The Center of Embedded Computer Systems (CECS) hosted the NSF Variability Expedition Renew & Joint Workshop with DFG SPP 1500 on November 21-23, 2013 at UCI. This joint event was organized by CECS affiliate faculty Nikil Dutt and UCLA graduate researcher Lucas Wanner. The review featured presentations by faculty and students from three University of California campuses (San Diego, Los Angeles and Irvine) as well as the University of Michigan, Stanford University, and the University of Illinois at Urbana Champaign. The event kicked off with opening remarks made by the Director of the NSF Variability Expedition program, UCSD Professor Rajesh Gupta, who welcomed participants and provided a briefing on the progress of the project, to date. Dr. Tanay Karnik from Intel Corporation was invited to give a talk on the “Future of Energy Efficient Computing by Dynamic Variation Tolerant Circuits”.

The review was co-located with the German Research Foundation (DFG) Priority Program 1500 Workshop, and attendees included faculty and students from Kaiserslautern University of Technology, Technical University of Munich, Karlsruhe Institute of Technology, Friedrich-Alexander University Erlangen-Nurnberg, Technical University of Dortmund, Dresden University of Technology and University of Tübingen. The goal of DFG SPP 1500 is to promote “Design and Architectures of Dependable Embedded Systems – A Grand Challenge in the Nano Age”. In addition to presentations related to these topics, there were breakout sessions to focus on potential opportunities for collaboration between German researchers and members of the Variability Expedition program.

For more details about Variability Expedition projects, please visit the Variability website: www.variability.org
The 10th IEEE International Conference on Embedded Software and Systems (ICCESS 2013) and the 13th IEEE International Conference on Computer and Information Technology (CIT 2013) was held in Sydney, Australia, on December 3-5, 2013. CECS Postdoctoral Researcher, Dr. Steffen Peter, in the Cyber Physical System Design Group, presented two NSF-funded research papers entitled “Utilizing Intervals in Component-based Design of Cyber Physical Systems” and “Modeling and Mitigation of Faults in Cyber-Physical Systems with Binary Sensors”. The presentation slides can be found at the Cyber Physical Systems Design Group website at: www.cps.ics.uci.edu/icess2013-and-cit2013/

Conference & Workshop Presentation Highlights

Two research papers were accepted and presented by CECS graduate students at the Asilomar Conference on Signals, Systems, and Computers, held in Pacific Grove, CA, on December 12, 2013. Muhammad Abdelghaffar presented his paper titled “Efficient Error-Aware Power Management for Memory Dominated OFDM Systems”, at the Technical Program Session for Communication System Design. Muhammad received his Ph.D. in September 2013, and was co-advised by Professors Fadi Kurdahi and Ahmed Eltawil. He is now working at Qualcomm in San Diego.

At the Technical Program Session for Communication Systems II, the paper titled “Resource Allocation for Mobile Video Conferencing” was presented by Chao Yang, a 4th year Ph.D. student in the Networked Systems Program. His advisor is Prof. Scott Jordan.
Presentation Highlights (continued from page 2)...

Amr M.A. Hussien attended the 1st IEEE Global Conference on Signal and Information Processing (GlobalSIP 2013) held on December 3-5, 2013 in Austin, TX. Amr presented his paper titled “Low Overhead Correction Scheme for Unreliable LDPC Buffering”, at the Technical Program Symposium on Low-Power Systems and Signal Processing. Amr Hussein received his PhD in September 2013, and was co-advised by Professors Fadi Kurdahi and Ahmed Eltawil. He is currently working at Newport Media in Lake Forest, CA.

Wael Elsharkasy traveled to San Jose on November 21, 2013, to present his poster titled, “High Sigma Variability Modeling of TG Latches”, in the IEEE/ACM Workshop on Variability Modeling and Characterization (VMC) at the 2013 International Conference on Computer-Aided Design (ICCAD 2013). Wael Elsharkasy is a 3rd year Ph.D. student working with Professors Kurdahi and Eltawil. His research interests are in the area of digital VLSI design, variability in memory elements and design of resilient circuits.

Ye Zhao, a PhD candidate in the Network Systems Program attended the ACM/IFIP/USENIX International Middleware Conference (MIDDLEWARE’13) in Beijing, China, on December 9-13, 2013 to present his paper “O2SM: Enabling Efficient Offline Access to Online Social Media and Social Networks”. He also participated in DEBS 2013: The 7th ACM International Conference on Distributed Event-Based Systems, June 29 – July 3, 2013, held at Arlington, Texas, and presented two papers, “DYNATOPS: A Dynamic Topic-based Publish/Subscribe Architecture,” and “Towards Efficient GeoSocial Content Dissemination”. Ye Zhao is working with Professor Nalini Venkatasubramanian in the Distributed System Middleware (DSM) group. His research interests include overlay networks, disruptive tolerant networks, and ubiquitous computing.
Associate lecturer and researcher Haitham M. DawoodElghannam is a visiting scholar at the Center for Embedded Computer Systems (CECS), hosted by Professor Ahmed Eltawil, from August 2013 through November 2013.

