network Ctrl of Nonlinear Continuous-time Systems	18 9
Spring 2020	EE 6310 Optimal Control & Estimation	2
Fall 2019	EE 5320 Neural Network Control & Applications	13
Spring 2019	EE 6335 Discrete-time Neural Network Control	6
Fall 2018	EE 6320 Nonlinear Control Systems	8
Spring 2018	EE 6001 Special Topics: Discrete-time Control EE 6310 Optimal Control & Estimation	9 12
Fall 2017	EE 6350 Neural Network Control	16
Spring 2017	EE 6310 Optimal Control & Estimation	8
Fall 2016	Research Leave	
Spring 2016	EE 5001 Applied Nonlinear Control EE 6310 Optimal Control & Estimation	10 32
Fall 2015	EE 5320 Neural Network Control and Applications EE 6001 Neural Network Control	22 13
Spring 2015	EE 6310 Optimal Control & Estimation	25
Fall 2014	EE 5320 Neural Network Control EE 6001 Neural Network Control	16 6
Spring 2014	EE 6310 Optimal Control & Estimation	11
Fall 2013	EE 401 Adaptive Control	5
Spring 2013	EE 6320 Nonlinear Control Systems	12
Fall 2012	EE 401 Special Topics Adaptive Control	8
Spring 2012	EE 6310 Optimal Control & Estimation EE 433 Special Topics: Neural Network Control	15 11
Fall 2011	EE 433 Current Topics in Control Theory	11
Spring 2011	EE 434 Nonlinear Control Systems	13
Spring 2010	EE 432 Optimal Control & Estimation	12
Fall 2009	EE 337 Neural Networks for Control	14
Spring 2009	EE 432 Optimal Control & Estimation EE 434 Nonlinear Control Systems	9 7
Fall 2008	CpE 448 High Speed Networks	24
Spring 2008	EE 433 Current Topics in Control Theory	4
Fall 2007	EE 433 Current Topics in Control Theory	10
Spring 2007	EE 434 Nonlinear Control Systems	8
Fall 2006	CpE High Speed Networks	18
Spring 2006	EE 433 Current Topics in Control Theory	12
Fall 2005	CpE 448 High Speed Networks	26
Spring 2005	EE 331 Digital Control EE 434 Nonlinear Control Systems	10 6
Fall 2004	CpE High Speed Networks Course Buyout	16
Spring 2004	EE 231 Control Systems EE 433 Current Topics in Control: Adaptive Control	33 8
Fall 2003	CpE 401 High Speed Networks Course Buyout	5
Spring 2003	EE 301 MEMS	10
Fall 2002	EE 337 Neural Networks for Control CpE 401 High Speed Networks Sec B CpE 401 High Speed Networks Sec A	26 16 15
Spring 2002	EE 434 Nonlinear Control Systems	7
Fall 2001	EE 231 Control Systems	33

Teaching at Univ of Texas at San Antonio (UTSA)

Semester	Course Information	No. of Students
Spring 2001	EE 4723 Intelligent Robotics EE 3413 Analysis & Design of Control	22 30
Spring 2000	EE 3413 Analysis & Design of Control EE/CS 5343 Intelligent Robotics	27 21
Fall 2000	EE 5463 Artificial Neural Networks EE 3413 Analysis & Design of Control	7 26
Spring 1999	EE 4443 Discrete-time Control EE 3413 Analysis & Design of Control	12 27
Fall 1999	EE 5143 Linear Systems and Control EE 4723 Intelligent Robotics	10 26

Teaching AT UTSA

Summer 1999 EE 2323 Engineering Analysis
Summer 2001 EE 3523 Electromechanical systems
*Note that within three years several courses have been introduced and taught.

Memberships:

- Member of Institution of Engineers, India (82-86)
- Member of IEEE Institution of Engineers Inc., USA (88-Present)
- Sr. Member (99-2015)
- Honorary member of Eta Kappa Nu(93-Present)
- Honorary member of Tau Beta Pi (93-Present)
- Inducted as a Member into International Scientific Research Society Sigma Xi (94-Present)
- SAE Member (96-99)

Administrative Experience

1. Managed Intelligent Systems Center-faculty over 55 across campus involved in the multidisciplinary center on Campus.
2. Managed NSF I/UCRC Center with several companies, faculty members and part of 60+ company members over four universities.
3. As an Associate chair for graduate studies, grown the graduate program in Electrical and Computer Engineering dept by 400% with applications increasing by several fold.
4. Established Embedded Systems and Networking Laboratory at the University of Missouri-Rolla.
5. Worked with other faculty on the Bioengineering Ph.D. Proposal for EE Department at UTSA and University Health Science Center. It is approved in 2001.
6. Assisted the Dean to develop Electrical Engineering Ph.D. Proposal at University of Texas at San Antonio.
7. Director & Consultant, Systems and Controls Research, Caterpillar, Inc from 1996-1998, where I supervised a total of 15 engineers with budgets planned every year. My responsibilities included hiring and guiding people.
8. Established Intelligent Systems Laboratory, funded by several agencies, at Univ. of Texas at San Antonio. Several faculty members later joined the laboratory.

Keynote/Plenary Talks

1. **Plenary**, "Lifelong Machine learning/AI for Robotics/Autonomous Systems", Recent Innovations in Production Engineering (RIPE 2024), Anna University, Chennai, India, May 30-31th, 2024.
2. **Plenary**, "Machine Learning/AI in 6G networks", Mobile Radio Communications & 5G Networks (MRCN 2024), August 25th-26th, 2024, Kurukshetra, Haryana, India.
3. **Keynote**, "Lifelong learning of Robotics/Autonomous Systems", International Advanced Computing Conference (IACC), Pune, India December 15-16th, 2023.
4. **Keynote**, "Artificial Intelligence: Good, bad and the ugly for 6G networks", Mobile Radio

Communications & 5G Networks (MRCN 2023), August 25th-26th, 2023, Kurukshetra, Haryana, India.

5. **Keynote, "**Lifelong Online Learning in Feedback Control of Robotics/Autonomous Systems", 2023 International Workshop on Industrial Internet of Things and Smart Manufacturing, June 17-18, 2023 in Ezhou, China.
6. **Keynote**, "Direct Error Driven Deep Learning for Bigdata Classification", 2023 International Conference on Electrical, Electronics, Communications and Information System, Feb 23-24th, 2023, Singapore.
7. **Keynote**, "Direct Error Driven Deep Learning for Bigdata Analytics", 2nd International Conference on Advanced Network Technologies and Intelligent Computing (ANTIC-2022), Banaras Hindu University, Varanasi, India, 22nd -24th December, 2022. https://www.antic.co.in
8. **Keynote**, "Lifelong Online Learning in Feedback Control of Autonomous/Robotics Systems", International Conference on Emerging Electronics and Automation, NIT Silchar, India, 16th-18th December, 2022. E2a2022.nits.ac.in
9. **Keynote**, "A Cross-layer Network Protocol and Optimal Control Design for Cyber-Physical Systems", 3rd International Conference on Mobile Radio Communications and 5G networks (MRCN2022)", August 5-6th, 2022, Kurukshetra, India.
10. **Plenary**, "Machine Learning/Artificial Intelligence for Robotics and Autonomous Systems", 11th International Advanced Computing Conference (IACC), December 18-19th, 2021, University of Malta, Malta, https://computingconf.com/speakers.php.
11. **Keynote**, "Machine Learning/Artificial Intelligence for Robotics and Autonomous Systems", 2nd International Conference on Robotics and Artificial Intelligence (ROAI), Nov 28-30th, 2021, India, https://advancedcomputingresearchsociety.org/roai-2021.
12. **Plenary**, "Machine Learning/AI in Feedback Control: Challenges and Successful Applications", International Symposium of Asian Control Association on Intelligent Robotics and Industrial Automation (IRIA 2021), Goa, Sept 2021.
13. **Keynote**, "Artificial Immune Systems as a Function Approximator for Prognostics Applications", IEEE Madras Section, Nature Inspired Workshop, July 24-25th, 2021.
14. **Plenary**, "Direct Driven Deep Learning Scheme for Bigdata Classification", International Conference on Communication and Information Systems, May 24th-26th, 2021, Valencia, Spain.
15. **Plenary**, "Artificial Intelligence: Good, bad and the ugly", International Advanced Conference on Computing, Dec 5th-6th, 2020, Goa, India.
16. **Plenary**, "Deep Neural Network based Reinforcement Learning for Online Games", International Advanced Conference on Computing, Dec 14-15th, 2019, Trichy, India
17. **Plenary**, "Learning Controllers: Transitioning from Theory to Practice", IEEE Conference on Control Technology and Applications, August 18-21, 2019 Hong Kong.
18. **Plenary**, "Direct Error Driven Learning for Bigdata Analytics", International Advanced Conference on Computing, Dec 14-15th, 2018, New Delhi India.
19. **Plenary**, "Optimal Adaptive Control using Event Driven Approximate Dynamic Programming", IEEE Latin America Conference, Nov 7-9th, 2018, Guadalajara, Mexico.
20. **Keynote**, "Cyber-physical Systems: Opportunities and Challenges", International Conference on Systems Design and Engineering, held at Sastra University, Tanjore, December 11-12, 2017.
21. **Keynote**, "Cyber-physical Systems", IEEE CIS and Signal Processing Workshop, held in Ahmedabad, April 11-13, 2017.
22. **Keynote**, "A Novel Hybrid Reinforcement Learning Approach and its Application to Optimal Control of Dynamic Systems", IEEE Computational Intelligence Workshop, Chennai, January 2nd, 2017.
23. **Keynote**, "Event-triggered Control", IEEE CSS workshop on CPS, Jan 5-8th, 2017.
24. **Keynote**, "Cyber-physical Systems and its application to Smart Cities", International Conference on Smart Cities, December 2016.
25. **Plenary**, "A Novel Hybrid Reinforcement Learning Approach and its Application to Optimal Control of Dynamic Systems", 2nd Cognitive Conference, Mysore, India, August 2016.
26. **Keynote**, "Neural Networks and Control", in IEEE Workshop on Computational Intelligence, Bengaluru, August 2016.
27. **Keynote**, "Neural Networks and Control", in IEEE Workshop on Computational Intelligence, Ahmedabad, March 2016.

28. **Keynote**, "Event Driven Adaptive Dynamic Programming", in IEEE Workshop on Computational Intelligence, Kanpur, India 2015.
29. **Plenary**, "Optimal adaptive control of uncertain continuous-time systems", in 2013 Chinese Conference on Decision and Control, Guiyang, China, May 25th, 2013.
30. **Keynote**, "Cyber-Physical Systems", in NETCOM, Chennai, Dec 23rd, 2012
31. **Plenary**, "Wireless Sensor Networks/RFID: Challenges & Future Directions", 2007 Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP), Dec 2007, Melbourne
32. **Keynote**, "Neural Network Control", ANNIE 2009.

REFEREED JOURNAL PAPERS

Impact Factor (2022): IEEE Transactions on Neural Networks and Learning Systems 14.255
IEEE Transactions on Systems, Man and Cybernetics: Systems 11.47
IEEE Transactions on Cybernetics 19.118
IEEE Transactions on Industrial Electronics 8.162
IEEE Transactions on Automatic Control 6.549
IEEE Transactions on Control Systems Technology 5.418
IEEE Transactions on Knowledge and Data Engineering 9.235
IEEE Transactions on Bigdata 4.271
IEEE Transactions on Automation Science and Engineering 6.636
Automatica 6.15
IEEE Transactions on Mobile Computing 6.075
IET Transactions on Control Theory and Applications 3.527
ASME Journal of Dynamic Systems and Control 1.640

***Graduate student**

1. Ehsan Soleimani*, Irfan Ganie* and S. Jagannathan, "Safe optimal control of quadrotor formations using multilayer neural networks and continual learning", International Journal of Adaptive Control and Signal Processing, accepted for publication, April 2025.

2. Irfan Ganie* and S. Jagannathan, "Online lifelong optimal tracking control of uncertain nonlinear continuous-time strict-feedback systems using deep neural networks" Neural Networks, Minor revision, December 2024.

3. B. Farzanegan* and S. Jagannathan, "Explainable and safety aware deep reinforcement learning-based control of nonlinear discrete-time systems using neural network gradient decomposition", IEEE Transaction on Automation Science and Engineering, vol. 22, pp. 13557-13569, March 2025.

4. B. Farzanegan* and S. Jagannathan, "Lifelong safe optimal tracking control of nonlinear strict feedback discrete-time systems", International Journal of Adaptive Control and Signal Processing, vol. 39, no.3, pp.451-470, 2025.

5. Irfan Ganie* and S. Jagannathan, "Optimal trajectory tracking of uncertain nonlinear continuous-time strict-feedback systems with dynamic constraints" International Journal of Control, vol. 98, no.4, pp.845-859, 2025.

6. Shirin Nasr and S. Jagannathan, "SIFT feature-based relative altitude estimation enhanced with Siamese network", IEEE Transactions on Geoscience and Remote Sensing, vol.63, pp.1-15, January 2025.

7. R. Prakash*, L. Behera, and S. Jagannathan, "Adaptive critic optimal control of an uncertain robot manipulator with Applications", IEEE Transactions on Control Systems Technology, vol.33, no.1, pp. 316-326, January 2025.

8. B. Farzanegan*, R. Moghadam*, S. Jagannathan, and N. Pappa, "Optimal adaptive tracking control of partially uncertain nonlinear discrete-time systems using lifelong hybrid learning", IEEE Transactions on Neural Networks and Learning Systems, vol.35, no. 12, pp. 17254-17265, December 2024.

9. Irfan Ganie* and S. Jagannathan, “Lifelong learning-based optimal trajectory tracking control of constrained nonlinear affine systems Using deep neural networks”, IEEE Transactions on Cybernetics, vol.54, no. 12, pp. 7133-7146, December 2024.

10. H. Ferdowsi*, Jia Cai*, and S. Jagannathan, “Adaptive fault estimation and accommodation for distributed parameter systems with coupled parabolic partial differential equations”, Journal of Control and Decision, pp. 1-16, 2024. https://doi.org/10.1080/23307706.2024.2388560.

11. Irfan Ganie* and S. Jagannathan, “Lifelong reinforcement learning tracking control of nonlinear strict-feedback systems using multilayer neural networks with constraints " Neurocomputing, vol. 60, Oct 2024.

12. Charles Rawlins* and S. Jagannathan, “Predicting IoT distributed ledger fraud transactions with a lightweight GAN network”, IEEE Transactions on Mobile Computing, vol.23, no.7, pp.7818-7929, July 2024.

13. Krishnan Raghavan*, Vignesh Narayanan*, and S. Jagannathan, "Cooperative deep Q-learning framework for environments providing image feedback", IEEE Transactions on Neural Networks and Learning Systems, vol. 35, no. 7, pp. 9267-9276, July 2024.

14. Max Geiger*, V. Narayanan*, and S. Jagannathan, “Optimal trajectory tracking for uncertain linear discrete-time systems using time-varying Q -learning”, International Journal of Adaptive Control and Signal Processing, pp.2340-2368, vol. 38, no.7, July 2024.

15. Charles Rawlins*, S. Jagannathan, and Sid Nadendla, “A reputation system for provably-robust decision-making in IoT blockchain networks”, IEEE Internet of Things Journal, vol. 11, no. 8, pp. 14088-14099, April 2024.

16. I. Ganie* and S. Jagannathan, “Continual online learning-based optimal tracking control of nonlinear strict-feedback systems: application to unmanned aerial vehicles”, Complex Dynamic Systems, vol. 4, no. 1, pp. 1-25, 2024.

17. H. Ferdowsi*, Jia Cai*, and S. Jagannathan, “Adaptive resilient control of a class of nonlinear distributed parameter systems with actuator faults”, Systems Science and Control Engineering, vol. 12, no. 1, pp. 1-13, 2024.

18. Irfan Ganie* and S. Jagannathan, “Lifelong learning-based multilayer neural network control of nonlinear continuous-time strict-feedback systems”, International Journal of Robust and Nonlinear Control, vol. 34, no. 2, pp. 1397–1416, 2024.

19. Irfan Ganie* and S. Jagannathan, “Lifelong deep learning-based control of robot manipulators”, International Journal of Adaptive Control and Signal Processing, vol. 37, no. 12, pp. 3169-3192, December 2023.

20. B. Farzanegan*, and S. Jagannathan, “Continual reinforcement learning formulation for zero-sum game-based constrained optimal tracking”, IEEE Transactions on Systems, Man and Cybernetics: Systems, vol. 53, no. 12, pp. 7744-7757, December 2023.

21. Surbi Gupta*, Gaurav Singal, Deepak Garg, Jagannathan Sarangapani, “QC_SANE: Robust control in DRL using quantile critic with spiking actor and normalized ensemble", IEEE Transactions on Neural Networks and Learning Systems, vol. 34, no. 9, pp. 6656-6662, Sept. 2023.

22. H. Ferdowsi*, Jia Cai*, and S. Jagannathan, “Filter-based detection and isolation in distributed parameter systems modeled by parabolic differential equations”, IEEE Access, vol. 11, pp. 45011-45027, 2023, doi: 10.1109/ACCESS.2023.3268702.

23. R. Moghadam*, V. Narayanan*, and S. Jagannathan, “Event-triggered optimal adaptive control of partially unknown linear continuous-time systems with state delay”, IEEE Transactions on Systems, Man

and Cybernetics: Systems, vol.53, no.6, pp. 3324-3337, June 2023.

24. R. Moghadam* and S. Jagannathan, “Online optimal adaptive control of uncertain nonlinear continuous-time systems with input and state delay”, IEEE Transactions on Neural Networks and Learning Systems, vol.34, no.6, pp. 3195-3204, June 2023.

25. Krishnan Raghavan*, S. Jagannathan, and V. Samaranayake, "A game-theoretic approach for addressing domain-shift in big-data", IEEE Transactions on Bigdata, vol.8, no.6, pp. 1610-1621, December 2022.

26. Tejalal Choudhary*, Vipul Kumar Mishra, Anurag Goswami, Jagannathan Sarangapani, “Inference aware convolutional neural network pruning”, Future Generation Computer Systems, vol. 135, pp. 44-56, Oct 2022.

27. Krishnau Nath*, Manas Kumar Bera, and S. Jagannathan, “Concurrent-learning based neuro-adaptive robust tracking control of a wheel mobile robot: An event-triggered approach”, IEEE Transactions on Artificial Intelligence, vol. 4, no. 6, pp. 1514-1525, Sept. 2022.

28. R. Moghadam*, P. Natarajan, and S. Jagannathan, “Online optimal adaptive control of partially uncertain nonlinear discrete-time systems using multilayer neural networks”, IEEE Transactions on Neural Networks and Learning Systems, vol. 33, no. 9, pp. 4840-4850, Sept. 2022.

29. C. Rawlins* and S. Jagannathan, “An intelligent distributed ledger construction algorithm for IoT”, IEEE Access, accepted for publication, vol. 10, pp. 10838-10851, 2022.

30. V. Narayanan*, H. Moderes, S. Jagannathan and F. L. Lewis, “Event-driven off-policy reinforcement learning for control of interconnected systems”, IEEE Transactions on Cybernetics, vol. 52, no. 3, pp. 1936-1946, March 2022.

31. Tejalal Choudhary*, Vipul Kumar Mishra, Anurag Goswami, Jagannathan Sarangapani, “Heuristic-based automatic pruning of deep neural networks”, Neural Computing and Applications, vol. 34, no. 6, pp. 4889–4903, March 2022.

32. H. Ferdowsi*, Jia Cai*, and S. Jagannathan, “Actuator and sensor fault detection and failure prediction for systems with multi-dimensional nonlinear partial differential equations”, International Journal of Control, Automation, and Systems, http://dx.doi.org/10.1007/s12555-019-0622-, Springer, vol. 20, no. 3, pp. 789-802, 2022.

33. Jinna Li, Z. Xiao, T. Chai, F.L. Lewis, and S. Jagannathan, " Adaptive interleaved reinforcement learning: robust stability of affine nonlinear systems with unknown uncertainty", IEEE Transactions on Neural Networks and Learning Systems, vol.33, no.1, pp.270-280, January 2022.

34. R. Prakash*, L. Behera, S. Mohan, and S. Jagannathan, “Dual loop optimal control of a robot manipulator and its application in warehouse automation”, IEEE Transactions on Automation Science and Engineering, vol. 19, no. 1, pp. 262-279, January 2022.

35. Krishnan Raghavan*, Shweta Garg*, S. Jagannathan, and V. Samaranayake, "Distributed min-max learning scheme for neural network with applications to high dimensional classification", IEEE Transactions on Neural Networks and Learning Systems, vol. 32, no.10, pp. 4323-4333, October 2021. **(Learning scheme for Bigdata analytics)**

36. Tejalal Choudhary*, Vipul Kumar Mishra, Anurag Goswami, Jagannathan Sarangapani, “A transfer learning with structured filter pruning approach for improved breast cancer classification on point-of-care devices”, Journal of Computers in Biology and Medicine, vol.134, 104432, July 2021.

37. D. Tran*, T. Yucelen, Sarangapani Jagannathan, D. Casbeer, “Distributed co-estimation in heterogeneous sensor networks”, International Journal of Control, vol. 94, no. 8, pp. 2032-2046, July 2021.

38. A. Sahoo*, V. Narayanan, and S. Jagannathan, "Resource aware learning-based optimal control of cyber-physical systems", IEEE TC on Cyber-Physical Systems, vol. 6, No. 1, pp. 24-34, March 2021.

39. Haifeng Niu* and S. Jagannathan, "Flow based attack detection and accommodation for networked control systems", International Journal of Control, vol. 94, no. 3, pp. 834-847, March 2021. **(Adversarial attack mitigation)**

40. V. Narayanan*, H. Modares, and S. Jagannathan, "Event-triggered control of input-affine nonlinear interconnected systems using multi-player game", International Journal of Robust and Nonlinear Control, vol. 31, no. 3, pp. 950-970, February 2021.

41. P. Natarajan, R. Moghadam*, and S. Jagannathan, "Online deep neural network-based feedback control of a Lutein bioprocess", Journal of Process Control, vol. 98, pp. 41-51, February 2021. **(Deep NN for medical applications)**

42. T. Choudhary*, V. Mishra, A. Goswami, and S. Jagannathan, "A comprehensive survey on model-based compression and acceleration", Artificial Intelligence Review, vol. 53, pp. 5113-5155, October 2020.

