Vita

John Leo Meier

US citizen – Active Security Clearances

Address: 4 Oak Forest Court, St. Charles, Missouri, 63303

Phone: 636-373-1441

E-Mail: jackmeier57@gmail.com

Career Objective: Professor of Embedded Systems or Intelligent Machines

Personal Information: Born: 01/03/1957 Married

Education:

Ph.D. in Computer Engineering, 2015, Washington University, St. Louis, Missouri

M.S. in Electrical Engineering, 1988, Missouri S&T, Rolla, Missouri

B.S. in Electrical Engineering, 1983, Southern Illinois University, Carbondale, Illinois

Honors and Awards

1982 -Inducted into Tau Beta Pi 1982 at Southern Illinois University

1996 - McDonnell Douglas Corporation (NDC) Citizenship Award for Leadership working with Historic Black Colleges (HBCU)

1997, MDC award tor establishing the first HBCU internship with Harris-Stowe State College

1997, MDC award for **establishing the multimedia lab** at Howard University as the corporate liaison fo historically black colleges and universities (HBCU)

2002, Rockwell Collins Advanced Technology Center Engineer of the Year

2004, Associate Technical Fellow, Boeing Corporation

2005, Technical Fellow, 2005, Boeing Corporation

2004, Technical Lead Engineer (TLE), Boeing Corporation

2006, Boeing Award for establishing the Center for Intelligent Networking Systems laboratory

2012, Technical Excellence awards for the Unmanned Carrier-Launched Airborne Surveillance and Strike UCLASS avionics Satcom System Integration

Professional Experience:

2004 – present Boeing Technical Fellow, Phantom Works, Boeing St. Louis, Missouri

1997 – 2003 Rockwell Collins Corporation, Advanced Development Center, Cedar Rapids, Iowa

1983 – 1997 Boeing/McDonnell Douglas, Advanced Programs, St. Louis, Missouri

1981-1983 Southern Illinois University, Teaching Assistant, Carbondale, Illinois

1977-1981 USAF, Electronic Warfare Technician, Warner Robins, Georgia

Research Leadership and Experience:

Principle Investigator – Intelligent Distributed System Management (IDSM), Boeing Research and Technology

Principle Investigator – High Speed Networks in the Rockwell Collins Advanced Technology Center

Independent & Interdisciplinary Research	**Applied Research (Transition)**	**Multi-disciplinary Team**
In-Flight Network	Internet is on flying aircraft	News Corp, Qualcom, several small companies
Wideband Multifunction Array	F/A-18 currently uses a multifunction array	Northrup Grumman, Raytheon
Intelligent Network Gateway (IG) – Embedded Systems	New defense systems are using active network technology to implement intelligent gateway solutions	Washington University, Stanford (NetFPGA), Xilinx, Altera, Cisco (AXP), Intel (Imote), IBM
Power Flow Control	Prevents power outages (US & Africa)	Carnegie Mellon University, Siemens, Bonneville Power
Intelligent Spectrum Management	See 5 year research plan	Washington University
Avionic Fiber Optics	Boeing 787 displays network	Iowa State University, and international team

Relevant Skills: Verilog, Handle C, C, C, C++, Matlab, VHDL, Test benches from Xilinx and Altera, digital analyzer and related test equipment operation, LaTex, Algorithm design, active network technology

Teaching Philosophy, Goals and Experience:

My teaching philosophy is to provide students with an increments successes curriculum building confidence toward a mature graduate that represents the university. My 5 key goals associated with my teaching philosophy are student centered learning, authentication, team based learning, pyramid visual teaching, and accessibility.

student centered learning

- Blackboard
- Monitor student access to web page
- Correlation of events to assess appropriate steps to reward or correct -guide
- counciling
- mentoring

authentication

- real world examples

team based learning
pyramid visual teaching
accessibility.

Curriculum development and academic advising experience:

Washington University Teaching Center training

- Use of advanced tools, including Blackboard
- Methods that increase student curiosity leading to student retention
- Curriculum structure built on steady levels of student success

Advising and mentoring experience with multiple undergraduate/graduate students

Teaching Experience:

Teaching assistant for undergraduate and graduate classes

- Digital Design, Advanced Network Design

Professional Classes Taught
-Radar System, Communication Systems, Avionic Systems, Network Systems

Workshops/Summits organize

- International Fiber Optics for Avionics 2002
- Quality of Service (QoS), 2004
- Wireless Networks, 2005

Continuous Improvement Plan:

May, 2016 – Present doctoral research at ISORC international conference on on real time embedded systems. Develop a plan to implement the embedded system intelligent network while attending the 12th Workshop on Software Technologies for Future Embedded and Ubiquitous Systems (SEUS 2016).

