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Reserapport – AAIEP 1986

Karl-Erik Årzén

**Institutionen för Reglerteknik
Lunds Tekniska Högskola
May 1986**

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Title and subtitle Reserapport — AAIEP 1986			
Abstract <p>This report summarizes the experiences from a visit to the 1'st International Conference on Application of Artificial Intelligence in Engineering Practice, Southampton, UK, April 14 - 19, 1986. The conference programme is included.</p>			
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Reserapport - AAIEP 1986

Karl-Erik Årzén

Under tiden 14/4 - 19/4 1986 besökte jag Southampton, England för att medverka i 1st International Conference on Applications of Artificial Intelligence in Engineering Practice. Detta är en AI konferens mer inriktad på applikationer än på grundforskning, vilket verkade lovande eftersom "rena" AI konferenser har en tendens att bli alltför filosofiska. Konferensen riktade sig till hela "engineering" området och blev därför väldigt bred. Arrangörer av konferensen var The Computational Mechanics Institute, ett engelskt-amerikanskt affärsdrivande forskningsinstitut med starka kopplingar till University of Southampton. Detta institut försörjer sig på att sälja programvara för Boundary Element Analysis samt på att anordna konferenser och att ge ut tidskrifter. Konferensen sponsrades dessutom av US Army Research, Development And Standardisation Group, London, UK, GTE Laboratories Inc., MA USA, Schlumberger-Doll Research, Connecticut, USA och The Institute of Mechanical Engineers, London UK.

Själva konferensen varade fyra dagar, tisdag till fredag. Den var uppdelad på som mest tre parallella sessioner. Totalt innehöll konferensen 28 olika sessioner fördelade efter ämnesområde enligt följande.

Knowledge Representation	1 st.
Robotics	2 st.
Natural Language	2 st.
Probability	1 st.
Design Methodologies	2 st.
Constraints	1 st.
Mechanical Engineering	4 st.
Tools/Techniques	3 st.
Civil Engineering	5 st.
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Som framgår hade konferensen en viss slagsida åt maskinteknik och väg- och vattenteknik. Dessutom hölls tre stycken inbjudna föredrag av John Gero, R. Moore och R. Poppelstone samt två paneldiskussioner. Professor John Gero, arkitekt från Sydney, Australien, talade allmänt om Knowledge-based design systems. Dr. R. Moore från Lisp Machine Inc. pratade om PICON och Professor R. Poppelstone från University of Edinburgh pratade om Engineering Design Support Systems. Ämnen för paneldiskussionerna var Future of AI in engineering industry och Expert systems in network management. Deltagarantalet på konferensen var ca. 200, huvudsakligen från USA.

De föredrag som var av mera reglerteknisk natur var CODEX: A Coding Expert for Programmable Logic Controllers av Jozsef Vancza från Computer and Automation Institute, Hungarian Academy of Sciences. I detta arbete användes Prolog för automatisk generering av PLC program. Professor Paul Nolan från University College, Galway, Irland presenterade två artiklar. I An Intelligent Assistant for Control System Design användes ett OPS liknande expertsystem för blockdiagramförenkling och så småningom också för design av lead-lag nät. I artikeln AI Frame Based Simulation

in System Dynamics beskrevs hur man eventuellt kunde använda AI teknik för kombinerad diskret och kontinuerlig simulering. Professor Gilmer Blankenship från University of Maryland beskrev det arbete de har gjort tillsammans med INRIA i MACSYMA för olinjär filterdesign i artikeln An Expert System for Control and Signal Processing with Automatic Fortran Code Generation. Det arbete som hade mest gemensamt med det vi gör var det som presenterades av D.E. Reynolds från CCL i Cambridge, UK. I artikeln AI applied to Real Time Control: A Case Study användes AI teknik, speciellt plan scripts, för dynamisk positionering av fartyg. Slutligen bidrog jag själv med artikeln Expert Systems for Process Control där jag beskrev vårt Expertregleringsprojekt. Denna artikel finns också tillgänglig som internrapport från Institutionen för Reglerteknik, CODEN:LUTFD2/TFRT-7315.

Under konferensen hade jag bl.a. givande samtal med M. Katajamaki från Nokia i Finland om för och nackdelar med att använda Symbolics jämfört med Apollo för att köra Lisp. Jag knöt också kontakter med G. Blankenship, Univ. of Maryland, A. Sulem, INRIA och Roar Fjellheim, Computas Norge.