43. R. Prakash*, L. Behera, S. Mohan, and S. Jagannathan, "Dynamic trajectory generation and a robust controller to intercept a moving ball in a game setting", IEEE Transactions on Control Systems Technology, vol. 28, no. 4, pp. 1418-1432, July 2020. (**Agent playing a game)**

44. Krishnan Raghavan*, S. Jagannathan, V. Samaranayake, "Direct error-driven learning for deep neural networks with applications to big-data", IEEE Transactions on Neural Networks and Learning Systems, vol. 31, no. 5, pp. 1763-1770, May 2020. **(Deep NN Learning mitigating Vanishing Gradient)**

45. J. Daniel Peterson*, Tansel Yucelen, Jagannathan Sarangapani, and Eduardo Pasiliao, "Active-passive dynamic consensus filters with reduced information exchange and time-varying agent roles", IEEE Transactions on Control Systems Technology, vol. 28, no. 3, pp. 844-856, May 2020.

46. A. Raj*, S. Jagannathan, and Tansel Yucelen, "Distributed state estimation and tracking using active passive networks", International Journal of Adaptive Control and Signal Processing, vol. 34, no. 3, pp. 330-353, March 2020.

47. Haifeng Niu*, C. Bhowmick*, and S. Jagannathan, "Attack detection and approximation in nonlinear networked control systems using neural networks", IEEE Transactions on Neural Networks and Learning Systems, Vol. 31, No. 1, pp. 235-245, January 2020. **(Learning Control System with Adversaries and Mitigation)**

48. Krishnan Raghavan*, V. Samaranayake and S. Jagannathan, "A hierarchical dimension reduction approach for big data with application to fault diagnostics" Bigdata Research, vol. 18, p. 100121, December 2019. doi: 10.1016/j.bdr.2019.100121.

49. Krishnan Raghavan*, V. Samaranayake, and S. Jagannathan, "A multi-step nonlinear dimension-reduction approach with applications to big data", IEEE Transactions on Knowledge and Data Engineering, vol. 31, no. 4, pp. pp. 2249-2261, December 2019.

50. W Meng*, Qinmin Yang*, S. Jagannathan, and Youxian Sun, "Distributed control of high-order nonlinear input constrained multiagent systems using a backstepping-free method", IEEE Transactions on Cybernetics, vol. 49, no. 11, pp. 3923-3933, November 2019.

51. Haifeng Niu*, A. Sahoo*, C. Bhowmick* and S. Jagannathan, "An optimal hybrid learning approach for attack detection in linear networked control systems", IEEE CAA Automatica Sinica, vol.6, no. 6, pp. 1404-1416, November 2019.

52. B. Fan*, Q. Yang*, S. Jagannathan, Y. Sun, "Output-constrained control for nonaffine multi-agent systems with partially unknown control directions," IEEE Transactions on Automatic Control, vol. 64, no. 9, pp. 3936-3942, September 2019.

53. V. Narayanan*, A. Sahoo*, and S. Jagannathan, “A min-max approach to event- and self-triggered sampling and regulation of linear systems" IEEE Transactions on Industrial Electronics, vol. 66, no. 7, pp. 5433-5440, July 2019.

54. V. Narayanan*, S. Jagannathan, K. Ramkumar, "Event-sampled output feedback control of robot manipulators using neural networks" IEEE Transactions on Neural Networks and Learning Systems, vol. 30, no. 6, pp. 1651-1658, June 2019.

55. V. Narayanan*, A. Sahoo*, S. Jagannathan, and K. George, "Approximate optimal distributed control of nonlinear interconnected systems using event-triggered nonzero-sum games" IEEE Transactions on Neural Networks and Learning Systems, vol. 30, no. 5, pp. 1512-1522, May 2019.

56. Haci Guzey*, Travis Dierks*, S. Jagannathan, and Levent Acar, “Modified consensus-based output feedback control of quadrotor UAV formations using neural networks", Journal of Intelligent and Robotic Systems, pp. 1-18, Online November 2018 10.1007/s10846-018-0961-y, vol. 94, no.1, pp. 283-300, April 2019.

57. Eyad Taqieddin*, H. Al-Dahoud, Haifeng Niu, and S. Jagannathan, “Tag ownership transfer in RFID systems: A survey of existing protocols and open challenges, IEEE Access, vol. 6, no. 1, pp. 32117- 32155, December 2018.

58. Vignesh Narayanan* and S. Jagannathan, “A reinforcement learning with exploration-based event-triggered distributed control of nonlinear interconnected systems”, IEEE Transactions on Cybernetics, vol. 48, no. 9, pp. 2510-2519, September 2018.

59. B. Talaei*, S. Jagannathan, and J. Singler, "Boundary control of two-dimensional Burgers PDE using approximate dynamic programming", IEEE Transactions on Neural Networks and Learning Systems, vol. 29, no. 8, pp. 3669-3681, August 2018.

60. Vignesh Narayanan* and S. Jagannathan, “Event-triggered distributed approximate optimal state and output control of affine nonlinear interconnected systems”, IEEE Transactions on Neural Networks and Learning Systems, vol. 29, no. 7, pp. 2846-2856, July 2018.

61. Bo Fan*, Qinmin Yang*, S. Jagannathan, and Youxian Sun, “Asymptotic tracking controller design of nonlinear systems with guaranteed performance”, IEEE Transactions on Systems, Man and Cybernetics: Systems, vol. 48, no. 7, pp. 2001-2011, July 2018.

62. Nathan Szanto*, V. Narayanan*, S. Jagannathan, “Event-sampled direct adaptive neural network output- and state-feedback control of uncertain strict-feedback system”, IEEE Transactions on Neural Networks and Learning Systems, vol. 29, no. 5, pp. 1850-1863, May 2018.

63. B. Talaei*, S. Jagannathan, and J. Singler, “Output feedback boundary control of uncertain coupled semi-linear parabolic PDE using neuro dynamic programming”, IEEE Transactions on Neural Networks and Learning Systems, vol. 29, no.4, pp 1263-1274, April 2018.

64. B. Talaei*, S. Jagannathan, and J. Singler, "Boundary control of linear uncertain one-dimensional parabolic PDE using approximate dynamic programming", IEEE Transactions on Neural Networks and Learning Systems, vol. 29, no.4, pp 1213-1225, April 2018.

65. Hasan Ferdowsi* and S. Jagannathan, “Fault diagnosis of distributed parameter systems modeled by linear parabolic partial differential equations with state faults, ASME Journal of Dyn. Sys., Meas., Control, vol. 140, no. 1, pp. 011010-1-011010-6, January 2018.

66. Dzung Tran*, Tansel Yucelen, Selahattin B. Sarsilmaz, S. Jagannathan, “Distributed input and state estimation using local information in heterogeneous sensor networks”, Frontiers in Robotics and AI, Section on Multi-Robot Systems, vol. 4, pp. 30, 2017.

67. H. Ferdowsi* and S. Jagannathan, “Decentralized fault diagnosis and prognosis scheme for interconnected nonlinear discrete-time systems,” International Journal of Prognostics and Health Management (IJPHM), vol. 8, pp. 1-15, 2017.

68. Haci Guzey*, Travis Dierks, S. Jagannathan, and Levent Acar, “Hybrid consensus-based control of nonholonomic mobile robot formation", Journal of Intelligent and Robotic Systems, vol. 88, no. 1, pp. 181-200, October 2017.

69. S. Kazemlou*, S. Mehareen*, H. Saberi, and S. Jagannathan, “Stability of the small-scale interconnected DC grids via output-feedback control”, IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 5, no. 3, pp. 960-970, September 2017.

70. W. Meng*, Q. Yang*, S. Jagannathan, and Y. Sun, “Decentralized control of nonlinear multi-agent systems with asymptotic consensus”, IEEE Transactions on Systems, Man and Cybernetics, vol. 47, no. 5, pp 749-757, May 2017.

71. H. Ferdowsi* and S. Jagannathan, “Decentralized fault tolerant control of a class of nonlinear interconnected systems”, International Journal of Control, Automation, and Systems, vol. 15, no. 2, pp. 527-536, 2017.

72. A. Sahoo*, Hao Xu* and S. Jagannathan, “Approximate optimal control of affine nonlinear continuous-time systems using event sampled neuro dynamic programming”, IEEE Transactions on Neural Networks and Learning Systems, vol. 28, no. 3, pp. 639-652, March 2017.

73. A. Sahoo* and S. Jagannathan, “Stochastic optimal regulation of nonlinear networked control systems by using event driven adaptive dynamic programming”, IEEE Transactions on Systems, Man and Cybernetics, vol. 47, no. 2, pp. 425-438, February 2017.

74. A. Sahoo*, H. Xu* and S. Jagannathan, “Near optimal event-triggered control of nonlinear discrete-time systems using neuro dynamic programming”, IEEE Transactions on Neural Networks and Learning Systems, Vol. 27, Issue 9, pp. 1801 – 1815, September 2016.

75. V. Narayanan* and S. Jagannathan, "Distributed adaptive optimal regulation of uncertain large-scale interconnected systems using hybrid Q-learning approach," IET Transactions on Control Theory & Applications, vol. 10, no. 12, pp. 1448-1457, 2016.

76. N. Guzey*, M. T. Ghasr, and S. Jagannathan, “Analysis of localization methods for unintended emitting sources”, IOP Journal of Measurement Science and Technology,” vol.27, no 10, page 105104-105113, September 2016.

77. J. Ding, Y. Song, T. Chai, S. Jagannathan, F.L. Lewis, Guest Editorial, IET Transactions on Control Theory and Applications, Volume 10, Issue 12, p. 1319 – 1321, August 2016.

78. Jia Cai*, H. Ferdowsi* and S. Jagannathan, “Model-based fault detection, estimation and prediction for a class of linear one-dimensional PDE”, Automatica, vol. 66, pp. 122-131, March 2016.

79. Haifeng Niu*, E. Taquiedin*, and S. Jagannathan, “EPC Gen2v2 RFID standard authentication and ownership management protocol”, IEEE Transactions on Mobile Computing, vol. 15, no. 1, pp. 137-149, 2016.

80. A. Sahoo*, H. Xu* and S. Jagannathan, “Neural network-based event-triggered state feedback control of nonlinear continuous-time systems”, IEEE Transactions on Neural Networks and Learning Systems, vol. 27. No. 3, pp.497-509, March 2016.

81. A. Sahoo*, H. Xu* and S. Jagannathan, “Adaptive neural network-based event-triggered control of single-input single-output nonlinear discrete time systems”, IEEE Transactions on Neural Networks and Learning Systems, vol. 27, no. 1, pp. 151-164, January 2016.

82. Haci Guzey*, Hao Xu* and S. Jagannathan, "Neural network-based finite horizon optimal adaptive consensus control of mobile robot formations", Optimal Control, Methods and Applications, vol. 37, pp. 1014–1034, 2015.

83. Haifeng Niu* and S. Jagannathan, "Optimal defense and control of dynamic systems modeled as cyber-physical systems", Journal of Defense Modeling and Simulation, (invited paper) vol. 12, no. 4, pp. 423-438, 2015.

84. Qiming Zhao*, Hao Xu*, and S. Jagannathan, "Finite-horizon near optimal adaptive control of uncertain linear discrete-time systems", Optimal Control, Applications, and Methods, vol. 36, no. 6, pp. 853-872, November/December 2015.

85. Q. Yang*, S. Jagannathan and Y. Sun, "Robust integral of neural network and error sign control of MIMO nonlinear systems", IEEE Transactions on Neural Networks and Learning Systems, vol. 26, no. 12, pp. 3278-3286, 2015, December 2015.

86. H. Zargarzadeh*, T. Dierks*, and S. Jagannathan, "Optimal control of nonlinear continuous-time systems in strict-feedback form", IEEE Transactions on Neural Networks and Learning Systems, vol. 26, no. 10, pp. 2535-2549, October 2015.

87. Hao Xu*, Qiming Zhao*, and S. Jagannathan, "Finite-horizon near optimal output feedback neural network control of quantized nonlinear discrete-time systems with input constraint, IEEE Transactions on Neural Networks and Learning Systems, vol. 26, no. 8, pp. 1776-1788, August 2015.

88. N. Guzey*, Hao Xu*, and S. Jagannathan, "Localization of near-field sources in spatially colored noise", IEEE Transactions on Instrumentation and Measurement, vol. 64, no. 8, pp 2302-2311, August 2015.

89. Qiming Zhao*, Hao Xu*, and S. Jagannathan, "Optimal control of uncertain quantized linear discrete-time systems", International Journal of Adaptive Control and Signal Processing, vol. 29, no. 3, pp. 325-345, March 2015.

90. Qiming Zhao*, Hao Xu*, and S. Jagannathan, "Neural network-based finite-horizon optimal control of quantized uncertain affine nonlinear discrete-time systems", IEEE Transactions on Neural Networks and Learning Systems, vol. 26, no. 3, pp. 486-499, March 2015.

91. Hao Xu* and S. Jagannathan, "Neural network based finite horizon stochastic optimal control design for nonlinear networked control systems", IEEE Transaction on Neural Networks and Learning Systems, vol. 26, no. 3, pp. 472-485, March 2015.

92. V. Thotla*, M. Zawodniok*, M. Ghasr, S. Jagannathan, and S. Agarwal, "Detection and localization of multiple R/C electronic devices using array detectors", IEEE Transactions on Instrumentation and Measurement, vol. 64, no. 1, pp. 241-251, January 2015.

93. Hao Xu*, A. Sahoo*, and S. Jagannathan, "Stochastic adaptive event-triggered control and network scheduling protocol co-design for distributed networked systems", IET Transactions on Control Theory and Applications, vol. 8, issue 18, pp. 2253-2265, December 2014.

94. N. Guzey*, Hao Xu*, and S. Jagannathan, "Localization of near field radio controlled unintended emitting sources in the presence of multipath fading", IEEE Transactions on Instrumentation and Measurement, Vol. 63, no. 11, pp. 2696-2703, Nov 2014.

95. Qiming Zhao*, Hao Xu*, and S. Jagannathan, "Near optimal output feedback control of nonlinear discrete-time systems based on neural network reinforcement learning", IEEE/CAA Journal of Acta Automatica Sinica, Vol. 1, no. 4, pp. 372-384, October 2014. (invited paper).

96. R. Basheer* and S. Jagannathan, "Localization and tracking of objects using cross-correlation of shadow fading noise", IEEE Transactions on Mobile Computing, vol. 13, no. 10, pp. 2293-2305, Oct 2014.

97. Hao Xu*, S. Jagannathan, and F.L. Lewis, "Stochastic optimal output feedback design for unknown linear discrete-time system zero-sum games under communication constraints", Asian Journal of Control, vol. 16, no. 5, pp. 1263-1276, Sept 2014. (Invited paper).

98. Hao Xu*, Qiming Zhao* and S. Jagannathan, "Optimal regulation of uncertain dynamical systems by using adaptive dynamic programming", Chinese Journal of Control and Decision Sciences, Vol. 1, no. 3, pp. 226-256, July 2014. (Invited paper for Special Inaugural Issue).

99. Balaje Thumati*, Miles Fienstein and S. Jagannathan, "A model-based fault prognostics scheme for Takagi-Sugeno systems", IEEE Transactions on Fuzzy Systems, vol. 22, no. 4, pp. 736-748, June 2014.

100. W. Meng*, Q.Yang*, S. Jagannathan, and Y. Sun "Adaptive neural control of high-order uncertain nonaffine systems: A transformation to affine systems approach", Automatica, vol. 50, no.5, pp.1473-1480, May 2014.

101. Balaje Thumati* and S. Jagannathan, "A model-based fault prognostics scheme for uncertain nonlinear discrete-time systems with multiple distinct faults", Transactions of the Institute of Measurement and Control, UK, Vol. 36, no.4, pp. 445-464, May 2014.

102. H. Ferdowsi*, S. Jagannathan, and M. Zawodniok, "An online outlier identification and removal scheme for improving fault detection performance", IEEE Transactions on Neural Networks and Learning Systems, vol. 25, no. 5, pp. 908-919, May 2014.

103. Hassan Zargarzadeh*, Travis Dierks* and S. Jagannathan, "Adaptive neural network based optimal control of nonlinear continuous-time systems in strict feedback form", International Journal of Adaptive Control and Signal Processing, Vol. 28, no. 3-5, pp. 305-324, March-May 2014.

104. David Nodland*, H. Zargarzadeh*, A. Ghosh, and S. Jagannathan, "Neuro-optimal control of an unmanned helicopter", Journal of Defense Modeling and Simulation, in Guest editorial by Greg Hudas, D. Mikulski, and F. Lewis, vol. 11, no. 1, pp.5-18, January 2014.

105. S. Mehraeen*, T. Dierks*, S. Jagannathan, and Mariesa Crow, "Zero-sum two-player game theoretic formulation of affine nonlinear discrete-time systems using neural networks", IEEE Transactions on Systems, Man and Cybernetics, vol. 43, no. 6, pp. 1641-1655, December 2013.

106. V. Thotla*, M. Ghasr, M. Zawodniok*, S. Jagannathan, and S. Agarwal, "Detection of super-regenerative receivers using Hurst parameter", IEEE Transactions on Instrumentation and Measurement, vol. 62, no. 11, pp. 3006-3014, November 2013.

107. H. Ferdowsi* and S. Jagannathan, "A unified model-based fault diagnosis scheme for nonlinear discrete-time systems with additive and multiplicative faults", Transactions of the Institute of Measurement and Control, pp. 452-462, vol. 35, no. 6, August 2013.

108. T. Dierks*, B. Brenner* and S. Jagannathan, "Neural network-based optimal control of mobile robot formation with reduced information exchange", IEEE Transactions on Control Systems Technology, vol. 21, no. 4, 1407-1415, July 2013.

109. Qiming Zhao*, Hao Xu*, and S. Jagannathan, "Fixed final time optimal adaptive control of linear discrete-time systems in input-output form", Journal of Artificial Intelligence and Soft Computing Research, vol. 3, no. 3, pp. 175-187, 2013. DOI 10.2478/jaiscr-2014-0012 (invited paper).

110. J. Hertenstein* and S. Jagannathan, "Simulation and detection of unintended electromagnetic emissions from super-regenerative receivers", IEEE Transactions on Instrumentation and Measurement, vol. 62, no. 7, pp. 2093-2100, July 2013.

111. M. Ghasr, Vivek Thotla*, M. Zawodniok* and J. Sarangapani, "Detection of super regenerative receiver using amplitude modulated stimulation", IEEE Transactions on Instrumentation and Measurement,

vol. 62, no. 7, pp. 2029-2036, July 2013.

112.David Nodland*, Hassan Zargarzadeh* and S. Jagannathan, "Neural network-based optimal adaptive output feedback control of a helicopter UAV", IEEE Transactions on Neural Networks and Learning Systems, vol. 24, no. 7, pp. 1061-1073, July 2013.

113.R. Basheer* and S. Jagannathan, "Localization of RFID tags using stochastic tunneling", IEEE Transactions on Mobile Computing, Vo. 12, no. 6, pp. 1225-1235, June 2013.

114.B. T. Thumati*, G. Halligan* and S. Jagannathan, "A novel fault diagnostics and prognostics scheme using a nonlinear observer with artificial immune system as an online approximator", IEEE Transactions on Control Systems Technology, vol. 21, no. 3, pp. 569-578, May 2013.

115.Hao Xu* and S. Jagannathan, "Stochastic optimal controller design for uncertain nonlinear networked control system via neuro dynamic programming", IEEE Transactions on Neural Networks and Learning Systems, , vol. 24, issue. 3, pp. 471-484, March 2013.

116.Priya Kasirajan*, Carl Larsen*, and S. Jagannathan," A new data aggregation scheme via adaptive compression for wireless sensor networks", ACM Transactions on Sensor Networks, vol.9, no.1, pp. 5:1-5:26, Feb. 2013.

117.Hao Xu* and S. Jagannathan, "Optimal adaptive distributed power allocation for enhanced cognitive radio network in the presence of channel uncertainties", International Journal of Computer Networks and Communications, vol. 5, no. 1, pp. 1-20, January 2013.

118.Hassan Zargarzadeh*, S. Jagannathan and J. Drallmeier, "Optimal adaptive NN control of nonaffine nonlinear discrete-time systems with application to HCCI engines", International Journal of Adaptive Control and Signal Processing, pp. 592-613, vol. 26, no. 7, 2012. (invited paper)

119.J. Massey*, J.B. Bettis, J. Drallmeier and J. Sarangapani, "A thermodynamic based HCCI engine model for adaptive nonlinear controller development", Proceedings of the Institution of Mechanical Engineers, Part D, Journal of Automobile Engineering, Volume 226, no. 11, pp. 1547 - 1563, November 2012.

120.Travis Dierks* and S. Jagannathan, "Online optimal control of affine nonlinear discrete-time systems with unknown internal dynamics by using time-based policy update", IEEE Transactions on Neural Networks and Learning Systems, vol. 23, no. 7, July 2012.

121.Hao Xu*, S. Jagannathan, F. L. Lewis, "Stochastic optimal control of unknown networked control systems in the presence of random delays and packet losses", Automatica, vol. 48, no. 6, pp. 1017-1030, June 2012. (second highly downloaded paper per the journal website)

122.Q. Yang* and S. Jagannathan, "Reinforcement learning controller design for affine nonlinear discrete-time systems using online approximators", IEEE Transactions on Systems, Man and Cybernetics: Part B, vol. 42, no. 2, pp. 377-390, April 2012.

123.T. Dierks*, B. Thumati*, and S. Jagannathan, "An online model-based fault accommodation scheme for nonholonomic mobile robots in formation", Journal of Defense Modeling and Simulation, in Guest editorial by Greg Hudas, D. Mikulski, and F. Lewis, vol. 9, no. 1, pp.17-32, January 2012. (invited paper)

124.A. Soylemezoglu*, S. Jagannathan and C. Saygin, "Mahalanobis-Taguchi system as a multi-sensor based-decision making prognostics tool for centrifugal pump failures", IEEE Transactions on Reliability, vol.60, no.4, pp.864-878, December 2011.

125.S. Mehraeen* and S. Jagannathan, "Decentralized near optimal control of a class of interconnected nonlinear discrete-time systems by using online Hamilton-Jacobi-Bellman formulation", IEEE Transactions on Neural Networks, vol. 22, no. 11, pp. 1757-1769. November 2011.

126.S. Mehraeen*, S. Jagannathan, and M. L. Crow, "Decentralized dynamic surface control of large scale interconnected systems in strict feedback form by using neural networks with asymptotic stabilization", IEEE Transactions on Neural Networks, vol.22, no. 11, pp. 1709-1722. November 2011.

127.B. Eslamnour*, S. Jagannathan, and M. Zawodniok*, "Dynamic channel allocation in wireless networks using adaptive learning automata", International Journal of Wireless Information Networks, Published electronically, vol. 18, No. 4, pp. 295-308, 2011.

128.C. Saygin and S. Jagannathan, "Radio frequency identification (RFID) enabling lean manufacturing", International Journal of Manufacturing Research, vol. 6, no. 4, pp. 321-336, 2011.

