

CONNECTIONS

LATEST NEWS AND UPDATES FROM
SEMICONDUCTOR RESEARCH CORPORATION

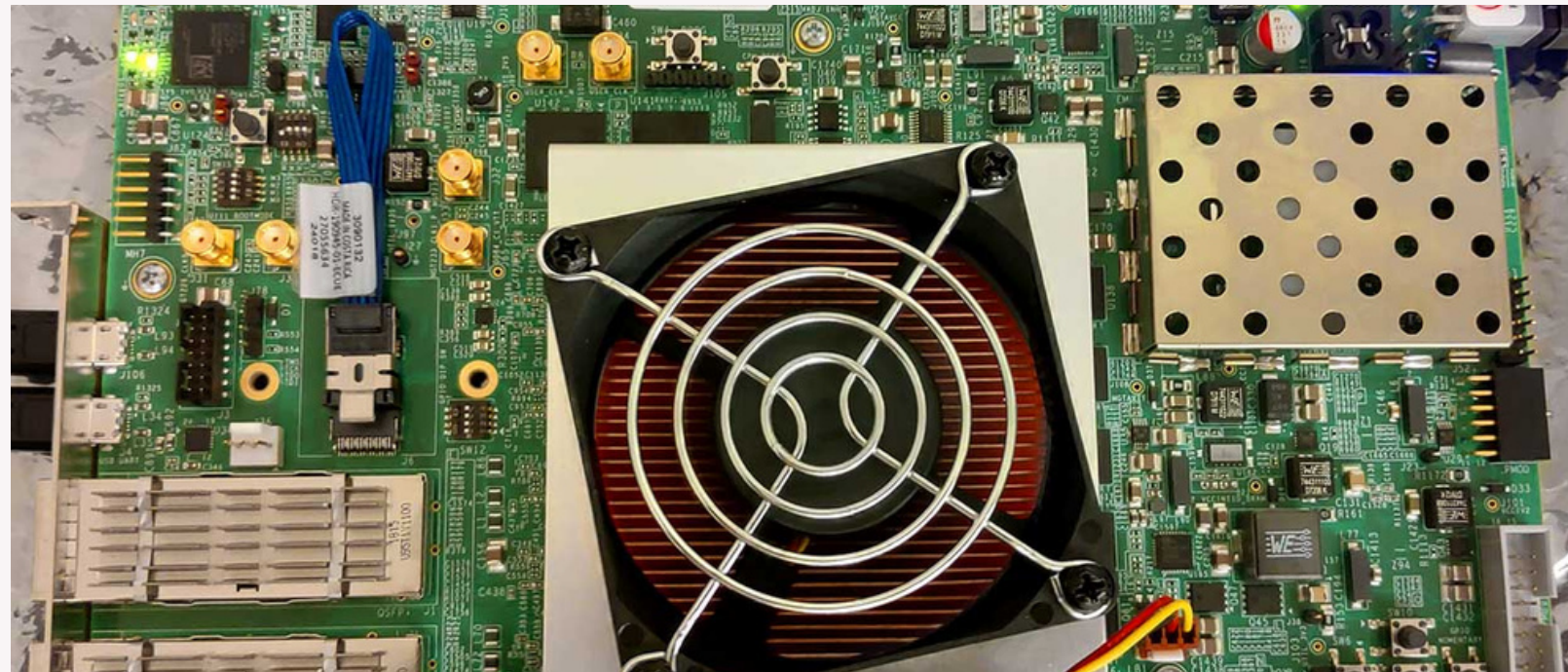


Photo: University of Michigan

Turning a CPU Into a Rubik's Cube to Defeat DARPA Hackers

In late 2017, ideas seeded within SRC's [CFAR Center](#), led by the University of Michigan, resulted in a [DARPA SSITH award](#) for "project Morpheus." More recently, a Morpheus Secure RISC-V CPU entered a DARPA Red-Teaming challenge where 500+ cybersecurity researchers tried to hack into a medical database running on the processor for three months. The Morpheus team saw zero penetrations! Learn more in this [IEEE Spectrum interview](#), where Prof. Todd Austin explains how his team's processor defeated every attack in the DARPA hardware hacking challenge. Learn more about Agita Labs, [here](#).

READ ON FOR MORE
NEWS AND UPDATES!

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P-bits—a JUMP, STARnet, nCORE Success Story

Funding from JUMP, STARnet, and nCORE provided critical early support at Purdue University for Kerem Camsari. Now an Asst. Professor at UC Santa Barbara, Camsari's research in probabilistic computing—"P-bits"—could have wide applications for solving optimization problems across industries. Learn more about P-bits in [*IEEE Spectrum*](#).



