Illinois-Intel partnership leads to prototype for debugging innovations

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In a major collaboration, researchers from the University of Illinois at Urbana-Champaign and Intel will unveil a new process for parallel programming systems at the International Symposium on Computer Architecture (ISCA) held in Tel Aviv, Israel, June 23-27. This process, called QuickRec, allows steps in a process to be retraced to learn where something went wrong. It is a prototype for a multicore Intel architecture record and replay system for multithreaded programs.

An early and continual problem with computer software has been the intrusion of bugs into programs. Many of these occur accidentally or without any human input into the program—they are simply anomalies that get into programs and wreak havoc.

Other bugs are not so innocently introduced. They are the result of malicious intrusions into a software system to disrupt the flow of information and the completion of assigned tasks. Researchers and industry have long been interested in new, innovative ways to help combat these accidental bugs and these malicious intrusions into software. QuickRec is that innovative process.

Computer science professor Josep Torrelas, one of the Illinois researchers on the QuickRec project, said, "As you are running your program, when you detect a bug, you can use this to go back and trace the bug—how it came in. If you see a security intrusion, you go back and see how it arose. It allows you to go back and see exactly how it got there."

QuickRec could point toward the next level of innovation in performance monitoring and debugging support for processors. Yet, a key element of QuikRec is that it will not adversely impact processing speed.

"It would just be a device you install to monitor the machine," said Torrelas. "It doesn't slow it down."

More information: i2pc.cs.illinois.edu/

Provided by University of Illinois at Urbana-Champaign