



Making Smart Cards “Smarter”: Increasing Security for e-Commerce Applications

A University of Toronto graduate student is using the National Microelectronics and Photonics Testing Collaboratory managed by CMC Microsystems to evaluate a new technology that offers more memory and greater security for e-commerce applications

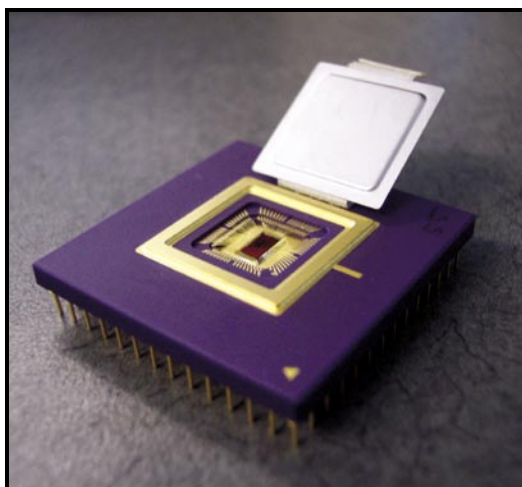
“Previous students often describe how they invested more time trying to figure out how to manage the limitations of 20-year-old test equipment, than actually testing their concepts. With the Collaboratory, researchers across the country have immediate access to the same state-of-the-art test available in industry. This significantly increases our productivity.”

Pradip Thachile
Master’s student
Electrical and Computer Engineering
University of Toronto



Pradip Thachile, graduate student, Electrical and Computer Engineering (left) conducts a demonstration at the official opening of the Advanced Digital Systems Lab at the University of Toronto. It is one of four specialized labs that comprise the National Microelectronics and Photonics Testing Collaboratory.

Pradip Thachile, Master’s student at the University of Toronto, is testing a new generation of silicon chips that could increase the capability of smart cards and ultimately replace conventional computer memory. Working together with Fujitsu Corporation as an industrial sponsor, Mr. Thachile helped to design the innovative chip using tools and technologies provided by CMC Microsystems. He is now testing the device – a critical step in the research process that would have been far more difficult to perform just a few months ago.



This silicon chip, designed using tools provided by CMC, is being tested at the Advanced Digital Systems Lab at the University of Toronto.

Today, researchers from across Canada have access to the Advanced Digital Systems Lab at the University of Toronto, one of four specialized laboratories that comprise the National Microelectronics and Photonics Testing Collaboratory. Led by CMC, the “virtual laboratory”, valued at CDN \$23 million, facilitates both onsite and Internet-based access to industry-grade test equipment for the test and verification of system-on-chip technology, mixed signal systems, RF components and photonic systems.

Mr. Thachile is one of the first researchers to access the digital test capability offered through the state-of-the art facility in Toronto. By combining cryptography and a new type of memory, his second-generation chip offers increased protection of the financial information, medical history or other personal data that are increasingly stored on smart cards.

“The chip uses ferroelectric memory, which has many applications for low-power, mobile systems,” explains Mr. Thachile. “Ferroelectric memory is non-volatile. Even if you remove the power source, the data remain in the card. The cryptography ensures that data stored on the smart card are not accessible to an unauthorized user.”

Dr. Yadollah Eslami Amirabadi designed the original chip during his PhD research at the University of Toronto, under the supervision of Professors Glenn Gulak and Ali Sheikholeslami. cmc