Sustainable approach to compute infrastructure at MIT is VeGen

Researchers from MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) came up with a [new tool for navigating complex computer instructions](#). Their tool "VeGen" (pronounced "vegan") automatically generates compiler plugins to effectively use more complicated instructions.



Will Hughes, John Kelly photo

"Data is in our DNA"—Researchers advance DNA as a memory material

At Boise State University, Micron School of Materials Science and Engineering professor Will Hughes and research scientist George Dickinson believe the future of digital memory storage may be found in utilizing the programmable qualities of chemically synthesized DNA. Read more about the research in the [*Boise State News*](#).



Using Blockchain to Detect Deepfakes

A team of undergraduate researchers from University of Virginia, including URI student [Zachary Yahn](#), used [blockchain technology to prevent and uncover deepfake images and videos online](#). The team earned the top prize in the IDISPLA University Adversarial Artificial Intelligence/ Machine Learning Challenge organized by the Greer Institute for Leadership and Innovation.



Texas A&M Team Wins ISPD 2021 Contest

Congratulations to SRC researcher [Rongjian Liang](#), part of a team from Texas A&M that was awarded first place in the 2021 ACM International Symposium on Physical Design Wafer-Scale Physics Modeling Contest. Team members included Yishuang, Lin, Hailang Hu, Yaguang Li, and Prof. Jiang Hu. The contest objective was to map a 3D finite element model onto a 2D grid of processing elements while maximizing performance and accuracy, and minimizing interconnect length.

Chelsea Davis Recognized for Faculty Excellence

At Purdue, Dr. Chelsea Davis received the Outstanding Faculty Mentor Award from the Engineering Graduate Education Program in recognition of her efforts to develop students into skilled researchers who can reach their full potential. Congratulations, Chelsea!



Chakrabarty Receives IEEE Award

Congratulations to Dr. Krishnendu Chakrabarty of Duke University. "[Hardware Trojan Detection Using Change-point-Based Anomaly Detection Techniques](#)" received the 2021 IEEE Transactions on Very Large Scale Integration Systems Prize Paper Award. His outstanding work has continued in the new HWS research project: [Securing 2.5D/3D ICs Against IP Theft](#).

Tehranipoor is Teacher/Scholar of Year

Dr. Mark Tehranipoor, longtime Hardware Security researcher and a renowned expert in the field, is being honored as Teacher/Scholar of Year at University of Florida. The 2021 Herbert Wertheim College of Engineering Awards Recognition Ceremony takes place on April 23.





Blanton receives Keithley Professorship at CMU

Congratulations to Dr. Shawn Blanton on receiving the Joseph F. and Nancy Keithley Professorship in Electrical and Computer Engineering at Carnegie Mellon University. Dr. Blanton is a longstanding member of the SRC research community and also serves as Interim Vice Provost for Diversity, Equity, and Inclusion at CMU. He's participated in nearly 20 SRC research tasks since 1995, recently investigating the design, test, and diagnosis of logic characterization vehicles.

In the Media



Ted Talk to Watch

University of Florida's Farimah Farahmand gave an eye-opening talk at TEDxYouth@PHUHS. "[The Risk of Too Many Smart Devices](#)" illuminates the risks and dangers of the smart connected networks that many of us have today. A principal investigator in the Hardware Security research program, Farahmand's research focuses on [Analyzing and Mitigating Security Vulnerabilities in High-Level Synthesis Flow](#).

Top 5 SRC Publications Viewed Across All Programs

Be sure to take a look at the papers that received the most views on the SRC website over the last six weeks. Members of the associated programs have early access to the pre-publications.

- The Evolution of NS SAR: A 100MHz-BW 68dB-SNDR Tuning-Free Hybrid-Loop DSM with an Interleaved Bandpass Noise-Shaping SAR Quantizer—SRC Pub ID [P103375](#)
- Methodology and Abstraction for System-Level HW/SW Co-Verification—SRC Pub ID [P103246](#)
- Interfacial Phase Change Memory (IPCM): Scaling, Performance Optimization and Understanding the Physics of Switching—Pub ID [P103192](#)
- Report on (a) Modeling of Zirconium(Zr)-dependent Behavior of HZO, Including Experimental Calibration (b) Phase-field Modeling of HZO-FETs Showing how the Non-uniform Channel Potential Couples with Multidomain Formation in FE/AFE—SRC Pub ID [P103173](#)
- Report on the Strain Energy Density Criterion as a Delamination Initiation Indicator—SRC Pub ID [P103139](#)