Conference Guide

IEEE SAM 2012

2012 IEEE 7th Sensor Array and Multichannel Signal Processing Workshop

June 17-20, 2012
Stevens Institute of Technology
Hoboken, NJ, USA

SAM 2012

IEEE

IEEE Signal Processing Society

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Note:

1. Babbio Atrium and Rooms 104, 110 & 122 are located at 1st Floor of Babbio Center (Building 6 on Stevens Map)
2. DeBaun Auditorium is located at 1st Floor of Edwin A. Stevens Hall (Building 1 on Stevens Map)
3. Bissinger Room if located at 4th Floor of Wesley J. Howe Center (Building 19 on Stevens Map)

GENERAL CHAIR WELCOME

On behalf of the Organizing Committee, it is our pleasure to welcome you to SAM 2012. The SAM Workshop is the principal IEEE conference devoted to sensor array processing and multichannel statistical signal processing. This is the seventh of a biennial series since 2000. This year we are privileged to host it in Hoboken, New Jersey. The birthplace of baseball and Frank Sinatra, Hoboken is a unique and vibrant community of the New York metropolitan area, with easy access to Manhattan by train, bus, or ferry.

SAM 2012 consists of 12 lecture sessions, 3 poster sessions, 10 plenary talks, and a student paper contest. We would like to thank our authors, reviewers, special session organizers, session chairs, and plenary speakers. The success of this Workshop would have been impossible without their great contributions. Our thanks are also due to the US Office of Naval Research (ONR) for providing financial support for student participation. A total of ten travel grants have been made available to student authors to attend and present their work at SAM 2012 with the ONR funding.

We are very lucky to have a truly dedicated team of colleagues on the Organizing Committee and would like to thank them for their tireless efforts and hard work: Antonio De Maio, Rabinder Madan and Peter Willett for putting together an outstanding technical program, Nathan A. Goodman for taking care of finances, Hongya Ge for handling publication related issues, and Pu Wang for assistance with website maintenance and local arrangements..

SAM 2012 is held on the campus of Stevens Institute of Technology, which rests at the highest point in Hoboken and overlooks the Hudson River and the breathtaking skyline of Manhattan. We owe our sincere gratitude to Stevens' generous support including free access to the meeting facilities as well tremendous help in operations. The Workshop would not happen without the excellent work from local people such as Annette Chirichella, Robert Gonzales Jr., Barbara J. Migliori, Cecilia Jololian, Marta Quigley, and Maria Toloza. They have provided countless hours of services, to which we are extremely indebted.

We invite you to take full advantages of the technical and plenary sessions and social events of our Workshop, along with numerous attractions in the area. Enjoy SAM 2012!

Hongbin Li
Xiaodong Wang
2012 IEEE SAM Workshop General Chairs

PROGRAM CHAIR WELCOME

For the first few iterations of a workshop it is an experiment. But SAM has reached its seventh incarnation. It is a part of our mental schedule now, and we, your Technical Program chairs, are proud to be part of that. And although the northern New Jersey location has no doubt helped swell the attendance list, we are delighted to be able to report so many manuscripts (more than 130) and – even now, well before the workshop's beginning – so many registrants (over 140).

Any good technical program has three key ingredients. The first is the invited sessions: these form the backbone of the workshop and highlight the most active topical areas. Radar is a core SAM area, and is represented within four invited sessions: on compressive techniques (a double session, from Moeness Amin & Nathan Goodman), on waveform design (Lee Patton and Braham Himed) and on netted systems (Maria Sabrina Greco). Clearly these relate also to three "fusion" topics: integrated/multimodal (Murali Rangaswamy, distributed/collaborative (Qi Cheng and Pramod Varshney) and consensus-based (Yi Guo). And finally we have the emerging areas of the smart grid (Rick Blum) and of novel covariance estimation approaches (Ami Wiesel & Pascal Larzabal). We are extremely grateful to all the organizers – these are the folks who not only had the inspirations in the first place but also chased down the papers and assured tight quality control of the final products.

The second component is the "regular" contributed papers. There were 133 of these, and each was reviewed in detail by at least two – and in many cases three – members of our technical program committee (about 30 people, all names very familiar to you). We read every review and were delighted by their depth. We were surprised that there were really no "bad" papers, and it was hard to make the decision to reject some of them. All the invited papers will be delivered as lectures; about half the regular papers will be oral too, and the rest will be in interactive poster sessions.

The final ingredient to the program is the plenary lecture series, and here is where SAM is a very different creature than most: we have ten (10!) high-quality plenary lectures on our schedule, lectures given by the best our community has, and on an exciting array of novel topics. We admit to being surprised so many of these good folks acquiesced to present for us; and we are looking forward to hearing from them.

Enjoy the conference!!

Antonio De Maio
Rabinder Madan
Peter Willett
2012 IEEE SAM Workshop Program Chairs

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GENERAL INFORMATION

Welcome to Hoboken

Hoboken is part of the New York metropolitan area and contains Hoboken Terminal, a major transportation hub for the region. Hoboken is also the location of the first recorded baseball game in the United States and home of the Stevens Institute of Technology. Known as the Mile Square City, Hoboken is a unique, vibrant, walkable urban community just over one square mile in size.

Hoboken was ranked the best dining town in New Jersey (NJ Monthly Magazine), the 12th best college town in the county (Princeton Review, 2010), No.1 city in public transportation use (U.S. Census), No.1 most walkable city in the country (WalkScore.com), and No.1 city in the country for Singles (Money Magazine, 2008). Its Pier A Park was ranked one of the top 10 urban parks in the country (Urban Land Institute) and Washington Street named one of the Top 10 Great Streets for 2010 (American Planning Association, 2010).

Washington Street, two blocks west of the Stevens campus, is the main street in town. It is known not only for numerous restaurants, outdoor cafes, small shops, bars and pubs, but also for the street's historic character. Many original buildings on the street were included to the National Register of Historic Places. Adding to the historic ambiance and pedestrian experience are 19th-century style lampposts, street clocks and benches.

Dining

Hoboken is one of New Jersey's culinary destinations offering an array of dining options for the discriminating palate. Hoboken's restaurants reflect the city's past and present, from Nuevo American and Asian fusion to cheese steaks and pizza. Washington Street is lined with numerous dining options, from authentic German, Middle Eastern, Asian, American and many bistros. Sinatra Drive features unobstructed views of the Manhattan skyline and many hip dining spots.

Some notable establishments include:

- Carlo's City Hall Bake Shop, 95 Washington Street, the home of the hit TLC show Cake Boss and The Next Great Baker, all things sweet, for 100 years. Expect long waiting line (www.carlosbakery.com).
- Helmers Restaurant, 1036 Washington Street for authentic German cuisine since 1936 (www.helmersrestaurant.com)
- Maxwell's, 1039 Washington Street, a famous music and comfort food venue (www.maxwellsnj.com)

- Dom's Bakery, 506 Grand Street, for fresh baked Italian bread made in a 120 year old brick oven
- Fiore's Deli, 414 Adams Street for homemade mozzarella & sandwiches since 1913 (www.fioresdeli.com)
- Biggies Clam Bar, 318 Madison Street, for fried clams/clams on the half shelf since 1946 (www.biggiesclambar.com)
- Piccolo's, 92 Clinton Street, which has been famous for cheese steaks since 1955
- Lepore's Homemade Chocolates, 537 Garden Street, hand crafted chocolates for over 30 years (www.leporechoc.com)
- Clam Broth House, 36-42 Newark Street, is a Hoboken landmark seafood restaurant since 1899 (www.originalclambrothhouse.com)
- Leo's Grandevous, 200 Grand Street, for good old-school Italian food and a Sinatra shrine (www.leosgrandevous.com)
- Dino and Harry's, 163 14th Street, a classic steakhouse with an extensive wine list (www.dinoandharrys.com)
- Madison Bar & Grill, 1316 Washington Street, for classic American fare (www.madisonbarandgrill.com.)
- Amanda's Restaurant, 908 Washington Street, considered by Zagat as one of Hoboken's best restaurants in a romantic setting (www.amandasrestaurant.com)
- Anthony David's, 953 Bloomfield Street, features an eclectic mix of northern Italian dishes (www.anthonydavids.com)
- Onieals, 342 Park Avenue, features burgers and salads in a quiet corner of Church Square Park (www.oniealshoboken.com)
- 10th & Willow, 935 Willow Avenue, is known for its creative American cuisine in a relaxed setting (www.10thandwillow.com)
- Ali Baba, 912 Washington Street, is an authentic Middle Eastern spot in a comfortable setting
- Lisa's Deli, 901 Park Avenue, for "homemade mozzarella and Italian cuisine," family owned since 1971 (www.lisasdeli.com)
- Elysian Cafe, 1001 Washington Street, is a classic and cozy French bistro (www.elysiancafe.com)
- Sushi Lounge, 200 Hudson Street, features Japanese fusion cuisine (www.sushilounge.com)
- Cucharamama, 233 Clinton Street, excels at fine artisanal South American food (www.cucharamama.com)
- La Isla Restaurant, 104 Washington Street, is a Zagat rated spot offering authentic Cuban cuisine (www.laislarestaurant.com)
- Casual Thai, 1006 Washington Street, features the bold flavors of authentic Thai cuisine since 1983
- Oddfellows Rest, 80 River Street, featuring Cajun dishes has been a destination for fun-loving Hobokenites and food critics alike since 1993 (www.odfellowsrest.com)
- Charrito's, downtown – 121 Washington Street/ uptown – 1024 Washington Street, authentic Mexican cuisine where guacamole is made tableside (www.loscharritos.com)

Local Public Transportation

***By Bus*:**
From New York, take NJ Transit Bus No. 126 from the Port Authority Bus Terminal at 8th Ave. and 40th Street. The bus goes directly to Hoboken and travels down Washington Street. From New York City, buses stop on even numbered streets. Please exit at 6th Street and walk east across Washington Street to Campus.

To New York, take the reverse route of No. 126 Bus at Washington Street.

