USC Viterbi
School of Engineering

3rd Annual Electrical Engineering Research Festival

February 6, 2013

Auditorium	9:00am	**Graduating Ph.D. Research Overview**
Patio	10:00am	**Poster & Demo Session #1**

Applied electromagnetics, Bio-electronics and bio-optics, Energy, Integrated circuits and systems, Nano-science, nano-technology & micro-electromechanical systems, Photonics , Signal Processing

Auditorium	11:30am	**Faculty Research Presentation**

Ben Reichardt - Classical Command of Quantum Systems

Courtyard	12:00pm	**Lunch & Undergrad Poster Session**
Auditorium	1:00pm	**Faculty Panel: Resilience in Research**

USC Electrical Engineering Faculty
Organizers: Krishna Nayak and Mahta Moghaddam
Panelists: Murali Annavaram, Martin Gundersen and Urbashi Mitra

Patio	2:00pm	**Poster & Demo Session #2**

Architecture, Communications, Controls, Networks, VLSI

Courtyard	3:30pm	**Awards Ceremony & Reception**

Hosted by the Ming Hsieh Institute, Department of Electrical Engineering

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9:00am Gerontology Auditorium
Welcome Remarks & Graduating Ph.D. 4 minute Research Presentations
Shrikanth (Shri) Narayanan
Andrew Viterbi Professor of Electrical Engineering; Ming Hsieh Institute Director

Graduating Ph.D. 4 Minute Research Overview (Auditorium)

Moh Amer	Effect of Substrate on Metallic Carbon Nanotube Field Effect Transistors (CNT-FETs) *Category: Nano-Science/Tec & Micro-Electro-Mechanical Systems*
Syed Ashrafulla	Modeling Causality in Mean and Variance between Sets of Signals *Category: Signal Processing*
Kartik Audhkhasi	A Computational Framework for Ensembles of Diverse Experts *Category: Signal Processing*
Prasanjeet Das	A Variability Aware Resilient Framework for Post-Silicon Delay Validation of High Performance Circuits *Category: VLSI*
Ming Li	Representation, Classification and Information Fusion for Robust and Efficient Multimodal Human States Recognition *Category: Signal Processing*
Yenting Lin	High Contrast Travel Time Tomography with Sparse Data *Category: Signal Processing*
Mehrdad Najibi	Optimization of Conditional Asynchronous Circuits with Average-Case Performance Constraints *Category: VLSI*
Vikram Ramanarayanan	Sparsity and Speech Science? Modeling speech motor planning by observing its execution *Category: Signal Processing*
Maheswaran Sathiamoorthy	Coded Distributed Storage for Cloud Environments *Category: Networks*
Qun Feng Tan	Novel Variations of Sparse Representation Techniques with Applications *Category: Signal Processing*

10:00am – 11:30 am Poster & Demo Session #1 (Gerontology Patio)

Applied electromagnetics, Bio-electronics and bio-optics, Energy, Integrated circuits and systems, Nano-science, nano-technology & micro-electromechanical systems, Photonics, Signal Processing **demo included*

1.	Ruzbeh Akbar	*Applied Electromagnetics*	Environmental Remote Sensing to Retrieve Surface Soil Moisture
2.	Mariko Burgin	*Applied Electromagnetics*	Analysis of Impact of Spatial Heterogeneity in Retrieval of Geophysical Parameters from Low-Frequency Radars
3.	Guanbo Chen	*Applied Electromagnetics*	3D Microwave Time Domain Inversion Technique for Breast Cancer Detection
4.	Viviane Ghaderi	*Bio-Electronics and Bio-Optics*	Analog Subthreshold Ultra Low-Power Implementation of the Laguerre-Volterra Model for Bidirectional Communication with the Brain
5.	Chih-Chieh Hsu	*Bio-Electronics and Bio-Optics*	Dendritic Computation and Dendritic Plasticity In Neuromorphic Circuits
6.	Shermin Arab	*Energy*	Study on the Transport Properties of GaP and p-type GaP Enhancement for the Reduction of CO_2 to Methane

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Applied electromagnetics, Bio-electronics and bio-optics, Energy, Integrated circuits and systems, Nano-science, nano-technology & micro-electromechanical systems, Photonics, Signal Processing **demo included*