August 2016 – Begin researcher at a major university to build an intelligent network laboratory. Prepare the NSF proposal for supporting this research plan and seek industry sponsors.

May, 2017 – Complete spectrum allocation laboratory and enhance value-optimal centralized manager to support equivalent cellular parameters of the current algorithms in use.

May 2018 – Complete implementation of the MDP value-optimal distributed spectrum manager with all relevant parameters tested.

May 2019 – Assess the value-optimal centralized and distributed value-optimal spectrum allocation using the large scale cellular testbeds. The new approach will be contrasted with the existing cellular allocation performance. Scalability and throughput will be the tracked.

May 2020 – Leverage the MDP value-optimal approach to develop an intelligent RF gateway.

May 2021 – Demonstrate a cognitive network using multiple RF gateway embedded systems evaluating the intelligent networking approach.

Research Philosophy, Goals and Experience:

Development of value optimal spectrum allocation using Markov Decision Processes (MDPs) using embedded computing is critical to use spectrum efficiently.
Spectrum is a precious resource and is often not used efficiently however a combination of new technology and advanced algorithms enables a disciplined approach to allocation. My approach to making spectrum management decisions is grounded in Markov decision theory, which has a rich formal foundation and is frequently used to guide decision-making in other disciplines. I have developed a set of MDPs that model the RF spectrum management problem (in various forms).
These MDPs are then queried to provide guidance for management decisions, including the combination of both admission and modulation decisions. This results in control decisions that are optimal in expectation. To address the computational complexity inherent in computing these control decisions, I develop heuristic approaches that mimic the MDP's decisions based upon patterns observed n the MDP decision space. These heuristics closely approximate the optimal results from the MDP.

My 5 year research plan is to develop a laboratory with corporate sponsors for evaluating my centralized spectrum allocation approach with my new distributed approach. I intend to expand my spectrum allocation models to manage additional decision factors, such as signal strength, noise figure, dynamic range, distance and additional modulation types. These value optimal approaches will be evaluated against the current wireless spectrum allocation approaches used today.

Professional Presentations:

2009, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), “Intelligent Distributed Architecture (IDA) for Mobile Sensor Data Fusion,” St. Louis, Missouri, October

2011, Compsac, conference paper and Ph.D. Seminar research presented, Munich, Germany

2007, Aerospace Conference, paper presentation, Big Sky, Montana

2008, Aerospace Conference, paper presentation of Intelligent Avionics with Advanced Clustering, Big Sky, Montana

2004, Boeing Research and & Technology (BR&T) QoS summit, St. Louis, Missouri

2005, BR&T Wireless Summit, Seattle, Washington,

2005, Boeing Technology Conference (BTEC2), Advanced QoS Application Control, Huntington Beach, California
2006, Boeing National Cyber Security Demonstration, Washington D.C.
2006, Intelligent Networks, invited talk by John Lockwood and John Meier for: Technology Gateway: IT Meeting, St. Louis, MO,
2002, EEE Conference on Local Computer Networks (LCN), Tampa, Florida,
2011, Boeing Technology Conference (BTEC18), "Intelligent Command, Control, and Communication Architecture for High Assurance Smart Grid", St. Louis, Missouri
2009, Boeing Technology Conference (BTEC15), "Cyber Architecture using Embedded Systems", St. Louis, Missouri
MDC advanced antenna array technology, Under Secretary of Defense, Pentagon, 1995

Key Publications and Papers

Meier, John, Benjamin Karaus, Shreeharsha Sisla, Terry Tidwell, Roger D. Chamberlain, and Christopher Gill, "Assessing the Appropriateness of using Markov Decision Processes for RF Spectrum Man- agement," in Proc. of ACM International Conference on Modeling, Analysis, and Simulation of Wireless and Mobile Systems (MSWiM), November 2013, pp. 41-48.

Meier, John, Christopher Gill, and Roger D. Chamberlain, "To- wards More Effective Spectrum Use Based on Memory Allocation Models," in Proc. of 35th IEEE Computer Software and Applications Conference (COMPSAC), July 2011, pp. 426-435.