Som sammanfattning kan sägas att konferensen var mycket bred och med stor kvalitetsvariation. Min medverkan på konferensen möjliggjordes genom ett resestipendium från Bo Rydins Stiftelse, SCA och genom anslag från STU, kontrakt 85-3084. Konferensproceedings finns tillgängliga på Institutionen för Reglerteknik. De består av två bundna volymer på sammanlagt 1200 sidor utgivna av Springer-Verlag, ISBN 0-905451-47-3.

COMPUTATIONAL MECHANICS INSTITUTE

1st International Conference on
Applications of Artificial Intelligence to Engineering Problems
15-18 April 1986, Southampton University, UK

Sponsored by: US Army Research, Development and Standardisation Group, London, UK
GTE Laboratories Inc, Massachusetts, USA
Schlumberger-Doll Research, Connecticut, USA

Co-sponsored by: The Institute of Mechanical Engineers, London, UK

TUESDAY, 15 APRIL 1986		
Opening - Dr R A Adey Introduction - Dr D B Thomas, Alvey Directorate, UK Invited Lecture - Prof J Gero Developments in Expert Systems for Design Systems		
COFFEE BREAK		
Design Methodology I Dr M Morjaria Maths 5a	Probability Drs P Mullarkey & J M Lefevre Turner Sims Hall	Knowledge Representation Dr Y Kodratoff Maths 5b
LUNCH		
PANEL DISCUSSION - FUTURE OF AI IN ENGINEERING INDUSTRY Turner Sims Hall		
Design Methodology II Dr P Haren Maths 5a	Constraints Dr D Brown Turner Sims Hall	Natural Language I Dr J Granacki Maths 5b
TEA BREAK		
Robotics I Prof P Dasiewicz Maths 5a		Natural Language II Dr M Bidoit Maths 5b
WEDNESDAY, 16 APRIL 1986		
Civil Engineering I Dr J B Nielsen Turner Sims Hall	Robotics II Dr M Maher Maths 5a	Electrical Engineering I Dr M Dyer Maths 5b
COFFEE BREAK		
Civil Engineering II Prof J Connor Maths 5a	Ideas Drs J Wilson & W Rasdorf Turner Sims Hall	Electrical Engineering II Drs S Shapiro & J Bowen Maths 5b
LUNCH		
Invited Lecture - Dr R Moore Expert Systems in Process Control: Applications Experience		
Civil Engineering III Dr J Slater Maths 5a	Tools/Techniques I Dr S Mittal Turner Sims Hall	General Engineering I Dr P Y Gloess Maths 5b
TEA BREAK		
Civil Engineering IV Dr R Levitt Maths 5a		

9.00 Meet at Coach Pick-up Point for Coach to Meon Valley Country Park for Conference Banquet

COMPUTATIONAL MECHANICS INSTITUTE

1st International Conference on
 Applications of Artificial Intelligence to Engineering Problems
 15-18 April 1986, Southampton University, UK

THURSDAY, 17 APRIL 1986		
	Invited Lecture - Mr R Popplestone Engineering Design Support Systems	
	COFFEE BREAK	
Civil Engineering V Prof I Taig Maths 5a	Tools/Techniques II Dr R Allen Turner Sims Hall	
LUNCH		
	PANEL DISCUSSION - KBES IN NETWORK	MANAGEMENT
Mech Engineering I Dr E G Powell Maths 5a	Tools/Techniques III Dr S Srihari Turner Sims Hall	General Engineering III Drs R Milne & S Ohsuga Maths 5b
	TEA BREAK	
Mech Engineering II Dr S Kristiansen Maths 5a		
FRIDAY, 18 APRIL 1986		
Mech Engineering III Dr P Nolan Maths 5a		General Engineering V Squadron Leader T J Grant Maths 5b
	COFFEE BREAK	
Mech Engineering IV Dr E Mamdani Maths 5a	Invited Lecture Prof W L Whittaker Cognitive Robots for Unstructured Environment	General Engineering VI Dr T Lindem Maths 5b
LUNCH		

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Dr P Delfiner, Schlumberger Research, France
Dr K MacCallum, University of Strathclyde, UK
Dr D Sriram, Massachusetts Institute of Technology, USA
Dr S Addanki, IBM, USA

PANEL - KNOWLEDGE BASED EXPERT SYSTEMS IN NETWORK MANAGEMENT

PANEL MEMBERS - Dr Shri Goyal, GTE Laboratories, USA
Dr R B Walford, Advanced Technology
Mr R Meyer, Clarkson University, USA
Mr Simon Hayward, STC IDEC, UK
Mr S Brady, Hawthorn Research Laboratories, USA
Mr E Walker, Bolt, Beranek and Newman, USA

INVITED LECTURES

Professor J Gero, University of Sydney, Australia
Dr R Moore, LISP Machines Inc, USA
Professor R Popplestone, University of Edinburgh, UK