

NAECON 2009



Agenda

July 21 – July 23, 2009

**Next Generation Optics, Innovative Aerospace Technology, and
Sensory Technology for Biological Signals**

Updated 16 July 09

www.naecon.org

Location



2800 Presidential Drive * Fairborn * Ohio * 45324
Phone: 937-426-7800
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We have 100 rooms reserved at \$84/day plus 12.5% tax
(Either standard double or king)

Under “NAECON/IEEE Conference” (937) 426-7800
Room CUT OFF DATE: June 29, 2009

Note: Tutorials Fees are included with Conference Registration

Plan Ahead For

NAECON 2010 July 14 - 17, 2010

NAECON 2009 Prelim Schedule

Day 1 – Tuesday, July 21, 2009

Time	Session	Event	Location
7:30am-8:30am		Registration/Continental Collage	Hallway
8:30am-8:45am		Introduction/ Robert Ewing	Amphitheatre
8:45am-11:20am	Tutorial A	Tutorial A: Air Force Technology Readiness Assessment Course Dr. Keith W. Jones, Air Force Institute of Technology and Innovative Technologies Corp.	Kittyhawk
8:45am-11:20am	NGC	NAECON Grand Challenge	Amphitheatre
11:30am–2:00pm		Luncheon	Challenger/ Discover
12:00pm-1:00pm		Keynote Speaker: Paul McManamon, Ph.D.	Ballroom
		Fellow SPIE, OSA, AFRL, & MSS Title: Conformal EO Aperture Array Based Sensing and High Energy Lasers	
1:00pm-2:00pm		Keynote Speaker: John M. Frazier, Ph.D.	Ballroom
		AFRL/HE Emeritus, Air Force Research Lab Title: Biomolecular Command and Control	
2:00pm-3:00pm	Lecture	Cognitive Processing Using Spiking Neural Networks Applications-Electronic Nose, Radar and Rapid HDL Hoda Abdel-Aty-Zohdy, PhD and Jacob Allen	Ballroom
3:00pm-4:00pm	CTS	Cognitive Trust in Sensors (Aircraft, Image & Radar) Panel Session Chair: Bill McQuay	Ballroom
4:00pm-6:30pm	BSS	Biological Signals Chair: Maj Leamon Viveros Ron Allen, President and Chief Operating Officer of AMDETECH Calamityville Presentation – Glenn Hamilton	Ballroom
7:00pm-9:00pm		NAECON Executive Steering & NAECON Committee (Only) Committee Chair: Maj. General (retired) Lou Ferraro	Armstrong

Day 2 – Wednesday, July 22, 2009

Time	Session	Event	Location
7:30am-8:30am		Registration/Continental Collage	Hallway
8:30am-11:30am	Tutorial B	Trust Management in Ad Hoc and Sensor Networks Dr. Bin Wang, Dept of Computer Science and Engineering, Wright State University	Amphitheatre
8:30am-11:30am	CC	Collaborative & Cognitive Processing Chair: Bill McQuay	Lindbergh/ Patterson
8:30am-11:30am	CM	RF Computational Modeling Chairs: Seng Hong & Robert Penno	Kittyhawk
8:30am-11:30am	PH	Photonics Chairs: Ken Hopkins & Jim Grote	Wright/Earhart
11:30am–2:00pm	Luncheon	Luncheon Panel Discussion-Posters TechEdge, DAGSI and AFOSR	Ballroom
2:00pm-5:00pm	Tutorial C	Biologically Inspired Technologies for Signal Processing Hoda S. Abdel-Aty-Zohdy, Ph.D, Dir. of the Microelectronics System Design Lab. Oakland University	Amphitheatre
2:00pm-5:00pm	AC	RF Adaptive Circuits and Subsystems Chair: Charles Cerny	Wright/Earhart
2:00pm-5:00pm	IRP	Image & Radar Processing Chair: Yuan Zheng	Lindbergh/ Patterson
7:00pm–10:00pm	Banquet	NAECON 2009 BANQUET Banquet Keynote speaker is Dr. Milton Chang, title of Talk, "Crossing the chasm between technology and commercialization" <ul style="list-style-type: none"> • Awards Presentation – Research Visionary Award • Live Entertainment - "Catty Wampus" Featuring Celtic Violins	Ballroom