Meier, John and Burchan Bayazit, "Intelligent Distributed Architecture (IDA) for Mobile Sensor Data Fusion," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), October 2009, pp. 103-109.

Meier, John, Todd Sproull, G. Adam Covington, and John W. Lockwood, "Intelligent Avionics with Advanced Clustering," in Proc. of IEEE Aerospace Conference, March 2008.

Sproull, Todd, John W. Lockwood, and John Meier, "Management and Service Discovery in Satellite and Avionic Networks," in Proc. of IEEE Aerospace Conference, March 2007.

Ramesh, Tirumale and John Meier, "A Multi-FPGA High Per- formance Computing Platform for Network-Centric Applications," in Proc. of International High Performance Computing Conference (HPCC), 2006.

Ramesh, Tirumale and John Meier, "Network Edge Computing – Using, Learning and Cultivating Best Practices to Meet the Challenge of Next-Generation High Performance Embedded Computing," in Proc. of Symposium oon HPC Technologies/Practices/Experiences, 2006.

Hackmann, Gregory, Chien-Liang Fok, Gruia-Catalin Roman, Chenyang Lu, Christopher Zuver, Kent English, and John Meier, "Agile Cargo Tracking using Mobile Agents," in Proc. of International Conference on Embedded Networked Sensor Systems (SenSys), 2005.

Meier, John, S. Kim, Alan George, S. Oral, "Gigabit COTS Eth- ernet Switch Evaluation for Avionics," in Proc. of IEEE Conference on Local Computer Networks (LCN), 2002.

Key Projects completed

1985 Avionic (F/A-15 & F/A-18 (ETS/METS) reduced 6'x 6'x 3' test equipment to shoebox with embedded devices and surface mount technology
1986 built and tested first transmit/receive module at McDonnell Douglas
1988 RF Engineer for the first multifunction (radar, communications, electronic warfare) phased array developed and demonstrated transitioned to F/A-18
1989 A-12 Avenger advanced sensors
1992 Chief RF architect for PAVE PACE modular avionics (radar, communication, navigation, IFF)
1995 Avionic Architect (McDonnell Douglas) design for the next generation avionics
1996 Chief RF Engineer for Integrated Sensor System (radar, communications, electronic warfare) using common yielding dramatic reduction in weight and size
1998 Designed the F-35 integrated communication system for Rockwell Collins
200 Developed proves for ARINC-664 deterministic Ethernet used on Airbus and Boeing aircraft
2001 Lead development of new train radio to minimize dark rail
2002 Demonstrated intelligent networking concept using embedded systems
2003 In flight network (IFN) demonstrating the first live internet to the aircraft
2004 Initiated international consortium to develop low cost fiber optic components for avionics
2005 Developed, tested and patented new network quality of service (QoS) technology
2006 Demonstrated intelligent network gateway
2007 Demonstrated mobile sensor networks for homeland defense container security
2008 US wide demonstration (patented) of cyber security for distributed networks
2010 US wide demonstration of cyber security for smart grid
2011 Power routing to eliminate blackouts (international application)

Patents

2012, Sackman, R.W. and Meier, J.L., "Controlling virtual power circuits'
2016-05-05 06:41:05 +0000
http://www.google.com/patents/EP2537221A2?cl=zh

2012, Sackman, R.W. and Meier, J.L., "Controlling virtual power circuits'
2016-05-05 06:32:38 +0000
http://google.com/patents/WO2011102927A2?cl=sv

2011, Sackman, R.W. and Meier, J.L. and Overman, T.F. and Moody, S.A. "Network centric power flow control ". 2016-05-05 06:34:54 +0000
http://www.google.com/patents/WO2011102926A3?cl=en

2012, Sackman, R.W. and Meier, J.L. and Overman, T.F. and Moody, S.A., "Network centric

power flow control'
2016-05-05 06:30:06 +0000, US Patent 8,315,743
https://www.google.ch/patents/US8315743

2006 Meier, J.L. and English, K.L. and Ayyagari, A. and Wang, G., "Network centric quality of service using active network technology"
2016-05-05 06:29:22 +0000, WO Patent App. PCT/US2005/043,892, WO2006062887 A1, PCT/US2005/043892
http://www.google.com/patents/WO2006062887A1?cl=un,

2011, Meier, J.L. and English, K.L. and Ayyagari, A. and Wang, G., "QOS provisioning in a network having dynamic link states",2016-05-05 06:27:02 +0000
, US Patent 7,936,762
https://www.google.com/patents/US7936762

