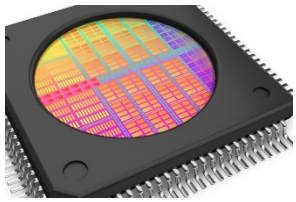
Semiconductor Research Corporation

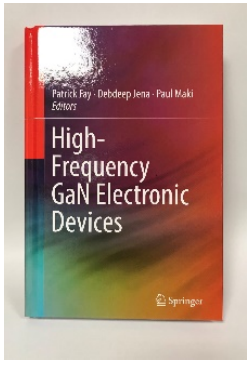
NEWSLETTER
AUGUST-SEPTEMBER 2019

TECHCON 2019 - Excellence recognized within the SRC community for research, teaching, mentoring, and innovation Read more ».



New ITIF Report underscores need to increase semiconductor-related federal R&D investments.

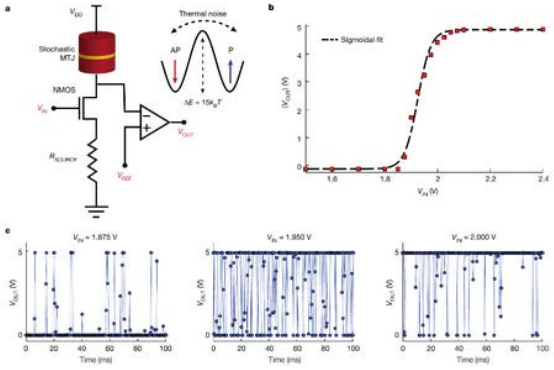
A newly released Information Technology and Innovation Foundation (ITIF) report argues federal R&D investment in areas related to semiconductor technology to boost productivity, drive economic growth, and reduce the debt-to-GDP ratio. The SIA has more details on that report and their Blueprint on how to win the future. »



JUMP faculty lead new publication on High-Frequency GaN Electronic Devices.

Notre Dame Prof. Patrick Fay and Cornell Prof. Debdeep Jena worked with Paul Maki of ONR to bring together recent research by scientists and device engineers working on both aggressively-scaled conventional transistors as well as unconventional high-frequency device concepts in the III-N material system. Device concepts for mm-wave to THz operation based on deeply-scaled HEMTs and distributed device designs based on plasma-wave propagation in polarization-induced 2DEG channels, tunneling, and hot-carrier injection are discussed in detail in the new text. »

Purdue's "P-bits" shown to rival quantum computing.



JUMP ASCENT Center researchers, K. Camsari *et al.*, demonstrated an 8 "p-bit" computer in an excellent Nature article. Circuits based on these stochastic nanoscale magnets were used to split a large number into prime-number factors, a problem that only quantum computers were previously expected to solve efficiently. The paper was accompanied by a Nature Editorial and commentary from Intel's Dimitri Nikonov. Ars Technica also provided a nice perspective. The understanding of P-bits has been rapidly advancing since their initial disclosure in 2017 by Prof. Supryio Datta's team in the STARnet C-SPIN Center. Learn more about P-bits in SRC tasks 2776.019 and 2776.066 and in the nCORE CAPSL Center. »

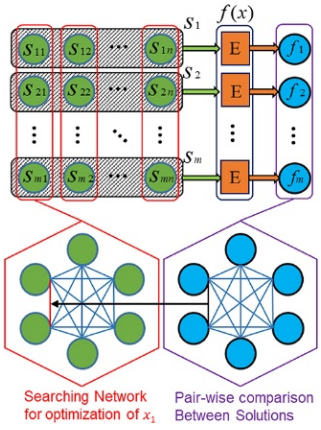
CRA-WP Grad Cohorts – Apply Now.

CRA-WP
Computing Research Association
Widening Participation

SRC and JUMP are proud sponsors of both the 2020 CRA Grad Cohort for URMD and the 2020 CRA Grad Cohort for Women. These amazing workshops provide a two-day immersive experience for graduate students in computing-related studies that are underrepresented minorities, persons with disabilities, or women. Interested students should apply between 10/1/19 and 11/15/19 here. »

SRC Aristotle Award winner Margaret Martonosi to head NSF CISE Directorate.

The National Science Foundation (NSF) has selected Dr. Margaret Martonosi to serve as head of the Directorate for Computer and Information Science and Engineering (CISE). CISE supports research in all areas of computer and information science and engineering, as well as advanced research cyberinfrastructure necessary for discovery in all science and engineering fields. Read more »



A Swarm Optimization Solver based on ferroelectric spiking neural networks.

Swarm Intelligence (SI) is a type of bio-inspired model that mimics the collective intelligence of biological swarms such as bird flocks, schools of fish, and ant colonies. In this collaborative research out of the ASCENT and C-BRIC Centers, the authors explore the feasibility of connecting a generalized SI model to a spiking neural network (SNN). They have demonstrated that the SI-SNN model is capable of efficiently solving optimization problems, such as the traveling salesman problem, with near-optimal solutions. Furthermore, they've demonstrated an efficient implementation of the neural dynamics on an emerging hardware platform, a compact 1T-1FeFET based neuron. Read more here. »

JUMP student wins 2019 IEEE Electron Devices Society (EDS) PhD Student Fellowship award.

Haitong Li, advised by Prof. Eric Pop, won the prestigious IEEE EDS PhD Student Fellowship. The fellowship promotes, recognizes, and supports PhD level study and research within the Electron Devices Society's field of interest. His research centers around energy-efficient machine learning systems enabled by emerging nanotechnologies such as 3D resistive memories. See his student profile here. His work and related efforts can be found in SRC task #2776.040.

TECHCON 2019 Top 10 Student Presenters and JUMP URI Best Poster awards.

TECHCON 2019 is in the books! At this year's SRC premier student event there were 160 research presentations, papers and posters from GRC, JUMP and nCORE, from which 10 Student Presentation Award Winners were announced. This year's event also included poster presentations from 25 students participating in the SRC's JUMP URI undergraduate program, with awards given to the top 3 posters. Read more »

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