Researcher Urges Radical Computer Redesign

Written by Marco Attard
 03 February 2011

Professor Uzi Vishkin, from the University of Maryland Institute for Advanced Computer Studies, says the industry needs a radical basic computer architecture redesign (an architecture in use for over 50 years).

Current computer architecture comes from mathematician John von Neuman in the 1940's, which Vishkin describes as "serial computing"-- where "any single instruction available for execution in a serial program executes immediately."

However this limited concept is no longer relevant, thanks to the advent of multicore processors and ever-increasing memory sizes. Instead Vishkin proposes massively parallel architectures executing indefinite amounts of instructions at any given time.

Such an approach obviously requires radical hardware design changes involving high bandwidth, low-latency networks between processors and memory--with a single processor core controlling all other cores.

Viskin calls his architecture abstraction approach ICE (Immediate Concurrent Execution) and holds 6 patents on the technology. His research team has prototype hardware running the ICE architecture.

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