



The Knowledge Network

Beds & Herts Network Jan 2008 Newsletter

The meetings described below take us into the new year, when everyone, including non-members, are most welcome. Except where stated, the events below require neither registration nor make a charge to attend. Meetings begin at 7.00pm, with refreshments available from 6.30pm.

Wed 13th Feb 2008

Medical Imaging - Seeing Inside the Human Body

by Teresa Robinson CSci, MIPEM, MIEE

Understanding how the human body is built, how it functions and how it goes wrong has been greatly assisted by the imaging technology to see beneath the skin without the need to cut it open. Medical imaging relies not only on the physics of the interaction between energy and matter but also on the technology to acquire, process and display this huge quantity of biological data. Not many years ago, medical imaging mainly referred to X-rays transmitted through the body and processed on film. In the last three decades however, imaging technology has grown rapidly, primarily as a result of the huge advances in digital computer technology, which continues to become less expensive, more compact and computationally faster. Now, we can generate medical images of the human body in many different and more sophisticated ways, including the creation of moving 3D images. The intention of this presentation is to delve into the most common medical imaging techniques and explore how they are used to see inside the human body.

Venue: **Mitchell Hall, Cranfield University**

PTO

For further details of IET Beds and Herts Events please visit:

www.theiet.org/bedsherts

or contact Malcolm Skeels Email: malcolm@mskeels.freemove.co.uk Tel: 07906 - 620203

Wed 20th Feb 2008

Massively Parallel Architectures

Speakers: Dr. Colin Egan & Jason McGuiness

The 'memory wall' problem is a major contributing factor to limiting processor performance which is a result of memory access times not matching the dramatic increases in processor speeds. Traditionally the memory wall problem has been overcome by introducing extra levels in the memory hierarchy. Unfortunately, such an approach also increases the design complexity and power consumption of the overall computer system. Furthermore, there is an increase in the penalty associated with a miss in the memory-subsystem resulting in a limitation of the exploitation of Instruction Level Parallelism (ILP).

Integrating the processing logic and memory simplifies the system design complexity, can reduce power cost and certainly reduces memory subsystem access times. This technique is termed Processing In Memory (PIM). PIM architectures may improve data-processing and data-access times, but the processor speed and the quantity of fast memory available are reduced. However, many PIM cells can be connected together to form massively parallel architectures which are called Cellular Architectures.

A major difficulty has been that too few important application programs have been successfully written to fully utilize the available parallelism that can be achieved by PIM cells. Writing code is (and will remain) a major challenge to multiprocessor/PIM application programmers, as they must be able to write programs that can be readily parallelized to maximize the usage of the underlying architecture.

Work at the University of Hertfordshire has been investigating compilation/code generation for such massively parallel architectures. This work has been carried out using the Delaware Interactive Multiprocessor Emulator System (DIMES), which is the first hardware implementation of a Cellular Architecture.

Venue: **Ramada International Hotel (formerly Comet Hotel), Hatfield**

Wed 12th March 2008

Outside Broadcast Vehicles

Ian Davis - Project Leader Sony BPE

Ian has designed outside broadcast units for organisations around the world. His talk will give an insight to what technologies and equipment are currently used to bring pictures and events into our homes. With the advent of Hi-def TV, the complexity and technical requirements places outside broadcast vehicles at the cutting edge of technology.

Venue: **Ramada International Hotel (formerly Comet Hotel), Hatfield**

Tue 18th March 2008

Technical visit to the Training Centre for London Underground drivers, Neasden, North West London.

Visitors will see at first hand the training schedule undertaken by drivers being employed on one of the busiest suburban railway systems in the world.

Please note that attendee numbers will be limited and registration is required with Malcolm Skeels.

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