129.S. Ferrari, S. Jagannathan and F. Lewis, "Approximate dynamic programming and reinforcement learning: editorial", Journal of Control Theory and Applications, vol. 9, no.3, pp.309, August 2011.

130.T. Dierks* and S. Jagannathan, "Online optimal control of nonlinear discrete-time systems using approximate dynamic programming", Journal of Control Theory and Applications, vol. 9, no.3, pp.361-369, August 2011.

131.Gary Halligan* and S. Jagannathan, "PCA-based fault isolation and prognostics with application to pump", International Journal of Advanced Manufacturing Technology, vol. 55, no. 5, pp. 699-707, 2011.

132.E. Taqieddin*, A. Miller and S. Jagannathan, Survivability and reliability analysis of the trusted link state protocol for wireless ad hoc networks", International Journal of Wireless and Mobile Networks, vol. 3, no. 2, pp. 77-89, April 2011.

133.T. Dierks*, B. Brenner*, and S. Jagannathan, "Discrete time optimal control of nonholonomic mobile robot formations using linearly parameterized neural networks", International Journal of Robotics and Automation, vol. 26, no. 1, pp. 76-85, 2011. (invited)

134.A. Soylemezoglu*, S. Jagannathan, and C. Saygin, "Mahalanobis-Taguchi-System as a prognostics tool for rolling element bearing failures", ASME Journal of Manufacturing Science and Engineering, vol. 132, no. 5, Oct 2010.

135.M. L. Crow, M. Zarghami*, and S. Jagannathan, "Nonlinear control of FACTS devices for damping inter-area oscillations in power systems", IEEE Transactions on Power Delivery, vol. 25, no. 4, pp. 3113-3121, Oct. 2010.

136.S. Mehraeen*, S. Jagannathan, and M. L. Crow, "Power system stabilization using adaptive dynamic surface control", IEEE Transactions on Power Systems, vol. pp, no. 99, pp. 1-12, 2010.

137.S. Mehraeen*, S. Jagannathan, and M. L. Crow, "Novel dynamic representation and control of power systems with FACTS devices", IEEE Transactions on Power Systems, vol. 25, no. 3, pp.1542-1554, May 2010.

138.T. Dierks* and S. Jagannathan, "Neural network output feedback control of robot formations", IEEE Transactions on Systems, Man and Cybernetics: Part B, vol.40, no. 2, pp. 383-399, April 2010.

139.B. Thumati* and S. Jagannathan, "A model-based fault detection and prediction scheme for nonlinear multivariable discrete-time systems with asymptotic stability guarantees", IEEE Transactions on Neural Networks, vo. 21, no.3, pp. 404-423, March 2010. **(Selected as best paper with a review appeared in IEEE Computational Intelligence Magazine)**

140.S. Mehraeen*, S. Jagannathan, and K. Corzine, "Energy harvesting from vibration with high voltage (>100V) scavenging circuitry and tapered cantilever beam", IEEE Transactions on Industrial Electronics, vol.57, no. 3, pp. 820-830, March 2010.

141.M. Zarghami*, M. L. Crow, and S. Jagannathan (J. Sarangapani), J. Liu, and S. Attcitty, "A novel approach to inter-area oscillation damping by unified power flow controllers utilizing ultra-capacitors",

IEEE Transactions on Power Systems, vol. 25, no. 1, pp. 404-412, February 2010.

142.T. Dierks* and S. Jagannathan, "Output feedback control of a quadrotor UAV using neural networks", IEEE Transactions on Neural Networks, vol.21, no.1, pp. 50-66, January 2010. **(one of the highly cited papers)**

143.C. Saygin, Deepak Mohan*, and S. Jagannathan, "Real-time detection of grip length deviation during fastening of bolted joints: A Mahalanobis-Taguchi System (MTS) based approach", Journal of Intelligent Manufacturing, vol. 21, no. 4, pp. 377-392, 2010.

144.J.W. Fonda*, M. Zawodniok*, S. Jagannathan, and S. Watkins, "Adaptive distributed fair scheduling for multiple channels in wireless sensor networks", International Journal of Distributed Sensor Networks, vol. 5(6), pp. 824-833, 2009.

145.B. Thumati* and S. Jagannathan, "A robust fault detection and prognostics scheme for nonlinear discrete time input-output systems", International Journal of Computational Intelligence in Control, vol. 2, no. 1, pp.71-83, December 2009.

146.P. Shih*, B. Kaul*, S. Jagannathan, and J. Drallmeier, "Reinforcement learning based output-feedback control of nonstrict nonlinear discrete-time systems with application to engine emission control", IEEE Transactions on Systems, Man and Cybernetics: Part B, vol. 39, no. 5, Page(s):1162 – 1179, Oct. 2009. **(NOx and CO reduction and fuel efficiency improvement)**

147.T. Landstra*, M. Zawodniok* and S. Jagannathan, "Energy efficient hybrid key management protocols for wireless sensor networks, Int. Journal of Network Security, vol.9, no.2, pp.121-134, Sept. 2009.

148.T. Dierks*, B. Thumati*, and S. Jagannathan, "Optimal control of unknown affine nonlinear discrete-time systems using offline-trained neural networks with proof of convergence", Neural Networks, vol.22.pp. 851-860, 2009.

149.B. Kaul*, J. Vance*, J. Drallmeier, and Jagannathan Sarangapani, "A method for predicting performance improvements with effective cycle-to-cycle control of highly dilute SI engine combustion", Journal of Automobile Engineering, Proceedings of the Institution of Engineers-Part D, vol. 223,pp. 423-438, 2009.

150.T. Dierks* and S. Jagannathan, "Asymptotic adaptive neural network tracking control of nonholonomic mobile robot formations", Journal of Intelligent and Robotic Systems: Special Issue, vol. 56, no.1-2, pp. 153-176, 2009.

151.A. Soylemezoglu*, M. Zawodniok*, and S. Jagannathan, "RFID based smart freezer", IEEE Transactions on Industrial Electronics: Special Issue on RFID Technology, vol. 56, no. 7, pp.2347-2356, July 2009.

152. Reghu Anguswamy*, C. Saygin, and S. Jagannathan, "In-process detection of fastener grip length using embedded mobile wireless sensor network-based pull type tools", International Journal of Manufacturing Technologies and Special Issue on Advanced Manufacturing Technologies, vol. 4, no.2, pp. 154-170, 2009.

153. T. Dierks* and S. Jagannathan, "Neural network control of mobile robot formations using RISE feedback", IEEE Transactions on Systems, Man and Cybernetics: Part B, vol. 39, no. 2, pp. 332-347, April 2009.

154. Q. Yang*, and S. Jagannathan, "Creep and hysteresis compensation for nanomanipulation using atomic force microscope", Asian Journal of Control, Special Issue in Nano Manipulation and Control, vol. 11, no. 2, pp. 182-187, March 2009.

155. Jianjun Guo*, M. L. Crow and S. Jagannathan, "An improved UPFC control for oscillation damping", IEEE Transactions on Power Systems, vol. 24, no. 1, pp. 288-296, February 2009.

156. J. Vance*, B. Kaul*, S. Jagannathan, and J. Drallmeier, "Neuro-emission controller for minimizing cyclic dispersion of spark ignition engines with EGR levels", International Journal of General Systems, vol. 37, no. 6, pp.44-71, January 2009.

157. S. Jagannathan and P. He*, "Neural network-based state feedback control of nonlinear discrete-time system in non-strict feedback form", IEEE Transactions on Neural Networks, vol. 19, no. 12, pp. 2073-2087, December 2008.

158. Deepak Mohan*, C. Saygin, and S. Jagannathan, "Real-time detection of grip length deviation during pull-type fastening: A Mahalanobis-Taguchi System (MTS) based approach", International Journal of Manufacturing Technology, vol.39, No.9-10, pp. 995-1008, November 2008.

159. Kainan Cha*, A. Ramachandran*, and S. Jagannathan", Adaptive and probabilistic power control algorithms in dense RFID networks", International Journal of Distributed Sensor Networks, vol. 4, no. 4, 2008.

160. E. Taqieddin*, S. Jagannathan, and A. Miller, "Optimal energy delay routing protocol with trust levels for wireless ad hoc networks", International Journal of Network Security, vol. 7, no. 2, pp. 207-217, Sept. 2008.

161. P. Shih*, B. Kaul*, S. Jagannathan, and J. Drallmeier, "Reinforcement learning based dual-control methodology for complex nonlinear discrete-time systems with application to spark engine EGR operation", IEEE Transactions on Neural Networks, vol. 19, no. 8, pp. 1369-1388, August 2008.

162. Q. Yang*, J. Vance* and S. Jagannathan, "Neural network control of nonaffine nonlinear discrete-time systems", IEEE Transactions on Systems, Man and Cybernetics: Part B, vol. 38, no. 4, pp. 994-1001, August 2008.

163. Anil Ramachandran* and S. Jagannathan, "Use of frequency diversity in signal strength based location determination", Int. Journal of Ad hoc and Sensor Wireless Networks, vol. 5, no.3-4, pp. 203-233, 2008.

164. J. Fonda*, M. Zawodniok*, S. Jagannathan and S. Watkins, "Optimized energy-delay subnet routing protocol development and implementation for wireless sensor networks", Smart Materials and Structures, vol. 17, 045015, pp. 1-14, June 2008.

165. J. Vance* and S. Jagannathan, "Discrete-time neural network control of nonlinear systems in nonstrict feedback form", Automatica, vol. 44, no. 4, pp. 1020-1027, April 2008.

166. Q. Yang*, S. Jagannathan and E. Bohanan,"Automatic drift compensation using phase-correlation method for nanomanipulation", IEEE Trans on Nanotechnology, vol. 7, no.2, pp. 209-216, March 2008.

167. J. Vance*, A. Singh*, B. Kaul*, S. Jagannathan and J. Drallmeier, "Output feedback controller for operation of spark ignition engines at lean conditions using neural networks", IEEE Transactions on Control Systems Technology, vol. 16, no.2, pp. 214-228, March 2008. **(NOx and CO reduction and fuel efficiency improvement)**

168. Q. Yang* and S. Jagannathan, "A suite of robust controllers for the manipulation of micro-scale objects", IEEE Transactions on Systems, Man and Cybernetics-Part B, vol. 38, No. 1, pp. 113-125, February 2008.

169. Z. Chen* and S. Jagannathan, "Generalized Hamilton-Jacobi-Bellman formulation-based neural network control of affine nonlinear discrete-time systems", IEEE Transactions on Neural Networks, vol. 19, no. 1, pp. 90-106, January 2008.

170. K. Cha*, S. Jagannathan, and D. Pommerenke, "Adaptive power control with hardware implementation for wireless sensor and RFID networks", IEEE Systems Journal: Special Issue on RFID Technology-Opportunities and Challenges, Vol. 1, No. 2, pp. 145-153, Dec. 2007. **(NN decision methods**

for RFID networks for Boeing)

171.M. Zawodniok* and S. Jagannathan, "Energy efficient rate adaptation MAC protocol for wireless ad hoc networks", International Journal of Wireless Information Networks, vol. 14, no. 4, pp. 251-263, November 2007.

172.M. Zawodniok* and S. Jagannathan, "Predictive congestion control MAC protocol for wireless sensor networks", IEEE Transactions on Wireless Communications, vol. 6, No. 11, pp. 3955 – 3963, Nov. 2007. **(NN control methods for wireless sensor networks)**

173.K. Mitchell*, J. Fonda*, S. Watkins and S. Jagannathan, "Embeddable modular hardware for multi-functional sensor networks", Smart Materials and Structures, vol. 16, No. 5, N27-N34, Sept. 2007.

174.Wenxin Liu*, Jagannathan Sarangapani, G.K. Venayagamoorthy, Li Lu, D.C. Wunsch II, M. Crow, and David A. Cartes, " Decentralized neural network-based excitation control large scale power systems," International Journal of Control, Automation, and Systems, vol. 5, no. 5, pp. 526-538, October 2007.

175.J. Vance*, A. Singh*, B. Kaul*, S. Jagannathan and J. Drallmeier, "Neural network controller development and implementation for spark ignition engines with high EGR levels", IEEE Transactions on Neural Networks, vol. 18, no. 4, pp. 1083-1100, July 2007.

176.P. He* and S. Jagannathan, "Reinforcement learning-based neural network controller for nonlinear discrete-time systems with input constraints", IEEE Transactions on Systems, Man and Cybernetics-Part B, vol. 37, no.2, pp. 425-437, April 2007.

177.K. Cha*, M. Zawodniok*, A. Ramachandran*, S. Jagannathan and C. Saygin, "Interference mitigation and read-rate improvement in RFID-based network centric environments", Sensor Review, vol. 26, no. 4, 2006.

178.Q. Yang* and S. Jagannathan, "Atomic force microscope-based nano manipulation with drift compensation", International Journal of Nanotechnology, vol. 3, no.4, pp. 527-544, 2006.

179.A. Soylemezoglu*, M.J. Zawodniok*, K. Cha*, D. Hall*, J. Birt, J. Saygin, S. Jagannathan, "A testbed architecture for Auto-ID technologies", Assembly Automation vol.26, no.2, pp.127-136, 2006.

180.M. Peng*, S. Jagannathan and S. Subramanya, "End to end congestion control of multimedia high speed Internet", Journal of High Speed Networks, vol. 15, no. 4, pp. 357-378, 2006.

181.S. Jagannathan*, M. Zawodniok* and Q. Shang, "Distributed power control for cellular networks in the presence of fading channels", IEEE Transactions on Wireless Communications, vol.5, no.3, pp. 540-549, March 2006.

182.P. He* and S. Jagannathan, "Neuroemission controller for reducing cyclic dispersion in lean combustion spark ignition engines", Automatica, vol. 41, pp. 1133-1142, 2005.

183.P. He* and S. Jagannathan, "Reinforcement-based neuro-output feedback control of nonlinear discrete-time systems with input constraints", IEEE Transactions on Systems, Man and Cybernetics-Part B, vol. 35, no. 1, pp. 150-154, Feb. 2005.

184.S. Jagannathan, "Admission control design for high-speed networks: A hybrid system approach", Journal of High Speed Networks, Vol. 14, pp. 263-281, 2005.

185.S. Jagannathan and G. Galan*, "Adaptive critic neural network–based object grasping controller using a three-fingered gripper", IEEE Trans. on Neural Networks, vol. 15, No. 2, pp. 395-407, March 2004.

186.S. Jagannathan, and G. Galan*, "A one-layer neural network controller with preprocessed inputs for autonomous underwater vehicles", IEEE Trans. on Vehicular Technology, vol. 52, no. 5, pp. 1342-1355, Sept. 2003.

187.S. Jagannathan and J. Talluri*, “Adaptive predictive congestion control of high-speed networks”, IEEE Transactions on Broadcasting, vol.48, no.2, pp.129-139, June 2002.

188.S. Jagannathan and J. Talluri*, “Predictive congestion control of ATM networks: Multiple sources/single buffer scenario”, Automatica, vol. 38, pp. 815-820, 2002.

189.S. Jagannathan, " Control of a class of nonlinear systems using multilayered neural networks”, IEEE Transactions on Neural Networks, vol.12, no. 5, pp. 1113-1120, September 2001.

190.S. Jagannathan, M.W. Vandergrift, and F. L. Lewis, "Adaptive fuzzy logic control of discrete-time dynamical systems", Automatica, vol. 36, pp. 229-241, 2000.

191.S. Jagannathan and F. L. Lewis, “Robust backstepping control of a class of nonlinear systems using Fuzzy Logic”, International Journal of Information Systems”, vol. 12-13, pp. 223-240, 2000. (invited)

192.S. Jagannathan and F. L. Lewis, “Feedback linearization of nonlinear systems using fuzzy logic”, Journal of Intelligent and Fuzzy systems, vol.7, No.2, pp. 107-124, 1999.

193.S. Jagannathan, "Discrete-Time CMAC control of a feedback linearizable nonlinear systems under a Persistence of Excitation", IEEE Trans. on Neural Networks, vol. 10, no. 1, pp.128-137, January 1999.

194.S. Jagannathan and F. L. Lewis, “Robust backstepping control of robot manipulators”, Journal of Intelligent and Robotic Systems”, vol.23, pp.105-128, November 1998. (invited)

195.S. Jagannathan, "Adaptive fuzzy logic control of feedback linearizable nonlinear systems with persistence of excitation", Automatica, vol. 34, no.11, pp, 1295-1310, November 1998.

196.S. Jagannathan, S. Commuri and F. L. Lewis, "Feedback linearization using CMAC neural networks", Automatica, vol.34, no.3, March 1998.

197.S. Jagannathan, “Discrete-Time fuzzy logic control of a mobile robot with an onboard manipulator”, International Journal of Systems Science, vol.28, no.12, pp. 1195-1209, 1997.

198. S. Jagannathan, "Automatic inspection of wave soldered joints using neural networks", Journal of Manufacturing Systems, vol. 16, no.6, pp. 389-398, 1997.

199. S. Commuri, S. Jagannathan and F. L. Lewis, “CMAC neural network control of robot manipulators”, Journal of Robotics Systems, vol.14, no.6, pp. 465-482, June 1997.

200. S. Jagannathan and F. L. Lewis, "Robust implicit self-tuning regulator/MRAC: convergence and stability", Automatica, vol.32, no.12, pp.1629-1644, December 96.

201. S. Jagannathan and F. L. Lewis, "Identification of nonlinear dynamical systems using multilayered neural networks", Automatica, vol.32, no.12, pp.1707-1712, December 1996.

202. S. Jagannathan and F. L. Lewis, "Discrete-time neural net controller for a class of nonlinear dynamical systems", IEEE Trans. on Automatic Control, vol.41, no.11, pp. 1693-1699, November 1996.

203. S. Jagannathan, F.L.Lewis, and O.C. Pastravanu, "Discrete-time model reference adaptive control of nonlinear dynamical systems using neural networks", International Journal of Control, vol.64, no.2, pp. 217-236, 1996.

204. S. Jagannathan and F. L. Lewis, "Discrete-time control of a class of nonlinear dynamical systems", International Journal of Intelligent Control and Systems, vol.1, no.3, pp.297-325, September 1996.

205. S. Jagannathan and F. L. Lewis, "Neural network controller design and the effect of neural network size on speed of learning", The International Journal of Intelligent Control and Systems, vol.1, no.1, pp.

119-132, March 96. (invited)

206. S. Jagannathan and F. L. Lewis, "Multilayer neural net controller for a class of nonlinear dynamical systems", IEEE Trans. on Neural Networks, vol. 7, no.1, pp. 107-130, Jan. 1996. **(Deep or multilayer NN tuning law that relaxed several assumptions such as certainty equivalence, linearity of the unknown parameters and persistency of excitation conditions)**

207. S. Jagannathan, S. Q. Zhu and F. L. Lewis, "Path planning and control of mobile vehicles with nonholonomic constraints", Robotica, vol. 12, pp. 529-539, 1994.

208. S. Jagannathan, F. L. Lewis, and K. Liu, "Motion control and obstacle avoidance of a mobile robot with an onboard manipulator", International Journal of Intelligent Manufacturing Systems, vol.5, pp. 287-302, 1994. (invited)

209. S. Jagannathan, D. Seebaluck and J. D. Jenness, "Intelligent inspection of wave soldered joints", Journal of Manufacturing Systems, vol. 11, no.2, pp.137-143, Apr. 92.

JOURNAL PAPERS SUBMITTED

Several papers are in review.

BOOK REVIEWS

1. S. Jagannathan, Neural Engineering: Computation, Representation, and Dynamics in Neurobiological Systems—by C. Eliasmith and C.H. Anderson, IEEE Control Systems Magazine, vol. 25, no. 6, pp. 102-106, December 2005.

BOOKS PUBLISHED/EDITED

1) F. L. Lewis, S. Jagannathan and A. Yesilderik, "Neural Network Control of Robot Manipulators and Nonlinear Systems**"**, Taylor and Francis, 1999.

2) S. Jagannathan, "Neural Network Control of Nonlinear Discrete-Time Systems", CRC Press, April 2006.

3) S. Jagannathan, "Wireless Ad hoc and Sensor Networks: Protocols, Performance and Control", CRC Press, April 2007.

4) Jay Lee, Jun Ni, Jagannathan Sarangapani, and Joseph Mathew, "Proceedings of the 6th World Congress on Asset Management", Cincinnati, Oct. 11-13, Springer, 2011. (edited)

5) S. Jagannathan and Hao Xu*, "Optimal Networked Control Systems", CRC Press, 2015.

6) K. Vamvoudakis*, and S. Jagannathan, "Control of Complex Systems: Recent Advances and Future Directions", Wiley, (Edited) 2016.

7) Deepak Garg, Kit Wong, Jagannathan Sarangapani, and Suneet Kumar Gupta, "Advanced Computing: Communications in Computer and Information Science", Proceedings of the 10th International Advanced Computing Conference: Part I and II, Panaji, Goa, December 4-5th, Springer, December 2020. (edited).

8) S. Jagannathan, A. Sahoo*, and V. Narayanan*, "Optimal Event-triggered Control using Adaptive Dynamic Programming", to be published, CRC Press, June 2024.

BOOK CHAPTERS

1) Rohollah Moghadam*, V, Narayanan*, S. Jagannathan, and Krishnan Raghavan, "Optimal adaptive control of uncertain linear systems with time-delay", Springer, in Handbook of Reinforcement Learning and Control, Editors: K.G. Vomvoudakis, Y. Wan, F. Lewis and D.Canseer, 2021.

2) Krishnan Raghavan*, S. Jagannathan, and V. Samaranayake, "Direct error driven learning for classification with applications to Bigdata", Editors: W. Pedrycz and S. Chen, Deep Learning Architectures, Springer Nature, pp. 1-30, 2020.

3) Hao Xu* and S. Jagannathan, “Joint scheduling and event triggered optimal control design for cyber physical systems”, Editors: Sandip Roy and Sajal Das, Principles of CPS: An Interdisciplinary Approach, Cambridge University Press,pp. 104-126, 2020.

4) Haifeng Niu*, C. Bhowmick*, and S. Jagannathan, “Attack detection and estimation for cyber-physical systems by using learning methodology”, in Artificial Neural Networks in Engineering Applications, Editors: Alma Y. Alanis, Nancy Arana-Daniel and Carlos Lopez-Franco, Elsevier, pp. 107-126, 2019.

5) Vignesh Narayanan*, Haci Guzey*, and S. Jagannathan, “Event sampled adaptive control of robot manipulators and mobile robot formation control”, Editors: Dan Zhang, Bin Wei, CRC Press, pp. 124-158, 2016.

6) A. Sahoo* and S. Jagannathan, “Adaptive optimal regulation of a class of nonlinear continuous-time systems”, Edited by K. Vomvoudakis and S. Jagannathan, Wiley, 2016.