New Jersey Transit bus routes from Hoboken's Hudson Place bus terminal include No. 22, 64, 68, 85, 87, 89 buses to destinations within Hudson County. Check out NJ Transit website (http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=BusTo) for bus schedules.

***By Subway*:**
From New York, take Port Authority Trans Hudson (PATH) Hoboken bound subway train. Fare is $2 per trip. Stations are located in midtown (on 6th Avenue at 33rd, 23rd, 14th, and 9th Streets, and at Christopher Street) and downtown (World Trade Center). Once arriving at Hoboken Terminal, walk uptown to 6th Street to the campus.

To New York, go to Hoboken Terminal, take either Hoboken – 33 Street train to midtown Manhattan, or Hoboken – World Trade Center train to downtown Manhattan.

Check out PATH website (http://www.panynj.gov/path/) for schedules.

***By Ferry*:**
NY Waterway ferry service to Hoboken Terminal is available from the World Financial Center, West 38th Street and Wall Street, Pier 11 in New York City. Service to 14th Street in Hoboken is available from West 39th Street in Midtown and from the World Financial Center in New York. Visit their website (http://www.nywaterway.com) for route details.

By Light Rail:
The three Hudson-Bergen Light Rail routes connect the waterfront communities of Hudson County. The line from West Side Avenue (Jersey City) to Tonnelle Avenue (North Bergen) has stops at Second Street and Eighth Street in Hoboken. The other two lines terminate at Hoboken Terminal and begin at Tonnelle Avenue (North Bergen) and 22nd Street (Bayonne). The Hoboken Terminal to Tonnelle Avenue line also stops at Second and Eighth Streets in Hoboken. Visit the Hudson-Bergen Light Rail website (http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=LightRailTo) for additional info.

Registration Hours (@Babbio Atrim)

Sunday June 17,	14:00 – 18:30
Monday June 18,	8:00 – 17:00
Tuesday June 19,	8:00 – 17:00
Wednesday June 20,	8:00 – 12:00

Internet Access

For those who have completed registration with the SAM 2012, you will receive an email (about 2 weeks before the Workshop) from Stevens Help Desk helpdesk@stevens.edu with a subject "Network Guest Credentials". The email contains login username (your email address used in your SAM 2012 registration) and password for temporal access to Stevens' wireless network.

How to connect: When on campus connect to the wireless network "Stevens Guest" and startup a web browser. When prompted enter your username and password. You will be asked to re-authenticate every 12 hours.

For people with on-site registration, please contact SAM 2012 Registration Desk for help.

Parking

Parking is available at (1) Babbio Center Parking Garage; and (2) Riverside Parking Lot, which are highlighted in the Stevens Map included in this Brochure. Both parking facilities are accessible only via Sinatra Drive. There are elevators in the Garage that go up to Babbio Center's Lobby Floor, where the SAM 2012 Registration Desk and lecture/poster session rooms are located. The Garage gets full quickly because of its proximity to campus. If you have to use the Riverside Parking Lot, you need walk across Sinatra Drive, and then use either the Elevators inside the Garage or walk up the wooden stairs (north of the Garage) to Gatehouse (number 13 on the Map) and you will be on campus.

Parking Permit: Please print out a copy of the Parking Permit located at http://www.stevens.edu/sam2012/parking.html. Display the Parking Permit on the dashboard of your car while parking in either one of the above parking facilities. The Parking Permit is good throughout SAM 2012 from June 17 to June 20. If you park in the Garage, your car has to be removed by 10 pm in the evening every day.

Note that the parking facilities are provided on first-come first-serve basis. They are shared with the Stevens faculty, staff and students. Parking is in general very tight in Hoboken. However, since June is the middle of the summer with fewer students on campus, you should have no problem finding parking space in the above facilities if you arrive early (before 9 am).

SPECIAL SESSIONS

Compressive Sensing for Radar (Session LS-06 & LS-08)
Moeness Amin, *Villanova University*, USA
moeness.amin@villanova.edu
Nathan A. Goodman, *University of Oklahoma*, USA
goodman@ou.edu

Smart Grid (Session LS-01)
Rick Blum, *Lehigh University*, USA
rblum@eecs.lehigh.edu

Distributed and Collaborative Signal Processing (Session LS-04)
Qi Cheng, *Oklahoma State University*, USA
qi.cheng@okstate.edu
Pramod K. Varshney, *Syracuse University*, USA
varshney@syr.edu

Multistatic Sensor Networks for Radar Applications (Session LS-03)
Maria Greco, *University of Pisa*, Italy
m.greco@iet.unipi.it

Consensus-Based Methods for Multi-Agent Dynamic Systems and Applications (Session LS-10)
Yi Guo, *Stevens Institute of Technology*, USA
yguo1@stevens.edu

Waveform Diversity (Session LS-02)
Lee Patton, *Matrix Research*, USA
lee.patton@matrixresearch.com
Braham Himed, *AFRL*, USA
braham.himed@wpafb.af.mil

Integrated Multimodal Sensing (Session LS-07)
Muralidhar Rangaswamy, *AFRL*, USA
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Non-Standard Covariance Estimation Methods (Session LS-09)
Ami Wiesel, *Hebrew University in Jerusalem*, Israel
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Pascal Larzabal, *Universite Ecole Normale Superieure de Cachan*, France
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FINALISTS OF STUDENT PAPER CONTEST

The SAM 2012 Student Paper Committee has identified the following ten papers, listed in random order, as the finalists of the Student Paper Contest. The first author of each of these papers is a full-time student and winner of the ONR Student Travel Grant for attending and presenting his/her work at the Workshop. Winners of the Best Three Paper Awards will be announced at the Banquet.

"Range Bias Modeling for Hyperbolic Frequency Modulated Waveforms in Target Tracking," by Xiufeng Song, Peter Willett, and Shengli Zhou

"Bias Compensation for Target Tracking from Range Based Maximum Likelihood Position Estimates," by Liyang Rui and Dominic K. C. Ho

"A Subspace Tracking Algorithm for Separating Partially Overlapping Data Packets," by Mu Zhou and Alle Jan van der Veen

"Time Division Multiple Access Methods in Bi-Directional Cooperative Relay Networks," by Adrian Schad and Marius Pesavento

"Waveform Design for Sequential Detection with Subspace Interference," by Moti Teitel and Joseph Tabrikian

"Benefits of collaboration and diversity in teams of categorically-thinking decision makers," by Joong Bum Rhim, Lav R. Varshney and Vivek K Goyal

"Wall Mitigation Techniques for Indoor Sensing within the Compressive Sensing Framework," by Eva Lagunas, Moeness Amin, Fauzia Ahmad and Montse Nájar

"Hierarchical Particle Filtering for Target Tracking in Multi-Modal Sensor Networks," by Phani Chavali and Arye Nehorai

"Decentralized Data Processing and Management in Smart Grid via Gossiping," by Xiao Li, Zhifang Wang, and Anna Scaglione

"Limited Field-of-View Multimodal Sensor Adaptation for Data Association," by Sean O'Rourke and Lee Swindlehurst

PLENARY TALKS

#1: Sub-Nyquist Sampling: Performance Limits, Beamforming, and Hardware

Dr. Yonina Eldar
Technion - Israel Institute of Technology, Israel
Monday, June 18, 8:15-9:05 am, DeBaun Auditorium

Abstract:
The famous Shannon-Nyquist theorem has become a landmark in the development of digital signal processing. However, in many modern applications, the signal bandwidths have increased tremendously, while the acquisition capabilities have not scaled sufficiently fast. Consequently, conversion to digital has become a serious bottleneck. Furthermore, the resulting high rate digital data requires storage, communication and processing at very high rates which is computationally expensive and requires large amounts of power.

In this talk, we present a framework for sampling and processing a wide class of wideband analog signals at rates far below Nyquist. We refer to this methodology as Xampling: A combination of compression and sampling, performed simultaneously. Using the Cramer-Rao bound we develop a generic low-rate sampling architecture that is optimal in a mean-squared error sense, and can be applied to a wide variety of wideband inputs. The resulting system can be readily implemented in hardware, and is easily modified to incorporate correlations between signals. We consider in detail an application of these ideas to ultrasound imaging and demonstrate recovery of noisy ultrasound images from sub-Nyquist samples while performing beamforming in the compressed domain. Applications to a variety of additional problems in radar and communications will also be described. Finally, motivated by problems in optics, we extend these principles to nonlinear problems leading to quadratic and more general nonlinear compressed sensing techniques. We demonstrate applications to phase recovery from magnitude measurements and super-resolution imaging.

Speaker Biography:
Yonina Eldar received the B.Sc. degree in physics and the B.Sc. degree in electrical engineering both from Tel-Aviv University (TAU), Tel-Aviv,Israel, in 1995 and 1996, respectively, and the Ph.D. degree in electrical engineering and computer science from the Massachusetts Institute of Technology (MIT), Cambridge, in 2002. She is currently a Professor in the Department of Electrical Engineering at the Technion?Israel Institute of Technology, Haifa. She is also a Research Affiliate with the Research Laboratory of Electronics at MIT and a Visiting Professor at Stanford University, Stanford, CA.

Dr. Eldar was a Horev Fellow of the Leaders in Science and Technology program at the Technion and an Alon Fellow. In 2004, she was awarded the Wolf Foundation Krill Prize for Excellence in Scientific Research, in 2005 the Andre and Bella Meyer Lectureship, in 2007 the Henry Taub Prize for Excellence in Research, in 2008 the Hershel Rich Innovation Award, the Award for Women with Distinguished Contributions, the Muriel & David Jacknow Award for Excellence in Teaching, and the Technion Outstanding Lecture Award, in 2009 the Technion's Award for Excellence in Teaching, in 2010 the Michael Bruno Memorial Award from the Rothschild Foundation, and in 2011 the Weizmann Prize for Exact Sciences. She is a Signal Processing Society Distinguished Lecturer, a member of the IEEE Bio Imaging Signal Processing technical committee, and an Associate Editor for several IEEE and SIAM journals.