Day 3 – Thursday, July 23, 2009

Time	Session	Event	Location
7:30 am-8:30 am		Registration/Continental Breakfast	Hallway
8:30 am-10:30 am	BSS	Biological Signals Chair: Maj Leamon Viveros	Kitty Hawk
8:30 am-10:30 am	IS	Innovative Sensing Chair: Nikolaos Bourbakis	Amphitheatre
8:30 am-12:30 pm	RC	Reconfigurable Components Chairs: Kerry Hill & Al Scarpelli	Lindbergh/ Patterson
8:30 am-12:30 pm	PH	Photonics Chairs: Ken Hopkins & Jim Grote	Wright/Earhart
10:30 am-12:30 pm	IF	Information Fusion Chair: Eric Blasch	Amphitheatre

Day 1 – Tuesday, July 21, 2009

Time	Event	Location
7:30 am - 8:30am	Registration/Continental Collage	Hallway
8:30 am - 8:45am	Introduction/ Robert Ewing	Ballroom
8:45 am -11:20am	Tutorial A: Air Force Technology Readiness Assessment Course	Amphitheatre

Dr. Keith W. Jones, Air Force Institute of Technology and Innovative Technologies Corporation

Abstract: The Department of Defense (DOD) Milestone Decision Authority (MDA) uses Technology Readiness Assessment (TRA) Reports to support Milestone (MS) B and C technology development decisions for initiating acquisition programs that include systems integration of critical technology elements (CTEs) onto warfighting platforms. However, past systems integration efforts of immature technologies has led to technical, schedule, and cost problems during systems acquisition. Consequently, TRA was instituted as a control mechanism to make certain CTEs have reached appropriate levels of technological maturation according to measured and assessed technology readiness levels (TRLs); that are based on what has been achieved in relevant (modeling, simulation, and analysis) and operational environments. Air Force Institute of Technology (AFIT), School of Systems and Logistics, Systems Department, was funded and tasked by Secretary of Air Force's Office for Acquisition, SAF/AQRE, Science, Technology and Engineering Division, Systems Engineering & Integration Branch to create, design, develop, and instruct, Systems 209, Technology Readiness Assessment Course.

This tutorial discusses the following:

1. Air Force (AF) TRA process and its measurements for technology maturation.
2. How to conduct a TRA.
3. TRA documentation and Report.
4. TRA team selection, schedule, policy and guidance.
5. What is missing within the TRA process and what has been or might be done to compensate.
6. What is oftentimes not considered as part of the DoD TRA or AF TRA process and what others in the private and academic sector have done about it.
7. What is oftentimes not considered as part of our technology development and decision-making process but should be.

The point of this tutorial is to increase awareness that AFIT offers this course, awareness of the AF's preferred way of conducting TRAs, decision-making processes related to technology and other types of AF and DoD related developments that might be considered.

Day 1 – Tuesday, July 21, 2009

Time	Event	Location
8:45am - 11:20am	NGC: NAECON Grand Challenge Chairs: Joanne DeGroat & Erik Blasch	Ballroom

Five Final teams for the National Aerospace and Electronics Conference (NAECON) Grand Challenge will present their research. The “NAECON Grand Challenge Problem” is in the area of “Signals of Opportunity”. Judging will be done by both the audience and invited judges. So Please attend!

NGC01-“Localization and Surveillance using Wireless Sensor Network and Pan-Tilt Camera.” Pratikkumar Desai and Kuldip Rattan, Department of Electrical Engineering, Wright State University, Dayton, Ohio. In this project, a system consisting of Cricket wireless sensor nodes, a camera and a Pan/Tilt gimbal is proposed to solve the indoor localization and surveillance problems. The system is easy to deploy, is cost effective and gives accurate results. The Crickets nodes use the Time Difference of Arrival (TDoA) between the RF and the ultrasound signals to estimate the distance of the object.

NGC02-“An Onboard Assistant to GPS Navigation of Vehicle Formations”, Nitin Reddy, Chris Papachristou, Frank Wolff, Case Western Reserve University, Cleveland, Ohio. There are more than 80 processors in modern cars. The engine control unit (ECU) is the most important multi-tasking unit in the car. However, the ECU info of one car is not shared by the ECU's of other close by cars on the road, therefore it would be desirable to exchange ECU packet information of cars using wireless networking sensors (proximity and others) should provide a back up to augment the wireless.

NGC03-“Experimental Development of a Software-Configurable Multifunctional UWB Radar/Communications/Navigation System”, Dmitriy Garmatyuk, Kyle Kauffman, Miami University Department of Electrical and Computer Engineering, Oxford, Ohio. In-house research has demonstrated the dual use of radar systems for both communication and navigation systems. Examples will be given showing the novel use of radar systems for non-radar novel applications.