7) Haci Guzey*, Travis Dierks*, and S. Jagannathan, “Hybrid consensus based control of nonholonomic mobile robots”, Editors: Lucian Busoniu, Levente Tamás, pp. 335-360, Springer, 2015.

8) S. Jagannathan and H. Xu*, “Neural networks for optimal feedback control”, Online Version, Wiley Encyclopedia of Electrical and Electronics Engineering, published, online 2014.

9) H. Xu*, A. Sahoo*, and S. Jagannathan, “Neural network control of nonlinear discrete-time systems in affine form in the presence of a communication network“, Frontiers of Intelligent Control and Information Processing, ICICIP Book Chapter, Editors: Derong Liu, Cesare Alippi, Dongbin Zhao, Huaguang Zhang, Imperial College Press, World Scientific, pp. 151-187, 2014.

10) Hassan Zargarzadeh*, Q. Yang*, and S. Jagannathan, “Optimal control of nonaffine nonlinear discrete-time systems without using value and policy iterations”, in Reinforcement Learning and Approximate Dynamic Programming, eds. By F. Lewis and D. Liu, IEEE Press, 2013.

11) David Nodland*, H. Zargarzadeh*, Arpita Ghosh, and S. Jagannathan, “Neural network-based optimal control of an unmanned helicopter”, AIAA Press, Progress in Aero and Astro, Eds. By John Valasek, 2012.

12) T. Dierks*, B. Thumati* and S. Jagannathan, “Fault tolerant control of nonholonomic robot formations”, IGI's book "Intelligent Industrial Systems: Modeling, Automation and Adaptive Behavior", September 2009.

13) B. Thumati* and S. Jagannathan, “Estimation and control of nonlinear discrete-time systems”, Recent Advances in Intelligent Control Systems, Eds. Wen Yu, pp. 89-124, Springer-Verlag, May 2009.

14) T. Dierks* and S. Jagannathan, “Neural network control and wireless sensor network based localization of Quad rotor UAV”, Aerial Vehicles, I-Tech, Vienna, Austria, December 2008.

15) C. Saygin, J. Sarangapani, and S.E. Grassman, “A Systems approach to viable RFID implementation in the supply chain” in Trends in Supply Chain Design and Management: Technologies and Methodologies, Editors: Hosang Jung, F. Frank Chen, and Bongju Jeong, Springer, March 2007.

16) S. Jagannathan and F. L. Lewis, "Discrete-time neural network control of nonlinear systems", CRC Press, pp. 149-176, 1999.

17) S. Jagannathan, "Adaptive fuzzy logic control of feedback linearizable nonlinear systems", Advances in Fuzzy Control, Springer-Verlag Series, pp.225-261, 1998.

18) F. L. Lewis, S. Jagannathan and A. Yesilderik, "Neural network control of robot arms and nonlinear systems", Neural Networks for Control, Academic Press, pp. 161-212, 1997.

WEB SYMPOSIUM

1. S. Jagannathan and J. Talluri*, "Adaptive traffic rate control of ATM networks", OSEE online Symposium, Cambridge, October 2000.

2. S. Jagannathan and A. Tohmaz*, "Adaptive bandwidth estimation and allocation in ATM networks",OSEE online Symposium, Cambridge, April 2001.

REFEREED CONFERENCE PAPERS

1. Irfan Ganie* and S. Jagannathan, "Online continual reinforcement learning-based optimal output tracking control of nonlinear systems using multilayer observer", Proc. of the IEEE International Joint Conference on Neural Networks, Rome, Italy, to appear in July 2025.

2. Irfan Ganie* and S. Jagannathan, "Online learning-driven human intent estimation and control for human-robot interaction", Proc. of the American Controls Conference, Denver, to appear in 2025.

3. Maxwell Geiger* and S. Jagannathan, "Improved optimal tracking of uncertain nonlinear discrete-time systems using experience replay", Proc of the American Controls Conference, Denver, to appear in July 2025.

4. Shirin Nasr and S. Jagannathan, "Lifelong direct driven error learning for UAV altitude estimation in different weather conditions", Proc of the 26th IEEE Workshop in Multimedia Signal Processing, Oct 2024.

5. Shirin Nasr and S. Jagannathan, "Relative altitude estimation of thermal infrared images using SIFT features", Proc of the IEEE 26th Workshop on Multimedia Signal Processing, Oct. 2024.

6. Irfan Ganie* and S. Jagannathan, "Online continual safe reinforcement learning-based optimal control of mobile robot formations", Proc. of the IEEE Conference of Control Technology and Applications, New Castle upon Tyne, August 2024.

7. Behzad Farzanegan* and S. Jagannathan, "Constrained optimal adaptive control of strict-feedback nonlinear discrete-time systems with application to underwater vehicles", Proc of the IEEE Conference on Control Technology and Applications, New Castle Upon Tyne, August 2024.

8. Max Geiger*, V. Narayanan*, and S. Jagannathan, "Optimal trajectory tracking of uncertain linear discrete-time systems using trajectory-dependent lifelong Q-learning", Proc of the American Controls Conference, July 2024.

9. Charles Rawlins*, S. Jagannathan, and D. Wunsch, "Prediction of blockchain transaction fraud using a lightweight generative adversarial network", The Fifth International Conference on Blockchain Computing and Applications (BCCA2023), Oct 2023.

10. Charles Rawlins* and S. Jagannathan, and V.S.S. Nadendla, "A reputation system for distributed intelligent blockchain decision-making", The Fifth International Conference on Blockchain Computing and Applications (BCCA2023), Oct 2023.

11. Charles Rawlins* and S. Jagannathan, "Towards robust consensus for intelligent decision-making in IoT blockchain networks", IEEE International Conference on Artificial Intelligence, Blockchain, and Internet of Things, Sept. 2023.

12. Charles Rawlins* and S. Jagannathan, "Improved intelligent leader construction for realistic IoT blockchain networks", IEEE International Conference on Artificial Intelligence, Blockchain, and Internet of Things, Sept. 2023.

13. Irfan Ganie* and S. Jagannathan, "Lifelong learning control of nonlinear systems with constraints using multilayer neural networks with application to mobile robot tracking", Proc of the 7th IEEE

Conference on Control Technology and Applications, Barbados, August 2023.

14. Behzad Farzanegan* and S. Jagannathan, "Continual learning-based optimal output tracking of nonlinear discrete-time systems with constraints: application to safe cargo transfer", Proc of the 7th IEEE Conference on Control Technology and Applications, Barbados, August 2023.

15. Irfan Ganie* and S. Jagannathan, "Continual optimal adaptive tracking of uncertain nonlinear continuous-time systems using multilayer neural networks", Proc of the American Controls Conference, San Diego, June 2023.

16. Behzad Farzanegan* and S. Jagannathan, "Optimal tracking of nonlinear discrete-time systems using zero-sum game formulation and hybrid learning", Proc of the American Controls Conference, San Diego, June 2023.

17. Rohollah Moghadam*, B. Farzanegan*, S. Jagannathan, and P. Natarajan, "Optimal adaptive regulation of partial uncertain discrete-time systems", Proc. of the IEEE Conference on Decision and Control, pp. 2005-2010, December 2022.

18. K. J. P. Veeramraju*, Alvaro Cardoza*, Jagannathan Sarangapani and Jonathan Kimball, "Robust modifications to model reference adaptive control for reference voltage tracking in a dual active bridge dc-dc converter", Proc of the IEEE Energy Conversion Congress & Expo, Oct 9-13, 2022.

19. Irfan Ganie* and S. Jagannathan, "Adaptive control of robotic manipulators using deep neural networks", Proc of the 6th IFAC International Conference on Intelligent Control and Automation Sciences, ICONS 2022, July13-July 15th, 2022.

20. Rohollah Moghadam*, and S. Jagannathan, "Optimal adaptive regulation of uncertain linear continuous-time systems with state and input delays", Proc. of the IEEE Conference on Decision and Control, pp. 132-137, December 2020.

21. Rohollah Moghadam*, P. Rajan, and S. Jagannathan, "Multilayer neural network-based optimal adaptive tracking control of partially uncertain nonlinear discrete-time systems", Proc. of the IEEE Conference on Decision and Control, pp. 2204-2209, December 2020.

22. Jinna Li, Zhenfei Xiao, TianYou Chai, Frank L. Lewis, and S. Jagannathan, "Off-policy Q-learning for anti-interference control of multi-player systems", Proc of the IFAC World Congress, Berlin Germany, July 2020.

23. Rohollah Moghadam*, Pappa Natarajan, Krishnan Raghavan and S. Jagannathan, "Online optimal adaptive control of a class of uncertain nonlinear discrete-time systems", Proc. of the IEEE International Joint Conference on Neural Networks (IJCNN) as part of WCCI, pp. 1-6, August 2020.

24. Rohollah Moghadam* and S. Jagannathan, "Optimal control of linear continuous-time systems in the presence of state and input delays with application to a chemical reactor", Proc. of American Controls Conference, pp. 999-1004, July 2020.

25. C. Bhowmick* and S. Jagannathan, "Availability-resilient control of uncertain linear stochastic networked control systems", Proc. of American Controls Conference, pp. 4016-4021, July 2020.

26. A. Raj*, S. Jagannathan, T. Yucelen, "Distributed Adaptive State Estimation and Tracking Scheme for Nonlinear Systems Using Active Passive Sensor Networks, Proc. of American Controls Conference, pp. 2587-2592, July 2020.

27. C. Bhowmick* and S. Jagannathan, "Detection and mitigation of attacks in nonlinear stochastic systems using modified chi square detector", Proc. of the IEEE Conference on Decision and Control, pp. 139-144, December 2019.

28. R. Moghadam* and S. Jagannathan, "Approximate optimal adaptive control of partially unknown

linear continuous-time systems with state delay", Proc. of the IEEE Conference on Decision and Control, pp. 1985-1990, December 2019.

29. Haifeng Niu*, C. Bhowmick*, A Sahoo* and S. Jagannathan, "Attack detection in linear networked control systems by using learning methodology", Proc. of the IEEE Conference on Controls Technology and Applications (CCTA), pp. 148-153, August 2019.

30. C. Bhowmick* and S. Jagannathan, "Detection of sensor attacks for uncertain stochastic linear systems", Proc. of the IEEE Conference on Controls Technology and Applications (CCTA), pp. 706-711, August 2019.

31. H. Ferdowsi*, J. Cai* and S. Jagannathan, "Fault detection and estimation for a class of nonlinear distributed parameter systems", Proc. of the International Conference on Prognostics and Health Management, pp. 1-8, June 2019.

32. A. Raj*, S. Jagannathan, T. Yucelen, "Event-triggered adaptive distributed state estimation by using active-passive sensor networks", Proc. of American Controls Conference, pp.4695-4700, June 2019.

33. D. Petersen*, T. Yucelen, and S. Jagannathan, "Active-passive dynamic consensus filters for linear time-invariant multiagent systems", Proc. of American Controls Conference, pp. 4683-4688, June 2019.

34. A. Raj*, S. Jagannathan, T. Yucelen, "Distributed state estimation by using active-passive sensor networks", Proc. of American Controls Conference, pp. 4689-4694, June 2019.

35. V. Narayanan*, Rohollah Moghadam*, S. Jagannathan, "Optimality in event-triggered adaptive control of uncertain linear dynamical systems", Proc of the AIAA Science and Technology Forum and Exposition, San Diego, pp. 2187-2192, January 2019.

36. D. Tran*, T. Yucelen, S. Jagannathan, "Dynamic information fusion with the integration of local observers, value of information, and active-passive consensus filters", Proc. of the AIAA Science and Technology Forum and Exposition, San Diego, pp. 2262-2285, January 2019.

37. Krishnan Raghavan*, S. Jagannathan, and V.A. Samaranayake, "A Minimax approach for classification with bigdata," Proc of the IEEE Conference on Bigdata, pp. 1437-1444, December 2018. (only 15 to 18% papers accepted)

38. Shweta Garg*, Krishnan Raghavan*, S. Jagannathan, and V.A. Samaranayake, "Distributed learning of deep sparse neural networks for high-dimensional classification", Proc of the IEEE Conference on Bigdata, pp. 1587-1592, December 2018. (only 15 to 18% papers accepted)

39. A. Sahoo*, V. Narayanan* and S. Jagannathan, "Event-triggered control of N-player nonlinear systems using nonzero-sum optimal sampling and regulation of uncertain interconnected linear continuous-time systems", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 1447-1452, November 2018.

40. V. Narayanan*, A Sahoo*, and S. Jagannathan, "Optimal adaptive distributed control of linear interconnected systems", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 1441-1446, November 2018.

41. Haifeng Niu*, C. Bhowmick* and S. Jagannathan, "A linear matrix inequality based attack detection approach for networked control systems", Proc of the IEEE Conference on Decision and Control, pp. 5470-5475, December 2018.

42. A. Gaffoor*, S. Balakrishnan, S. Jagannathan and T. Yucelen, "Event triggered neuroadaptive controller (ETNAC) design for uncertain linear systems", Proc of the IEEE Conference on Decision and Control, pp. 2217-2222, December 2018.

43. A. Gaffoor*, S. Balakrishnan, S. Jagannathan and T. Yucelen, "Event triggered neuroadaptive controller (ETNAC) design for uncertain affine nonlinear systems", Proc of the ASME Dynamic Systems and Controls Conference, pp. V001T03A003-V001T03A003, September 30, 2018.

44. Vignesh Narayanan*, A. Sahoo* and S. Jagannathan, "Approximate optimal distributed control of nonlinear interconnected systems using nonzero-sum games", Proc of the IEEE Conference on Decision and Control, pp. 2872-2877, December 2018.

45. Ali Albattat*, Tansel Yucelen, S. Jagannathan, "An observer-free output feedback cooperative control architecture for linear multiagent systems with event-triggering", Proc. of American Control Conference, pp. 1647-1652, June 2018.

46. Dzung Tran*, Tansel Yucelen, S. Jagannathan, David W. Casbeer, "Distributed coestimation in heterogeneous sensor networks with time-varying active and passive node roles", Proc. of American Control Conference, pp. 1033-1038, June 2018.

47. Vignesh Narayanan*, Avimanyu Sahoo, S. Jagannathan, Optimal event-triggered control of nonlinear systems: A min-max approach", Proc. of American Control Conference, pp.3441-3446, June 2018.

48. Krishnan Raghavan*, V. Samarnayake, and S. Jagannathan, "A multi-step nonlinear dimension-reduction Approach with applications to big data", Proc. of the INNS BDDL, vol. 144, pp. 81-88, April 2018.

49. Krishnan Raghavan*, S. Jagannathan, V. Samarnayake, "Direct error driven learning for deep neural networks with applications to big data", Proc. of the INNS BDDL, vol. 144, pp. 89-95, April 2018.

50. A. Sahoo*, V. Narayanan and S. Jagannathan, "'Optimal sampling and regulation of uncertain interconnected linear continuous-time systems", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, November 2017.

51. A. Sahoo*, V. Narayanan and S. Jagannathan, "Optimal event-triggered control of uncertain linear networked control systems: A co-design approach'", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, November 2017.

52. Ali Albattat*, T. Yucelen, B. Gruenwald, and S. Jagannathan, "Observer free output feedback cooperative control architecture for multivehicle systems", ASME Conference on Dynamic Systems and Control, Oct 11-13, 2017.

53. Dzung Tran*, T. Yucelen and S. Jagannathan, "A new result on the distributed input and state estimation for heterogeneous sensor networks", ASME Conference on Dynamic Systems and Control, Oct 11-13, 2017.

54. Vignesh Narayanan* and S. Jagannathan, "Online reinforcement with exploration for distributed control", Proc. of the IEEE Joint Conference on Neural Networks, pp. 4022-4027, May 2017.

55. Krishnan Raghavan*, S. Jagannathan, and Samaranayake, "Deep learning inspired prognostics scheme for applications generating big data", Proc. of the IEEE Joint Conference on Neural Networks, pp. 3296-3302, May 2017.

56. Nathan Szanto*, Vignesh Narayanan* and S. Jagannathan, "Event-sampled control of quadrotor unmanned aerial vehicle", Proc. of American Controls Conference, pp. 2956-2961, May 2017.

57. H. Guzey*, Vignesh Narayanan*, T. Dierks*, S. Jagannathan, and Levent Acar, "Distributed consensus-based event-triggered approximate control of nonholonomic mobile robot formations", Proc. of American Controls Conference, pp. 3194-3199, May 2017.

58. J. D. Peterson*, T. Yucelen, S. Jagannathan, Eduardo Pasiliao, "Event-triggered active-passive

dynamic consensus filters", Proc. of American Controls Conference, pp. 3900-3905, May 2017.

59. D. Tran*, T. Yucelen, S. Jagannathan, "On local design and execution of a distributed input and state estimation architecture for heterogeneous sensor networks", Proc. of American Controls Conference, pp. 3874-3879, May 2017.

60. Nathan Szanto*, Vignesh Narayanan* and S. Jagannathan, "Event-sampled direct adaptive NN state-feedback control of uncertain strict-feedback system", Proc. of the IEEE International Conference on Decision and Control, pp. 3395-3400, December 2016.

61. Vignesh Narayanan* and S. Jagannathan, "Approximate optimal distributed control of uncertain nonlinear interconnected systems with event-sampled feedback", Proc. of the IEEE International Conference on Decision and Control, pp. 5827-5832, December 2016.

62. Vignesh Narayanan* and S. Jagannathan, "Event-sampled adaptive neural network control of robot manipulators", Proc. of the IEEE International Joint Conference on Neural Networks, pp. 4941-4946, July 2016.

63. Haifeng Niu* and S. Jagannathan, "Neural network-based attack detection in nonlinear networked control systems", Proc. of the IEEE International Joint Conference on Neural Networks, pp. 4249-4254, July 2016.

64. B. Talaei*, S. Jagannathan, J. Singler, "Boundary control of two dimensional Burgers PDE using approximate dynamic programming", Proc. of the American Controls Conference, pp. 5243-5248, July 2016.

65. Vignesh Narayanan* and S. Jagannathan, "Distributed event-sampled approximate optimal control of interconnected affine nonlinear continuous-time systems", Proc. of the American Controls Conference, pp. 3044-3049, July 2016.

66. Jia Cai* and S. Jagannathan, "Fault isolation in distributed parameter systems modeled by parabolic partial differential equations", Proc. of the American Controls Conference, pp. 4356-4361, July 2016.

67. Vignesh Narayanan* and S. Jagannathan, "'Distributed adaptive optimal regulation of uncertain large-scale linear networked control systems using Q-learning", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 587-592, December 2015.

68. Haifeng Niu* and S. Jagannathan, "Optimal defense and control for cyber-physical systems", Proc. of the Symposium Series on Computational Intelligence, pp. 634-639, December 2015.

69. Krishnan Raghavan* and S. Jagannathan, "Hierarchical Mahalanobis distance clustering based technique for prognostics in applications generating Bigdata", Proc. of the Symposium Series on Computational Intelligence, pp. 516-521, December 2015.

70. Jia Cai*, Hasan Ferdowsi*, and S. Jagannathan, "Model-based actuator fault accommodation for distributed parameter systems represented by coupled linear PDEs", Proc. of the IEEE Multi-Conference on Systems and Control, pp. 978-983, Sept. 2015.

71. Behzad Talaei*, S. Jagannathan, and John Singler, "Boundary control of linear one-dimensional parabolic PDE using neuro-dynamic programming", Proc. of the IEEE Multi-Conference on Systems and Control, pp. 577-582, Sept. 2015.

72. Behzad Talaei*, S. Jagannathan, and John Singler, "Adaptive dynamic programming boundary control of uncertain coupled semi-linear parabolic PDE", Proc. of the IEEE Multi-Conference on Systems and Control, pp. 918-923, Sept. 2015.

73. A. Sahoo*, Hao Xu*, and S. Jagannathan, "Event-based neural network approximation and control

of uncertain nonlinear continuous-time systems", Proc. of the American Controls Conference, pp. 1567-1572, July 2015.

74. H. Guzey*, T. Dierks* and S. Jagannathan, "Hybrid consensus-based formation control of agents with second order dynamics", Proc. of the American Controls Conference, pp. 4386-4391, July 2015.

75. Jose Santiago Elvira Ceja*, Edgar N. Sanchez, and S. Jagannathan, "Stochastic inverse optimal control of unknown linear networked control system in the presence of random delays and packet losses", Proc. of the American Controls Conference, pp. 799-804, July 2015.

76. V. Narayanan*, A. Sahoo* and S. Jagannathan, "Optimal regulation of uncertain linear discrete-time systems using event-sampled Q-learning and adaptive dynamic programming", Proc. of the Yale Workshop on Adaptive and Learning Systems, pp. 90-94, June 2015.

77. Jia Cai*, Hasan Ferdowsi*, and S. Jagannathan, "Model-based fault diagnosis and prediction for a class of distributed parameter systems, " Proc. of the IEEE Conference on Decision and Control, pp. 5758-5763, Dec 2014.

78. A. Sahoo* and S. Jagannathan, "Event-triggered optimal regulation of uncertain linear discrete-time systems by using Q-learning scheme, " Proc. of the IEEE Conference on Decision and Control, pp. 1227-1232, Dec 2014.

79. A. Sahoo*, Hao Xu*, T. Dierks*, and S. Jagannathan, "Event-triggered optimal control of nonlinear continuous-time systems in affine form by using neural networks," Proc. of the IEEE Conference on Decision and Control, pp. 1233-1238, Dec 2014.

80. B. Talaei*, Hao Xu*, and S. Jagannathan, "Near optimal boundary control of distributed parameter systems modeled as parabolic PDEs by using finite difference neural network approximation", Proc. of the IEEE Conference on Decision and Control, pp, 6776-6781, Dec 2014.

81. B. Thumati*, and S. Jagannathan, "A fault prediction scheme for Takagi-Sugeno fuzzy systems with immeasurable premise variables and disturbance", Proc. of the IEEE Conference on Decision and Control, pp. 6758-6763, Dec 2014.

82. Avimanyu Sahoo*, Hao Xu* and S. Jagannathan, "Event-based optimal regulator design for nonlinear networked control systems", Proc. of the Adaptive Dynamic Programming and Reinforcement Learning, pp. 295-300, Dec 2014.

83. Haci Guzey*, Hao Xu* and Jagannathan Sarangapani, "Neural network-based adaptive optimal consensus control of leaderless networked mobile robots", Proc. of the Adaptive Dynamic Programming and Reinforcement Learning, pp. 198-205, Dec 2014.

84. Hao Xu* and S. Jagannathan, "Model-free Q-learning over finite horizon for uncertain linear continuous-time systems", Proc. of the Adaptive Dynamic Programming and Reinforcement Learning, pp. 164-169, Dec 2014.

85. Haifeng Niu* and S. Jagannathan, "'A Gen2v2 Compliant RFID authentication and ownership management protocol", Proc. of the IEEE Conference on Local Computer Networks, pp. 331-336, September 2014.

