The Universities of York and Leeds present the

Eleventh Knowledge Representation and Reasoning Distinguished Lecturer

Alan Bundy

Professor Bundy will deliver two talks, both aimed at a general audience of computer scientists. The public is invited to attend these talks and the receptions afterwards.

Cooperating Reasoning Processes:
More Than Just the Sum of their Parts

16:15, Tuesday, 6 March 2007

Informatics Conference Room, 6.08 EC Stoner Building
School of Computing, University of Leeds

and broadcast to Haycock Lecture Theatre
Department of Computer Science, University of York

Using the achievements of my research group over the last 30+ years, I provide evidence to support the hypothesis that by complementing each other, cooperating reasoning process can achieve much more than they could if they only acted individually.

Most of the work of my group has been on processes for mathematical reasoning and its applications. We have studied how these processes can complement each other, and cooperate to achieve complex goals.

We have applied this work to the following areas: proof by mathematical induction and co-induction; analysis; equation solving, mechanics problems; the building of ecological models; the synthesis, verification, transformation and editing of both hardware and software, including logic, functional and imperative programs, security protocols and process algebras; the configuration of hardware; game playing and cognitive modelling.

A Crisis in Mathematics?

14:00, Wednesday, 7 March 2007

Haycock Lecture Theatre
Department of Computer Science, University of York

and broadcast to
Informatics Conference Room, 6.08 EC Stoner Building
School of Computing, University of Leeds

Mathematics is facing a crisis which strikes at its foundation: the nature of mathematical proof. We have known since Turing showed that much of mathematics was undecidable, that there are theorems with short statements, but whose simplest proof is too huge for a human mathematician to grasp in its entirety. Within the last half century we have discovered practical examples of such theorems: the classification of all finite simple groups, the four colour theorem and Kepler's conjecture. These theorems were proved only with the aid of a computer. But computer proof is very controversial, with many mathematicians refusing to accept a proof that has not been thoroughly checked and understood by a human. The choice seems to be between abandoning the investigation of theorems with only huge proofs, or changing traditional mathematical practice to include computer-aided proofs. Or, is there a way to make large computer proofs more accessible to human mathematicians?

About the Speaker: Alan Bundy is a professor in the School of Informatics at the Univ. of Edinburgh, where he heads the Mathematical Reasoning Group, a leading group working on automated mathematical reasoning.

He is the recipient of many honours: a founding fellow of ECCAI, AISB and AAAI, a fellow of the Royal Society of Edinburgh, the BCS and the IEE. This year he became the 11th winner of the IJCAI Award for Research Excellence for his seminal work in automated reasoning and his wider contributions to AI. He is unique in having won both IJCAI's Research Excellence Award and their Distinguished Service Award. He was a founder and convener of the UKCRC and has served on two RAE panels.

For four decades Alan Bundy has pursued the research dream of getting computers to do mathematics. Along the way he has uncovered many gems and has inspired a generation of AI researchers, including his 44 PhD students and over 100 academic descendants.

About the Lecture Series: This lecture series is sponsored and organised by the Department of Computer Science at the University of York and the School of Computing at the University of Leeds. Its purpose is to promote the strong research interests that both departments have in knowledge representation and reasoning. Further information can be found at http://www.cs.york.ac.uk/aig/seminars/dist.html.

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