#2: Quickest Change Detection in Distributed Sensor Networks

Dr. Venugopal V. Veeravalli
University of Illinois at Urbana-Champaign, USA
Monday, June 18, 9:05-9:55 am, DeBaun Auditorium

Abstract:
The problem of detecting changes or anomalies in stochastic systems and time series, often referred to as a quickest change detection problem, arises in various branches of science and engineering. It has a variety of applications, including critical infrastructure monitoring, biomedical signal and image processing, quality control engineering, financial markets, intrusion detection in computer networks and security systems, detection of the onset of an epidemic, failure detection in manufacturing systems and large machines, target detection in surveillance systems, econometrics, and seismology. The centralized version of this problem, where all the information about the change is available at a single location, is well-understood and has been solved under a variety of criteria since the seminal works of Page and Shiryaev. In this talk, we will cover recent results on the quickest change detection problem in the context of sensor networks, where the information available for decision-making is obtained through measurements taken at a set of distributed sensors, and a central entity (fusion center) must detect the change as soon as possible based on information received from the sensors. Topics that will be discussed include methods for adaptive sampling and decision making at the sensors, change process detection for settings where the change might occur at different times at the various sensors, and techniques for controlling the sensing process to make it energy-efficient.

Speaker Biography:
Prof. Veeravalli received the Ph.D. degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in 1992, the M.S. degree from Carnegie-Mellon University in 1987, and the B.Tech degree from Indian Institute of Technology, Bombay in 1985. He is currently a Professor in the department of Electrical and Computer Engineering (ECE) and the Coordinated Science Laboratory (CSL) at the University of Illinois at Urbana-Champaign. He was on the faculty of the School of ECE at Cornell University before he joined Illinois in 2000. He served as

a program director for communications research at the U.S. National Science Foundation in Arlington, VA during 2003-2005. His research interests include wireless communications, distributed sensor systems and networks, detection and estimation theory, and information theory. He is a Fellow of the IEEE, and a recipient of the IEEE Browder J. Thompson Best Paper Award and the U.S. Presidential Early Career Award for Scientists and Engineers (PECASE). He served as a distinguished lecturer for the IEEE Signal Processing Society during 2010-2011.

#3: **Challenges and Opportunities in Cognitive Radar**

Dr. Joseph R. Guerci
Consultant, USA
Monday, June 18, 1:30-2:20 pm, DeBaun Auditorium

Abstract:
Advances in radar front-end hardware affording unprecedented flexibility, adaptivity and waveform diversity, coupled with continued advances in high performance embedded computing (HPEC) and knowledge-aided (KA) methods and "network centricity", has afforded the opportunity to "re-invent" radar with a new and powerful set of tools/assumptions that include:

- Arbitrary waveform selection
- Transmit adaptivity (waveform, spatial, polarimetric, etc.)
- Environmental awareness via a dynamic database and the availability of both endogenous and exogenous sensors and other pertinent information available via a network
- Real-time KA methods adapted from the DARPA/AFRL KASSPER project and extended to the transmitter as well as the receiver
- Radar scheduler optimization

When effectively integrated, the result is an advanced radar architecture that exhibits the key properties of a "cognitive" system, i.e., the ability to adapt "on-the-fly" both transmit and receive functions based on both its own sensing, as well as on information from a multitude of other sources. Indeed an ever increasingly complex radar environment, including issues of dynamic spectrum allocation (DSA), are creating the application "pull" for a next generation adaptive radar. In addition to reviewing the key mathematical and theoretical underpinnings of cognitive radar, this talk will highlight the numerous potential opportunities and remaining challenges that must be addressed to mature this technology.

Speaker Biography:
Dr. Guerci has over 27 years of experience in advanced technology research and development in government, industrial, and academic settings. His government service included a recent 7 year term with the Defense Advanced Research Projects Agency (DARPA) in which he held the positions of Program Manager, Deputy Office Director, and finally Director of the Special Projects Office (SPO). In these capacities, Dr. Guerci was involved in the inception, research,

development, execution, and ultimately transition of next generation multidisciplinary defense technologies.

Dr. Guerci is a recognized leader in the research and development of next generation sensor systems and adaptive signal processing. In particular, he has pioneered several advanced radar technologies including robust and knowledge-aided space-time adaptive processing (STAP), and optimal and adaptive MIMO radar and waveform design. In addition to authoring over 100 peer reviewed articles, he has several book chapters and is the author of Space-Time Adaptive Processing for Radar (Artech House, 2003), and the recently published Cognitive Radar: The Knowledge-Aided Fully Adaptive Approach, (Artech House, 2010). Dr. Guerci also recently received the IEEE Warren D. White Award for "Excellence in Radar Adaptive Processing and Waveform Diversity", and the IEEE/IEE Waveform Diversity Person of the Year for 2010 for "For Scientific, Technical, and Executive Leadership Contributions in Making Waveform Diversity a Fielded Technology". He has also recently been appointed the General Chair for the 2015 IEEE International Radar Conference, and a member of the IEEE Aerospace and Electronic Systems Society (AESS) Board of Governors.

A graduate of NYU Polytechnic University with a Ph.D.E.E (System Engineering), Dr. Guerci has held adjunct professorships in engineering and applied mathematics at The City University of New York, Polytechnic University, The Cooper Union for Advancement of Art and Science, and Virginia Tech. Additionally, he has held senior engineer and scientist positions in industry and was recently Chief Technology Officer (CTO) for SAIC's Research, Development, Test & Evaluation (RDT&E) Group. A member of the IEEE Radar Systems panel, he is also a Fellow of the IEEE for "Contributions to Advanced Radar Theory and its Embodiment in Real-World Systems", holds eight US Patents, and is a member of several industrial, academic, and government advisory boards.

#4: SAM Challenges for Fully Adaptive Radar

Dr. Muralidhar Rangaswamy
Air Force Research Laboratory, USA
Monday, June 18, 2:20-3:10 pm, DeBaun Auditorium

Abstract:
This talk will provide an overview of issues underlying the fully adaptive radar (FAR) construct. The onerous challenges imposed by severely heterogeneous environments, difficult radar targets, and a rapidly dwindling EM spectrum for Defense missions require closed loop radar operation. A number of pieces of the puzzle need to be brought into play to take advantage of all available resources on transmit and receive to facilitate the closed loop operation. Important SAM challenges in this context will be highlighted and illustrative examples will be presented.

Speaker Biography:

Muralidhar Rangaswamy (S'89, M'93, SM'98, F'06) received the B.E. degree in electronics Engineering from Bangalore University, Bangalore, India in 1985 and the M.S. and Ph.D. degrees in Electrical Engineering from Syracuse University, Syracuse, NY, in 1992. He is presently employed as the Technical Advisor for the RF Exploitation Technology Branch within the Sensors Directorate of the Air Force Research Laboratory (AFRL). Prior to this he has held industrial and academic appointments.

His research interests include radar signal processing, spectrum estimation, modeling non-Gaussian interference phenomena, and statistical communication theory. He has co-authored more than 130 refereed journal and conference record papers in the areas of his research interests. Additionally, he is a contributor to 5 books and is a co-inventor on 3 U.S. patents.

Dr. Rangaswamy is the Technical Editor (Associate Editor-in-Chief) for Radar Systems in the IEEE Transactions on Aerospace and Electronic Systems (IEEE-TAES). He served as the Co-Editor-in-Chief for the Digital Signal Processing journal between 2005 and 2011. Dr. Rangaswamy was a 2 term elected member of the sensor array and multichannel processing technical committee (SAM-TC) of the IEEE Signal Processing Society between January 2005 and December 2010 and serves as a member of the Radar Systems Panel (RSP) in the IEEE-AES Society. He was the General Chairman for the 4th IEEE Workshop on Sensor Array and Multichannel Processing (SAM-2006), Waltham, MA, July 2006. Dr. Rangaswamy has served on the Technical Committee of the IEEE Radar Conference series in a myriad of roles (Track Chair, Session Chair, Special Session Organizer and Chair, Paper Selection Committee Member, Tutorial Lecturer). He served as the Publicity Chair for the First IEEE International Conference on Waveform Diversity and Design, Edinburgh, U.K. November 2004. He presently serves on the conference sub-committee of the RSP.

He received the 2004 (Fred Nathanson memorial) outstanding young radar engineer award from the IEEE AES Society, the 2006 Distinguished Member award from the IEEE Boston Section, the 2007 IEEE Region 1 award and the 2005 Charles Ryan basic research award from the Sensors Directorate of AFRL, in addition to 40 AFRL scientific achievement awards.

#5: Precipitation Monitoring based on measurements taken by cellular operators - challenges and opportunities for the signal processing community

Dr. Hagit Messer
Tel Aviv University, Israel
Tuesday, June 19, 8:00-8:50 am, DeBaun Auditorium

Abstract: Accurate measurements of precipitation is a topic of great importance - both for basic research, to better understand the global climate and its dynamics (climate change); and for applications as weather forecast, flood warning etc. While traditionally precipitation monitoring is done by costly special purpose equipment as gauges, radar and satellites, lately [1] it has

been suggested to use existing measurements from wireless communication networks for environmental monitoring.

In this talk I present recent results in detection, estimation and classification of precipitation as rain, snow, sleet and fog, using this approach. These results are based on the availability of spatially and temporally diverse measurements and employ multidimensional signal processing techniques adopted from sensor networks, detection and parameter estimation, classification, robust estimation, distributed detection and more. I will also point out on existing challenges and opportunities in this research area, mainly in the fields of source separation and vector sensors, as well as in sampling theory and application.

[1] Messer, H; Zinevich, A; Alpert, P Environmental monitoring by wireless communication networks, SCIENCE, 312 (5774): 713-713 MAY 5 2006.

Speaker Biography:
Hagit Messer is an active contributor to the signal processing community for the last 25 years. Besides being an active researcher with significant technical contribution to topics such as time delay estimation, sensor array processing and lower bounds on parameter estimation, she has been involved with the signal processing society, including leading the organization of HOS'99 and SAM'2010 in Israel.