86. Haifeng Niu* and S. Jagannathan, "'A cross layer routing scheme for passive RFID tag-to-tag communication", Proc. of the IEEE Conference on Local Computer Networks, pp. 438-441, September 2014.

87. B. Talaei*, Hao Xu*, and S. Jagannathan, "Neural network-based near optimal constrained control of distributed parameter systems with application to diffusion-reaction processes," Proc. of the IEEE Multi Conference on Systems and Control, pp. 1861-1866, Oct. 2014.

88. Hao Xu* and S. Jagannathan, "Near optimal event triggered control of nonlinear continuous-time systems using input-output data", World Congress of Intelligent Control and Automation, Shenyang China, July 2014.

89. Hao Xu* and S. Jagannathan, "Finite horizon stochastic optimal control of nonlinear two-player zero-sum games under communication constraint", Proc. of the International Joint Conference on Neural Networks, Beijing China, pp. 239-244, July 2014.

90. Avimanyu Sahoo*, Hao Xu* and S. Jagannathan, "Near optimal event-based control of nonlinear discrete-time systems in affine form with measured input-output data", Proc. of the International Joint Conference on Neural Networks, Beijing China, pp. 3671-3676, July 2014.

91. Hao Xu*, Qiming Zhao*, Travis Dierks*, and S. Jagannathan "Finite-horizon approximately optimal control of uncertain affine nonlinear continuous-time systems", Proc. of the American Controls Conference, pp. 1243-1248, June 2014.

92. Qiming Zhao*, Hao Xu*, and S. Jagannathan, "Fixed final-time near optimal regulation of nonlinear discrete-time systems in affine form using output feedback", Proc. of the American Controls Conference, pp. 4643-4648, June 2014.

93. Hasan Ferdowsi* and S. Jagannathan, "Fault diagnosis of a class of distributed parameter systems modeled by parabolic partial differential equations", Proc. of the American Controls Conference, pp. 5434-5439, June 2014.

94. H. Zargarzadeh*, S. Jagannathan, James A. Drallmeier, "Extremum-seeking for nonlinear discrete-time systems with application to HCCI Engines", Proc. of the American Controls Conference, pp. 861-866, June 2014.

95. Avimanyu Sahoo*, Hao Xu*, S. Jagannathan, "Neural network approximation-based event-triggered control of uncertain MIMO nonlinear discrete time systems", Proc. of the American Controls Conference, pp. 2017-2022, June 2014.

96. Qiming Zhao*, Hao Xu*, and S. Jagannathan. "Finite horizon neural network-based optimal adaptive control design for affine nonlinear discrete-time systems", Proc. of the Multi Conference on Systems and Control, pp. 41-46, August 2013.

97. A. Sahoo*, Hao Xu*, S. Jagannathan, "Neural network-based adaptive event-triggered control of nonlinear continuous-time systems in affine form", Proc. of the Multi Conference on Systems and Control, pp. 35-40, August 2013.

98. Ivo Grondman*, Hao Xu*, S. Jagannathan and Robert Babuska, "Solutions to finite horizon cost problems using actor-critic reinforcement learning", Proc. of the International Joint Conference on Neural Networks, pp. 325-331, August 2013.

99. H. Xu* and S. Jagannathan*, "Neural network based finite horizon stochastic optimal controller design for nonlinear networked control systems", Proc. of the International Joint Conference on Neural Networks, pp. 318-324, August 2013.

100. Qiming Zhao*, Hao Xu*, Travis Dierks* and Jagannathan Sarangapani. "Finite-horizon neural network-based optimal control design for affine nonlinear continuous-time systems", Proc. of the International Joint Conference on Neural Networks, pp. 2545-2550, August 2013.

101. Hasan Ferdowsi*, S. Jagannathan and M. Zawodniok*, "A neural network-based outlier identification and removal scheme", Proc. of the IEEE International Conference on Prognostics and Health Management, pp. 1-6, June 2013.

102. Hasan Ferdowsi*, S. Jagannathan and M. Zawodniok*, "Neural network-based fault detection and

accommodation scheme for distributed systems", Proc. of the IEEE International Conference on Prognostics and Health Management, pp. 1-6, June 2013.

103. A. Sahoo*, Hao Xu*, S. Jagannathan, "Adaptive event-triggered control of an uncertain linear discrete time system using measured input and output data", Proc. of the American Controls Conference, pp. 5692-5697, June 2013.

104. A. Sahoo*, Hao Xu*, S. Jagannathan, "Neural network-based adaptive event trigger control of affine nonlinear discrete time systems with unknown internal dynamics", Proc. of the American Controls Conference, pp. 6433-6438, June 2013.

105. Hao Xu* and S. Jagannathan, "Finite horizon optimal adaptive control of uncertain continuous-time systems", Proc. Of the Yale Workshop on Adaptive and Learning Systems, New Haven, CT, June 4-6 2013.

106. V. Thotla*, M. Ghasr, M. Zawodniok and S. Jagannathan, "Correlation based detection and localization of R/C Electronic devices using array detectors", Proceedings of the IEEE International Instrumentation and Measurement Technology Conference (I2MTC), May 2013.

107. Haifeng Niu* and S. Jagannathan, "Passive RFID tag with multimodal sensors with applications", Proceedings of the IEEE International Instrumentation and Measurement Technology Conference (I2MTC), May 2013.

108. Qiming Zhao*, Hao Xu* and S. Jagannathan, "Finite horizon optimal control design for uncertain linear discrete-time systems", Proc. Of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 6-12, April 2013.

109. Hao Xu* and S. Jagannathan, "Finite-horizon stochastic optimal control of uncertain linear networked control systems", Proc. Of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 24-30, April 2013.

110. Haci Guzey* and S. Jagannathan, "Neural network-based consensus formation control of mobile robots", Proc. Of the SPIE, April 2013.

111. E. Taqieddin* and J. Sarangapani, "Vulnerability analysis of two ultra-lightweight RFID authentication protocols: RAPP and gossamer," Proc. Of the International Conference For Internet Technology And Secured Transactions, *2012*, vol., no., pp.80-86, 10-12 Dec. 2012.

112. Hao Xu* and S. Jagannathan, "Distributed joint optimal network scheduling and controller design for wireless networks," Fourth International Conference on Networks and Communications (NeTCoM), Springer Lecture Notes in Electrical Engineering, Vol. 2, pp. 147-162, Dec. 2012.

113. Hao Xu* and S. Jagannathan, "Adaptive optimal distributed power allocation for enhanced cognitive radio network in presence of channel uncertainties," The Fourth International conference on Networks and Communications (NeTCoM), Springer Lecture Notes in Electrical Engineering, vol. 2, pp. 359-370, Dec. 2012.

114. H. Zargarzadeh*, Travis Dierks* and S. Jagannathan, "Optimal adaptive control of nonlinear continuous-time systems in strict feedback form with unknown internal dynamics", Proceedings of the IEEE Conference on Decision and Control, pp. 4127-4132, Dec 2012.

115. T. Dierks* and S. Jagannathan, "A self-tuning optimal controller for affine nonlinear continuous-time systems with unknown internal dynamics", Proceedings of the IEEE Conference on Decision and Control, pp. 5392-5397, Dec 2012.

116. Q. Zhao*, H. Xu*, and S. Jagannathan, "Optimal adaptive controller scheme for uncertain quantized linear discrete-time system", Proceedings of the IEEE Conference on Decision and Control, pp. 6132-6137, Dec 2012.

117. Hao Xu* and S. Jagannathan, "A cross layer approach to the novel distributed scheduling protocol and event-triggered controller design for cyber physical systems", Proceedings of the IEEE Conference on Local Computer Networks, pp. 232-235, Oct 2012.

118. V. Thotla*, Ghasr, Mohammad Tayeb Ahmad, Zawodniok, Maciej, Jagannathan, S.; Agarwal, Sanjeev; "Detection and localization of multiple R/C electronic devices using array detectors," *Proceedings of the* IEEE International Instrumentation and *Measurement Technology Conference (I2MTC),* pp.1687-1691, 13-16 May 2012.

119. David Nodland*, H. Zargarzadeh*, V. Thotla* and S. Jagannathan, "Neuro optimal control of UAV helicopter to detect unintended emissions", Proc. of the SPIE Conference, Baltimore, vol. 8387, pp. 83870H, Baltimore, MD,2012.

120. Vivek Thotla*, Mohammad T. A. Ghasr, M. Zawodniok, S. Jagannathan, and S. Agarwal, "Detection and localization of R/C electronic devices using Hurst parameter", Proc. of the SPIE Conference, vol. 8359, pp. 835915, Baltimore, MD, 2012.

121. R. Kraleti*, M. Zawodniok and S. Jagannathan, "Model-based diagnostics and prognostics of a three Phase induction motor for vapor compressor applications", Proc. of the IEEE International Conference on Prognostics and Health Management, June 2012.

122. Hasan Ferdowsi*, Deepthi S. L. Raja* and S. Jagannathan, "A decentralized fault detection and prediction scheme for nonlinear interconnected continuous-time systems", Proc. of the International Joint Conference on Neural Networks, pp. 791-797, June 10-15, Brisbane, Australia, 2012.

123. Qiming Zhao*, Hao Xu* and S. Jagannathan, "Adaptive dynamic programming-based state quantized networked control system without value and/or policy iterations", Proc. of the International Joint Conference on Neural Networks, pp. 1168-1174, June 10-15, Brisbane, Australia, 2012.

124. Hao Xu* and S. Jagannathan, "Stochastic optimal controller design for unknown networked control systems under TCP", Proc. of the American Controls Conference, pp. 6503-6508, Montreal, Canada, 2012.

125. Hassan Zargarzadeh*, T. Dierks*, and S. Jagannathan, "State and output feedback-based adaptive optimal control of nonlinear continuous-time systems in strict feedback form", Proc. of the American Controls Conference, pp.6412-6417, June 27-29, Montreal, Canada, 2012.

126. Hasan Ferdowsi*, Deepthi. L. Raja* and S. Jagannathan, "Decentralized fault prognosis scheme for nonlinear interconnected discrete-time systems", Proc. of the American Controls Conference, pp. 5900-5905, Montreal, Canada, 2012.

127. Shahab Mehraeen* and S. Jagannathan, "Decentralized adaptive neural network state and output feedback control of a class of interconnected nonlinear discrete-time systems", Proc. of the American Controls Conference, pp. 6406-6411, Montreal, Canada, 2012.

128. David J. Nodland*, Hassan Zargarzadeh*, and S. Jagannathan, "Neural network-based optimal control for trajectory tracking of a Helicopter UAV", Proc. of the IEEE Conference on Decision and Control, pp. 3876-3881, Dec 2011.

129. Qinmin Yang* and S. Jagannathan, "Robust integral of neural network and sign of tracking error control of uncertain nonlinear affine systems using state and output feedback", Proc. of the IEEE Conference on Decision and Control, pp. 6765-6770, Dec 2011.

130. Hasan Ferdowsi* and S. Jagannathan, "A unified model-based fault diagnosis scheme for nonlinear discrete-time systems with additive and multiplicative faults", Proc. of the IEEE Conference on Decision and Control, pp.1570-1575, Dec 2011

131. Hao Xu* and S. Jagannathan, "Stochastic optimal control design for nonlinear networked control

system via neuro dynamic programming using input-output measurements", Proc. of the IEEE Conference on Decision and Control, pp. 136-141, Dec 2011.

132. M. Rana Basheer* and S. Jagannathan, "'Localization of objects using cross-correlation of shadow fading noise and copulas", Proc. of the Globecom, pp. 1-5, Dec 2011.

133. G. Halligan*, B. Thumati* and S. Jagannathan, "Artificial immune system-based diagnostics and prognostics scheme and its experimental verification", Proc. of the Conference on Control Applications, pp. 958-963. Sept. 2011.

134. Balaje Thumati*, Miles Feinstein, James W. Fonda, Alfred Turnbull, Fay Weaver, Mark Calkins, Sarangapani Jagannathan "An online model-based fault diagnosis scheme for HVAC systems", Proc. of the Conference on Control Applications, pp. 70-75, Sept. 2011.

135. Hao Xu*, S. Jagannathan "Model-free H-infinite stochastic optimal design for unknown linear networked control system zero-sum games via Q-learning", Proc. of the IEEE Symposium on Intelligent Control, pp. 198-203, Sept. 2011.

136. Qinmin Yang*, S. Jagannathan, Y. Sun, "NN/RISE-based asymptotic tracking control of uncertain nonlinear systems", Proc. of the IEEE Symposium on Intelligent Control, pp. 1361-1366, Sept. 2011.

137. E. Taqieddin*, M. Zawodniok, S. Jagannathan, and A. Miller, "Hardware implementation of the energy-efficient hybrid key management protocol for wireless sensor networks", Proceedings of the International Conference on Wireless Networks, Las Vegas, USA, 223 – 229, 2011.

138. Hao Xu* and S. Jagannathan, "Stochastic optimal control of unknown linear networked control system using Q-learning methodology", Proc. of the American Controls Conference, pp. 2819-2824, June 2011.

139. Hao Xu* and S. Jagannathan, "Optimal controller design for networked control system via adaptive dynamic programming", Proc. of the Yale Workshop, June 2011.

140. J. Hertenstein* and S. Jagannathan, "Unintended emission detection and identification", Proc. of the SPIE Conference on Defense, Security and Sensing, vol. 8017, April 2011.

141. D. Nodland*, A. Ghosh and S. Jagannathan, "Near optimal control of helicopter UAV", Proc. of the SPIE Conference on Defense, Security and Sensing, vol. 8045, pp. 1-10, April 2011.

142. B. Brenner*, T. Dierks*, and S. Jagannathan, "Neuro optimal control of robot formations", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 234-241, April 2011.

143. H. Zargarzadeh*, S. Jagannathan and J. Drallmeier, "Near optimal control of nonaffine nonlinear system with application to HCCI engines", Proc. of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 258-263, April 2011.

144. R. Basheer* and S. Jagannathan, "'Localization of objects using stochastic tunneling", Proc. of the IEEE Wireless Communications and Networking Conference, pp. 587-592, March 2011.

145. T. Dierks* and S. Jagannathan, "Optimal control of affine nonlinear continuous-time systems using an online Hamilton-Jacobi-Isaacs formulation", Proc. of the IEEE Conference on Decision and Control, pp. 3048-3053, December 2010.

146. S. Mehraeen*, S. Jagannathan and M. L. Crow, "Decentralized state feedback and near optimal adaptive neural network control of interconnected nonlinear discrete-time systems", Proc. of the IEEE Conference on Decision and Control, pp. 114-119, December 2010.

147. B. Eslamnour* and S. Jagannathan, "Adaptive routing scheme for emerging wireless ad hoc

networks", IEEE Symposium on Reliable Distributed System, pp. 318-322, Nov 2010.

148. P. Kasirajan*, H. Xu*, M. Zawodniok*, and S. Jagannathan, "Demonstration of the multi-interface multichannel channel routing protocol for wireless sensor networks using Missouri S&T motes", Proceedings of the IEEE Local Computer Networks, Oct 2010.

149. S. Agarwal, Y. Bodas, Jagannathan Sarangapani, and T. Smith, "Distributed spatiotemporal detection in wireless sensor networks", IEEE Conference on Wireless Information Technology and Systems, August 2010.

150. James Fonda*, S. Jagannathan and Steve Watkins, "Robust neural network RISE observer based fault diagnostics and prediction", Proc. of the IEEE International Conference on Neural Networks, pp. 1-8, July 2010.

151. S. Mehraeen* and S. Jagannathan, "Decentralized near optimal control of a class of interconnected nonlinear discrete-time systems by using online Hamilton-Bellman-Jacobi formulation", Proc. of the IEEE International Conference on Neural Networks, pp. 1-8, July 2010.

152. S. Mehraeen*, Travis Dierks*, S. Jagannathan, and M. L. Crow, "Zero-sum two-player game theoretic formulation of affine nonlinear discrete-time systems using neural networks", Proc. of the IEEE International Joint Conference on Neural Networks, pp. 1-8, July 2010.

153. Travis Dierks* and S. Jagannathan, "Optimal control of affine nonlinear continuous-time system", Proc. of the American Controls Conference, pp. 1568-1573, June 2010.

154. B. Thumati*, T. Dierks*, and S. Jagannathan, "Fault tolerant formation control of nonholonomic mobile robots using online approximators." Proc. of the SPIE symposium on Defense, Security, and Sensing, April 2010.

155. Rana Basheer* and S. Jagannathan, "A new receiver placement scheme using Delaunay refinement based triangulation", Proc. of the IEEE Wireless Networks and Communications Conference, pp.1-6, April 2010.

156. Priya Kasirajan*, Cal Larsen*, and S. Jagannathan, "A new adaptive compression scheme for data aggregation in wireless sensor networks, Proc. of the IEEE Wireless Networks and Communications Conference, pp. 1-6, April 2010.

157. J. Bettis*, J. Massey*, J. Drallmeier, and S. Jagannathan, "Thermodynamic based modeling for nonlinear control of combustion phasing in HCCI engines," Proceedings of the 2010 Technical Meeting of the Central States Section of the Combustion Institute, Champaign, Il, March 21-23, 2010.

158. T. Dierks* and S. Jagannathan, "Optimal tracking control of affine nonlinear discrete-time systems with unknown internal dynamics", Proc. of the IEEE Conference on Decision and Control, pp. 6750-6755, December 2009.

159. B. Thumati* and S. Jagannathan, "A multilayer neural network based identification and control scheme for a class of nonlinear discrete-time systems with asymptotic stability guarantee", Proc. of the IEEE Mediterranean Conference on Control and Automation, pp. 540-545, June 2009.

160. T. Dierks* and S. Jagannathan, "Optimal control of affine nonlinear discrete-time systems", Proc. of the IEEE Mediterranean Conference on Control and Automation, pp. 1390-1395, June 2009.

161. M.R. Basheer* and S. Jagannathan, "A new parameter to enhance location accuracy in RSSI based real-time location systems", Proc. of the IEEE Conference on Sensor, Mesh, and Ad hoc Communications and Networks, pp. 1-9, June 2009.

162. S. Mehraeen*, S. Jagannathan, and M. Crow, "Decentralized control of large scale interconnected systems using adaptive neural network based dynamic surface control", Proc. of the IEEE International

Joint Conference on Neural Networks, pp. 2058-2064, June 2009.

163. T. Dierks*, B. Thumati* and S. Jagannathan, "Adaptive dynamic programming based optimal control of affine nonlinear discrete-time systems", Proc. of the IEEE International Joint Conference on Neural Networks, pp. 711-716, June 2009.

164. B. Thumati* and S. Jagannathan, "A model-based fault detection and accommodation scheme for nonlinear discrete-time systems with asymptotic stability guarantees", Proc. of the American Controls Conference, pp. 4988-4993, June 2009.

165. T. Dierks* and S. Jagannathan, "Neural network control of Quad rotor UAV formations", Proc. of the American Controls Conference, pp. 2990-2996, June 2009.

166. B. Thumati* and S. Jagannathan, "Neural network control of a class of nonlinear discrete-time systems with asymptotic stability guarantees", Proc. of the American Controls Conference, pp. 2934-2939, June 2009.

167. R. Anguswamy*, M. Zawodniok, and S. Jagannathan, "A multi-interface multi-channel routing protocol for wireless ad hoc networks", Proceedings of the IEEE Wireless Communications and Networking Conference, pp. 1-6, April 2009.

168. B. Eslamnour*, M. Zawodniok*, and S. Jagannathan, "Dynamic channel allocation in wireless networks using adaptive learning automata", Proceedings of the IEEE Wireless Communications and Networking Conference, pp. 1-6, April 2009.

169. B. Thumati* and S. Jagannathan, "A model-based fault detection and prognostics scheme for uncertain nonlinear discrete-time systems", Proc. of the IEEE Conference on Decision and Control, pp. 392-397, Dec 2008.

170. T. Dierks* and S. Jagannathan, "Neural network output feedback control of a quad rotor UAV", Proc. of the IEEE Conference on Decision and Control, pp. 3633-3639, Dec 2008.

171. S. Mehraeen*, S. Jagannathan, and M.L. Crow, "Novel dynamic representation and control of power networks embedded with FACTS devices", Proc. of the IEEE Conference on Systems, Man and Cybernetics, pp. 3171-3176, Oct 2008.

172. B. Thumati* and S. Jagannathan, "A model based fault detection scheme for nonlinear multivariable systems", Proc. of the IEEE Conf. on Systems, Man and Cyber., pp. 1978-1983, Oct 2008.

173. J.W. Fonda*, S. Jagannathan and S. Watkins, "Joint adaptive rate and power control for wireless networks", Proc. of the IEEE Conference on Systems, Man and Cybernetics, pp. 3216-3221, Oct 2008.

174. M. Zarghami*, M. Crow, S. Jagannathan, Y. Liu, "Damping inter-area oscillations by UPFCs based on selected global measurements", IEEE PES General Meeting, pp. 1-6, July 2008.

175. S. Mehraeen*, S. Jagannathan, K. Corzine and J. Huang, "Energy harvesting using piezoelectric materials and high voltage scavenging circuitry", Proc. of the IEEE ICIT, pp. 1-8, March 2008.

176. J. Fonda*, S. Watkins, M. Zawodniok, and S. Jagannathan, "Embedded sensor mote for structural monitoring", Proc. of the SPIE, March 2008.

177. J. Fonda*, M. Zawodniok, S. Jagannathan, Al Salour, and D. Miller, "Missouri S&T mote-based demonstration of energy monitoring solution for network enabled manufacturing using wireless sensor networks (WSN)", Proc. of the Information Processing in Sensor Networks, pp. 559-560, April 2008.

178. F. Ren*, Y.R. Zheng, and Jagannathan Sarangapani, "Incorporating forward error correction codes into flexray communications", Proc. of the Sensip, 2008.

179. F. Ren*, Y.R. Zheng, M. Zawodniok, and S. Jagannathan, "Effects of electromagnetic interference on control area network performance, Proc. of the IEEE Region 5 Conference, pp. 199 – 204, April 2007.

180. T. Dierks* and S. Jagannathan, "Asymptotic stability of nonholonomic mobile robot formations using multilayer neural networks", Proc. of the IEEE Conference on Decision and Control, pp. 1944-1950, Dec 2007.

181. B. Thumati* and S. Jagannathan, "An online approximation-based fault detection framework for nonlinear discrete-time systems", Proc. of the IEEE Conference on Decision and Control, pp. 2608-2613, Dec 2007.

182. Q. Yang* and S. Jagannathan, "Online reinforcement learning control of unknown nonaffine nonlinear discrete time systems", Proc. of the IEEE Conf. on Decision and Control, pp. 5942-5947, Dec 2007.