NGC04-“Cooperative Position Location with Signals of Opportunity”, Chun Yang, Sigtem Technology, Inc., San Mateo, CA, Thao Nguyen, Donald Venable, Lt. Matthew White, Air Force Research Laboratory, Rich Siegel, Microwave Innovations, Furlong, PA. When the reception of GPS signals becomes unreliable, one alternative is to explore signals of opportunity (SOOP) to complement or substitute GPS. Broadcast digital radio transmissions (e.g., digital TV signals) contain field and segment sync codes, which can be used for ranging even though it was not originally designed for so. Another example is the wireless local area network (WLAN).

NGC05-“Computer Vision Localization Based on Pseudo-Satellites”, Kevin R. Huggins, Michael A. McGrath, Yuan F. Zheng, The Ohio State University, Columbus, Ohio. In following the “Signals of Opportunity” theme of the NAECON '09 Grand Challenge, we explore using computer-vision techniques for localization and orientation techniques to complement navigation via the pseudo-satellite technique proposed. The proposed approach is not affected by the strength of the microwave, and is more accurate than the conventional time of arrival approaches. Methods based on limited and varying information of markers is discussed.

Day 1 – Tuesday, July 21, 2009

Time	Event	Location
11:30am–2:00pm	Luncheon	Ballroom

American Buffet Luncheon: Salad of Seasonal Greens with Assorted Dressings, Chicken Cordon Bleu, Apple Cranberry Pork Loin, Seasonal Vegetables, Garlic Mashed Potatoes, Rolls, Butter, Assorted Pastries and Tortes

12:00pm-1:00pm **Keynote Speaker: Paul McManamon**, Ph.D. Fellow SPIE, OSA, AFRL, & MSS

Title: Conformal EO Aperture Array Based Sensing and High Energy Lasers

Dr. McManamon will address developing multidiscriminate electro-optical sensors, including multifunction laser radar technology, novel electro-optical countermeasure systems and optical phased-array beam steering technology.

Dr. McManamon is widely recognized in the electro-optical community and was elected as the 2004 secretary for SPIE, the International Society for Optical Engineering. In addition, he serves on the executive board for the Military Sensing Symposia. Paul McManamon recently retired as chief scientist of the Sensors Directorate at the Air Force Research Laboratory (AFRL). During a 40-year career as a civilian employee of the Air Force, he previously held appointments as senior scientist for IR sensors at the AFRL and as chief scientist for avionics at Wright Laboratory. He is a SPIE Fellow and was SPIE President in 2006.

1:00pm-2:00pm **Keynote Speaker: John M. Frazier**, Ph.D. AFRL/HE Emeritus, Air Force Research Lab

Title: Biomolecular Command and Control

- Cells are extremely complex, high-performance systems.
- Biomolecular networks (biochemical reaction networks) are dominated by feedback/feed-forward loops.
- Perturbations can have catastrophic consequences on systems without robust control mechanisms.
- The real world is highly chaotic from the perspective of the cell.
- Therefore, evolution has explored and exploited a wide spectrum of novel approaches to biochemical control systems.
- Control theory is important for both engineering and reverse-engineering of biosystems.

Dr. Frazier was a faculty member at Johns Hopkins University's Division of Toxicology in the Department of Health Sciences from 1973 to 1994. He also served for nine years as Associate Director of the Johns Hopkins Center for Alternatives to Animal Testing, and on numerous boards and panels in government and academia. He is the author of more than 70 peer-reviewed scientific papers and 18 book chapters, has edited six books or monographs, and has organized 20 national and international workshops and conferences. In 1994, Dr. Frazier left Johns Hopkins University and accepted a position as principal scientist for ManTech Environmental Technology Inc. at the Tri-Service Toxicology Laboratory, Wright-Patterson AFB.

Dr. Frazier was an associate professor with the Department of Pharmacology and Toxicology at Wright State University's School of Medicine from 1994 to 2005. He is an associate professor in the Department of Biochemistry and Molecular Biology, School of Medicine, Wright State University, and an adjunct professor in the Department of Pharmacology and Toxicology, Michigan State University. He has served as liaison for the Air Force to the National Research Council Committee on Toxicology, the Federal Interagency Coordinating Committee for the Validation of Alternative Methods, and the NATO Technical Research Organization Workgroup 09 - Operational Toxicology.