7.	Yun Fang	*Energy*	Seeding of the Self-modulation Instability of a Long Electron Bunch in a Plasma
8.	Arash Vafanejad	*Nano-Science/Tec & Micro-Electro-Mechanical Systems*	Dome Shaped diaphragm resonators with Wine-glass mode vibration
9.	Yuhan Yao	*Nano-Science/Tec & Micro-Electro-Mechanical Systems*	High Efficiency Solar Spectrum Dispersion: Using Multilayer Nanostructures for Energy Harvesting
10.	Mark Harrison	*Photonics*	Computational Modeling of Serpentine Low Loss Trapezoidal Silica Waveguides on Silicon
11.	Hao Huang	*Photonics*	High Capacity and Spectral Efficient Data Link using Orbital Angular Momentum
12.	Hari Mahalingam	*Photonics*	Tunable Refractive Index Titania Silica Hybrid Sol-gel Thin Films
13.	Sushil Subramanian	*Integrated Circuits & Systems*	Wideband Frequency Synthesis with Rapid Frequency Hopping
14.	Susan Schober	*Integrated Circuits & Systems*	Low Power IC Techniques for Biomedical Implants
15.	Zahra Safarian	*Integrated Circuits & Systems*	100-Channel Event-Driven Neural Recording System with Wireless Telemetry
16.	Alireza Imani	*Integrated Circuits & Systems*	A Low-Noise FBAR-CMOS Frequency/Phase Discriminator for Phase Noise Measurement and Cancellation
17.	Kunal Datta	*Integrated Circuits & Systems*	Mm-Wave Stacked Class-E Power Amplifiers in Silicon
18.	Uldric Antao	*Integrated Circuits & Systems*	Low Power, Long Life Design for Smart Intelligence, Surveillance, and Reconnaissance (ISR) Sensors
19.	Hooman Abediasl	*Integrated Circuits & Systems*	On-chip Optical Frequency Discriminators
20.	*Run Chen	*Integrated Circuits & Systems*	Reconfigurable Wideband Receiver Using a Sample-Domain Radio-Frequency CMOS Signal Processor
21.	Junyang Shen	*Signal Processing*	Radio Positioning using Time-of-Arrival information
22.	Sergul Aydore	Signal Processing	Statistical Analysis of Phase Locking Value
23.	Daniel Bone	Signal Processing	Modeling Eye-Voice Coordination in Rapid Automatized Naming: Smooth Patterns of Fast Performance
24.	Sachin Chachada	Signal Processing	On Unstructured Audio Modeling with Statistical Analysis and Test

10:00am – 11:30 am Poster & Demo Session #1 (Gerontology Patio)

Applied electromagnetics, Bio-electronics and bio-optics, Energy, Integrated circuits and systems, Nano-science, nano-technology & micro-electromechanical systems, Photonics, Signal Processing **demo included*

25.	Theodora Chaspari	Signal Processing	Using Physiology and Language for Modeling Verbal Response Latencies of Children with ASD
26.	James Gibson	Signal Processing	An Audio-Visual Approach to Learning Salient Behaviors in Couples' Problem Solving Discussions
27.	*Nikolaos Malandrakis	Signal Processing	Extracting text and speech emotion using the world wide web
28.	*Naveen Kumar	Signal Processing	Adaptive Random Sensing Networks for Monitoring Time-Varying Fields
29.	Dongwoo Kang	Signal Processing	Automatic Detection of Significant and Subtle Lesions from Coronary CT Angiography
30.	Jangwon Kim	Signal Processing	Spatial and Temporal Alignment of Multimodal Human Speech Production Data: Real Time Imaging, Flesh Point Tracking and Audio
31.	Hyunsuk Ko	Signal Processing	New In-loop Filter for Depth Map Coding in HEVC
32.	Mohammad Korjani	Signal Processing	Linguistic Summeriztion using Fuzzy Set Qualitative Comparative Analysis
33.	Rahul Gupta	Signal Processing	Greedy Feature Clustering for Classifier Ensemble Training
34.	Sungwon Lee	Signal Processing	Hardware-driven Compressive Sampling for Fast Target Localization using Single-chip Radar Sensor
35.	Davi Leite	Signal Processing	Acceleration of Spiral Fourier Velocity Encoded MRI using 3D SPIRiT
36.	Tsung-Jung Liu	Signal Processing	A Fusion Approach to Video Quality Assessment Based on Temporal Decomposition
37.	Kuan-Hsien Liu	Signal Processing	Cascaded Age Groups Classification: from Uncertainty-driven Shape Features to Surface Features
38.	Harshad Kadu	Signal Processing	Human Motion Classification and Management Based on Mocap Data Analysis
39.	Angeliki Metallinou	Signal Processing	Quantifying Atypicality in Affective Facial Expressions of Children with Autism Spectrum Disorders
40.	Osonde Osoba	Signal Processing	Noisy Expectation Maximization and Some Applications
41.	Sanjay Purushotham	Signal Processing	Collaborative Topic Regression with Social Matrix Factorization for Recommendation Systems
42.	Ran Ren	Signal Processing	Optimizing MAP reconstruction of Fourier Rebinned TOF PET