Haitham is a second year Ph.D. student in M.T.C, Cairo, Egypt. He obtained his master's degree in communication engineering from AAST Cairo in 2011. His previous research was mainly focused on Network Security, designing Encryption Algorithms using FPGA, and testing the performance of these algorithms.

In 2011, he joined the communication department at M.T.C. Cairo, as a Ph.D. Student.

His current research interests are in wireless communication networks, including:

- Analytical studies for different encryption algorithms used in WIMAX network.
- Design optimized encryption algorithm based on latest security systems.
- Simulation, Testing, and Evaluation of proposed encryption algorithm.

Haitham says he is very excited to have the opportunity to visit UCI, and wishes to contribute to CECS research and to create a cooperative working environment that will provide the opportunity for research collaboration between UCI and M.T.C. Cairo in the future.
Peizhao Ou is a second-year MS/PhD Student in computer engineering in the department of Electrical Engineering and Computer Science at UC Irvine. He received his Bachelor's degree in Software Engineering from Shanghai Jiao Tong University, China in 2012.

When he was an undergraduate student in Jiao Tong University in 2011, he worked on a project on Automatic API Parameter Recommendation for Java, which took advantage of data-mining techniques to decrease the difficulties for programmers to use complex API. That was his first time working as a junior researcher in the area of software engineering and programming languages.

In fall 2012, he joined Prof. Brian Demsky’s research group at UC Irvine. His research interest is mainly in static and dynamic program analysis, and software system verification and compilation. From fall 2012 to summer 2013, Peizhao worked on the Crowd Safe project, an ongoing project which focuses on using dynamic program analysis and crowd-sourcing techniques to make computer systems more secure on the OS level. In summer 2013, he started to work on another project which checks the correctness of concurrent data structure on a C11 memory model, where his main contribution will be designing a useful and easy-to-use specification language for library programmers to check their concurrent data structures written in C11. Hopefully, this will help find hidden bugs in concurrent data structures.

The Dutt Research Group (DRG) is currently working on the SyNAPSE (Systems of Neuromorphic Adaptive Plastic Scalable Electronics) project in collaboration with the Cognitive Anteater Robotics Laboratory (CARL), led by Prof. Jeff Krichmar, in the School of Social Science. On October 31, 2013, Professor Dutt hosted a joint luncheon at Chakra restaurant to bring two groups together to formally introduce the members. It provided a great opportunity for everyone to meet, exchange ideas and share information.
The following papers were published by CECS affiliates between July 2013 to December 2013 (and unreported papers from previous eNews).

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<th>Author, Title, Publication</th>
<th>Conference Proceedings</th>
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<tr>
<td>Amr Hussien, Wael Elsharkasy, Ahmed Eltawil, Fadi Kurdahi, Amin Khajeh. “Low Overhead Correction Scheme for Unreliable LDPC Buffering.” The 2013 IEEE GlobalSIP Symposium on Low-Power Systems and Signal Processing (GlobalSIP’13), December 3-5, 2013, Austin, TX, USA</td>
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<td>Volkan Gunes, Steffen Peter, Tony Givargis, “Modeling and Mitigation of Faults in Cyber-Physical Systems with Binary Sensors,” IEEE 13th International Conference on Computer and Information Technology (CIT), Sydney, Australia, December 3-5, 2013</td>
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S. Crane, P. Larsen, S. Brunthaler, and M. Franz; "Booby Trapping Software;" accepted for publication in 2013 New Security Paradigms Workshop (NSPW 2013), Banff, Canada; September 2013.


continued on next page...
The following papers were published by CECS affiliates between July 2013 to December 2013 (and unreported papers from previous eNews) - continued from page 8...


continued on next page...
The following papers were published by CECS affiliates between July 2013 to December 2013 (and unreported papers from previous eNews) - continued from page 9...


The following papers were published by CECS affiliates between July 2013 to December 2013 (and unreported papers from previous eNews) - continued from page 10...


Technical Reports


continued on next page...
The following papers were published by CECS affiliates between July 2013 to December 2013 (and unreported papers from previous eNews) - continued from page 11...