Day 1 – Tuesday, July 21, 2009

Time	Event	Location
2:00pm-3:00pm	Lecture: Cognitive Processing Using Spiking Neural Networks Applications-Electronic Nose, Radar and Rapid HDL	Ballroom

Invited Speakers: Dr. Hoda Abdel-Aty-Zohdy and Jacob Allen

This invited talk introduces a novel spiking neural network methodology, and applies it to an odorant learning, medical and radar detection applications. Rapid HDL is introduced as a 15 minute rapid prototyping approach, where real-time implementations will be demoed on FPGAs. The spike-time dependent plasticity can support coding schemes that are based on spatio-temporal spike patterns. Spiking (or pulsed) neural networks (SNNs) are models which explicitly take into account the timing of inputs. The network input and output are usually represented as series of spikes (delta function or more complex shapes). Plasticity SNNs have an advantage of being able to recurrently process information. Spike-time dependent plasticity can enhance signal transmission by selectively strengthening synaptic connections that transmit precisely timed spikes at the expense of those synapses that transmit poorly timed spikes.

Dr. Abdel-Aty-Zohdy is the Founder and Director of the Microelectronics System Design Laboratory at Oakland University. She is Coordinator of the Engineering Physics Program, and a Professor in the department of Electrical and Systems Engineering. Her current research and teaching activities are in Bio-Technology with Bio-Inspired Intelligent Signal Perception and Processing (ISPP), sub-micro- electronics, embedded neural networks and genetic algorithms for novel systems-on-a-chip, Analog ICs, Electronic Nose and other bio-inspired systems. Dr. Abdel-Aty-Zohdy has authored over 110 refereed publications, 20 reports, and more than 100 technical presentations. Dr. Abdel-Aty-Zohdy has been an AFOSR/IF Visiting Faculty Research Fellow (2003 and 2002), a National Academy of Science/National Research Council fellow at the WPAFB 2000 and 2001, a Faculty Intern at the Chrysler Technology Center, Advanced Manufacturing Engineering, 1998 and 1997, Consultant to FANUC-BERKELEY MEMS Lab, 1996, DARPA supported Visiting Associate Professor at The University of Michigan, Ann Arbor, Center for Integrated Sensors and Circuits, 1995; Consultant to General Motors Research Labs, ITT, and a summer visiting professor at the Institute for Computer Research, The University of Waterloo. She is the elected Chair for the IEEE/SEM Section Chapter-I on Circuits and Systems, Signal Processing, Information Theory, and Control since 2000.

Mr. Jacob Allen, is a PhD student at Oakland University, who will be graduating in the Fall of 2009, with his research in the area of spiking neural networks. Mr. Allen worked as a graduate student at the Air Force Research Laboratory, Information Directorate for several years in the area of reconfigurable FPGAs, video compression and ATR techniques used on UAVs.

3:00pm-4:00pm CTS: Cognitive Trust in Sensors (Aircraft, Image & Radar) Panel Ballroom
Panel Session Chair: Bill McQuay

Panel Discussion Topic:

“Issues of Building Cognitive Trust by Feedback Methodology for Sensors”

- How will sensory information be processed and stored for active feedback techniques?
- Why is active feedback, a step towards cognitive sensory trust?
- Are we facing the same issues, similar to the medical field in cognitive sensory trust?
- Can we use commercial databases for storing sensory information?

Day 1 – Tuesday, July 21, 2009

Time	Event	Location
4:00pm-6:30pm	BSS: Biological Signals	Ballroom

Chair: Maj Leamon Viveros

Ron Allen, President and Chief Operating Officer of AMDETECH, an international provider of protective detection services

Calamityville Presentation – Glenn Hamilton

BREAKING NEW GROUND: NAECON, during this afternoon session will feature a talk on Calamityville, which is a multimillion dollar disaster response training center that will be located in Fairborn, Ohio. City leaders and Wright State University professors are working to develop a multimillion dollar disaster response training center. This training center will be the proving ground for medical first responders. Over the next few years, NAECON will be addressing exploratory non-in vitro medical sensory issues for detecting biological signals using both RF and optical devices. Finally, we will have Ron Allen, President and Chief Operating Officer of AMDETECH, an international provider of protective detection services to governments and businesses. They specialize in explosives, narcotics, chemical and contraband detection.

