DISTINGUISHED LECTURE SERIES 2007/08

Scheduling Real-time Systems

By

Professor Alan Burns
University of York

Thursday, 22nd November 2007

2nd Year Laboratory, Jack Cole Building
North Haugh, St Andrews – morning lectures

Maths Lecture Theatre C, Mathematical Institute, North
Haugh, St Andrews – afternoon lecture

Biography

Professor Alan Burns has worked for a many years on a number of different aspects of real-time systems engineering. He joined the University of York in January 1990 and was subsequently promoted to a Personal Chair in 1994.

His research activities have covered a number of aspects of real-time and safety critical systems including: requirements for such systems, the specification of safety and timings needs, systems architectures appropriate for the design process, the assessment of languages for use in the real-time safety critical domain, distributed operating systems, the formal specification of scheduling algorithms and implementation strategies, and the design of dependable user interfaces to safety critical applications.

He has authored/co-authored over 350 papers/reports and 8 books. His teaching activities include courses in Operating Systems, Scheduling and Real-time Systems.

Programme

Scheduling Real-Time Systems

Real-time systems are required to satisfy constraints over when computation takes place. For example, control loops must meet stringent periodicity and jitter requirements, and signal processing procedures must complete by defined deadlines. The main obstacle to meeting these requirements is the limited resources on which real-time systems are usually implemented. Scheduling theory is concerned with the design, implementation and evaluation of resource management algorithms.

In these talks the general notion of processor scheduling will be described with details been given of the commonly used fixed priority scheduling approach. Results from this approach will be outlined as will the current topics being addressed by the real-time scheduling research community. These topics include probabilistic approaches to execution time analysis, and the challenges presented by multi-core platforms.

10.00 – 11.00	**Lecture 1: Introduction to scheduling real-time systems** 2nd Year Laboratory Jack Cole Building
11.00 – 11.30	*Coffee* Coffee area Jack Cole Building
11.30 – 12.30	**Lecture 2: Current work** 2nd Year Laboratory Jack Cole Building
14.00 – 15.30	**Lecture 3: Research issues and new developments** Maths Lecture Theatre C Mathematical Institute