

COMPUTER SCIENCE & ENGINEERING NEWSLETTER



Term: Spring | Issue 4 | Date: April 2018

FAKE NEWS RESEARCH



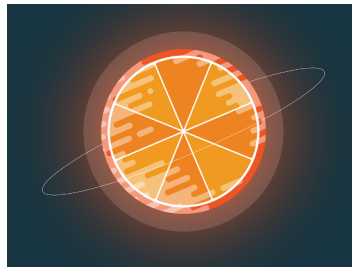
UCR's Multi-Aspect Data Lab, led by Professor Evangelos E. Papalexakis, have built a tech-based solution to the

dissemination of malicious misinformation. They are developing novel data science techniques to address a variety of problems in social network analysis, with funding from Naval Sea Systems Command, Naval Engineering Education Consortium, the National Science Foundation, and Adobe.

Prof. Papalexakis' latest academic paper on this work: "Unsupervised Content-Based Identification of Fake News Articles with Tensor Decomposition Ensembles," co-written with graduate research assistant Seyed Mehdi Hosseini Motlagh, was presented, and won the "best paper award," at the recent MIS2: Misinformation and Misbehavior Mining on the Web workshop, part of WSDM 2018 (11th ACM International Conference on Web Search and Data Mining).

For more information about this research, please [read more](#).

CITRUS HACK 2018



13 April 2018

Citrus Hack is a 36-hour hackathon. A hackathon invites collegiate students to a location to collaborate and innovate.

Throughout the 36 hours participants work in teams on a project, attend workshops to learn about new technologies, and network with industry partners.

<https://acmucr.org/events/16>

FACULTY FEATURE



Professor Michalis Faloutsos is the lead investigator on a large grant (over \$3.5

million USD) from the University of California Office of the President. The project's aim is to secure future smart campuses that integrate intelligent buildings and autonomous systems. The collaborative team includes two other CSE faculty (Silas Richelson and Nael Abu-Ghazaleh) as well as researchers from UCLA, UCSD, UCSB, and Lawrence Livermore National Labs.

RESEARCH FUNDING - EXPENDITURES OVER THE YEARS



Prof. Abu-Ghazaleh's work on attacking branch predictors (with Dmitry Evtushkin at College of William and Mary, and Dmitry Ponomarev at Binghamton University) provided an important ingredient behind the dangerous Meltdown and Spectre attacks. Branch predictors are a core component of modern processors.

The vulnerabilities they discovered in the branch predictor provide the understanding (and in some variants of the attack, the control) of the predictor so that the attackers can force the CPU to execute their chosen vulnerable code. The work was referenced by the Google Project Zero report that disclosed and explained the vulnerability, as well as the Spectre paper.

ALUMNI FEATURE

George Montañez

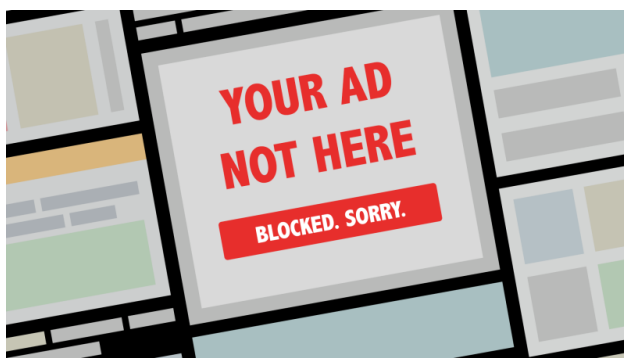
Dr. George Montañez is a machine learning researcher and data scientist with Microsoft AI+Research, working on automated machine learning (AutoML) systems. He was recently awarded a PhD from Carnegie Mellon University in machine learning under Dr. Cosma Shalizi, focusing on understanding why machine learning works from an abstract and unified search perspective. Dr. Montañez received his MS degree in computer science from Baylor University, and a BS degree from UC Riverside in computer science.

His research has been recognized with several awards, namely, the IEEE SMC 2017 Best Student Paper award, the IJCNN 2017 INNS/Intel Best Student Paper award, the IJCNN 2017 Best Poster award, and the CIKM 2014 Best Paper award. He is a former NSF GRFP fellow and Ford Foundation Predoctoral fellow, and previous intern at Yahoo! Labs and Microsoft Research.

Beginning in Fall of 2018 Dr. Montañez will be joining the computer science faculty at Harvey Mudd College in Claremont, CA as an assistant professor. His academic website is whymachinelearningworks.com and his LinkedIn profile is <https://www.linkedin.com/in/georgemontanez/>. He is a happy father of two children, ages 6 and 4, and looks forward to his return to the Inland Empire this fall.



CSE Research on Blocked Ads



A new research paper, “Measuring and Disrupting Anti-Adblockers Using Differential Execution Analysis,” written by UCR professors Zhiyun Qian and Heng Yin; UCR graduate student Shitong Zhu; Xunchao Hu of

Syracuse University, and Zubair Shafiq of the University of Iowa, takes an in-depth scholarly look at the anti-ad blocking landscape and what can be done.

The authors will be presenting their work at the Network and Distributed Systems Security Symposium in San Diego from Feb. 18-21.