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43.	Bo Xiao	Signal Processing	Multimodal Detection of Salient Behaviors of Approach-Avoidance in Dyadic Interactions
44.	Hang Yuan	Signal Processing	Energy-Efficient Video-Sharing Servers

11:30am – 12:00pm Faculty Research Presentation (Auditorium)
Ben Reichardt - Classical Command of Quantum Systems

12:00pm-1:00pm Lunch & Undergrad Poster Session (Courtyard)
**demo included*

27.	*Dylan Foster	Kinematic Retargeting
28.	Zach Gima	Using Complex Event Processing for Intelligent Energy Management in Microgrids
29.	Nishita Deka	Doped Microlaser with High-Index Coatings
30.	Sam Kushner-Lenhoff	Experimental Modeling of Sterilization Effects of Atmospheric Entry Heating on Microorganisms

1:00pm-1:45pm Faculty Panel: Resilience in Research (Auditorium)
USC Electrical Engineering Faculty
Organizers: Krishna Nayak and Mahta Moghaddam
Panelists: Murali Annavaram, Martin Gundersen and Urbashi Mitra

2:00pm-3:30pm Poster & Demo Session #2 (Gerontology Patio)
Architecture, Communications, Controls, Networks, VLSI
**demo included*

1.	Anas Al Majali	*Networks*	Cyber Physical Modeling of the Smart Grid
2.	Parisa Mansourifard	*Networks*	Optimal Policy for Rate Control Problem
3.	Keyvan Rezaei Moghadam	*Networks*	Dynamic Online Storage Allocation for Multi-Content Dissemination in Intermittently Connected Mobile Networks
4.	Hanie Sedghi	*Networks*	Statistical Structure Learning of Smart Grid for Detection of False Data Injection
5.	Wenyuan Tang	*Networks*	Game-Theoretic Study for the Smart Grid
6.	Yanting Wu	*Networks*	A Competitive Rate Allocation Game

CONT… 2:00pm-3:30pm Poster & Demo Session #2 (Gerontology Patio)

