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Present

Reconfigurable Computing & Real-Time Systems

Professor Neil Bergmann, University of Queensland

Thursday 25th August 2005

Refreshments at 5.30pm Talk at 6.15pm

Engineering House, 447 Upper Edward St, Brisbane

Free admission

Real-time control systems are a major focus for the widespread application of so-called ubiquitous computing technology – i.e. where computers are deployed throughout electronic systems of every type. Examples include MP3 players, IP telephony, car engine control systems, car “X-by-wire” safety systems, and aircraft flight control systems.

In some systems, for example engine control systems, failure to meet real-time deadlines leads to a drop in performance and is inconvenient. In other systems, such as future “drive-by-wire” steering and braking automotive systems, failure to meet deadlines can be catastrophic.

Reconfigurable hardware uses FPGAs (Field Programmable Gate Arrays) to implement algorithms in programmable hardware as well as programmable software. We believe that the use of programmable hardware enables us to build systems which can more reliably implement real-time control algorithms, and may even be a major enabling technology for the widespread deployment of safety critical, programmable control systems. The talk describes our work to date, giving examples of possible applications in areas such as automotive control, spacecraft control systems, real-time multimedia processing and railway signal interlocking.

The Speaker:

Professor Neil Bergmann is Professor of Embedded Systems in the School of Information Technology and Electrical Engineering at The University of Queensland, St Lucia. His interests are in VLSI circuits and systems, especially reconfigurable System-on-Chip technology. This work is supported by the Federal government’s International Science Linkages project, which funds UQ’s participation in the European Union Framework 6 project entitled “4S: Smart ChipS for Smart Surroundings”. This project looks at new IC technologies for multimedia applications. Other participants include Harmon Becker (Germany) , Twente University & WMC (Netherlands) , University of Karlsruhe (Germany), Atmel (Germany), Thales (France), ASI-Centrum (Czech Republic), PACT (Germany), Dicas (Austria), and IMEC (Belgium).

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