UC SANTA BARBARA
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‘High Honors’

Three UC Santa Barbara engineering faculty members have been named fellows of the Institute of Electrical and Electronics Engineers (IEEE) for 2018. Professors Li-C. Wang, Clint Schow and Giovanni Vigna have been selected for their extraordinary accomplishments in their respective fields.

“Ensuring the integrity of computer chips and circuits, using opto-electronic technology to move more data faster and with greater efficiency, and securing computer systems against cybercrime are critical pursuits in the digital age — professors Wang, Schow and Vigna are playing key roles in these important areas,” said Rod Alferness, dean of the UCSB College of Engineering. “We offer congratulations to each of them for receiving this high honor.”

Li-C. Wang

A professor of electrical and computer engineering, Wang is an expert in computer engineering as well as electronic design automation and test, in which intelligent software tools are used to automate the processes of hardware design and verification. Modern hardware design can comprise billions of devices and integrate heterogeneous components that perform a variety of functions, involving complex algorithms and architectures in which their performance and properties must be thoroughly verified and tested to ensure product quality, reliability and safety.

Wang is a recipient of numerous honors and awards, including seven best paper awards presented at leading international conferences, and the Technical Excellence

Award for his research contributions to member companies of Semiconductor Research Corporation. He was cited by IEEE for “contributions to statistical timing analysis for integrated circuits,” where his research pioneers the use of statistical data analytics to verify design timing assumptions with silicon measurement data.

This innovative methodology, also called design-silicon timing correlation, later became the foundation for developing other data mining-based methodologies in a variety of design automation and test applications such as functional verification, yield improvement and quality assurance.

Clint Schow

For rapid movement of ever-increasing amounts of data, engineers have turned to photonics, which uses light to transmit information at, well, the speed of light. Light is ideal for efficiently transmitting large amounts of information over long distances (think: fiberoptic cables), but within the confines of computers and other data devices, light becomes a challenge to manipulate.

Schow, also a professor of electrical and computer engineering, focuses his research on integrating photonics and electronics, developing hardware that can translate the information between photon and electron, between optical fiber and wire. He was cited by IEEE for “contributions to high-bandwidth optical interconnects,” which will accelerate the development of higher-performance computers and data centers that can accommodate the growing flood of data. Schow also is a fellow of the Optical Society of America.

Giovanni Vigna

Computer science professor Vigna has the job of trying to stay one step ahead of hackers and other cybercriminals in a world where our lives and interactions are increasingly online. Recognized by IEEE for “contributions to internet security and cybercrime prevention,” he focuses his research on malware analysis, web security, vulnerability analysis and intrusion detection — via platforms including web-based applications, smartphone programs and digital voting systems.

Vigna, a senior member of the Association for Computing Machinery, is also known for the international Capture the Flag hacking contest, in which students from various institutions participate in a daylong competition that provides insight on potential network weaknesses and security measures. He also leads the Shellphish

hacking group, which has participated in more DefCon Capture the Flag competitions than any other group in history.

IEEE is the world’s largest technical professional organization dedicated to advancing technology for the benefit of humanity through its more than 423,000 members in over 160 countries, and its highly cited publications, conferences, technology standards and professional and educational activities.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.