7:00pm-9:00pm	NAECON Executive Steering & NAECON Committee (Only)	Challenger
	Committee Chair: Maj. General (retired) Lou Ferraro	

Day 2 –Wednesday, July 22, 2009

Time	Event	Location
7:30am - 8:30am	Registration/Continental Collage	Hallway
8:30am - 11:30am	Tutorial B: Trust Management in Ad Hoc and Sensor Networks	Amphitheatre

Dr. Bin Wang, Department of Computer Science and Engineering, Wright State University

Trust has been the focus of researchers for a long time. It started in social sciences where trust between humans was studied. The effect of trust was also analyzed in economic transactions. E-commerce necessitated a notion to judge how trusted an Internet seller can be. So did Peer-to-Peer networks and other Internet forums where users deal with each other in a decentralized fashion. Recently, attention has been given to the concept of trust and reputation to increase security and reliability in ad hoc and sensor networks. In this tutorial, we will introduce the basics of computational models of trust and reputation. We will then cover the trust calculus, and trust management protocols for trust establishment, calculation, and propagation in ad hoc and sensor networks.

8:30am-11:30am **CC: Collaborative & Cognitive Processing** **Lindbergh/Patterson**
Chair: Bill McQuay

- CC01 *A Collaborative Application of Systems Engineering*, Science Applications International Corporation, Brian W. Beebe, Dr. James S. Shedden
- CC02 *A Flexible Evaluation Framework for Collaborative Layered Sensing Systems*, Edaptive, Adam Langdon
- CC03 *Collaborative Visualization for Layered Sensing*, Science Applications International Corporation, McMillan, Dan
- CC04 *Ideas on Authenticating Humanness in Collaborative Systems Using AI-Hard Problems in Perception and Cognition*, Air Force Research Laboratory, John McIntyre
- CC05 *Trust and Privacy in Attribute Based Access Control for Collaboration Environments*, University of Dayton, Waleed Smari
- CC06 *A New Communication Mechanism for Enhanced Embedded Training System Communication Mechanism for Embedded Training systems*, Korea Aerospace Industries, Kun Su Yoon, Han Sang Jo, Keugyeol Bang
- CC07 *Spectrum Assignment in Infrastructure Based Cognitive Radio Networks*, Wright State University, Tao Zhang, Bin Wang Zhiqiang Wu
- CC08 *Cognitive Processing for Formation Flying*, Air Force Research Laboratory, R.L. Ewing, G.B. Lamont, B.A. Kadrovach, M.D. Eyster and M. Talbert

Day 2 –Wednesday, July 22, 2009

Time	Event	Location
8:30am-11:30am	CM: RF Computational Modeling Chairs: Seng Hong & Robert Penno	Kittyhawk
CM01	<i>Mitigating 3G Carrier Interference to GPS Due to Co-existence in 3G Handset</i> , University of South Carolina, Taher AlSharabati,, Paul G. Huray, and Mohammad Ali	
CM02	<i>The optimization algorithm of target range profiling for airborne radar</i> , Shanghai University, Hu Xiujuan and Deng Jiahao	
CM03	<i>Parabolic Approximation to EMA Motion Profiles</i> , University of Central Florida, D. Woodburn, T. X. Wu, Q. Leland, N. Rolinski, L. Chow, and B. Jordan	
CM04	<i>Automatic Loop-shaping of QFT Robust Controllers</i> , University of Navarra, Spain, Carlos Molins, and Mario Garcia-Sanz	
CM05	<i>Low Frequency Antenna Analysis</i> , Air Force Institute of Technology, Nicholas A. Estep, Morgan L. Hurliman, Jeffrey P. Massman, Steven M Pugh, Rashi Rathi, and Andrew J. Terzuoli	
CM06	<i>Modeling and Design Optimization of Planar Power Transformer for Aerospace Application</i> , University of Central Florida, K. Zhang, T. X. Wu, N. Kutkut, J. Shen, D. Woodburn, L. Chow , W. Wu, H. Mustain, and Batarseh	
CM07	<i>Noise Analysis and Optimization of Power Constrained Integrated Inductive Degradation LNAs</i> , The Ohio State University, Fei Gong, Joanne DeGroat	
CM08	<i>Design and Parametric Analysis of 32nm OPAMP in CMOS and CNFET Technology for Optimum Performance</i> , Aligarh Muslim University, India, Fahad Ali Usmani, Naushad Alam and Mohd. Hasan	
CM09	<i>A Brief Analysis of Latency Effects in a Heterogeneous Radar Processor</i> , Air Force Research Laboratory, Charles Berdanier, Michael McGrath, Joseph Jezek	
8:30am - 11:30am	PH: Photonics (Cont. on Day 3) Chairs: Ken Hopkins & Jim Grote	Wright/Earhart
PH01	<i>Study of doped DNA based biopolymers for enhanced Electromagnetic Properties</i> , University of Dayton, Guru Subramanyam, K. Park, L. Dai, J. Grote, F. Ouchen, and M. Patterson	
PH02	<i>DNA-Single Wall Carbon Nanotube Hybrid</i> , Sang Nyon Kim	
PH03	<i>Thin Film, Nanoparticle, and Nanocomposite Fabrication by Through Thin Film Ablation</i> , Paul Terry Murray	
PH04	<i>Chirality of Sulforhodamine Dye Molecules Incorporated in DNA Thin Films</i> , Hans Spaeth	
PH05	<i>Electrical resistivity measurements on thin films of DNA-based materials and common polymers</i> , University of Dayton, Perry Yaney	
PH06	<i>Deoxyribonucleic acid (DNA) as semiconductor in thin film organic field effect transistors</i> , Fahima Ouchen	
PH07	<i>Optical Mods/Split Ring Regulators</i> , The Ohio State University. S. Balasubramanian	