2014, Meier, J.L. and Ayyagari, A. and Smith, B.J. and Zamith, F.A. and Hanks, C.J. and Howard, R.J. and Zuver, C.K. and Gray, M.R., "System, apparatus, and method for communication in a tactical network ",2016-05-05 06:23:08 +0000, US Patent 8,761,008
https://www.google.com/patents/US8761008

2015, Meier, J.L. and Ayyagari, A. and Smith, B.J. and Zamith, F.A. and Hanks, C.J. and Howard, R.J. and Zuver, C.K. and Gray, M.R.M.," System for communication in a tactical network", 2016-05-05 06:21:42 +0000, US Patent 9,178,829
https://www.google.com/patents/US9178829

2011, Ramesh, T.K. and Meier, J.L. ,"Virtual intelligent fabric",
2016-05-05 06:47:12 +0000, US Patent 7,996,350
https://www.google.ch/patents/US7996350

2011, Ramesh, T.K. and Meier, J.L. ,"Virtual intelligent fabric",
2016-05-05 06:18:43 +0000, US Patent 7,996,350
https://www.google.com/patents/US7996350

2007, Koenck, S.E. and Jensen, D.W. and Meier, J.L., Free space optical data link for aircraft
2016-05-05 06:17:15 +0000, US Patent 7,308,203
https://www.google.com/patents/US7308203

2005, Meier, J.L. and Steffensmeier, M.J. and West, J.B. and Wright, S.J. and Jensen, N.O.," Conformal electronic scanning array", 2016-05-05 06:49:54 +0000, US Patent 7,308,203
https://www.google.com/patents/US6937194

2011, Ramesh, T.K. and Meier, J.L. ," Distributed cognitive architecture",
EP20,090,154,093,
https://www.google.com/patents/EP2101289A3?cl=en

2012, Ramesh, T.K. and Meier, J.L." Intelligent fabric system on a chip",

2016-05-05 06:03:47 +0000, US Patent 8,103,853
https://www.google.com/patents/US8103853

2013, Ramesh, T.K. and Meier, J.L. and Amanatullah, J.E. and Huang, M.Y.," Distributed security architecture", 2016-05-05 05:59:22 +0000, US Patent 8,434,125
https://www.google.com/patents/US8434125

2000, Ayyagari, A. and Harrang, J.P. and Ray, S., "Airborne broadband communication network", 2016-05-05 05:57:32 +0000, US Patent 6,018,659
https://www.google.com/patents/US6018659

2012, Meier, J.L. and Ayyagari, A. and Smith, B.J. and Zamith, F.A. and Hanks, C.J. and Howard, R.J. and Zuver, C.K. and Gray, M.R.M.," System for communication in a tactical network", https://www.google.com/patents/EP2494749A2
https://www.google.com/patents/EP2494749A2?cl=fr

2009,m Ramesh, T.K. and Meier, J.L.," Distributed cognitive architecture",
2016-05-05 05:33:26 +0000, US Patent App. 12/042,648
https://www.google.com/patents/US20090228407

2006, Meier, J.L. and English, K.L. and Ayyagari, A. and Wang, G.," Network centric quality of service using active network technology",2016-05-05 05:29:45 +0000, WO Patent App. PCT/US2005/043,892
https://www.google.com/patents/WO2006062887A1?cl=en

References:

Keith Coleman
Boeing Chief Engineer of Advanced Weapons
E-mail: Keith.A.Coleman@boeing.com
Phone: 314-777-5672

Roger Chamberlain, Ph.D.
E-mail: roger@wustl.edu
Campus Box 1045
One Brookings Dr.
St. Louis, MO 63130-4899
Office: Bryan 405C
314-935-5708 (office)
314-935-7302 (fax)

Chris Gill, Ph.D.
E-mail: cdgill@cse.wustl.edu
Department of Computer Science and Engineering
Campus Box 1045,
Washington University One Brookings Drive St. Louis, MO 63130
Phone: (314) 935-7538)

Alan George, Ph.D.
Email: ageorge@ufl.edu
Room 327, Larsen Hall, 968 Center Drive,
POB 116200,
ECE Department,
University of Florida, Gainesville, FL 32611-6200
Phone: (352) 392-5225

The information contained in this document is true to the best of my knowledge.

John Meier