Hagit joined the faculty of Engineering at Tel Aviv University in 1986, after post-doctorate at Yale University, where she is a professor of Electrical Engineering. On 2000 - 2003 she has been on leave from TAU, serving as the Chief Scientist at the Ministry of Science, ISRAEL. After returning to TAU she was the head of the Porter school of environmental studies (2004-6), and the Vice President for Research and Development 2006-8. Since October 2008 she is also the President of the Open University in Israel.

Prof. Hagit Messer, Fellow of the IEEE, is an expert in statistical signal processing with applications to source localization, communication and environmental monitoring. She has published numerous journal and conference papers, including the pioneering recent publication: Messer, H; Zinevich, A; Alpert, P, Environmental monitoring by wireless communication networks, SCIENCE, 312 (5774): 713-713 MAY 5 2006; and has supervised tens of graduate students. She has been a member of Technical committees of the Signal Processing society since 1993 and an associate editor of the IEEE Transactions on Signal Processing and of the IEEE Signal Processing Letters for parameter estimation, detection and performance analysis, and on the editorial board of the IEEE journal of selected topics in signal processing (J-STSP). She is currently on the Overview Editorial Board of the Signal Processing Society journals.

Hagit Messer is also interested in various aspects of higher-education science policy, including ethics, science-society interplay, and commercialization of academic research. Her book Capitalism and the Ivory Tower (in Hebrew) was published in 2008. She is also committed to the advancement of women in science and technology.

Her vast and broad experience makes her a popular speaker, both on technical and on non-technical topics. For example, she has been a plenary speaker at the IEEE SPWAC-2007 and at the SAM-2008; she is a special consultant of WIPO, giving talks on its behalf all over Europe, including a recent plenary talk in the Expopriority 2010 in Moscow. On February 2011 she has been invited to the UN as a plenary speaker on women in science and technology in the 55 session of the CSW.

#6: The Geometry of Statistical Inference

Dr. Steven Kay
University of Rhode Island, USA
Tuesday, June 19, 8:50-9:40 am, DeBaun Auditorium

Abstract:
Sir Ronald Fisher is credited with providing the foundations of modern statistical theory. Some of these contributions include sufficient statistics, maximum likelihood estimation, and Fisher information. The insights he used in formulating these concepts were not always made explicit. It has therefore always been a challenge to "reverse engineer" the mind of Sir Fisher in an attempt to solve some of the thornier problems in statistical signal processing. In this talk we discuss some of the insights provided by appealing to the geometric viewpoint of statistical inference. We believe that by doing so, new ideas and approaches will be spawned, especially for problems that have so far defied analytical solutions.

Biography: Steven Kay was born in Newark, NJ, on April 5, 1951. He received the B.E. degree from Stevens Institute of Technology, Hoboken, NJ, in 1972, the M.S. degree from Columbia University, New York, in 1973, and the Ph.D. degree from Georgia Institute of Technology, Atlanta, in 1980, all in electrical engineering.

From 1972 to 1975, he was with Bell Laboratories, Holmdel, NJ, where he was involved with transmission planning for speech communications and simulation and subjective testing of speech processing algorithms. From 1975 to 1977, he attended Georgia Institute of Technology to study communication theory and digital signal processing. From 1977 to 1980, he was with the Submarine Signal Division, Portsmouth, RI, where he engaged in research on autoregressive spectral estimation and the design of sonar systems. He is presently a Professor of Electrical Engineering at the University of Rhode Island, Kingston, and a consultant to numerous industrial concerns, the Air Force, the Army, and the Navy. As a leading expert in statistical signal processing, he has been invited to teach short courses to scientists and engineers at government laboratories, including NASA and the CIA. He has written numerous journal and conference papers and is a contributor to several edited books. He is the author of the textbooks Modern Spectral Estimation (Prentice-Hall, 1988), Fundamentals of Statistical Signal Processing, Vol. I: Estimation Theory (Prentice-Hall, 1993), Fundamentals of Statistical Signal Processing, Vol. II: Detection Theory (Prentice-Hall, 1998), and Intuitive Probability and Random Processes Using MATLAB (Springer, 2005). His current interests are spectrum analysis, detection and estimation theory, and statistical signal processing.

Dr. Kay is a member of Tau Beta Pi and Sigma Xi. He has been a distinguished lecturer for the IEEE Signal Processing Society. He has been an Associate Editor for the IEEE SIGNAL PROCESSING LETTERS and the IEEE TRANSACTIONS ON SIGNAL PROCESSING. He has received the IEEE signal processing society education award "for outstanding contributions in education and in writing scholarly books and texts...." He has recently been included on a list of the 250 most cited researchers in the world in engineering.

#7: User Parameter Free Dense and Sparse Spectral Estimation Algorithms

Dr. Jian Li
University of Florida, USA
Tuesday, June 19, 1:30-2:20 pm, DeBaun Auditorium

Abstract:
User parameter free algorithms, like the simple fast Fourier transform (FFT), are easy to use and are desirable for diverse practical applications. However, the data-independent FFT algorithm suffers from poor resolution and high sidelobe level problems. Many parametric, nonparametric, and sparse (semi-parametric) spectral estimation algorithms have been introduced in the literature. They possess super resolution and low sidelobe level properties. However, most of these algorithms are not user parameter free, making them difficult to use in practical applications. Many of these algorithms are sensitive to data model errors and/or require second-order statistics of the measurement vector. We present herein an iterative adaptive approach (IAA) for dense spectral estimation and a sparse learning via iterative minimization (SLIM) algorithm for sparse spectral estimation. Both algorithms are user parameter free, with the dense algorithm more accurate and the sparse algorithm computationally more efficient. We also discuss how to combine the merits of IAA and SLIM into a single hybrid algorithm that is both accurate and sparse.

Speaker Biography:
Jian Li is with the Department of Electrical and Computer Engineering, University of Florida, Gainesville, where she is currently a Professor. In Fall 2007, she was on sabbatical leave at MIT, Cambridge, Massachusetts. Her current research interests include spectral estimation, statistical and array signal processing, and their applications.

Dr. Li is a Fellow of IEEE and a Fellow of IET. She received the 1994 National Science Foundation Young Investigator Award and the 1996 Office of Naval Research Young Investigator Award. She has been a member of the Editorial Board of the IEEE Signal Processing Magazine since 2010 and a member of the Editorial Board of Digital Signal Processing -- A Review Journal, a publication of Elsevier, since 2006. She is a co-author of the paper that has received the M. Barry Carlton Award for the best paper published in IEEE Transactions on Aerospace and Electronic Systems in 2005. She is also a co-author of the paper that has received the Lockheed Martin Best Student Paper Award at the 2009 SPIE Defense, Security, and Sensing Conference in Orlando, Florida.

#8: Advances in Waveform Scheduling for MIMO Radar

Dr. Michael Zoltowski
Purdue University, USA
Tuesday, June 19, 2:20-3:10 pm, DeBaun Auditorium

Abstract:
In a MIMO active sensing systems, different waveforms are transmitted simultaneously from different emitters and the returns are processed to detect targets and to also determine their speed and location. A major challenge in MIMO radar is waveform separation at the receiver. The relative delays and doppler shifts of the superimposed echoes greatly diminish the efficacy of employing orthogonal waveforms. Novel transmit waveform matrices will be presented that dictate the scheduling of complementary waveforms over both multiple Pulse Repetition Intervals (PRIs) and multiple emitters. The designs also dictate the matched filtering done over multiple PRIs at the different receivers. The diverse waveform matrix designs are quite remarkable in that when one sums the running matched-filter outputs over multiple PRIs at a given receiver, one achieves the delta function effect (at each true target delay) relative to the waveforms sent from a particular transmit antenna, while simultaneously canceling the contributions from the other transmit antennas. The challenge is to design such waveform matrices under a unimodular constraint on the sequence values due to the nonlinear amplifiers employed in radar for power efficiency.

Initial proof-of-concept simulation results have centered on a 4x4 system which, for example, may be realized as four beams transmitting different waveforms simultaneously, pointed to slightly different azimuth and elevation angles. The 4x4 unitary waveform matrix design dictates the scheduling of 4-ary complementary waveforms over both four transmitting beams and four PRIs. The per-element conjugation, time-reversal, and transpose of the waveform matrix dictates the matched filtering of the returns at each of four PRIs and the subsequent combining so as to achieve both perfect separation (of the superimposed returns) AND perfect reconstruction. Perfect reconstruction implies that the sum of the time-autocorrelations associated with each of the four waveforms is a delta function. Conditions for both perfect separation and perfect reconstruction have been formulated, and a variety of unitary waveform matrix designs have been formulated. The net result of the processing of four PRIs over four receivers yields sixteen cross-correlations all of which ideally exhibit a sharp peak at each true target delay.

Simulation results will be presented demonstrating the efficacy of the overall scheme, including how to exploit Doppler for enhanced resolution.

Speaker Biography:

Michael D. Zoltowski is the Thomas J. and Wendy Engibous Professor of Electrical and Computer Engineering at Purdue University. He is the recipient of the 2002 Technical Achievement Award from the IEEE Signal Processing Society. In addition, he served as a 2003 Distinguished Lecturer for the IEEE Signal Processing Society. He is a Fellow of IEEE. He is also a recipient of the 2006 Distinguished Alumni Award from Drexel University.

Dr. Zoltowski is a co-recipient of the IEEE Communications Society 2001 Leonard G. Abraham Prize Paper Award in the Field of Communications Systems. He is also the recipient of the IEEE Signal Processing Society's 1991 Paper Award, The Fred Ellersick MILCOM Award for Best Paper in the Unclassified Technical Program at the 1998 IEEE Military Communications Conference, and a Best Paper Award at the 2000 IEEE International Symposium on Spread Spectrum Techniques and Applications.

He was Technical Chair for the 2006 IEEE Sensor Array and Multichannel Workshop. He served as Vice-President for Awards and Membership for the IEEE Signal Processing Society, for 2008-2010.