“The ad industry lacks self-regulation and all sorts of issues exist such as malware delivered through ads, universal tracking, annoying ads and so on,” said Qian, an assistant professor in the computer science and engineering department, who previously worked for Microsoft and Cisco. “Our research paper came out of work which was initially funded by the Data Transparency Lab, and now by the National Science Foundation, and its initial goal was simple: to learn more about the escalating arms race between ad blocker and anti-ad blockers.”

The authors ran multiple concurrent experiments, including a differential execution analysis to automatically detect and analyze anti-ad blockers, collecting execution traces by visiting a website with, and then without, ad blockers to measure the different in-browser experiences. Their system detected anti-ad blockers on an astonishing 30 percent of the Alexa top 10K websites.

“This is up to 52 times more than reported in prior literature,” said Quin, a 2017 NSF CAREER award recipient. “We know that earlier research was limited to detecting visible reactions, such as warning messages and pop-ups, by anti-ad blockers. But our system can discover attempts to detect ad blockers even when there is no visible reaction, which happens in over 90 percent of cases.” [READ MORE](#)

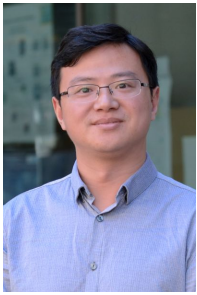
NEW BCOE DEAN: DR. CHRISTOPHER S. LYNCH

Dr. Christopher S. Lynch is the next dean of the Marlan and Rosemary Bourns College of Engineering. Dr. Lynch is professor and chair of Mechanical and Aerospace Engineering at UCLA who studies ferroelectric materials including experimental characterization of constitutive behavior under multiaxial loading. He has held a variety of leadership roles over more than a decade on the Westwood campus.



Professor Lynch brings a vision for the future of BCOE that is well aligned with UCR’s priorities of research excellence, student success, and diversity and inclusion. Dr. Lynch will begin his appointment on September 1, 2018 and you can read more about him [here](#).

CSE RESEARCH TO HELP PROTECT MILITARY SOFTWARE FROM HACKERS



Outdated military software and hardware is vulnerable to attack. Associate Professor Heng Yin is trying to solve this problem by securing decades-old legacy systems that are still instrumental. Yin was awarded a \$4.68 million grant from the U.S. Office of Naval Research to pursue such research over a five-year term. Chengyu Song, an assistant professor of computer science and engineering at UCR, is a co-principal investigator on the grant.

“The programs are not maintained anymore, but they still need to use them,” said Yin of the programs run by the Navy and other government agencies. “The binary code may have lots of vulnerabilities.”

Yin and his team of researchers at UCR will be studying how to “harden” the code to prevent vulnerabilities from being exploited by hackers. This can involve removing some functions from legacy software that are not used, but could be exploited by attackers.

Legacy software isn’t only used in government, Yin said, noting that everyday civilian life is riddled with old code, such as on civilian aircraft.

“If the attacker finds a way to exploit the system, that will be a disaster,” Yin said of the potential for a flight to be hacked.

Yin will not actually gain access to Department of Defense systems, however. Those are highly classified and require top-level security clearance. Yin will use other readily available software programs on the market, such as Adobe Reader and Microsoft Office, to develop the prototype and method for securing similar legacy systems used in government.

Adobe Reader is considered a binary program, which resembles the old code, according to Yin. For example, the research will entail how to remove certain features from Adobe Reader, such as disabling JavaScript handling.

“Almost all malicious PDFs rely on JavaScript to exploit Adobe Reader,” Yin said. “The goal is really to push the boundaries for binary analysis,” Yin added. “This is the biggest challenge for us – to really push our analysis capability much further than the current status.” <https://ucrtoday.ucr.edu/50923>

UCR CRESP



The UCR Center for Research and Education in Cyber Security and Privacy (CRESP),

which includes CSE faculty, will organize its first workshop on Friday, April 27, 2018 from 8:00am to 5:00pm.

CRESP will seek to be a premier center for cybersecurity, designing novel approaches to building secure systems and enabling them to detect and tolerate attacks. They will also aim to prepare talented engineers and researchers with the technical and problem solving skills in this area of national need.

Their mission will be to secure everything. They will work on building systems that are secure by design, and that resist and tolerate attacks. As computing is becoming pervasive, it is essential to build future devices with security and privacy as a first class design consideration.

For more information about CRESP, [click here](#).

For more information and to register this event, please [click here](#).

STAY CONNECTED

Department of Computer Science and Engineering
351 Winston Chung Hall
Riverside, CA 92521
Tel: (951) 827-5639

Alumni Connect

The CSE department wants to know what is happening in your professional life. Send us a message and tell us about your accomplishments!
gradconnect@cs.ucr.edu



Donate

CSE INAUGURAL SYMPOSIUM

The UCR Computer Science Department is running its inaugural symposium on computer science. This is an interdisciplinary symposium that includes a range of topics, not limited to: traditional computer science, applied computer science, big data, computer/electrical engineering. This is a great opportunity to showcase new, but not complete work and receive feedback from peers. Any discipline or alumni is allowed to submit abstracts. For more information, please visit: css.cs.ucr.edu