183. D. Mohan*, J. Birt*, J., C. Saygin, Jagannathan Sarangapani, "Real-time process quality monitoring using wireless sensor embedded rotary tools for fastening operations," ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 10-16, IMECE2007-41647, 2007.

184. R. Anguswamy*, Saygin, C., Jagannathan Sarangapani, "In-process detection of fastener grip length using embedded mobile wireless sensor networks," ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 10-16, IMECE2007-41648, 2007.

185. Balaje Thumati*, Jeffery Birt, Neha Bassi*, and Jag Sarangapani, "A neural network model based approach to predict seal and impeller failures in centrifugal pumps", ASME International Mechanical Engineering Congress and Exposition (IMECE), Seattle, Washington, November 10-16, IMECE2007-41941, 2007.

186. A. Ramachandran* and S. Jagannathan, "Temporal and small-scale compensation using spatial diversity for signal strength-based location determination systems", Proc. of the IEEE Conference on Local Computer Networks, pp. 10-17, Oct 2007.

187. A. Ramachandran* and S. Jagannathan, "Use of frequency diversity in signal strength based WLAN location determination systems", Proc. of the IEEE Conference on Local Computer Networks, pp. 117-124, Oct 2007.

188. Tim Landstra*, M. Zawodniok and S. Jagannathan, "Energy efficient hybrid key management protocols for wireless sensor networks", Proc. of the IEEE Conference on Local Computer Networks, pp. 1009-1016, Oct 2007.

189. Q. Yang* and S. Jagannathan, "Near optimal neural network-based output feedback control of affine nonlinear discrete-time systems", Proc. of the IEEE Symposium on Intelligent Control, pp. 578-583, Oct. 2007.

190. P. Shih* and S. Jagannathan, "Reinforcement learning-based output feedback controller for complex nonlinear discrete-time systems" Proc. of the IEEE Inter. Symposium on Intelligent Control, pp. 407-412, Oct. 2007.

191. T. Dierks* and S. Jagannathan, "Control of nonholonomic mobile robot formations using neural networks", Proc. of the IEEE Conference on Intelligent Control, pp. 132-137, Oct. 2007.

192. C. Larsen*, M. Zawodniok* and S. Jagannathan, "Route aware predictive congestion control for wireless sensor networks", Proc. of the IEEE Conference on Intelligent Control, pp. 13-18, Oct. 2007.

193. T. Dierks* and S. Jagannathan, "Control of robot formations: backstepping kinematics into dynamics", Proc. of the IEEE Conference on Control Applications, pp. 94-99, Oct. 2007.

194. Wenxin Liu*, S. Jagannathan, G. Venayagamoorthy, D. Wunsch, M. Crow, and D. A. Cartes, "Neural network based decentralized controls of large scale power systems", IEEE Multi-Conference on Systems and Control (in ISIC 2007), pp. 676-681, Oct 2007.

195. Wenxin Liu*, S. Jagannathan, G. Venayagamoorthy, D. Wunsch, M. Crow, and D. A. Cartes, "Comparisons of controllers for power systems", IEEE Multi-Conference on Systems and Control (in CCA 2007), pp. 922-927, Oct 2007.

196. T. Dierks* and S. Jagannathan, "Neural network control of robot formations using RISE feedback structure", Proc. of the IEEE International Joint Conference on Neural Networks, pp. 2794-2799, August 2007.

197. P. Shih*, J. Vance*, B. Kaul*, S. Jagannathan, and James A. Drallmeier, "Near optimal output feedback control of nonlinear discrete-time systems in nonstrict feedback form with application to spark ignition engines" Proc. of the IEEE International Joint Conference on Neural Networks, pp. 396-401, August 2007.

198. Q. Yang* and S. Jagannathan, "Online reinforcement learning neural network controller design for affine nonlinear discrete-time systems", Proc. of the American Controls Conference, pp. 4774-4779, July 2007.

199. P. Shih*, J. Vance*, B. Kaul*, S. Jagannathan, and James A. Drallmeier, "Reinforcement learning based output-feedback control of nonlinear nonstrict feedback discrete-time systems with application to spark ignition engines" Proc. of the American Controls Conference, pp. 5106-5111, July 2007.

200. C. Saygin* and S. Jagannathan, "RFID in manufacturing; the good, the bad and the ugly", Proc of the 8th Annual Conference of the Production and Operations Management, Dallas, May 4-7, 2007.

201. Q. Yang* and S. Jagannathan, "Online reinforcement learning neural network controller design for nanomanipulation", Proc. of the IEEE International Symposium on Approximate Dynamic Programming, pp. 225-232, April 2007.

202. J. Fonda*, M. Zawodniok, J. Birt, and S. Jagannathan, "UMR-based demonstration of wireless sensor network protocols using pneumatics test bed", Proc. of the Information Processing in Sensor Networks, pp. 569-570, April 2007.

203. K. Cha*, A. Ramachandran, S. Jagannathan and D. Pommerenke, "Decentralized power control with hardware implementation for RFID networks", Proc. of the IEEE Conference on Decision and Control, pp. 1858-1863, December 2006.

204. M. Zawodniok* and S. Jagannathan, "Dynamic programming-based congestion control MAC protocol for wireless ad hoc networks", Proc. of the IEEE Conference on Local Computer Networks, pp. 521-524, Nov. 2006.

205. J. Fonda*, M. Zawodniok*, S. Jagannathan and S. Watkins, "Adaptive distributed fair scheduling and its implementation in wireless sensor networks", Proc. of the IEEE International Conference on Systems, Man, and Cybernetics, pp. 3382-3387, Oct 2006. (Invited)

206. P. He*, W. Gao* and S. Jagannathan, "Neuro control of nonlinear discrete-time systems with deadzone and input constraints", Proc. of the IEEE Conference on Control Applications, pp. 2836-2841, Oct. 2006.

207. Q. Yang* and S. Jagannathan, "Adaptive critic neural network force controller for atomic force based nanomanipulation, Proc. of the IEEE International Symposium on Intelligent Control, pp. 464-469, Oct 2006.

208. J. Fonda*, M. Zawodniok*, S. Jagannathan and S. Watkins, "Development and implementation of optimal energy delay routing protocol in wireless sensor networks", Proc. of the IEEE International

Symposium on Intelligent Control, pp. 119-124, Oct 2006. (Invited paper)

209. M. Zawodniok* and S. Jagannathan, "Congestion control and routing protocol for wireless sensor networks", Proc. of the IEEE Allerton Conference, Sept. 2006. (invited).

210. A. Singh*, J. Vance*, B. Kaul*, S. Jagannathan and J. Drallmeier, "Neural network control of spark ignition engines with high EGR levels", Proc. of the IEEE Conference on Neural Networks, pp. 4978-4985, July 2006.

211. W. Liu*, S. Jagannathan, G. Venayagamoorthy, D. Wunsch and D. Cartes, "Decentralized neural network based excitation control of large scale power systems", Proc. of the IEEE Conference on Neural Networks, pp. 1975-1981, July 2006.

212. H. Wu* and S. Jagannathan, "Adaptive neural network control and wireless sensor network-based localization of UAVs", Proc. of the IEEE Mediterranean Conf on Control and Autom., pp. 1-6, June 2006.

213. Q. Yang* and S. Jagannathan, "Nanomanipulation using atomic force microscope with drift compensation, Proc. of the American Controls Conference, pp. 1-6, June 2006.

214. J. Vance*, P. He*, B. Kaul*, S. Jagannathan, and James A. Drallmeier, "Neural network-based output feedback controller for lean operation of spark ignition engines" Proc. of the American Controls Conference, pp. 1-8, June 2006.

215. K. Cha*, A. Ramachandran and S. Jagannathan, "Adaptive and probabilistic power control algorithms in dense RFID networks", Proc. of the IEEE Conference on Sensing, Networking, and Control, pp. 474-479, April 2006.

216. S. Ratnaraj*, S. Jagannathan and V. Rao, "OEDSR: Optimal energy delay subnet routing protocol for wireless sensor networks", Proc. of the IEEE Conference on Sensing, Networking, and Control, pp. 330-335, April 2006.

217. S. Ratnaraj*, S. Jagannathan and V. Rao, "SOS: Self organizing protocol for wireless sensor networks", Proc. of the SPIE Conference, Feb 2006.

218. B. McMillin, M. L. Crow, D. Tauritz, F. Liu, B. Chowdhury, and J. Sarangapani, "Improving Power Transmission Efficiency and Reliability through Hardware/Software Co-Design," Electricity Advanced Sensing and Control Conference, Pittsburgh, PA, January 2006. (Invited)

219. Z. Chen* and S. Jagannathan, "Near Optimal Control of a class of nonlinear discrete-time systems using HJB formulation", Proc. of IEEE Conference on Decision and Control, pp. 4123-4128, Dec 2005.

220. P. He*, Z. Chen* and S. Jagannathan, "Neural network-based control of nonlinear discrete-time systems in nonstrict feedback form", Proc. of IEEE Conf. on Decision and Control, pp. 2580-2585, Dec 2005.

221. E. Taqieddin*, S. Jagannathan, and A. Miller, "TLR: Trust level routing protocol for wireless networks", Proc. of the Telemetry Conference, pp. 839-848, Nov. 2005.

222. Q. Yang*, S. Jagannathan and E. Bohannan, "Block phase correlation-based manipulation for atomic force microscopes", Proc. of the IEEE Nano, vol.1, pp. 370-373, July 2005.

223. M. Zawodniok* and S. Jagannathan, "Predictive congestion control MAC protocol for wireless sensor networks", Proc. of the IEEE International Conference on Control and Automation (ICCA), vol. 1, pp. 185-190, June 2005.

224. S. Jagannathan, "Decentralized discrete-time neural network controller for a class of nonlinear systems", Proc. of the IEEE Symposium on Intelligent Control, pp. 268-273, June 2005.

225. S. Jagannathan and Q. Yang*, "A robust controller for the manipulation of micro scale objects", Proc. of American Controls Conference, Vol.6, pp. 4154-4159, June 2005.

226. S. Jagannathan, P. He*, A. Singh* and Drallmeier, "Output feedback control of a class of nonlinear discrete-time systems using neural networks", Proc. of the Yale Workshop on Adaptive Systems, May 2005.

227. Niranjan Regatte* and S. Jagannathan, "Optimized energy delay routing for wireless ad hoc networks", Proc. of the Word Wireless Congress, May 2005.

228. M. Zawodniok* and S. Jagannathan, "Energy efficient rate adaptation MAC Protocol for ad hoc wireless networks", Proc. IEEE International Performance Computing and Communications Conference (IPCCC), pp. 389-394, March 2005.

229. K. Chakravarty*, C. Daw, R.M. Wagner, B.C. Kaul. J. A. Drallmeier, and Jagannathan Sarangapani, "Modeling nonlinear dynamics in a spark ignition engine with a two-zone thermodynamic model", Proceedings of the Combustion Institute, Spring 2005.

230. W. Liu*, S. Jagannathan, D. Wunsch and M. L. Crow, "Decentralized neural network control of a class of large-scale systems with unknown interconnections", Proc. of the IEEE Conference on Decision and Control, vol. 5, pp. 4972-4977, Dec 2004.

231. W. Liu*, S. Jagannathan, G.K. Venayagamoorthy, and D.C. Wunsch II, "Feedback linearization based power system stabilizer design with control limits", Proceedings of The 36th North American Power Symposium, August 9-10, 2004, Moscow, Idaho, USA.

232. P. He*, H. Bui*, S. Jagannathan, B. Kaul* and J. Drallmeier, "Neuro emission controller for minimizing cyclic dispersion in spark ignition engines with high EGR levels", Proc. of ANNIE, Vol. 14, pp. 421-426, Nov. 2004. **(Won third place in the best paper award category)**

233. V. Janardhan*, P. He* and S. Jagannathan, "Neural network controller for the manipulation of micro scale objects", Proc. of the IEEE Symposium on Intelligent Control, pp. 55-60, September 2004.

234. W. Liu*, S. Jagannathan, G.K. Venayagamoorthy, D. Wunsch and M. Crow, "Neural Network Stabilizing Control of Single Machine Power System with Control Limits", Proc. of the IEEE International Joint Conference on Neural Networks, pp. 1823-1828, July 2004.

235. N. Regatte* and S. Jagannathan, "A new fair scheduling MAC protocol for wireless sensor networks", Sensor-Actuator Networks, International Conference on Embedded Systems and Applications, June 2004.

236. N. Regatte* and S. Jagannathan, "Adaptive and distributed fair scheduling scheme for wireless adhoc networks", Proc. of the Word Wireless Congress, pp. 101-106, May 2004.

237. Sarat Dontula* and S. Jagannathan, "Active link protection with distributed power control of wireless networks", Proc. of the World Wireless Congress, pp. 612-617, May 2004.

238. M. Zawodniok* and S. Jagannathan, "A distributed power control MAC protocol for wireless adhoc networks", Proc. of the IEEE Wireless Communications and Networking Conference, vol. 3, pp. 1915-1920, March 2004.

239. S. Jagannathan, M. Zawodniok*, and Q. Shang*, "Distributed power control of wireless cellular networks in the presence of channel uncertainties", IEEE INFOCOM, vol.2, 1055-1066, March 2004.

240. S. Jagannathan and Hameed Mohammed*, "Adaptive force-balancing control of MEMS gyroscope with actuator limits", Proc. of American Controls Conference, vol.2, pp. 1862-1867, 2004.

241. Pingan He* and S. Jagannathan, "Discrete-time neural network output feedback control of

nonlinear systems in nonstrict feedback form", Proc. of the American Controls Conference, vol.3, pp, 2439-2444, 2004.

242. Pingan He* and S. Jagannathan, "Reinforcement-learning based output feedback control of nonlinear systems with input constraints", Proc. of the American Controls Conference, vol. 3, pp. 2563-2568, 2004.

243. Pingan He* and S. Jagannathan, "Adaptive critic neural network-based controller for nonlinear systems with input constraints", Proc. of the IEEE Conference on Decision and Control, vol. 6, pp. 5709-5714, 2003.

244. Pingan He* and S. Jagannathan, "Discrete-time neural network control of a class of nonlinear systems in nonstrict feedback form", Proc. of the IEEE Conference on Decision and Control, vol. 6, pp. 5703-5708, 2003.

245. S. Subramanya*, S. Jagannathan, and Mingsheng Peng*, "End to end rate-based congestion control of multi-media traffic in packet switched networks", Proc. of the IEEE Conference on Multimedia and Expo, vol.3, pp. 357-360, Aug. 2003.

246. S. Subramanya*, Mingsheng Peng* and J. Sarangapani, "Rate-based end to end congestion control of packet switched networks", Proc. of the IEEE Conference on Infor. Technology, pp. 342-346, July 2003.

247. Pingan He* and S. Jagannathan, "Lean combustion stability of spark ignition engines using backstepping scheme", Proc of the IEEE Conference on Controls Applications, vol.1, pp. 167-172, 2003.

248. Pingan He* and S. Jagannathan, "Neuro emission controller for minimzing cyclic dispersion in spark ignition engines", Proc of the IEEE Joint Conference on Neural Networks, vol. 2, pp. 1535-1540, 2003.

249. Pingan He*, S. Jagannathan and S. Balakrishnan, "Adaptive critic-based neural network controller for nonlinear systems with unknown deadzones", Proc of the IEEE Conference on Decision and Control, vol.1, pp. 955-960, Dec 2002.

250. S. Jagannathan, "A system theoretic approach to the design of admission controller for high-speed networks", Proc of the IEEE Conference on Decision and Control, vol.4, pp. 3638-3643, Dec 2002.

251. S. Jagannathan, A. Chronopoulos, and S. Ponipireddy*, "Distributed power control in wireless communication systems", Proc of the IEEE International Conference on Computer Communications and Networks, pp. 493-496, Nov. 02.

252. S. Jagannathan, "A hybrid system theoretic approach for admission control design in multimedia networks", Proc of the IEEE International Conference on Local Computer Networks, pp. 150-159, Nov 2002.

253. S. Jagannathan, "End to end congestion control of multicast high-speed networks", Proc of the IEEE International Conference on Local Computer Networks", pp. 547-556, Nov 2002.

254. S. Jagannathan, A. Tohmaz*, A. Chronopoulos, and H.G. Cheung, "Adaptive admission control of multimedia traffic in high-speed networks", Proc. of the IEEE Symposium on Intelligent Control, pp. 728-733, Oct 2002.

255. S. Jagannathan, "Adaptive critic neural network-based controller for nonlinear systems", Proc. of the IEEE Symposium on Intelligent Control, pp. 303-308, Oct 2002.

256. S. Jagannathan, "End to end congestion control of packet switched networks", Proc. of the IEEE Conference on Control Applications", vol. 1, pp. 519-524, Sept. 2002.

257. S. Jagannathan, "Admission controller design for high-speed networks: A hybrid systems

approach", Proc. of the IEEE Conference on Control Applications", vol. 1, pp. 542-546, Sept. 2002.

258. A. Chronopoulos, S. Ponipireddy*, and S. Jagannathan, "Constructing energy efficient broadcast trees in wireless adhoc networks", Proc of the International Symposium on Parallel and Distributed Computing, Romania, pp. 205-213, July 2002.

259. A. Chronopoulos and S. Jagannathan, "A distributed discrete-time neural network architecture for pattern allocation and control", Proc. of IEEE Symposium on Parallel and Distributed Systems (IPADS), Workshop on Bio-Inspired Solutions to Parallel Processing Problems (BioSP3), April 15-19, pp. 204-211, 2002.

260. G. Galan* and S. Jagannathan, "Adaptive critic-based object grasping controller for a three-fingered gripper", Proc of the IEEE Conference on Decision and Control, vol.4, pp. 3140-3145, Dec. 2001.

261. S. Jagannathan A. Tohmaz*, "congestion control of ATM networks using a Learning Methodology", Proc. of the IEEE Conference on Control Applications, pp. 135-140, September 2001.

262. S. Jagannathan, Annie Levesque* and Yesh Singh, "Approximation-based control and avoidance of a mobile base with an onboard arm for MARS greenhouse operation", Proc of the IEEE Symposium on Intelligent Control, pp. 103-108, September 2001.

263. G. Galan* and S. Jagannathan, "Adaptive critic-based object contact controller for a three-fingered gripper", Proc of the IEEE Symposium on Intelligent Control, pp. 109-114, September 2001.

264. S. Jagannathan and J. Talluri*, "Congestion control of ATM networks using a multilayered approach: multiple sources/single buffer scenario", Proc of American Controls Conference, vol.5, pp. 3789-3794, June 2001.

265. S. Jagannathan, Annie Levesque* and Yesh Singh, "Adaptive network control of a mobile base with an arm", Proc of the American Controls Conference, pp. 606-611, 2001.

266. S. Jagannathan, "Control of a multiple link robot arm at very high speeds for an industrial application", Proc. of the American Controls Conference, vol. 2, pp. 793-798, June 2001.

267. S. Jagannathan, G. Galan* and F. L. Lewis, "Control of autonomous underwater vehicles using neural network Approach", Proc of the IFAC Symposium on System Structure and Control, August 2001.

268. S. Jagannathan and J. Talluri*, "Predictive congestion control of ATM networks: multiple sources/single buffer scenario", Proc of IEEE Conference on Decision and Control, vol.1, pp. 47-52, Dec. 2000.

269. S. Jagannathan and J. Talluri*, "Traffic Rate Control of ATM Networks Using Neural Network Approach: Single Source/Single Buffer Scenario", Proc of the IEEE Symposium on Intelligent Control, pp. 315-320, July 2000.

270. S. Jagannathan and J. Talluri*, "Adaptive traffic rate control of ATM networks", Proc of the American Control Conference, vol.3, pp.1577-1581, June 2000. (**voted best paper in the session**)

271. S. Jagannathan and G.V.S. Raju, "Remaining useful life prediction of automotive engine oils using MEMS technologies", Proc. of the American Controls Conference, vol.5, pp.3511-3512, June 2000.

272. S. Jagannathan and A.C. Rogers, "Coordinated motion control of a mobile base with an arm", Proc of the ASCE Conference, Space and Robotics 2000, pp. 270-276, March 2000.

273. S. Jagannathan, "Robust backstepping control of a robotic systems using neural networks", Proceedings of the IEEE Conference on Decision and Control, vol.1, pp. 943-948, Dec. 98.

274. S. Jagannathan, "Robust backstepping control of nonlinear systems using multilayered neural

networks", Proceedings of the IEEE Conference on Decision and Control, vol.1, pp.480-485, Dec. 97.

275. S. Jagannathan and F. L. Lewis, "Multilayer neural network control of a class of nonlinear systems", Proceedings of the IEEE International Conference on Intelligent Control, pp. 181-186, July 97.

276. S. Commuri and S. Jagannathan, "Modular controls design for robot manipulators using CMAC neural networks", Proceedings of the IEEE Conference on Robotics and Automation, vol. 3, pp. 1725-1730, April 1997.

277. S. Jagannathan, "Adaptive control of unknown feedback linearizable nonlinear systems", Proceedings of the IEEE Conference on Decision and Control, pp. 4747-4752, Dec. 96.

278. S. Jagannathan, S. Commuri and F. L. Lewis, "Feedback linearization using CMAC neural networks", Proceedings of the IEEE Conference on Decision and Control, pp.3304-3309, Dec. 96.

279. S. Jagannathan, "Discrete-time fuzzy logic control of a mobile robot with an onboard manipulator", Proceedings of the IEEE Conference on Decision and Control, pp. 1135-1140, Dec. 96.

280. S. Jagannathan, F. L. Lewis, M. Vandegrift, and S. Commuri, "Feedback linearization of nonlinear systems using fuzzy logic systems", Proceedings of the ISAI/IFIS, pp. 385-392, Nov. 96.

281. S. Jagannathan, "Adaptive fuzzy logic control of a feedback linearizable discrete-time nonlinear systems ", Proceedings of the IEEE International Conf. on Intelligent Control, pp. 133-138, Sept. 96.

282. S. Jagannathan, "Discrete-Time CMAC NN control of a feedback linearizable nonlinear systems under a persistence of excitation", Proceedings of the IEEE International Conf. on Intelligent Control, pp. 462-467, Sept. 96.

283. S. Jagannathan, "Adaptive discrete-time fuzzy logic control of a feedback linearizable nonlinear systems", Proceedings of the IEEE International Conf. on Fuzzy Systems, pp. 1273-1278, Sept. 96.

284. S. Jagannathan, "Adaptive control of feedback linearizable discrete-time nonlinear systems using neural networks under a persistence of excitation", Proceedings of the IEEE Mediterranean Symposium on New Directions, pp. 35-40, Jun. 96.

285. S. Jagannathan, "Discrete-Time fuzzy logic control of a mobile robot with an onboard manipulator", Proceedings of the IEEE Mediterranean Symposium on New Directions, pp.451-456, Jun. 96.