#9: Multi-Target Tracking

Dr. Stefano Coraluppi
Compunetix, Inc., USA
Wednesday, June 20, 8:00-8:50 am, DeBaun Auditorium

Abstract:
Multi-target tracking draws upon and generalizes classical detection and estimation theory by introducing measurement origin uncertainty. In this presentation, we focus primarily on the track-oriented multiple-hypothesis tracking (MHT) formalism, which is generally acknowledged as the most powerful currently know paradigm for multi-target tracking. We illustrate the benefits and some of the limitations of MHT. We discuss some recent contributions to the theory and practice of MHT, drawing on examples from a number of surveillance applications. Finally, we identify some emerging application areas and indicate some promising topics of ongoing research.

Speaker Biography:
Stefano Coraluppi received the BS degree in Electrical Engineering and Mathematics from Carnegie Mellon University (1990), and MS and PhD degrees in Electrical Engineering from the University of Maryland (1992, 1997). He has worked on the research staff at ALPHATECH Inc. (1997-2002), the NATO Undersea Research Centre (2002-2010), and Compunetix Inc. (since 2010). He has contributed to programs in ground, undersea, maritime and air surveillance for security and defense applications. Currently, Dr. Coraluppi serves on the Board of Directors of the International Society of Information Fusion (ISIF). He is Associate Editor for Target Tracking and Multisensor Systems for the IEEE Transactions on Aerospace and Electronic Systems and Area Editor for Tracking for the ISIF Journal of Advances in Information Fusion. He participates in the IEEE AESS Target Tracking Systems Panel and the ISIF Multistatic Tracking Working Group,

and lectures for the NATO Research and Technology Organization. He is a Senior Member of IEEE.

#10: Array Processing in The Face of Nonidealities

Dr. Visa Koivunen
Aalto University, Finland
Wednesday, June 20, 8:50-9:40 am, DeBaun Auditorium

Abstract:
In this talk we describe techniques that allow the practitioner to apply high performance array processing algorithms using real-world sensor arrays with nonidealities. Arbitrary array geometries and processing data in azimuth, elevation and polarimetric domains are considered. We acquire a realistic array steering vector model by taking into account array nonidealities such as mutual coupling, mounting platform reflections, cross-polarization effects, errors in element positions as well as individual directional beampatterns. This facilitates achieving optimal or close-to-optimal performance and retaining high-resolution capability despite the nonidealities. Moreover, tighter performance bounds may be established for parameter estimation. We describe how the various approaches can be applied in practice in the context of high-resolution direction finding as well as beamforming so that problems related to beamsteering, SOI and interference cancellation are mitigated.

Speaker Biography:
Visa Koivunen (IEEE Fellow) received the D.Sc. (EE) degree (with honors) from the Department of Electrical Engineering, University of Oulu, Finland. From 1992 to 1995, he was a visiting researcher at the University of Pennsylvania, Philadelphia. Since 1999, he has been a Professor of Signal Processing at Aalto University (formerly known as Helsinki Univ of Technology), Finland. Since 2009 he has been Academy professor at Aalto University. He is one of the Principal Investigators in the SMARAD (Smart Radios and Wireless Systems) Center of Excellence nominated by the Academy of Finland. During his sabbatical leave in 2006-2007, he was a Visiting Fellow at Nokia Research Center, as well as Princeton University. He makes frequent research visits to Princeton University. He continues to serve as Nokia Visiting Fellow in a part-time basis.

His research interests include statistical, communications, and sensor array signal processing. He has published more than 350 papers in international scientific conferences and journals. He co-authored the papers receiving the IEEE Signal Processing Society Best Paper Award for 2007 (co-authored with J. Eriksson). He is a member of the editorial board for the IEEE Signal Processing Magazine. He is also a member of the IEEE Sensor Array Multichannel Signal Processing Technical Committee. He is also serving in the industrial relations board of the IEEE SP society.

SOCIAL EVENTS

Welcoming Reception
Sunday, June 17
18:30 – 20:30
Babbio Atrium

Banquet
Tuesday, June 19
18:30 – 21:00
Bissinger Room

SUPPORTERS

We would like to thank the following organizations for their contributions to the success of SAM 2012:

- Stevens Institute of Technology, for helping organizing the event and providing free use of meeting facilities
- US Office of Naval Research, for providing travel grants to student authors

Conference program

Time	DeBaun Auditorium	Babbio 122	Babbio 104	Babbio Atrium	Babbio 110
Sunday, June 17					
18:30	*Welcoming Reception (at Babbio Atrium)*				
Monday, June 18					
08:00	*Opening Remarks*				
08:15	Plenary-01: *Sub-Nyquist Sampling: Performance Limits, Beamforming, and Hardware (Yonina Eldar, Technion - Israel Institute of Technology, Israel)*				
09:05	Plenary-02: *Quickest Change Detection in Distributed Sensor Networks (Venugopal V. Veeravalli, University of Illinois at Urbana-Champaign, USA)*				
09:55	*Coffee Break (at Babbio Atrium)*				
10:15		LS-01: *Smart Grid*	LS-02: *Waveform Diversity*	PS-01: *Signal Processing for Communications and Sensor Networks*	
12:15	*Lunch (at Bissinger Room, 4th Floor, Howe Center)*				
13:30	Plenary-03: *Challenges and Opportunities in Cognitive Radar (Joseph R. Guerci, USA)*				
14:20	Plenary-04: *SAM Challenges for Fully Adaptive Radar (Muralidhar Rangaswamy, AFRL, USA)*				
15:10	*Coffee Break (at Babbio Atrium)*				
15:30		LS-03: *Multistatic Sensor Networks for Radar Application*	LS-04: *Distributed and Collaborative Signal Processing*		LS-05: *Localization Techniques*
Tuesday, June 19					
08:00	Plenary-05: *Precipitation Monitoring based on measurements taken by cellular operators - challenges and opportunities for the signal processing community (Hagit Messer, Tel Aviv University, Israel)*				
08:50	Plenary-06: *The Geometry of Statistical Inference Homepage (Steven Kay, University of Rhode Island, USA)*				
09:40	*Coffee Break (at Babbio Atrium)*				
10:00		LS-06: *Compressive Sensing for Radar 1*	LS-07: *Integrated Multimodal Sensing*	PS-02: *Radar Signal and Array Processing, DOA Estimation, Beamforming*	
12:00	*Lunch (at Bissinger Room, 4th Floor, Howe Center)*				
13:30	Plenary-07: *User Parameter Free Dense and Sparse Spectral Estimation Algorithms (Jian Li, University of Florida, USA)*				
14:20	Plenary-08: *Advances in Waveform Scheduling for MIMO Radar (Michael Zoltowski, Purdue University, USA)*				
15:10	*Coffee Break (at Babbio Atrium)*				
15:30		LS-08: *Compressive Sensing for Radar 2*	LS-09: *Non-Standard Covariance Estimation Methods*		LS-10: *Consensus –Based Methods for Multi-agent Dynamic Systems and Applications*

18:30	*Banquet (at Bissinger Room, 4th Floor, Howe Center)*				
Wednesday, June 20					
08:00	Plenary-09: *Multi-Target Tracking (Stefano Coraluppi, Compunetix, Inc., USA)*				
08:50	Plenary-10: *Array Processing in The Face of Nonidealities (Visa Koivunen, Aalto University, Finland)*				
09:40	*Coffee Break (at Babbio Atrium)*				
10:00		LS-11: *Radar Detection in Interference*	LS-12: *Beamforming*	PS-03: *Detection, Estimation, and Array Processing*	
12:00	*Lunch (boxed lunch to-go, pick up at Babbio Atrium)*				

Sunday, June 17

18:30 - 20:30

Welcoming Reception (at Babbio Atrium)

Monday, June 18

08:00 - 08:15

Opening Remarks

Room: DeBaun Auditorium

08:15 - 09:05

Plenary-01: Sub-Nyquist Sampling: Performance Limits, Beamforming, and Hardware (Yonina Eldar, Technion - Israel Institute of Technology, Israel)

Room: DeBaun Auditorium

09:05 - 09:55

Plenary-02: Quickest Change Detection in Distributed Sensor Networks (Venugopal V. Veeravalli, University of Illinois at Urbana-Champaign, USA)

Room: DeBaun Auditorium

09:55 - 10:15

Coffee Break (at Babbio Atrium)

10:15 - 12:15

LS-01: Smart Grid

Room: Babbio 122
Chair: Rick Blum (Lehigh University, USA)

Decentralized Data Processing and Management in Smart Grid via Gossiping
Xiao Li (University of California, Davis, USA); Zhifang Wang (University of California Davis, USA); Anna Scaglione (University of California, Davis, USA)
pp. 1-4

Fast Anomaly Detection in Smart Grids via Sparse Approximation Theory
Marco Levorato (Stanford University & University of Southern California, USA); Urbashi Mitra (University of Southern California, USA)
pp. 5-8

Widely Linear State Space Models for Frequency Estimation in Unbalanced Three-Phase Systems
Dahir Dini (Imperial College London, United Kingdom); Yili Xia (Imperial College London, United Kingdom); Scott Douglas (Southern Methodist University, USA); Danilo Mandic (Imperial College, London, United Kingdom)
pp. 9-12

Deadline Scheduling for Large Scale Charging of Electric Vehicles with Renewable Energy
Shiyao Chen (Cornell University, USA); Yuting Ji (Cornell University, USA); Lang Tong (Cornell University, USA)
pp. 13-16

Change Detection in Smart Grids Using Errors In Variables Models
Chuanming Wei (Lehigh University, USA); Ami Wiesel (Hebrew University in Jerusalem, Israel); Rick Blum (Lehigh University, USA)
pp. 17-20

Analysis of a Joint Access and Scheduling Scheme for Residential Energy Management Controller
Chen Chen (Lehigh University, USA); Kyatsandra Nagananda (Lehigh University, USA); Gang Xiong (Lehigh University, USA); Shalinee Kishore (Lehigh University, USA); Lawrence Snyder (Lehigh University, USA)
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LS-02: Waveform Diversity

