2013-2014 CS Seminar Series

Title: Reconfigurable computing, its evolution and current challenges

Speaker: Walid Najjar (UC Riverside)

Date: Friday OCtober 4th, 2013 at 11 am

Location: DBH 6011

Abstract: Reconfigurable computing is not a new idea. In fact, the basic ideas behind reconfigurable computing date back to the very early computers. The very first "modern" reconfigurable computing system was developed 25 years ago: the DEC PRL Pamette. Two factors have contributed to the rekindling of interest in this paradigm: the rapid growth in both size and speed of its underlying technology (FPGA devices) and the change in the challenging problems: processing big data at line speed. These challenging problems have spurred researchers to examine reconfigurable computing solutions to problems far beyond its initial niche of signal and image processing: bioinformatics, data mining, data analytics, data bases etc. Customized hardware multithreading is an architecture model, implemented on FPGAs, that supports large-scale parallelism by masking long memory latency; it is supported by the availability of hybrid architecture, seamlessly combining CPUs and FPGAs with large shared virtual memory (the Convey HC and MX series). As with any new paradigm, reconfigurable computing raises new challenges in architecture, compilers, languages and algorithms.

Speaker's bio: Walid A. Najjar is a Professor in the Department of Computer Science and Engineering at the University of California Riverside. His areas of research include architectures and compilers for parallel and high-performance computing,  embedded systems, FPGA-based code acceleration and reconfigurable computing. NSF, DARPA and various industry sponsors have supported his research. Walid received a B.E. in Electrical Engineering from the American University of Beirut in 1979 and the M.S. and Ph.D. in Computer Engineering from the University of Southern California in 1985 and 1988 respectively. He was elected Fellow of the IEEE and the AAAS.

Host: Eli Bozorgzadeh, Associate Professor, Computer Science Department