286. S. Jagannathan, "Discrete-time adaptive control of feedback linearizable nonlinear systems using neural networks", Proceedings of the IEEE Conf. on Neural Networks, vol.4, pp. 1704-1709, Jun. 96.

287. S. Jagannathan and F. L. Lewis, "Discrete-time adaptive fuzzy logic control of robotic systems", Proceedings of the IEEE Conf. on Robotics and Automation, vol.3, pp.2586-2591, April 96.

288. S. Jagannathan, "Adaptive control of unknown feedback linearizable systems in discrete-time using neural networks", Proc. of the IEEE Conf. on Robotics and Automation, vol.1, pp. 258-263, April 96.

289. S. Commuri, F. L. Lewis and S. Jagannathan, "Discrete-time CMAC neural networks for Control Applications", Proceedings of the IEEE Conference on Decision and Control, pp. 2420-2426, Dec. 1995.

290. S. Jagannathan, "Robust modified implicit self tuning regulator/MRAC convergence and stability", Proceedings of the IEEE Conference on Systems, Man and Cybernetics, vol.3, pp. 2171-2175, Oct. 95.

291. S. Jagannathan and F. L. Lewis, "Multilayer neural net controller for a class of nonlinear dynamical systems", Proceedings of the IEEE International Symposium on Intelligent Control, pp. 427-432, Aug. 95.

292. S. Jagannathan and F. L. Lewis, "Robust implicit self tuning regulator/MRAC convergence and stability", Proceedings of the IEEE International Symposium on Intelligent Control, pp. 42-46, Aug. 95.

293. S. Jagannathan and P.S. Shiakolas, "A comparison of neural network controllers for a mobile base with an onboard manipulator using neural networks", Proceedings of the IEEE International Symposium on Intelligent Control, vol. 1, pp. 405-410, Aug. 95.

294. M. Vandergrift, F. L. Lewis, S. Jagannathan, and K. Liu, "Adaptive fuzzy logic control of discrete-time dynamical systems", Proceedings of the IEEE International Symposium on Intelligent Control, pp. 395-401, Aug. 95.

295. P. Shiakolas and S. Jagannathan, "Control of a mobile robot with an onboard arm using neural networks", Proceedings of the IEEE Mediterranean Symposium on New Directions and Automation, pp. 315-323, June 95.

296. S. Jagannathan and F. L. Lewis, "Identification of nonlinear dynamical systems using multilayer neural networks", Proceedings of the IEEE International Symposium on Intelligent Control, pp. 345-351, Aug. 94.

297. A. Yesilderek, S. Jagannathan, and F. L. Lewis, "Continuous and discrete-time neural controllers", Proceedings of the IEEE Mediterranean Symposium on New Directions and Automation, Crete, pp. 9-16, June 94.

298. S. Jagannathan and M. Evans, "Intelligent control of flexible autonomous robots Part I: architectural considerations", Proceedings of the IEEE Conf. on Neural Networks, vol.5, pp. 2837-2841, June 94.

299. S. Jagannathan, "Intelligent control of flexible autonomous robots Part II: implementation", Proceedings of the IEEE Conf. on Neural Networks, vol.5, pp. 2831-2836, June 94.

300. S. Jagannathan, F. L. Lewis, and O. C. Pastravanu, "MRAC of nonlinear dynamical systems using multilayer neural networks", Proceedings of the IEEE Conf. on Neural Networks, vol.7, pp. 4766-4771, June 94.

301. S. Jagannathan and F. L. Lewis, "Discrete-time neural net controller with guaranteed performance", Proceedings of the American Control Conference, pp. 3334-3339, May 1994.

302. S. Jagannathan, F. L. Lewis and K. Liu, "Modeling, control, and obstacle avoidance of a mobile robot with an onboard manipulator", Proceedings of the IEEE Symposium on Intelligent Control, vol. 1, pp. 196-201, Aug. 93.

303. F. L. Lewis, H-Huang, and S. Jagannathan, "A systematic approach to discrete-event controller design for manufacturing applications control", Proceedings of the American Control Conference, vol.2, pp. 1525-1531, June 1993.

304. S. Jagannathan, S. Balakrishnan and N. Popplewell, "Visual inspection of wave soldered joints using neural networks", Proceedings of the IEEE-IJCNN Conference on Neural Networks, vol.1, pp.7-12, Dec. 91.

305. S. Jagannathan, S. Balakrishnan and N. Popplewell, "Sampling and loop delay intervals for digital control", Proceedings of the ISMM Conference on Mini and Microcomputers, vol.2, pp.114-117, Dec. 91.

306. S. Jagannathan, N. Popplewell and S. Balakrishnan, "Digital control of a CNC milling machine", Proceedings of the ISMM Conference on Mini and Microcomputers, vol.2, pp.118-121, Dec. 91.

307. S. Jagannathan, S. Balakrishnan and N. Popplewell, "Task level language for robot arm control", Proceedings of the modeling and simulation conference, vol.3, pp.995-1001, May 91.

308. K. Udayakumar, S. Jagannathan, D. Shankar and E. Vadivelu, "Magnetic levitation and propulsion", Proceedings of the International Conference on Railway Electrification, New Delhi, Vol.1, pp. 221-223, Oct. 85.

PRESENTATIONS ONLY

1. Soylemezoglu, A., J. Birt, Sarangapani, J, D. Trimble and C. Rouse, "Auto-ID Technologies and Solutions for Aerospace Manufacturing," *AEROMAT'05*, Orlando , Florida , June 6-9, 2005.

2. K. Cha, Soylemezoglu, A., J. Birt, M. Zawodniok, J. Fonda, E. Taqieddin, E. M. Millis-Harris, Saygin, and J. Sarangapani, "A Testbed for Validation and Benchmarking of Auto-ID Solutions," *AEROMAT'05*, Orlando, Florida, June 6-9, 2005.

3. C. Saygin and J. Sarangapani, "Auto-ID Technologies Research Group at the University of Missouri-Rolla", US Air Force Depot Maintenance Transformation (DMT) Automatic Identification Technology (AIT) Workshop, Sept. 12-15, Ogden, Utah, 2005.

4. J. Sarangapani and C. Saygin, "Monitoring, Diagnostics, and Prognostics Research at the University of Missouri-Rolla," 9th Bi-annual Industry Advisory Board Meeting of the Intelligent Maintenance Systems (NSF I/UCRC) Center, May 2005, Ann Arbor, Michigan.

5. J. Sarangapani and C. Saygin, "Monitoring, Diagnostics, and Prognostics Research at the University of Missouri-Rolla ," 8th Bi-annual Industry Advisory Board Meeting of the Intelligent Maintenance Systems (NSF I/UCRC) Center, Nov 1-2, 2004 , Milwaukee , Wisconsin.

6. S. Jagannathan, "Energy Efficient Protocols for Wireless Networks", Indian Institute of Technology, Dept. of Computer Science, Chennai, June 2004.

7. J. Sarangapani, "Monitoring, Diagnostics, and Prognostics Research at the University of Missouri-Rolla ," 9th Bi-annual Industry Advisory Board Meeting of the Intelligent Maintenance Systems (NSF I/UCRC) Center, May 2004, Ann Arbor , Michigan.

8. J. Sarangapani, "Monitoring, Diagnostics, and Prognostics Research at the University of Missouri-Rolla ," 8th Bi-annual Industry Advisory Board Meeting of the Intelligent Maintenance Systems (NSF I/UCRC) Center, Nov 2003 , Milwaukee , Wisconsin.

9. S. Jagannathan and J. Drallmeier, "Neuro Emission Controller for Spark Ignition Engines", Sandia National Laboratories, June 2004.

10. S. Jagannathan and G.V.S Raju, "Integration of Microsensor Arrays", Tex MEMS, August. 99. (invited).

11. S. Jagannathan, **"**Computers and society**"**, National Seminar, Feb. 1983.

12. S. Jagannathan and M. Arif, **"**Digital techniques in nuclear instrumentation**"**, IEEE Student Chapter, Madras, pp. 1-7, April 85.

SHORT COURSES

1. "Embedded Computer Systems", Offered at IEEE MOCON March 2004
2. "Wireless Networking", Offered at IEEE MOCON March 2004. (With Dr. Subramanya)
3. "Embedded Computer Systems for Control", IEEE ISIC Symp. on Intel. Control, Oct 2003.

PATENTS AWARDED

1. Al Salour, D. Trimble, J. Sarangapani, and E. Taqieddin*, "Ultra-lightweight Mutual Authentication Protocol with Substitution Operation", US Patent No. 10198605, February 5, 2019. (**Cybersecurity jointly filed with Boeing)**

2. Jagannathan Sarangapani, M. Zawoniok, Vivek Thotla*, T. Ghasr, and Jake Hertenstein, "Electronic Device Detection Systems and Method", US Patent No. 9689964B2, June 27, 2017. (**Explosive threat detection)**

3. Jagannathan Sarangapani, A. Ramachandran*, C. Saygin, and K. Cha*, "Decentralized Radio Frequency Identification System", US Patent No. 8143996B2, March 27, 2012.

4. S. Mehraeen* and J. Sarangapani, "System and method for harvesting energy from environmental energy", US Patent 8,129,887B2, March 6, 2012. **(8 to 10 times more energy than commercially available hardware at the time of evaluation)**

5. Jagannathan Sarangapani, A. Ramachandran*, C. Saygin, and K. Cha*, "Adaptive Inventory Management System", US Patent No. 7752089B2, July 2010. **(NN Decision making for asset localization and tracking)**

6. S. Jagannathan and S.K. Rangarajan, "A Method to Predict Severity of a Trend toward an Impending Machine Failure and Responding to the Same", US Patent No. 6,442,511, August 2002. **(Prognostics for Caterpillar)**

7. S.R. Rangarajan, and S. Jagannathan, "Method and Apparatus for Predicting a Fault Condition using Nonlinear Curve Fitting Techniques", US Patent No. 6,363,332, March 26, 2002.

8. S. Jagannathan, "Apparatus and Method for Diagnosing an Engine Using Computer-Based Models in Combination with a Neural Network", US Patent No. 6,240,343, May 29, 2001.

9. S. Jagannathan, "A Method for Determining a Desired Response to Detection of an Obstacle", US Patent No 6,173,215, January 2001. **(Autonomous Systems)**

10. S. Jagannathan, "Energy-Based Approach for Obstacle Avoidance", US Patent No. 6,134,502, Oct. 17, 2000.

11. S. Jagannathan, "Method and Apparatus of Predicting a Fault Condition", US Patent No. 6,119,074, Sept. 12, 2000.

12. S. Jagannathan and D.R. Schricker, "Apparatus and Method for Diagnosing an Engine Using an Exhaust Temperature Model ", US Patent No. 6,092,016, July 18, 2000.

13. S. Jagannathan and C. A. Kemner, "Method and Apparatus for Determining an Alternate path in Response to Detection of An Obstacle", US Patent No. 60,64,926, May 16, 2000.

14. S. Jagannathan and F.L.Lewis, "Discrete-Time Neural Network Tuning of a Class of Nonlinear Dynamical Systems", The Univ. of Texas, US Patent No. 6,064,997, May 16, 2000.

15. S. Jagannathan, "Method and Apparatus for Detecting Obstacles Using Multiple Sensors for Range Selective Detection", US Patent No. 6,055,042, April 25, 2000.

16. S. Jagannathan, "Method for Determining the Condition of Engine Oil based on TBN Modeling", US Patent 5,987,976, November 23, 1999.

17. S. Jagannathan and D. R. Schricker, "Method and Apparatus for Predicting a Fault Condition", Caterpillar Inc., US Patent No. 5,950,147, September 7, 99.

18. C. Kemner, C. Khoerson, and S.Jagannathan, "System and Method for Managing a Fleet of Mobile Machines for Dumping at a Plurality of Dump Points", US Patent No. 5,931,875, August 3, 99.

19. S. Jagannathan et al., "Automated Systems—Automated Loader System", Defensive Publication, Research Disclosure Technology Journal, Pub. No. 42368, July 99.

20. S. Jagannathan, D. R. Schricker, and Trent Simpson, "Method for Determining the Condition of Engine Oil based on Soot Modeling", US Patent No. 5,914,890, June 22, 1999.

21. S. Jagannathan, "Method and Apparatus for Determining a Path for a Machine between a Predetermined Route and a Final Position", US Patent No. 5,752,207, May 12, 98.

22. D.R. Schricker, S. Jagannathan, D. G. Young, Satish M. Shetty, "Method and Apparatus for Comparing Machines in Fleet", US Patent No. 5,737,215, April 7, 98.

PATENT/PROVISIONAL PATENT FILED

1) K. Cha*, M. Zawodniok, A. Ramachandran, S. Jagannathan and C. Saygin, "Decentralized Radio Frequency Identification System", Patent Filed, Nov 2007.

2) M. Thiagarajan*, M. Zawodniok, S. Jagannathan, "RFID-based Adaptive Inventory Management System", Provisional patent application filed in Dec 2007.

INVENTION DISCLOSURES

1) S. Jagannathan, K. Cha, A. Ramachandran, and C. Saygin, "Read Rate and Coverage Improvement Through Reader Power Control", Invention Disclosure, January 2006.

2) S. Jagannathan, S. Ratnaraj, J. Fonda and M. Zawodniok, "Optimal Energy Delay Routing Protocol for Wireless Sensor Networks", Invention Disclosure, May 2006.

3) S. Jagannathan, N. Regatte, and M. Zawodniok, "Adaptive and Distributed Fair Scheduling Schemes for Wireless Sensor Networks", Invention Disclosure, May 2006.

4) S. Jagannathan and J. Drallmeier, "Neural Network Control of Spark Ignition Engines Operating Lean", Invention Disclosure, May 2006.

5) S. Jagannathan and J. Drallmeier, "Neural Network Control of Spark Ignition Engines with High EGR Levels", Invention Disclosure, May 2006.

6)S. Jagannathan, "Adaptive HE Implement Control", Invention Disclosure, November 1998.

7) S. Jagannathan, "On-line HE Learning Control", Invention Disclosure, November 1998.

8) S. Jagannathan, "A Method to Predict Confidence", Invention Disclosure, December 1998.

9) S. Jagannathan, F. Lombardi, and C. Ramamoorthy, "A System and Method to Control ON/OFF Valves and Associated Implement Circuits", Invention Disclosure, January 1999.

Former Graduate Students

Doctoral Students

1. Pingan He*, "Neural network control of a class of discrete-time nonlinear systems with application to engine emission control", December 2004. (GM Power Train, Michigan)
2. Maciej Zawodniok, "Power sensitive algorithms and protocols for wireless ad hoc and sensor networks", December 2005. (Associate Professor, Dept. of Computer Engg, Missouri University of Science and Technology, Rolla, USA; **NSF Career Awardee**)
3. Jianjun Guo, "Decentralized control and placement of multiple unified power flow controllers", co-advisor, September 2006. (Los Angeles)

4. Eyad Taqeiddin, “Trust level energy efficient routing protocols for wireless ad hoc networks”, May 2007, co-advisor, (Professor, Department of Computer Science and Information Technology, Jordon University of Science and Technology).
5. Qinmin Yang, “Advanced control design using neural networks for micro/nano robotics”, August 2007. (Professor, Zhejiang University, China)
6. Jonathan Vance, “Neural network control of nonstrict feedback and nonaffine nonlinear discrete-time systems with application to engine control”, Sept. 2007. (Tech. Fellow, Advanced Computing and Information Technology Group, Boeing, Advanced Technologist)
7. James W. Fonda, “Energy efficient wireless sensor network protocols for monitoring and prognostics of large-scale systems”, January 2008. (Tech. Fellow, Advanced Computing and Information Technology Group, Boeing as an Advanced Technologist).
8. Travis Dierks, “Formation control of mobile robots and UAVs”, August 2009. (DRS Technologies, now in a startup in St. Louis)
9. Carl Larsen, “Quality of service provisioning through resource allocation and data aggregation in wireless sensor networks”, August 2009. (Patent Examiner, United States Patents and Trademarks Office)
10. Shahab Mehraeen, “Decentralized adaptive neural network control of interconnected nonlinear dynamic systems with application to power systems”, Nov. 2009. (Newton B Thomas Professor, Louisiana State University, Baton Rouge; **NSF Career Awardee**)
11. Balaje Thumati, “A control theoretic fault prognostics and accommodation framework for a class of nonlinear discrete-time systems”, Nov 2009. (Associate Tech Fellow-Boeing, St. Louis) (**Won Boeing Chairman Award for Safety**)
12. Ahmet Soylemezoglu, “Sensor-based decision making”, Mar. 2010. USACE ERDC-CERL (United States Army Corps of Engineers - Engineer Research and Development Center - Construction Engineering Research Laboratory, Urbana Champaign, IL).
13. Behdis Eslamnour, “Adaptive resource allocation for cognitive wireless ad hoc and hybrid networks”, October 2010. (Faculty in Iran)
14. Rana Basheer, “Real-time localization system by using received signal strength indicator”, April. 2012. (Broadcom, Irvine, CA **now having his own company Edza, CA**).
15. Hao Xu, “Stochastic optimal adaptive controller and communication protocol design for the networked control system”, May 2012. **NSF Career Awardee** (Associate Professor, University of Nevada, Reno).
16. Hassan Zargarzadeh, “Lyapunov based optimal control of a class of nonlinear systems”, August 2012 (Associate Professor, Lamar University, Beamont, Texas).
17. Hasan Ferdowsi, “Model based diagnosis and prognosis of nonlinear systems”, October 2013. (Assistant Professor, Northern Illinois University, Dekalb, IL)
18. Qiming Zhao, “Finite horizon optimal control of a class of linear and a class of nonlinear systems”, October 2013. (Denso, Michigan).
19. Avimanyu Sahoo, “Event-sampled regulation of a class of linear and nonlinear systems”, April 2015. (Assistant Professor-University of Alabama at Huntsville, AL)
20. Nurbanu Guzey, “Localization and tracking of unintended emitting sources”, October 2015. (Associate Professor, Department of Electrical Engineering, Erzurum Technical University, Turkey)
21. Behzad Talaei, “Boundary control of distributed parameter systems using adaptive dynamic programming”, March 2016. (American Axle Corporation, Warren, MI; now VW-California)
22. Jia Cai, “Model-based diagnosis and prognosis of a class of linear and nonlinear distributed parameter systems”, April 2016. (Microsoft, Seattle)
23. Haifeng Niu, “A control theoretic approach to security in cyber-physical systems”, April 2016. (Amazon Corp, and now at Google Cloud Seattle)
24. Haci Guzey, “Consensus based formation control of unmanned vehicles”, November 2016. (Associate Professor, Department of Electrical Engineering, Erzurum Technical University, Turkey)
25. Xiang Gao, “Using wireless sensors and networks program for chemical particle propagation mapping and chemical source localization”, November 2016 (co-advisor)
26. Vignesh Narayanan, “Event triggered optimal adaptive control of interconnected systems”, June 2017. (Assistant Professor, Dept of Computer Science-University of South Carolina)
27. Krishnan Raghavan, “Deep learning neural network-based classifier design with applications to bigdata analytics”, March 2019. (Scientist, Dept of Comp Science and Mathematics, Argonne

National Laboratory, Chicago)
28. Rohollah Moghadam, "Optimal adaptive control of time-delay dynamical systems with known and unknown dynamics", October 2020. (Assistant Professor, California State University-Sacramento)
29. Charles Rawlins, "IoT Security using Block Chain protocols", January 22, 2024. (Montanna State University)
30. Behzad Farzanegan, "Safe Lifelong learning based optimal control of a class of nonlinear discrete-time systems", April 9, 2025. (Caterpillar, Peoria, IL)
31. Irfan Ganie, "Human-robot teaming using safe lifelong learning based optimal control framework", April 11, 2025.

Additional Advisor for Doctoral Students:

1. Wenxin Liu, "Power system stabilizing control using neural networks", May 2005. Additional advisor (Professor, Lehigh University, PA) (Published several papers)
2. Ivo Grondman, "Online model-based learning algorithms for actor-critic control", Tu Delft, Netherlands, March 2015. (published conference paper)
3. Ravi Prakash, "Intelligent control for complex manipulation tasks using skill transfer", December 2021, IIT-Kanpur, India. (Published several journal papers; now Assistant Professor, IISc, Bangalore)
4. Tejalal Chowdhury*, "Pruning in deep neural networks", June, Bennett University, Noida, 2022. (Published several journal papers)
5. S. Gupta*, "Q-SANE spiking neural networks", June, Bennett University, Noida, 2022.

Master Students

1. J. Talluri, "Adaptive traffic management in ATM Networks", Dec 2000. (Software company Austin)
2. A. Tohmaz, "Adaptive congestion control and bandwidth estimation in high-speed networks", May 2001. (Beckwith Electronic Engineering Company, San Antonio)
3. G. Galan, "Neural network control of a class of nonlinear systems", August 2001. (Software Engineer Lead in San Antonio)
4. A. Levesque, "Neural Network-based robot control", August 2001. Grubber Engineering San Antonio, Texas.
5. Satish Ponipireddy, "Distributed power control of wireless networks", August 2002. (co-advisor) (SBC Communications)
6. M. Peng, "End to end congestion control of the INTERNET", December 2002. co-advisor (working as a software engineer, California)
7. S. Dontula, "Power sensitive algorithms and protocols for wireless cellular and adhoc networks", May 2003. (Software Engineer, Florida)
8. M. Hameed, "Adaptive force balancing control of MEMS gyroscope", May 2003. (Student State University of New York, Bio Engineering using MEMS sensors)
9. N. Regatte, "Distributed fair scheduling and optimal routing protocols for wireless ad hoc and sensor networks", May 2004. (Design Engineer)
10. V. Janardhan, "Implementation and control of a class of nonlinear systems", Sept. 2005. (Embedded Systems Engineer, Peoria, IL)
11. Jonathan Vance, "Embedded networked system controller for spark ignition control", November 2005. (Boeing St. Louis)
12. Sibala Ratnaraj, "Self organizing and routing protocols for wireless sensor networks", December 2005. (Boeing, CA)
13. Kainan Cha, "Interference mitigation using distributed power control algorithms for RFID reader networks," April 2006. (Garmin, Kansas City)
14. Tim Landstra, "Hybrid key management and secure routing protocol", May 2006. (Sandia National Labs)
15. Anil Ramachandran, "Diversity techniques for signal strength based WLAN location determination systems", November 2006. (Sprint, Kansas City and now at Emerson, St. Louis)
16. Peter Shih, "Reinforcement learning-based NN control of complex nonlinear discrete-time systems with application to engine control", November 2006. (Software Engineer, Hugh Res. Lab)
17. Deepak Mohan, "Real-time grip length detection of rotary tools: A Mahalanobis Taguchi Strategy", May 2007, Co-advisor. (Software Engineer at Intel; Now at Garmin, Kansas City)
18. Travis Dierks, "Nonlinear control of nonholonomic mobile robot formations", June 2007. (DRS

Technologies, St. Louis, Startup in a company and part time instructor in Rolla)

19. Amit Shah, "Terahetrz data processing for standoff detection of improvised explosive devices", August 2007. Co-advisor (Florida Engineer)
20. Phani Gajjala, "Energy efficient processor operation and vibration-based energy harvesting schemes for wireless sensor nodes", August 2007. (Dallas Engineer)
21. Reghu Anguswamy, "Wireless mote-based in-process diagnostics using hand held tools in network enabled manufacturing environments", May 2008. (Doctoral student at Virginia Tech in Dept of ECE, now in India as a VP in a company)
22. Hindu Kothapalli, "Localization in wired and wireless networks", May 2009. (Morgan & Chase, MD)
23. Gary Halligan, "Fault detection and prediction with application to rotating machinery", Nov 2009. (Rockwell Collins, Iowa)
24. Priya Kasirajan, "Data aggregation in wireless sensor networks", Dec 2009 (with graduation May 2010). (Garmin International, Kansas City)
25. Jake Hertenstein, "Detection of explosive threats by using embedded wireless sensor-based networks", Jan 2010. (DRS Technologies, St. Louis)
26. Bryan Brenner, "Embedded optimal control of mobile robot formations using neural networks," August 2010.
27. David Nodland, "Optimal control of helicopter unmanned air vehicle", Oct 2011 (Caterpillar, Peoria, IL).
28. Deepthi Raja, "Decentralized diagnostics and prognostics of discrete-time systems", May 2012.
29. R. Kraleti, "Diagnostics and prognostics of a class of industrial systems", May 2012. (Co-advisor)
30. Nathan Szanto, "Event sampled control of strict feedback systems with application to quadrotor UAV", Sept 2016. (start up company)
31. Arnold Fernandez, "Attack detection and mitigation in mobile robot formations", December 2019. (Doctoral student at S&T)
32. Ahmed Abugroun, "Lifelong adaptive learning for autonomous application: A framework for mitigating catastrophic forgetting and enabling continuous adaptation", April 2025.