Room: Babbio 104
Chairs: Lee K Patton (Matrix Research, USA), Braham Himed (AFRL, USA)

Adaptive Pulse Design for Space-Time Adaptive Processing
Lee K Patton (Matrix Research, USA)
pp. 25-28

Untangling Multipath Returns in MIMO Radar via Waveform Diversity
William Rowe (University of Florida, USA); Johan Karlsson (University of Florida, USA); Luzhou Xu (University of Florida, USA); Jian Li (University of Florida, USA)
pp. 29-32

Sparsity-based MIMO Noise Radar for Multiple Target Estimation
Sandeep Gogineni (Washington University in St Louis, USA); Arye Nehorai (Washington University in St. Louis, USA)
pp. 33-36

Structured De-Chirp for Compressive Sampling of LFM Waveforms
Bruce Pollock (University of Arizona, USA); Nathan A Goodman (University of Oklahoma, USA)
pp. 37-40

A Cognitive Approach for Ambiguity Function Shaping
Augusto Aubry (Università degli studi di Napoli Federico II, Italy); Antonio De Maio (University of Naples "Federico II", Italy); Bo Jiang (University of Minnesota, USA); Shuzhong Zhang (University of Minnesota, USA)
pp. 41-44

Direct Cartesian Detection, Localization, and De-Ghosting for Passive Multistatic Radar
Daniel E Hack (Matrix Research, USA); Lee K Patton (Matrix Research, USA); Alan Kerrick (Air Force Research Laboratory, USA); Michael A. Saville (Air Force Institute of Technology, USA)
pp. 45-48

PS-01: Signal Processing for Communications and Sensor Networks

Room: Babbio Atrium
Chair: Augusto Aubry (Università degli studi di Napoli Federico II, Italy)

On the Sum Rate of MIMO Nakagami-m Fading Channels with MMSE Receivers
Caijun Zhong (Zhejiang University, P.R. China); Michail Matthaiou (Chalmers University of Technology, Sweden); Aiping Huang (Zhejiang University, P.R. China); Zhaoyang Zhang (Zhejiang University, P.R. China)

Amplify-and-Forward Compressed Sensing as a PHY-Layer Secrecy Solution in Wireless Sensor Networks
Joan Enric Barceló-Lladó (Universitat Autonoma de Barcelona, Spain); Antoni Morell (Universitat Autonoma de Barcelona (UAB), Spain); Gonzalo Seco-Granados (Universitat Autonoma de Barcelona, Spain)
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Dictionary Based Reconstruction and Classification of Randomly Sampled Sensor Network Data
Grigorios Tsagkatakis (FORTH, Greece); Panagiotis Tsakalides (FORTH-ICS and University of Crete, Greece)
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A Robust Adaptive Sensor Array with Slepian Sequences
Tõnu Trump (Tallinn University of Technology, Estonia)
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Sensor Network Distributed Computation for Direct Position Determination
Mohammad Pourhomayoun (Binghamton University, USA); Mark Fowler (Binghamton University, USA)
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Per Band PMI Selection in Finite-Rate Closed-Loop MIMO-OFDM Systems
Tadesse Ghirmai (University of Washington Bothell, USA)
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SOCP based Robust Detector for Cooperative Spectrum Sensing in MIMO Cognitive Radio
Adarsh Patel (Indian Institute of Technology Kanpur, India); Aditya K Jagannatham (Indian Institute of Technology Kanpur, India)
pp. 133-136

Power Allocation for MIMO-OFDM based CR with Spatial Constraints and CSI Uncertainty
Fnu Pratibha (Indian Institute of Technology Kanpur, India); Aditya K Jagannatham (Indian Institute of Technology Kanpur, India)
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12:15 - 13:30

Lunch (at Bissinger Room, 4th Floor, Howe Center)

13:30 - 14:20

Plenary-03: Challenges and Opportunities in Cognitive Radar (Joseph R. Guerci, USA)

Room: DeBaun Auditorium

14:20 - 15:10

Plenary-04: SAM Challenges for Fully Adaptive Radar (Muralidhar Rangaswamy, AFRL, USA)

Room: DeBaun Auditorium

15:10 - 15:30

Coffee Break (at Babbio Atrium)

15:30 - 17:30

LS-03: Multistatic Sensor Networks for Radar Application

Room: Babbio 122
Chair: Maria S. Greco (University of Pisa, Italy)

On a Definition of the Ambiguity Function for Non-Coherent Radars
Anand Guruswamy (Lehigh University, USA); Rick Blum (Lehigh University, USA)
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Multiple Target Tracking Using a Narrowband RF Sensor Array
Christopher Kreucher (Integrity Applications Incorporated, USA); Braham Himed (AFRL, USA)
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Hierarchical Particle Filtering for Target Tracking in Multi-Modal Sensor Networks
Phani Chavali (Washington University in Saint Louis, USA); Arye Nehorai (Washington University in St. Louis, USA)
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Distributed Target Tracking in Multiple Widely Separated Radar Architectures
Hana Godrich (Princeton University & Rutgers University, USA); Ali Tajer (Princeton University, USA); H. Vincent Poor (Princeton University, USA)
pp. 153-156

A Game-Theoretic Approach for Energy-Efficient Detection in Radar Sensor Networks
Giacomo Bacci (University of Pisa & Wireless Systems Engineering and Research (Wiser) Srl, Italy); Luca Sanguinetti (University of Pisa, Italy); Maria S. Greco (University of Pisa, Italy); Marco Luise (University of Pisa & WISER srl, Italy)
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Analyzing the Impact of MIMO Radar on Tracking Association Error
Shawn Kraut (MIT Lincon Laboratory, USA); Daniel W. Bliss (MIT Lincoln Laboratory, USA)
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LS-04: Distributed and Collaborative Signal Processing

Room: Babbio 104
Chair: Qi Cheng (Oklahoma State University, USA)

Reliability-Based Detection for Decode-And-Forward Relaying in Cooperative Communications
Tsang-Yi Wang (National Sun Yat-sen University, Taiwan); Jwo-Yuh Wu (National Chiao Tung University, Taiwan)
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Thwarting Traffic Analysis: A Signal Processing Perspective
Abhishek Mishra (Lehigh University, USA); Parv Venkitasubramaniam (Lehigh University, USA)
pp. 169-172

Fusion of Multiple Microphone Arrays for Blind Source Separation and Localization
Tao Wu (Oklahoma State University, USA); Longji Sun (Oklahoma State University, USA); Qi Cheng (Oklahoma State University, USA); Pramod Varshney (Syracuse University, USA)
pp. 173-176

A Hierarchical Model for Distributed Detection with Conditionally Dependent Observations
Hao Chen (Boise State University, USA)
pp. 177-180

Benefits of collaboration and diversity in teams of categorically-thinking decision makers
Joong Bum Rhim (Massachusetts Institute of Technology, USA); Lav R. Varshney (IBM Thomas J. Watson Research Center, USA); Vivek K Goyal (Massachusetts Institute of Technology, USA)
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Detecting the Presence of a Proximate Cellular User through Distributed Femtocell Sensing
Pankaj Parag (Texas A&M University, USA); Santhosh Kumar (Texas A&M University, USA); Jean-Francois Chamberland (Texas A&M University, USA); Gregory Huff (Texas A&M University, USA)
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LS-05: Localization Techniques

Room: Babbio 110
Chair: Jian Li (University of Florida, USA)

Source Localization Using Unique Characterizations of Multipath Propagation in an Urban Environment
Brian Phelan (The Pennsylvania State University, USA); Erik Lenzing (The Pennsylvania State University, USA); Ram Narayanan (The Pennsylvania State University, USA)
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Bias Compensation for Target Tracking from Range Based Maximum Likelihood Position Estimates
Liyang Rui (University of Missouri, USA); Dominic K. C. Ho (University of Missouri - Columbia, USA)
pp. 193-196

MIMO Radar Target Location Estimation Using Multiple Widely Separated Antenna Arrays
Peter Khomchuk (University of Massachusetts, Dartmouth, USA); Igal Bilik (University of Massachusetts, USA); Rick Blum (Lehigh University, USA)
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Performance analysis for near field source localization
Mohammed Nabil El Korso (Communication Systems Group & Technische Universitat Darmstadt, Germany); Marius Pesavento (Technische Universität Darmstadt, Germany)
pp. 201-204

Convex Joint Emitter Localization and Passive Sensor Network Synchronization
Oren Jean (Tel Aviv University, Israel); Anthony Weiss (Tel Aviv University, Israel)
pp. 205-208

Quantifying the Advantages of Joint Processing in TDOA Estimation
Arie Yeredor (Tel-Aviv University, Israel)
pp. 209-212

Tuesday, June 19

08:00 - 08:50

Plenary-05: Precipitation Monitoring based on measurements taken by cellular operators - challenges and opportunities for the signal processing community (Hagit Messer, Tel Aviv University, Israel)

Room: DeBaun Auditorium

08:50 - 09:40

Plenary-06: The Geometry of Statistical Inference Homepage (Steven Kay, University of Rhode Island, USA)

Room: DeBaun Auditorium

09:40 - 10:00

Coffee Break (at Babbio Atrium)

10:00 - 12:00

LS-06: Compressive Sensing for Radar 1

Room: Babbio 122
Chair: Moeness G. Amin (Villanova University, USA)

Compressed Sensing Radar Surveillance Networks
Aurora Schmidt (Carnegie Mellon University, USA); Joel Harley (Carnegie Mellon University, USA); Jose Moura (Carnegie Mellon University, USA)
pp. 213-216

Wall Mitigation Techniques for Indoor Sensing within the Compressive Sensing Framework
Eva Lagunas (Universitat Politècnica de Catalunya, Spain); Moeness G. Amin (Villanova University, USA); Fauzia Ahmad (Villanova University, USA); Montse Nájar (UPC, Spain)
pp. 217-220