Day 2 –Wednesday, July 22, 2009

Time	Event	Location
11:30am – 2:00pm	Luncheon	Ballroom

West Coast Deli Buffet Luncheon: Asparagus Almond Salad with Citrus Vinaigrette, Yukon Gold Potato Salad, Crisp Julienne Vegetable Slaw, Sonoma Field Greens with Roma Tomatoes, Asiago Croutons, Boar's Head Roast Beef, Black Forest Ham, Smoked Peppered Turkey, Roasted Portobellos, Smoked Salmon, Gouda, Provolone Muenster, Smoked Cheddar and Imported Swiss Cheeses, Roma Tomatoes, Sprouts, Bibb Lettuce, Cherry Peppers, Selection of Artisan Breads, Baguettes, Rolls, Dijon & Grain Mustards, Sun-Dried Tomato Aioli, Chipotle, Mayonnaise

Panel Discussion - Posters – TechEdge, DAGSI and AFOSR

2:00pm-5:00pm Tutorial C: Biologically Inspired Technologies for Signal Processing Amphitheatre

Hoda S. Abdel-Aty-Zohdy, Ph.D, Director of the Microelectronics System Design Laboratory, Oakland University

Abstract: Scientists have long sought to model the brain and unlock its secrets. Understanding brain dynamics, how humans think, is a holy grail of science that is still a mystery after sixty years of diverse research. The body of neural related knowledge spans scientific disciplines from psychology to finance. The motivations of neural network research can be classified broadly into two categories. In one category, researchers are attempting to understand and explain biological neural systems. In the second category, researchers are attempting to solve specific problems using techniques inspired by biological systems. This tutorial fits squarely in the second category, because it focuses specifically on problems related to medical sensing. However, the methodology used is strongly influenced by research that fits in the first category. Physicists attempting to model biological brain activity have been aided by improvements in brain imaging technology. Complex models of spiking neural networks developed by physicists help to explain certain brain dynamics and may eventually provide a mechanism for understanding and duplicating animal intelligence at a macroscopic level. For example, in one instance, learning phenomena observed in monkey cortexes was roughly duplicated using biologically plausible networks

2:00pm-5:00pm AC: RF Adaptive Circuits and Subsystems

Wright/Earhart

Chair: Charles Cerny

AC01 *Adaptive Interacting Multiple Model Filter for GNSS-Based Civil Aviation*, Beijing University of Aeronautics and Astronautics, Jin Ling HUANG Zhi-gang

AC02 *Characteristics of Mobility Models for Mobile Ad Hoc Network*, University of King Abdulaziz, Saudi Arabia, Lama J. Madany, Mohamed A. Madkour, and Abdulrahman H. Al-Talhi

AC03 *Microcontroller based Multi-Star Simulator using Controller Area Network (CAN)*, National Institute of Technology, India Umamaheswaran S, Santosh Nagendra

AC04 *Signal Criterion for use of Nonlinear Encoding of Communications Signals*, Air Force Research Laboratory Charles A. Berdanier

AC05 *Angle of Arrival Measurement Using Wideband Linear Phased Array*, Air Force Research Laboratory, L.L. Lou, D.M. Lin, J.T. Tsui, J. Buck, M. Longbrake, J. McCann, P. Buxa and T. Dalrymple