Current Graduate Students (All Ph.D.) (expected)

1. Maxwell Geiger, "Optimal adaptive tracking using lifelong learning", December 2025.
2. Ahmed Abugroun, "Safe and lifelong learning with image feedback", August 2026.
3. Ehsan Soleimani, "Multiagent formation using optimal adaptive framework", December 2026.
4. Mohamed Tanvir Shahed, "Optimal control of power grid with adversaries", August 2028.
5. Insha Sheikh, "Deep learning using imagery data", August 2028.
6. Ankaniwit Sahawat, "Control of biped robots", August 2027.

Current M.S: None.

Postdoctoral Fellow/Visiting Scholar:

Shirin Nasr, Trajectory generation by using imagery data analytics, Oct 2022-April 2025.
Vijay Kumar Singh, Optimal adaptive control of power systems, Sept 2024-present.
Pappa Rajan, Process Control, August 2019-March 2020, Anna University, Fulbright scholar

Undergraduate Students:

1. David Price, "Optimal control of UAV and mobile robot formations", ONR, Summer 2025.
2. Redemer Payton, "Block-chain based reputation system", ARO Grant, Fall-Spring 2023.
3. Cheng-Yuan Wang, "Predicting IoT attacks using GAN", ARO Grant, Fall-Spring 2023.
4. Aaron Burke, "Online learning for formation control", ARO grant supported, Spring 2023.
5. Jared Allen, "3D printer as a CPS system with attacks", Fall 2021.
2. Carlos Cook, "Inplant RFID and Part DNA", Fall 2020, Honeywell.
3. Eric Hanson, "RFID Cart System", 2019-2020. Supported by Honeywell.
4. Van Hai Bui, "Neural network control of spark ignition engines with high levels of EGR", (Summer 03, Fall 04, Spring 04). Supported by NSF 0327877 grant.
5. Robert Stewart, "Spark ignition engine modeling with high EGR", Summer 03. NSF #032787
6. Jamie McChesney, "Autonomous navigation of a mobile base with an onboard arm for MARS greenhouse operation (Fall 00, Spring 01) Supported by NASA/TSGC grant.
7. Juan Portillo, "Obstacle avoidance of a mobile base with an onboard arm", (Fall 00, Spring 01).

Supported by NASA/TSGC.

8. Adam Wolf, "Interfacing the real world-robots and sensors", Spring 2001. Supported by Office of Naval Research through ONR Scholar's program
9. Cynthia Green, "Force controller", Spring 2001. ONR Scholars program.
10. P. Au, Gilani, and J.Putz, "Sensor network alert system," B.S Thesis, 2003.

Service Activities (Not updated --Internal and External)

Professional Activities:

- **Senior Editor, IEEE Transactions on Neural Networks and Learning Systems (2024-present)**
- **Program Chairman** for IEEE Illinois Valley Section (94-95)
- **Branch Counselor**, IEEE Student Branch of Univ of Missouri Rolla and Missouri S&T (03-10)
- Secretary Institution of Engineers (86)
- **Chaired sessions**, IEEE International Conference on Intelligent Control (95,96,01, 04)
- Reviewer for IEEE Trans. on Neural Networks (93-Present)
- Reviewer for IEEE Trans. on Automatic Control (93-Present)
- Reviewer for Journal of Intelligent Robotic Systems (93-Present)
- Reviewer for IEEE Control Systems Magazine (92-Present)
- **Chaired sessions** in American Control Conference (94-Present)
- Reviewer for American Control Conference (93-Present)
- Reviewer for IEEE Conference on Decision and Control (92-Present)
- Reviewer for IEEE Conference on Robotics and Automation(93-Present)
- Reviewer for IEEE Mediterranean Symposium on Control Directions (94-Present)
- **Program Committee**, Mediterranean Symposium on Control Directions (00, 04)
- Reviewer for IEEE Symposium on Intelligent Control (93-Present)
- Reviewer for IEEE Conference on Fuzzy Systems (96-Present)
- **Program Committee** for IEEE Symposium on Intelligent Control (96, 99, 01, 03,05)
- **Chaired sessions** in Conference in Decision and Control (1997-till date)
- Reviewer for IEE Transactions and Proceedings (1995-Present)
- Reviewer for ASME Transactions on Measurements, Dynamics and Control (94-present)
- Reviewer for IEEE Transactions on Robotics and Automation (95-Present)
- Reviewer for IEEE Transactions on Information Technology in Biomedicince (99-Present)
- Reviewer for International Journal of Adaptive and Signal Processing
- Reviewer for Automatica (95-Todate)
- Reviewer, IEEE Transactions on Networking (99-Todate)
- Reviewer, Neurocomputing (04-)
- **Finance Chair**, 2004 IEEE Symposium on Intelligent Control
- **Program Committee,** 2004 IEEE Conference on Cybernetics and Intelligent Systems (http://cis-ram.nus.edu.sg/)
- **Program Committee,** 2004 International Conference on Intelligent Knowledge Systems (IKS), Turkey (http://www.ikss.org/iks-2004.htm)
- **Steering Committee,** 2005 International Congress for Global Science and Technology
- **Publicity Chair,** 2006 International Conference on Networking, Sensing and Control
- **Invited Sessions Chair,** 2006 International Symposium on Intelligent Control
- **Program Chair,** 2007 International Symposium on Intelligent Control as part of first multi conference on systems and control, Singapore
- **Publicity Chair,** 2007 International Symposium on Adaptive Dynamic Programming
- **International Technical Program Committee,** 2008, 2009 International Conference of Wireless Communication and Networking (IEEE WCNC)
- **Program Committee,** 2008 IEEE International Joint Conference on Neural Networks
- **Program Committee,** 2009 International Conference on Systems of Systems Engineering (SoSE)
- **Program Committee,** 2009,2010 IEEE Globecom
- **Program Committee**, 2009 IEEE ADPRL
- **Invited Session Chair,** 2009 IEEE Mediterranean Symposium on Controls and Automation

- **Program Committee,** 2009, 2010 IEEE IJCNN, July 20-23, Barcelona, Spain
- **Program Committee,** 2010 8th International Conference on Controls and Automation (IEEE ICCA), June 9-11th, Xiamen, China
- **Program Committee,** 2010 IEEE Wireless Communications and Networking Conference, April 18-22nd, Sydney, Australia
- **Program Committee,** 2010 7th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2010), 15-18th June, Portugal
- **Program Committee,** 2010 Knowledge-based Intelligent Information and Engineered Systems (KES), Sept. 8-10th, Cardiff UK
- **Program Committee,** 2009, 2010 IEEE SenseApp, Oct 11th-14th, Denver, CO
- **Program Committee,** 2011 3rd International Symposium on Computational Intelligence and Data Mining, Paris (CIDM), April 11-25, 2011.
- **Program Chair, CCA part of** 2011 IEEE Multi-Conference on Systems and Control, Sept 28-30th, Denver CO
- **Program Chair,** 2011 IEEE ADPRL, April 11-15, Paris, France
- **Member of the International Technical Program Committee,** IEEE International Joint Conference on Neural Networks, (IJCNN), July 29-August 5, 2011, San Jose, CA.
- **Member of the International Technical Program Committee,** 8th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2011), 15-18th June, 2011, Portugal.
- **International Program Committee,** 2011 IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob 2011) Shanghai China, October 10-12.
- **Technical Program Committee,** 2012 IEEE International Conference on Communications (ICC)
- **International Program Committee,** 2012 IEEE Conference on Control Applications
- **Registration Chair,** 2012 IEEE Conference on Decision and Control, Hawaii, Dec 2012.
- **Program Co-Chair,** 2013 IEEE ADPRL, April 15-19, Singapore
- **Vice Chair, Technical Committee on Adaptive Dynamic Programming and Reinforcement Learning, IEEE CIS (2013)**
- **International Program Committee**, 9th International Conference on Knowledge, Information and Creativity Support Systems, Kraków, Poland, from November 7 to 9, 2013
- **Sponsors and Exhibits Chair,** 2013 IEEE Conference on Neural Networks, Dallas, Texas
- **International Program Committee Member,** 2013 IASTED International Conference on Control and Applications (CA 2013) August 2013**.**
- **International Program Committee Member**, 2013 Informatics in Control, Automation and Robotics ICINCO,
- **International Program Committee Member**, 2013 10th IEEE International Conference on Control & Automation (ICCA)
- **International Program Committee Member,** 2013 IEEE ICC Wireless Communications Symposium
- **International Advisory Committee,** 2014 ACODS
- **Program Co-Chair Chair,** 2014 IEEE Adaptive Dynamic Programming and Reinforcement Learning, Orlando, December 2014
- **International Program Committee,** 2014 IEEE Multi Conference on Systems and Control, Antibes, France, October 2014
- **International Program Committee**, International Conference on Contemporary Computing and Informatics (IC3I), Mysore, India, November 27-29, 2014.
- **International Program Committee**, The 7th International Conference on Network Security &Applications(CNSA-2014), Zurich Switzerland
- **General Chair,** Sixth International Conference on Networks & Communications (NETCOM – 2014), Chennai, India
- **International Program Committee**, 9th International Conference on Knowledge, Information and Creativity Support Systems, Tokyo, Japan
- **International Program Committee Member**, 2014 Informatics in Control, Automation and Robotics ICINCO, October
- **International P**rogram **Committee member,** 2014 eKNOW, The Sixth International Conference on

Information, Process, and Knowledge Management, Barcelona, July 2014.

- **Advisory Committee Member,** International Conference on Recent Developments in Control, Automation and Power Engineering **(RDCAPE 2015) http://rdcape.com/** on 12-13 March 2015.
- International Program Committee Member, ICPRAM 2015 http://www.icpram.org/RegistrationFees.aspx.
- International Program Committee Member, The first International Conference on Cognitive Computing and Information Processing (CCIP-15) at JSSATEN on 3- 4th, March 2015.
- **International Program Committee Member**, 2015 Informatics in Control, Automation and Robotics ICINCO, October.
- **Associate Editor and International Program Committee Member**, 2015 International Joint Conference on Neural Networks (IJCNN 2015) which will take place in Killarney, Ireland, July 12-17, 2015.
- **Associate Editor**, 2015 IEEE Multi-conference on Systems and Control, Sydney Australia, Sept 21-24, 2015.
- **International Program Committee Member**, 2015 Wireless Communications Symposium (ICC 2015)
- **International Program Committee Member**, 2015 IEEE Adaptive Dynamic Programming and Reinforcement Learning, Cape Town, South Africa, December 2015.
- **International Advisory Committee**, Biennial International Conference on Control, Measurement and Instrumentation (CMI 2016), January 08-10, 2016.
- International Program Committee Member, ICPRAM 2016 http://www.icpram.org/RegistrationFees.aspx.
- **International Technical Program Committee Member**, The twelfth International Conference on Autonomic and Autonomous Systems, June 26 - 30, 2016 - Lisbon, Portugal.
- **International Program Committee Member**, The Seventh International Conference on Adaptive and Self-Adaptive Systems and Applications, March 20 - 24, 2016 - Rome, Italy.
- **International Advisory Program Committee**, National Conference in the field covering Electronics, Communication, Power Electronics and Computer Science during July 2016.
- **International Program Committee Member**, International Conference on Advances in Intelligent Control and Automation (ICAICA 2016)during March 10-12, 2016. http://rljit.co.in/icaica2016/..
- **International Program Committee Member**, 4th IFAC International Conference on Intelligent Control and Automation Sciences (ICONS 2016), in Reims, France, June 1-3, 2016.
- **International Program Committee Member**, The Eighth International Conference on Information, Process, and Knowledge Management, eKNOW April 24 - 28, 2016 - Venice, Italy.
- **International Program Committee Member**, IEEE First International Conference on Control, Measurement and Instrumentation (CMI 2016), January 8-10, Kolkota, India. www.cmi2016india.org
- **International Program Committee Member**, IEEE International Conference on Advanced Networks and Telecommuncations Systems (ANTS), Bangalore, India https://edas.info/Tyn.php?tpc=999032496.
- International Program Committee Member, ICPRAM 2017 http://www.icpram.org/RegistrationFees.aspx.
- **International Program Committee Member**, India Controls Conference, Ghawhati, January 2017.
- **Member of Advisory Board,** 2nd International Conference on Recent Technological Development in Electronics and Electrical Engineering, (RTDEEE-2018) during 6th – 7th April 2018.
- **Technical Program Committee**, International Conference on Advanced Research in Computational Intelligence and Computing (ICARCIC 2018), August 9-11, 2018, Lam, Guntur, Andhra Pradesh, India.
- **Technical Program Committee, International Program Committee Member**, 15th International Conference on Informatics on Control, Automation and Robotics, Porto Portugal, July 29-31,2018.
- **Technical Program Committee Member**, Indian Control Conference, IIT Kanpur, Jan 4-8th 2018.
- **Honorary Co-Chair,** 8th IEEE International Advanced Computing Conference, New Delhi, Dec 12-14th, 2018**.**
- **Technical Program Committee Member,** 7th International Conference on Pattern Recognition Applications and Methods, Funchal Madeira, Portugal, 16-18th January 2018.
- **Program Co-Chair,** IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, Bangalore India, Nov 18-23, 2018**.**

- **Program Co-Chair,** IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, China, Dec 18-23, 2019**.**
- **Honorary Co-Chair,** 9th IEEE International Advanced Computing Conference, Trichy, Dec 14-15th, 2019**.**
- **International Program Committee Member**, 15th International Conference on Informatics on Control, Automation and Robotics, Prague, Czech Republic, July 29-31,2019.
- **Technical Program Committee Member**, Indian Control Conference, IIT Guwahati, Jan 9-11th 2019.
- **International Technical Program Committee Member,** 7th International Conference on Pattern Recognition Applications and Methods, Funchal Madeira, Portugal, 16-18th January 2019.
- **International Technical Program Committee Member**, 11th International Conference on Neural Computation Theory and Applications, 17-19th Vienna Austria Sept. 2019.
- **International Technical Program Committee Member**, 15th International Conference on Autonomic and Autonomous Systems, Athens Greece, June 2-6th 2019.
- **International Technical Program Committee Member**, 15th International Conference on Adaptive and Self-Adaptive Systems and Applications, Venice, Italy, May 5-9th 2019.
- **International Program Committee**, 9th International Conference on Pattern Recognition Applications and Methods, Feb 22-24th, Valetta, Malta, 2020.
- **Technical Program Committee, International Program Committee Member**, 17th International Conference on Informatics on Control, Automation and Robotics, Porto Portugal, July 7-9th, 2020.
- **International Program Committee Member**, 12th International Conference on Neural Computation Theory and Applications, Budapest Hungary 2-4th November 2020.
- **International Program Committee Member**, 12th International Conference on Adaptive and Self Adaptive Systems, Nice France Oct 25th-29th, 2020.
- **Honorary Co-Chair,** 9th IEEE International Advanced Computing Conference, Goa, Dec 6-7th, 2020**.**
- **International Technical Program Committee Member**, ALLSENSORS, 5th International Conf. on Advances in Sensors, Actuators, Metering and Sensing, Valencia, Spain, Nov. 21-25th 2020.
- **International Technical Program Committee Member,** International Conference of Interdisciplinary Cyber-Physical Systems, December 28-29th 2020.
- **International Technical Program Committee Member,** 2ndInternational *Conference on Communication, Optical and Microelectronics: "The Emerging Trends"-2020 (ICCOMET-2020)* during 3rd – 4th April 2020.
- **International Technical Program Committee, International Program Committee Member**, 17th International Conference on Informatics on Control, Automation and Robotics, Porto Portugal, July 7-9th, 2021.
- **International Program Committee Member**, 13th International Conference on Neural Computation Theory and Applications (NCTA 2021), October 25-27th 2021.
- **International Program Committee Member**, 12th International Conference on Adaptive and Self Adaptive Systems, Nice France Oct 25th-29th, 2021.
- **Honorary Co-Chair,** 9th International Advanced Computing Conference, Malta, Dec 18-19th, 2021**.**
- **International Technical Program Committee Member**, ALLSENSORS, 6th International Conference on Advances in Sensors, Actuators, Metering and Sensing, Nice, France, July 18-22th 2021.
- **International Technical Program Committee Member,** 4th International Conference on Recent Developments in Control, Automation and Power Engineering (RDCAPE 2021)**,** Noida, India**,** 7-8 October 2021.
- **International Technical Program Committee Member,** 4th IFAC Conference on Embedded Systems, Computational Intelligence and Telematics in Control, Valenciennes, France, July 5-7, 2021.
- **International Technical Program Committee**, 1st International Conference on Advanced Network Technologies and Intelligent Computing (ANTIC-2021), Bhuvaneswar, India, 17th & 18th December 2021.
- **International Technical Program Committee**, 16th International Conference on Knowledge, Information, and Creativity Support Systems, Bangkok, Thailand, November 24-26, 2021.
- **International Technical Program Committee,** 18th International Conference on Informatics on Control, Automation and Robotics, Barcelona, Spain, April 24-28th, 2022.
- **International Program Committee Member**, 14th International Conference on Neural Computation

Theory and Applications (NCTA 2021), October 24-26th , Malta, 2022.

- **International Technical Program Committee** and served as an Associate Editor for the 17th International Conference on Control, Automation, Robotics and Vision (ICARCV) in 2022, ICARCV 2022- will be held during December 11-13 2022, in Singapore.
- **Associate Editor**, 6th *IFAC* Conference on Intelligent Control and Automation Sciences (*ICONS 2022*), Cluj-Napoca, Romania, 13-15 July *2022*.
- **International Program Committee**, 14th International Conference on Adaptive and Self Adaptive Systems, 24th-28th April, Barcelona Spain, 2022.
- **Honorary Chair**, 2nd International Conference on Advanced Network Technologies and Intelligent Computing (ANTIC-2022), 22nd to 24th December 2022, Banaras Hindu University, Varanasi, India.
- **Honorary Co-chair**, 12th International Advanced Computing Conference, Hyderabad, 16-17th, December, 2022**.**
- **Honorary Chair**, 2nd International Conference on Emerging Electronics and Automation (E2A-2022), 16-18th, December, Silchar, India.

Academic Committees:

- Member, Kummer AI and Autonomous Systems Center Search Committee (2021-2022)
- Chair, Dean's Scholar Selection Committee (2022-2024)
- Member, Campus Level budget Committee (2023-present)
- Member, System wide tenure committee
- Member, Dept of Engineering Management and Systems Engineering P&T Committee
- Member, Dean's CEC Strategic Vision Committee (2020-2021)
* Member, Campus Incentive Committee (2017-2018)
* P&T Chair, Dept of Nuclear Engineering (2018)
* Chair, Dean's Scholar Selection Committee (Member 2016, 2018, 2019, Chair 2020 & 2021)
* Member, Search Committee on Autonomous Systems in Mechanical Engineering
* Member, Tenure Policy Committee (2016-)
* Search Committee Chair, Controls Strategic Hire (2015-2016)
* Search Committee Chair, ECE Department Chair (2014-2015)
* Member, ECE representative of the Budget Affairs Committee (2009-2014)
* Member, Electronics Faculty Position Recruitment Committee (2012)
* Member, Public Occasions (2011-2014)
* Controls Area Coordinator (2011-2015)
* Member, Dept Executive Committee (2011-2015)
* Member, Campus Professional Degree Selection Committee (2010-2012)
* Promotion and Tenure Evaluation Faculty member, Engineering Management and Systems Engineering (2010, 2019, 2020)
* Dept. P&T Chair (2010-2014)
* Member, University Wide Tenure Committee (2009)
* Faculty Service Awards Committee (2009)
* ECE Representative, Promotion and Tenure Policy Committee (2008-10)
* Chair, Control Systems Search Committee (2007-08)
* ECE representative, Campus Tenure Committee (07-08)
* Member, Compliance Committee (07-15)
* Member, UM Patent Committee (06-15)
* Member, Faculty Recruitment Committee Power (2006)
* Member, Academic Freedom Committee(05-09)
* Member, Communications Faculty Recruitment Committee (2005)
* Member, School of Engineering Honors Committee (03-06)
* Member, School of Engineering Awards Committee (02-05)
* Member, Dept Graduate Curriculum Committee (06-todate)
* Member, Dept. Laboratory Committee (02-05)
* Member, Library Committee (04-05)
* Advisor, IEEE Student Branch (03-10)
* Member, Graduate Faculty Council
* University of Texas Honors Program Committee
* University of Texas Graduate Studies Committee

* UTSA Library Committee.
* UTSA EE Faculty Committee.
* UTSA College of Engineering Implementation Committee.
* Member, Academic Policy and Curricula Committee
* Member, Committee for Several Graduate Students

External Examiner for Tenure Decisions: Several from Singapore, USA, Jordon and from India