Power Allocation for CS-based Colocated MIMO Radar Systems
Yao Yu (Rutgers, The State University of New Jersey, USA); Athina Petropulu (Rutgers, The State University of New Jersey, USA); H. Vincent Poor (Princeton University, USA)
pp. 221-224

Sparsity Aware Nonlinear Multichannel Ultrasonic Tomographic Imaging
Chengdong Dong (Shanghai University of Fiance and Economics, P.R. China); Yuanwei Jin (University of Maryland Eastern Shore, USA); Enyue Lu (Salisbury University, USA)
pp. 225-228

A General Framework for Robust Compressive Sensing Based Nonlinear Regression
Brian E Moore (Kansas State University, USA); Bala Natarajan (Kansas State University, USA)
pp. 229-232

3-D Imaging for Ground Penetrating Radar using Compressive Sensing with Block-Toeplitz Structures
Kyle Krueger (Georgia Institute of Technology, USA); James H McClellan (Georgia Institute of Technology, USA); Waymond Scott (Georgia Institute of Technology, USA)
pp. 233-236

LS-07: Integrated Multimodal Sensing

Room: Babbio 104
Chair: Muralidhar Rangaswamy (AFRL, USA)

Bandwidth Sharing and Scheduling for Multimodal Radar with Communications
Surendra Bhat (The Pennsylvania State University, USA); Ram Narayanan (The Pennsylvania State University, USA); Muralidhar Rangaswamy (AFRL, USA)
pp. 237-240

Robust Signal Detection by Using The EEF
Steven Kay (University of Rhode Island, USA); Quan Ding (University of Rhode Island, USA); Muralidhar Rangaswamy (AFRL, USA)
pp. 241-244

Limited Field-of-View Multimodal Sensor Adaptation for Data Association
Sean O'Rourke (University of California, Irvine, USA); Lee Swindlehurst (University of California at Irvine, USA)
pp. 245-248

Waveform-agile Multiple Target Tracking Using Probability Hypothesis Density Filtering
Brian O'Donnell (Arizona State University, USA); Jun Zhang (University of Denver, USA); Antonia Papandreou-Suppappola (Arizona State University, USA); Muralidhar Rangaswamy (AFRL, USA)
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Range Bias Modeling for Hyperbolic Frequency Modulated Waveforms in Target Tracking
Xiufeng Song (University of Connecticut, USA); Peter Willett (University of Connecticut, USA); Shengli Zhou (University of Connecticut, USA)
pp. 253-256

A Heterogeneous Markov Chain Model of Target Existence Variable for Bayesian Track-Before-Detect
Shuangzhi Xia (Xidian University & National Lab of Radar Signal Processing, P.R. China); Fengzhou Dai (Xidian University, P.R. China); Hong-Wei Liu (Xidian University, P.R. China)
pp. 257-260

PS-02: Radar Signal and Array Processing, DOA Estimation, Beamforming

Room: Babbio Atrium
Chair: Hongya Ge (New Jersey Institute of Technology, USA)

Altitude Estimation of Maneuvering Targets in MIMO Over-the-Horizon Radar
Yimin D. Zhang (Villanova University, USA); Moeness G. Amin (Villanova University, USA); Braham Himed (AFRL, USA)
pp. 261-264

Beamformer Design For Nonstationary Signals by Means of Interfrequency Correlations
Tofigh Naghibi (University of ETH, Switzerland); Beat Pfister (ETH Zurich, Switzerland)
pp. 265-268

Relative-entropy based beamforming for secret key transmission
Rémy Boyer (CNRS, Université Paris-Sud (UPS), Supelec, France); Claude Delpha (Universite Paris Sud, France)
pp. 269-272

Adaptive blind source separation with HRTFs beamforming preprocessing
Mounira Maazaoui (Telecom ParisTech, France); Karim Abed-Meraim (Telecom ParisTech, France); Yves Grenier (Institut Télécom, Télécom ParisTech, France)
pp. 273-276

Online Subspace and Sparse Filtering for Target Tracking in Reverberant Environment
Weichang Li (ExxonMobil Corporate Strategic Research, USA)
pp. 337-340

12:00 - 13:30

Lunch (at Bissinger Room, 4th Floor, Howe Center)

13:30 - 14:20

Plenary-07: User Parameter Free Dense and Sparse Spectral Estimation Algorithms (Jian Li, University of Florida, USA)

Room: DeBaun Auditorium

14:20 - 15:10

Plenary-08: Advances in Waveform Scheduling for MIMO Radar (Michael Zoltowski, Purdue University, USA)

Room: DeBaun Auditorium

15:10 - 15:30

Coffee Break (at Babbio Atrium)

15:30 - 17:30

LS-08: Compressive Sensing for Radar 2

Room: Babbio 122
Chair: Nathan A Goodman (University of Oklahoma, USA)

Analysis and Design of Algorithms for Compressive Sensing Based Noise Radar Systems
Mahesh Shastry (The Pennsylvania State University, USA); Yangsoo Kwon (The Pennsylvania State University, USA); Ram Narayanan (The Pennsylvania State University, USA); Muralidhar Rangaswamy (AFRL, USA)
pp. 341-344

Exploiting Adaptive Beamforming for Compressive Measurements
Matthew Sharp (Johns Hopkins University Applied Physics Laboratory, USA); Michael Pekala (Johns Hopkins University, USA); Jeffrey Nanzer (Johns Hopkins University Applied Physics Lab., USA); I-Jeng Wang (Johns Hopkins University Applied Physics Lab., USA); Dennis Lucarelli (Johns Hopkins University Applied Physics Laboratory, USA); Keir Lauritzen (Johns Hopkins University Applied Physics Lab., USA)
pp. 345-348

Detection Performance of Multibranch and Multichannel Compressive Receivers
Bruce Pollock (University of Arizona, USA); Nathan A Goodman (University of Oklahoma, USA)
pp. 349-352

Iterative Sparse Through-the-Wall Imaging
Marija Nikolic (University of Belgrade, Serbia); Arye Nehorai (Washington University in St. Louis, USA); Antonije Djordjevic (University of Belgrade, Serbia)
pp. 353-356

Compressive Sensing in Nonstationary Array Processing Using Bilinear Transforms
Yimin D. Zhang (Villanova University, USA); Moeness G. Amin (Villanova University, USA)
pp. 357-360

Sparse Multi-Target Localization Using Cooperative Access Points
Hadi Jamali-Rad (Delft University of Technology (TU Delft), The Netherlands); Hamid Ramezani (Delft University of Technology, The Netherlands); Geert Leus (Delft University of Technology, The Netherlands)
pp. 361-364

LS-09: Non-Standard Covariance Estimation Methods

Room: Babbio 104
Chairs: Pascal Larzabal (ENS-Cachan, PARIS, France), Ami Wiesel (Hebrew University in Jerusalem, Israel)

Covariance estimation in time varying ARMA processes
Ami Wiesel (Hebrew University in Jerusalem, Israel); Amir Globerson (The Hebrew University of Jerusalem, Israel)
pp. 365-368

Measure Transformed Canonical Correlation Analysis with Application to Financial Data
Koby Todros (University of Michigan, USA); Alfred Hero III (University of Michigan, USA)
pp. 369-372

Natural Order Recovery for Banded Covariance Models
Benjamin Rolfs (Stanford University, USA); Bala Rajaratnam (Stanford University, USA)
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Covariance Estimation and Related Problems in Portfolio Optimization
Ilya Pollak (Purdue University, USA)
pp. 377-380

Robust ANMF test using Huber's M-estimator
Mélanie Mahot (SONDRA Supelec, France); Frederic Pascal (Supélec, France); Philippe Forster (University paris 10, France); Jean-Philippe Ovarlez (ONERA, France)
pp. 381-384

Improved estimation of the logarithm of the covariance matrix
Xavier Mestre (CTTC, Spain); Francisco Rubio (HKUST, Hong Kong); Pascal Vallet (Université Paris-Est/Marne-la-Vallée & Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), France)
pp. 385-388

LS-10: Consensus –Based Methods for Multi-agent Dynamic Systems and Applications

Room: Babbio 110
Chair: Yi Guo (Stevens Institute of Technology, USA)

A cyclic-small-gain approach to distributed output-feedback control of multi-agent nonlinear systems
Tengfei Liu (Polytechnic Institute of New York University, USA); Zhong-Ping Jiang (Polytechnic Institute of New York University, USA)
pp. 389-392

On Consensus of Multiple Uncertain Nonlinear Systems
Wenjie Dong (The University of Texas-Pan American, USA)
pp. 393-396

Distributed Formation Control for Nonholonomic Mobile Robots
Jing Wang (Bethune-Cookman University, USA); Morrison Obeng (Bethune-Cookman University, USA)
pp. 397-400

Protection Against False Data Injection by Dynamically Changing Information Structure of Microgrids
Morteza Talebi (University of Central Florida, USA); Chaoyong Li (University of Central Florida, USA); Zhihua Qu (University of Central Florida, USA)
pp. 401-404

Robust H_infinity Consensus on Directed Networks with Quantized Communication
Shuai Li (Stevens Institute of Technology, USA); Yi Guo (Stevens Institute of Technology, USA); Jun Fang (Stevens Institute of Technology, USA); Hongbin Li (Stevens Institute of Technology, USA)
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18:30 - 21:00

Banquet (at Bissinger Room, 4th Floor, Howe Center)

Wednesday, June 20

08:00 - 08:50

Plenary-09: Multi-Target Tracking (Stefano Coraluppi, Compunetix, Inc., USA)

Room: DeBaun Auditorium

08:50 - 09:40

Plenary-10: Array Processing in The Face of Nonidealities (Visa Koivunen, Aalto University, Finland)

Room: DeBaun Auditorium

09:40 - 10:00

Coffee Break (at Babbio Atrium)

10:00 - 12:00

LS-11: Radar Detection in Interference

Room: Babbio 122
Chair: Pu Wang (Stevens Institute of Technology, USA)

Waveform Design for Sequential Detection with Subspace Interference
Moti Teitel (Ben-Gurion University of the Negev, Israel); Joseph Tabrikian (Ben-Gurion University of the Negev, Israel)
pp. 409-412

