

Conference News

THE 1ST IFAC WORKSHOP ON INTELLIGENT AUTONOMOUS VEHICLES

The First International Workshop on Intelligent Autonomous Vehicles was held in Southampton, England on 18–21 April, 1993, with the aim of bringing together the diverse technological research areas fundamental to the development and design of land-based, aerospace and undersea robotic systems.

World-wide interest was generated by the workshop, which was attended by over 150 participants. Research groups from Western Europe were well-represented and over 25 participants came from Eastern Europe, the USA and Canada, Scandinavia and Japan. In the three and a half days of this international meeting over 70 papers were presented, many of them originating from international co-operative ventures such as the *Esprit* and *PROMETHEUS* research programs.

The workshop opened with an invited talk from Prof. Mike Brady of the University of Oxford. In revisiting some of the notable achievements of the past twenty years research in mobile robotics, he took the opportunity to advise caution about the claims we should make for vehicle autonomy. He stressed that the design of fully autonomous vehicle systems, that can deal with uncertain, incomplete and dynamic real-world knowledge, is still very much in its infancy. A review of open issues in sensing, planning and system architectures served to illustrate that there remain many important and largely unresolved problems in all areas of *IAV* research.

Two special sessions were held on vehicle case studies, involving mostly land-based *IAV* systems, for which even such fundamental issues as locomotion often dominate except in the most benign of environments. Sensing and control formed the predominant themes of the workshop, with sessions on navigation and guidance providing a natural bridge between. Intelligent control merited a paper session in its own right; fuzzy logic methods in particular are being applied to all aspects of vehicle navigation and control. Sessions were also held on *IAV* design, architectures and mission management. Two poster sessions were presented, one devoted to issues in path planning.

Selected papers from the workshop are to appear in special issues of *Control Engineering Practice and Engineering Applications of Artificial Intelligence*.

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IFIP/IFAC INTERNATIONAL WORKING CONFERENCE ON KNOWLEDGE-BASED HYBRID SYSTEMS IN ENGINEERING AND MANUFACTURING

(April 20–22, 1993, Budapest, Hungary)

Knowledge-based systems have emerged as efficient solution for complex problems in many areas. A balanced mixture of casual and heuristic processing modules that can offer a comprehensive approach in complex cases is often called a “knowledge-based hybrid system”. The Working Conference (Sponsored by IFIP/TCS/WG 5.3, co-sponsored by IFAC Manufacturing Technology Committee) wanted to provide a forum for presenting interesting results obtained by using this approach.

Eighty percent of submitted session papers were accepted. Three keynote and 17 session papers were presented, and 4 Mini-Symposia with demonstrations and discussions were held in the afternoons. Altogether 25 authors came from 12 countries to present their papers, and 15 (mainly local Hungarian) visitors attended the conference. The official language of the conference was English.

The keynote speakers were highly respected experts: Professors Andrew Kusiak, Axel Lehmann, Tibor Vámos. They gave a good introduction for each day. Prof. Vámos talked about the actual problems of artificial intelligence research. He stressed the importance of man-machine symbiotic systems that promise better knowledge representation and decision support. Prof. Lehmann gave an overview and analysis of methodological approaches and techniques often used for representing and processing information in knowledge-based systems and made a comparison between *AI* and conventional programming techniques. Finally, different approaches to knowledge-based hybrid systems and their tools were discussed with application examples. Prof. Kusiak concentrated on the concurrent engineering approach in the design of products and manufacturing systems, and outlined application possibilities for knowledge-based hybrid systems.

The submitted papers were presented in seven sessions, each covering a separate topic. Most of the papers referred to both industrial application and theoretical work. The level of presentations was high.

The four mini-symposia based on demonstrations offered very good opportunities for detailed, high level discussions in the afternoons. Each symposium concentrated on a different problem of hybrid systems. These problems were: design of CIM systems’ software architecture, feature-based product redesign, facilities layout design, and evaluation of manufacturing system throughput. A major benefit of the conference was that it brought researchers of the same field together. This was brilliantly demonstrated when some research groups realised that others were also working on the same or similar subjects.

The conference activities were conducted smoothly, the flexible and open organisation encouraged detailed discussions and building contacts between researchers. At the panel session the participants agreed the following conclusions:

- hybrid system development and evaluation need special methodologies,
- hybrid systems offer solutions for problems without the need of basic simplifications,
- a distinction has to be made between hybrid and integrated systems.

The participants showed enthusiasm for taking part in another workshop on the same topic after active preliminary consultations via e-mail among potential participants. Professor L.M. Camarinha-Matos (Universidade Nova de Lisboa) expressed his willingness to organise the next workshop in Lisbon (Portugal).

The conference proceedings will be published by Elsevier Science Publishers B.V. (Editors, Dr I. Mezgár and Dr P.

Bertók). The conference received financial support from IFIP, the Hungarian Academy of Sciences and the Hungarian National Committee of Technological Development.

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