Day 2 –Wednesday, July 22, 2009

Time	Event	Location
2:00pm-5:00pm	IRP : Image & Radar Processing Chair: Yuan Zheng	Lindbergh/Patterson
IRP01	<i>Resonance-Region Radar Target Identification Using Aspect Sampling</i> , Southern Illinois University, Jen-Shiun Chen	
IRP02	<i>Antenna placement for sensing buried objects by radio frequency lateral waves</i> , Air Force Research Laboratory, Paul Sotirelis, Jesse Butler, Tiffany Wang	
IRP03	<i>Sub-mm wave imaging techniques for non-destructive aerospace materials evaluation</i> , Wright State University, Izaak Kemp, Melissa Peterson, Carla Benton, Dr. Doug Petkie	
IRP04	<i>Hierarchical Graph Neuron, an Efficient Scheme for Distributed and Real Time Pattern Recognition within Wireless Sensor Networks</i> , Monash University, Australia, Amir H. Basirat and Asad I. Khan	
IRP05	<i>Distortion Weighting Based on Biorthogonal Wavelet Gain in JPEG2000</i> University of Dayton, Benjamin Fortener and Eric J. Balster	
IRP06	<i>Infrared Image Processing for Very Large Format Cameras</i> University of Dayton, William Turri and Robert Gillen	
IRP07	<i>Development of a JPEG2000 Code-stream Interpreter</i> , Univ. of Dayton, Brett Ballard and Eric Balster	
IRP08	<i>Distributed RF Tomography for Tunnel Detection: Suitable Inversion Schemes</i> , General Dynamics Information Technology Authors Lorenzo Lo Monte, Danilo Erricolo, Francesco Soldovieri, Michael Wicks	
7:00pm–10:00pm	NAECON 2009 BANQUET	Holiday Inn Ballroom

Banquet Keynote speaker is Dr. Milton Chang

Title of Talk, “Crossing the Chasm between Technology and Commercialization”.

Dr. Chang is completing a book this month after working on it for eight years, the title is "Towards Entrepreneurship" which covers all aspects of starting businesses, from learning to become broadly knowledgeable to how to manage and exit. It has gotten shorter over the years, to 200 pages of easy reading. He has pulled some aspect of that to put into his Keynote talk.

Dr. Chang is Managing Director of Incubic LLC. He is semi-retired, working with portfolio companies and mentoring entrepreneurs. He was CEO and President of Newport Corporation and New Focus, Inc. and prior to forming Incubic, he participated in funding about a dozen start-up companies as an angel investor, all were successful. He currently sits on the board of Precision Photonics.

Milton Graduated from the Univ. of Illinois with the highest honor and earned his PhD in EE from Caltech. He is a Fellow of the IEEE, LIA, and OSA, and past president of LIA and LEOS of the IEEE. He is Distinguished Alumni of Caltech and of the University of Illinois, a Caltech Trustee, a member of the Committee of 100, and an Overseer of The Huntington. He shares his experience freely and writes for Laser Focus World and Photonics Spectra.

- Awards Presentation – Research Visionary Award
- Live Entertainment - “Catty Wampus” Featuring Celtic Violins

Banquet Menu: Grilled Chicken Breast, Market Salad - Baby Field Greens, Roma Tomatoes & English Cucumbers, Grilled Chicken with Champagne Mushroom Sauce, Garlic Roasted Red Skin Potatoes, Fresh Vegetable Medley, Rolls and Butter, Raspberry White Chocolate, Cheesecake Brulee. Cash Bar available

Day 3 –Thursday, July 23, 2009

Time	Event	Location
7:30am-8:30am	Registration/Continental Breakfast	Hallway
8:30am-10:30am	BSS: Biological Signals Chair: Maj Leamon Viveros	Kitty Hawk
BS01	<i>Modifying Sensitivity/Specificity for Sensors Using Predictive power measures</i> , Air Force Research Laboratory, D. W. Repperger, J. S. Warm, P. R. Havig, M. A. Vidulich, V. S. Finomore	
BS02	<i>Perfect Velocity Tracking for Biomedical Applications Using a Pneumatic Muscle Actuator</i> , Air Force Research Laboratory, D. W. Repperger, C. A. Phillips K. L. Muckley-Hall, D. B. Reynolds, S. R. Mohler	
BS03	Invited Speaker: "Biological Markers for Human Performance and ISR: Linking Biology and Engineering." Nicholas DelRaso	
8:30am-10:30am	IS: Innovative Sensing Chair: Nikolaos Bourbakis	Amphitheatre
IS01	<i>Fingerprint biometric authentication based on local global graphs</i> , Wright State University, Raghudeep Kannavara and Nikolaos G. Bourbakis	
IS02	<i>Target Identification Performance Improvement From Enhanced HRR Radar Clutter Suppression</i> , General Dynamics, Bart Kahler and Erik Blasch.	
IS03	<i>A Signals of Opportunity Based Cooperative Navigation Network</i> , Quantum Dimension Inc., Ca., Michael A. Enright and Christopher N. Kurby	
IS04	<i>Extension of Motion Primitives and Neighboring Optimal Control Used in Trajectory Generation for RLVs</i> Zhesheng Jiang and Raul Ordonez	
IS05	<i>Channel-Warped Impulse Propagation Functions</i> , Air Force Research Laboratory, Atindra Mitra, Rob Ewing, Cole Litton	
10:30am -12:30pm	IF: Information Fusion Chair: Eric Blasch	Amphitheatre
IF01	<i>Image Registration Techniques for Layered Sensing</i> , Air Force Research Laboratory, Olga Mendoza-Schrock, James A. Patrick, and Soundararajan Ezekiel	
IF02	<i>Image Fusion Using Registration and SVD Algorithms</i> Air Force Research Laboratory, D. W. Repperger, A. R. Pinkus, K. A. Farris R. G. Roberts, R. D. Sorkin	
IF03	<i>Identification Performance Improvement through Information HRR-EO Fusion</i> , General Dynamics, Bart Kahler and Erik Blasch	
IF04	<i>Supervised Learning for Adaptive Interactive Multiple Model (SLAIMM) Tracking</i> , Air Force Research Lab Erik Blasch	
IF05	<i>Layered Sensing Using Master/Slave Cameras</i> , Wright State University, Donald McLemore, Kuldip S. Rattan and Devert W. Wicker	