Detection with Target-Incurring Orthogonal Subspace Interference
Pu Wang (Stevens Institute of Technology, USA); Jun Fang (University of Electronic Science and Technology of China, P.R. China); Hongbin Li (Stevens Institute of Technology, USA)
pp. 413-416

Cognitive Multi-Antenna Radar Detection Using Bayesian Inference
Yuanwei Jin (University of Maryland Eastern Shore, USA)
pp. 417-420

Distribution-free detection under complex elliptically symmetric clutter distribution
Esa Ollila (Aalto University, Finland); David Tyler (Rutgers University, USA)
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SUAS for 8-Channel GMTI Radar Using Alternative High Performance Non-SMI STAP Algorithm
Lawrence Marple (Georgia Tech Research Institute, USA)
pp. 425-428

Sparsity-based change detection of short human motion for urban sensing
Fauzia Ahmad (Villanova University, USA); Moeness G. Amin (Villanova University, USA)
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LS-12: Beamforming

Room: Babbio 104
Chair: Xiufeng Song (University of Connecticut, USA)

Low-Overhead Cooperative Beamforming Under Imperfect Quantized SNR of Source-to-Relay Links

Jwo-Yuh Wu (National Chiao Tung University, Taiwan); Chung-Hsuan Hu (NCTU, Taiwan); Tsang-Yi Wang (National Sun Yat-sen University, Taiwan)

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An L1-Norm Linearly Constrained LMS Algorithm Applied to Adaptive Beamforming

José Andrade, Jr. (Federal University of Rio de Janeiro (UFRJ) & Brazilian Navy, Brazil); Marcello Campos (Federal University of Rio de Janeiro, Brazil); José Antonio Apolinário Jr. (IME, Brazil)

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Steering vector non-identifiability in covariance matrix fitting based beamforming

Michael Rübsamen (Technische Universität Darmstadt, Germany); Marius Pesavento (Technische Universität Darmstadt, Germany)

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A new beamformer based on phase dispersion to improve 2D sparse array response

Oscar Martinez-Graullera (CSIC, Spain); David Romero-Laorden (CSIC, Spain); Alberto Ibañez (CSIC, Spain); Luis Ullate (CSIC, Spain)

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Beamformer Bank Optimization for True Time Delay Beam-Space Processing

Nathan Wilkins (US Air Force Research Lab Munitions Directorate, USA); Arnab Shaw (Wright State University, USA)

pp. 449-452

Incorporating Array Nonidealities Into Adaptive Capon Beamformer for Source Tracking

Mario Costa (Aalto University, Finland); Visa Koivunen (Helsinki University of Technology, Finland)

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PS-03: Detection, Estimation, and Array Processing

Room: Babbio Atrium

Chair: Domenico Ciuonzo (Seconda Università di Napoli - Facoltà di Ingegneria, Italy)

Broadband Field Directionality Mapping with Spatially-Aliased Arrays

Jonathan Odom (Duke University, USA); Jeffrey Krolik (Duke University, USA)

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Wideband Sound Reproduction in a 2D Multi-zone System Using a Combined Two-stage Lasso-LS Algorithm

Nasim Radmanesh (RMIT University, Australia); Ian Burnett (RMIT University, Australia)

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Distributed Binary Geometric Sensor Arrays for Low-Data-Throughput Human Gait Biometrics

Tianyao Yue (Duke University, USA); Qi Hao (University of Alabama, USA); David Brady (Duke University, USA)

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Effects of Unsuccessful Transmissions of Measurements on Uncertainty in Power Flow Calculations

Qian He (University of Electronic Science and Technology of China, P.R. China); Chuanming Wei (Lehigh University, USA); Rick Blum (Lehigh University, USA)

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Microphone Array Beampattern Characterization for Hands-free Speech Applications

Mohammad J. Taghizadeh (Idiap Research Institute & EPFL, Switzerland); Philip Garner (Idiap Research Institute, Switzerland); Herve Bourlard (IDIAP, Switzerland)

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Optimum Quantization and Reconstruction of Power Flows from Voltage Measurements at Dispersed Buses

Xinda Ke (Lehigh University, USA); Rick Blum (Lehigh University, USA)

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A Novel Augmented Complex Valued Kernel LMS

Felipe Tobar (Imperial College London, United Kingdom); Anthony Kuh (Univ of Hawaii, Manoa, USA); Danilo Mandic (Imperial College, London, United Kingdom)

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Subspace Estimation Using Factor Analysis

Ahmad Mouri Sardarabadi (Delft University of Technology, The Netherlands); Alle Jan van der Veen (Delft University, The Netherlands)

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Nonlinear Blind Mixture Identification Using Local Source Sparsity and Functional Data Clustering

Matthieu Puigt (Foundation for Research and Technology - Hellas, Greece); Anthony Griffin (FORTH/University of Crete, Greece); Athanasios Mouchtaris (Foundation for Research and Technology-Hellas, Greece)

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Distributed Detection With A Scan Statistic: Global to Local Inference

Xiufeng Song (University of Connecticut, USA); Peter Willett (University of Connecticut, USA); Joseph Glaz (University of Connecticut, USA); Shengli Zhou (University of Connecticut, USA)

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Estimation of the Number of Narrowband Signals in the Presence of Multipath Propagation

Hao Tao (Xi'an Jiaotong University, P.R. China); Jingmin Xin (Xi'an Jiaotong University, P.R. China); Nanning Zheng (Xi'an Jiaotong University, P.R. China); Akira Sano (Keio University, Japan)

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The Locally Most Powerful Invariant Test for Detecting a Rank-P Gaussian Signal in White Noise

David Ramírez (Paderborn Universität, Germany); Jorge Iscar (University of Cantabria, Spain); Javier Vía (University of Cantabria, Spain); Ignacio Santamaria (University of Cantabria, Spain); Louis Scharf (Colorado State, USA)

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An Improved Probe Noise Approach for Acoustic Feedback Cancellation

Meng Guo (Aalborg University & Oticon A/S, Denmark); Søren Holdt Jensen (Aalborg University, Denmark); Jesper Jensen (Oticon, Denmark)

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Hyperspectral Band Selection for Human Detection

Kuniaki Uto (Tokyo Institute of Technology, Japan); Yukio Kosugi (Tokyo Institute of Technology, Japan); Toru Murase (Sumitomo Electric Industries, LTD, Japan); Sigenori Takagishi (Sumitomo Electric Industries, LTD, Japan)

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Low-cost Multi-channel Underwater Acoustic Signal Processing Testbed

Koen Blom (University of Twente, The Netherlands); Rinse Wester (University of Twente, The Netherlands); Andre Kokkeler (University of Twente, The Netherlands); Gerard Smit (University of Twente, The Netherlands)

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Distributed Posterior Cramer-Rao Lower Bound for Nonlinear Sequential Bayesian Estimation

Arash Mohammadi (York University, Canada); Amir Asif (York University, Canada)

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Performance Bounds For Constrained Parameter Estimation

Tirza Routtenberg (Ben Gurion university of the Negev, Israel); Joseph Tabrikian (Ben-Gurion University of the Negev, Israel)

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Multiple Source Resolution for True Time Delay Beam-Space Processing

Nathan Wilkins (US Air Force Research Lab Munitions Directorate, USA); Arnab Shaw (Wright State University, USA)

pp. 525-528

Source counting in real-time sound source localization using a circular microphone array

Despoina Pavlidi (University of Crete & Institute of Computer Science (ICS) Foundation for Research and Technology - Hellas (FORTH), Greece); Anthony Griffin (FORTH/University of Crete, Greece); Matthieu Puigt (Foundation for Research and Technology - Hellas, Greece); Athanasios Mouchtaris (Foundation for Research and Technology-Hellas, Greece)

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Estimation of Radio Interferometer Beam Shapes Using Riemannian Optimization

Sarod Yatawatta (ASTRON, The Netherlands)

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MUSIC-Based Array Imaging in Multi-Modal Ultrasonic Non-Destructive Testing

Foroohar Foroozan (York University, Canada); Shahram ShahbazPanahi (University of Ontario Institute of Technology, Canada)

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A Multichannel Cross-Spectrum Density Estimator Based On Canonical Correlation Analysis

Xiaoli Wang (New Jersey Institute of Technology, USA); Hongya Ge (New Jersey Institute of Technology, USA)

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12:00 - 13:00

Lunch (boxed lunch to-go, pick up at Babbio Atrium)

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3. Lieb Building
4. Burchard Building
5. McLean Hall
6. Babbio Center
7-8-9. Morton-Pierce-Kidde Complex
10. Rocco Technology Center
11. Nicholl Environmental Laboratory
12. Davidson Laboratory
13. Gatehouse (Campus Police)
14. Griffith Building
15. Walker Gymnasium
16. Schaefer Athletic and Recreation Center
17. Samuel C. Williams Library and Computer Center
18. Jacobus Student Center
19. Wesley J. Howe Center and Visitors Information Desk
27. Hoxie House
28. Alexander House
29. Colonial House
46. Kenneth J. Altorfer Academic Complex
47. 607-614 Hudson St.
49. 800 Castle Point Terrace
50. 2 Ninth St.
51. Pollara House
52. Pond House

FRATERNITIES:
30. Chi Phi - 801 Hudson St.
31. Chi Psi - 804 Castle Point Terrace
32. Sigma Nu - 806 Castle Point Terrace
33. Beta Theta Pi - 812 Castle Point Terrace
34. Theta Xi - 805 Castle Point Terrace
35. Delta Tau Delta - 809 Castle Point Terrace
36. Alpha Sigma Phi - 903 Castle Point Terrace
37. Phi Sigma Kappa - 837 Hudson St.
38. Sigma Phi Epsilon - 528-530 Hudson St.

SORORITIES:
39. Omicron Pi - 831 Castle Point Terrace
40. Delta Phi Epsilon - 808 Castle Point Terrace
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RESIDENCE HALLS:
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RIVER TERRACE SUITES:
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