Architecture, Communications, Controls, Networks, VLSI

**demo included*

7.	Gopi Neela	*VLSI*	Logice-on-Logic Stacked 3-Dimensional Integrated Circuits
8.	Qing Xie	*VLSI*	Adaptive Thermal Management for Portable System Batteries by Forced Convection Cooling
9.	Fatemeh Kashfi	*VLSI*	Thermal Sensor Distribution Method for 3D Integrated Circuits Using Efficient Thermal Map Modeling
10.	Jan Florjanczyk	*Communications*	Continuous Quantum Measurement Procedures Via Weak Probe Interactions
11.	Dilip Bethanabhotla	*Communications*	Utility Optimal Scheduling and Admission Control for Adaptive Video Streaming in Small Cell Networks
12.	Sajjad Beygi	*Communications*	Optimal Bayesian Resampling for OFDM Signaling over Multi-scale Multi-lag Channels
13.	Song-Nam Hong	*Communications*	Lattice Strategies for Gaussian Relay Networks
14.	Kung-Chuan Hsu	*Communications*	A Family of Finite Geometry LDPC Codes for Quantum Key Expansion
15.	Mingyue Ji	*Communications*	Capacity Scaling Laws in Wireless Device-to-Device Caching Networks
16.	Daphney-Stavroula Zois	*Communications*	Kalman-like State Tracking and Control in POMDPs with Applications to Body Sensing Networks
17.	Ruisi He	*Communications*	Propagation Issues for High-Speed Railways
18.	Sundar Aditya	*Communications*	Multicast Routing using Mutual Information Accumulation
19.	*Agnelo Silva	*Communications*	Achieving Energy-Efficiency in Large and Sparse Wireless Sensor Networks
20.	* Tooraj Rajabioun	*Controls*	Intelligent Parking Assist
21.	Yanbo Zhao	*Controls*	Dynamic Train Headway Selection and Its Effect on Capacity
22.	Vadim Butakov	*Controls*	Driver/Vehicle Diagnostics
23.	Afshin Abadi	*Controls*	Smart Personalized Routing in Navigation
24.	Scout Kingery	*Communications*	Clifford circuits for encoded quantum gates with low error spread
25.	Kristen Pudenz	*Communications*	Experimental Quantum Error Correction
26.	Ansuman Adhikary	*Communications*	Joint Spatial Division and Multiplexing
27.	Seun Sangodoyin	*Communications*	Real-time Ultrawideband MIMO Channel Sounding
28.	Ryan Rogalin	*Communications*	Distributed Multiuser MIMO with Full Spatial Multiplexing
29.	Alexander Onic	*Communications*	Unique Word OFDM

CONT... 2:00pm-3:30pm Poster & Demo Session #2 (Gerontology Patio)

Architecture, Communications, Controls, Networks, VLSI

**demo included*

30.	Milad Marvian	*Communications*	Fluctuation Theorems for Quantum Processes
31.	Songze Li	*Communications*	A Jointly Cooperative Scheme for Secondary Spectrum Access
32.	Chien-Lun Chen	*Communications*	LDPC Code Design for Wireless Relay Channel with ISI
33.	Sunav Choudhary	*Communications*	On Constructing Good Compressed Sensing Matrices
34.	Hao Feng	*Communications*	Diversity Backpressure Routing with Mutual Information Accumulation in Wireless Ad-hoc Networks
35.	Aditya Deshpande	*Architecture*	Modeling Energy Across Memory Hierarchy
36.	Mohammad Abdel-majeed	*Architecture*	Warped Register File: A Power Efficient Register File for GPGPUs
37.	Lizhong Chen	*Architecture*	NoRD: Node-Router Decoupling for Effective Power-gating of On-Chip Routers
38.	Thilan Ganegedara	*Architecture*	High Performance IPv6 Forwarding on Software and Hardware Platforms
39.	Gunjae Koo	*Architecture*	A New In-Loop Filter for Depth Map Coding in HEVC
40.	Mehrtash Manoochehri	*Architecture*	Chip Independent Error Correction in Main Memory
41.	Yun Qu	*Architecture*	High-performance Pipelined Architecture for Tree-based IP lookup Engine on FPGA
42.	Daniel Wong	*Architecture*	Modeling Future EP Trends – Three Laws of Energy Proportionality Growth
43.	Lihang Zhao	*Architecture*	Regulating Network Traffic for Transactional Memory
44.	Waleed Dweik	*Architecture*	SignTest: Signature-based Adaptive Online Fault Detection

3:30pm Awards Ceremony & Reception (Courtyard)

Award categories for Best Posters, Presentations, Demos and Papers

Best Paper Nominees

Mohammad Abdel-Majeed	Dileep Kalathil	Sanjay Purushotham
Kartik Audhkhasi	Fatemeh Kashfi	Mohammad Reza Rajati
Dilip Bethanabhotla	Hyunsuk Ko	Zahra Safarian
Vadim Butakov	Mohammad Korjani	Alireza Shafaei Bejestan
Sunav Choudhary	Ming Li	Junyang Shen
Prasanjeet Das	Yunchu Li	Agnelo Silva
Harsha Honnappa	Tsung-Jung Liu	Daniel Wong
Hao Huang	Angeliki Metallinou	Lihang Zhao
Harshad Kadu	Masoud Moshref Javadi	Yanbo Zhao

The Annual Electrical Engineering Research Festival is hosted by the Ming Hsieh Institute.
All presentations will be posted on the website – mhi.usc.edu