Day 3 –Thursday, July 23, 2009

Time	Event	Location
8:30am - 12:30am	RC: Reconfigurable Components Chairs: Kerry Hill & Al Scarpelli	Lindbergh/Patterson
RC01	<i>A Single-Chip 24 GHz SiGe BiCMOS Transceiver for Low Cost FMCW Airborne Radars</i> , US Monolithics, Gilbert, AZ Dave Saunders, Steve Bingham, Gaurav Menon, Don Crockett, Josh Tor, Ralph Mende, Marc Behrens, Nitin Jain, Angelos Alexanian and Rajanish	
RC02	<i>Frequency Tunable Microstrip Patch Antenna Using Ferroelectric Thin Film Varactor</i> , University of Dayton, Hai Jiang, Mark Patterson, Chenhao Zhang, and Guru Subramanyam	
RC03	<i>Signal Generator for Low Overhead ADC BIST</i> , Iowa State University Jingbo Duan, Bharath Vasam, Chen Zhao, Degang Chen, and Randall Geiger	
RC04	<i>New Sequence Switching and Layout Technique for High-Speed High-Accuracy Current-Steering DACs</i> , Iowa State University, Tao Zeng, and Degang Chen	
RC05	<i>A Wideband Integrate, Amplify, and Dump Circuit in 0.13um CMOS for Ultra-Wideband Applications</i> The Ohio State University, Brian Dupaix and Dr. Steven B. Bibyk	
RC06	<i>Fractal Antennas for Conformal Phased Arrays</i> , University of Cincinnati, Altan M. Ferendeci	
RC07	<i>A Remote Sensing Lab in Space</i> , Los Alamos National Laboratory, Kimberly Katko	
RC08	<i>A reconfigurable spiking neural network is implemented in a 0.5 um CMOS technology digital Tiny-chip</i> Oakland University, Kevin Van Sickle and Hoda S. Abdel-Aty-Zohdy	
RC09	<i>Low bias field planar ferrite phase shifter devices for next generation unmanned vehicle platforms</i> Northeastern University, Boston , Anton L. Geiler, Jianwei Wang, Soack Dae Yoon, Ilan Viswanathan, Carmine Vittoria, and Vincent G. Harris	
8:30am - 12:30pm	PHS: Photonics Continued Chairs: Ken Hopkins & Jim Grote	Wright/Earhart
PH01	<i>Introductory comments on fiber lasers</i> , Air Force Research Laboratory, F. Kenneth Hopkins	
PH02	<i>Overview of materials development efforts in AFRL/RX enabling fiber lasers</i> , Air Force Research Laboratory, William D. Mitchell	
PH03	<i>A New Type of Tm-Doped Fiber for 2 Micron Fiber Lasers</i> , Shibin Jiang	
PH04	<i>Optical Quality YAG Fiber for High Energy Lasers</i> , Geoff Fair	
PH05	<i>All-Fiber Isolator for High Power Fiber Laser</i> , Shibin Jiang	
PH06	<i>Microchip-pumped 2 μm Tm fiber amplifier</i> , Charles D Phelps	
PH07	<i>Frequency Stabilization of RF excited laser using photoacoustics</i> , Honam Univeristy, Jong-Woon Choi & Moon-Jong Yu	

