

## Conference Reports

### SIXTH ANNUAL SYMPOSIUM ON HAPTIC INTERFACES

The Sixth Annual Symposium for Haptic Interfaces for Virtual Environment and Teleoperator Systems was held on Nov. 17–18, 1997 in Dallas, Texas. Haptic interfaces are devices that allow human–machine interaction through force and touch. Areas of application include, but are by no means limited, to telemanipulation (for work in hazardous or challenging environments such as space exploration, undersea operations, microsurgery and minimally-invasive surgery, and hazardous waste clean-up) and virtual environments (for realistic interactions with computer simulations in critical procedure training, architectural design, product prototyping, and data visualization).

The international conference attracted a diverse, interdisciplinary audience consisting of engineers, computing scientists, experimental psychologists, neurophysiologists, and human factors scientists knowledgeable about human tactile sensing, haptics, and motor control, disciplines likely to contribute to future advance in this field. Topics of interest included human factors, sensory psychophysics and perception, biomechanics and motor control, control system design and analysis, haptic rendering and world modeling algorithms, and mechanism design.

A total of 20 oral presentations and 11 posters were accepted this year. In addition, a special panel discussion was added. Invited experts were charged with the task of each posing a “Grand Challenge in Haptic Interface Development”. Topics selected by the speakers included the following issues: “How should engineers test haptic (or other) devices?” “Multimodal virtual environments”; “Complex, stable simulations”; “Hyping haptics – how not to put a haptic interface on every desk”; “Hardware systems for multimodal haptics”; “Haptics: means or end?”, and “The haptic interpretation machine”.

The titles of all current and previous papers may be viewed on the Haptic Symposium Web page

(<http://www.hrl.harvard.edu/events/haptics-symposium/index.html>)

published in the ASME Annual Proceedings, Dynamic Systems and Control division.

Next year, the seventh annual meeting will be held for two days during the ASME Annual Winter meeting in Anaheim, California (Nov. 15–20, 1998). Please check for new announcements and full details concerning paper submissions on our Web page. Full papers for the 1998 symposium are due in early February, 1998.

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and

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### WORLD MANUFACTURING CONGRESS '97 18–21 NOVEMBER 1997, MASSEY UNIVERSITY, AUCKLAND, NEW ZEALAND

The World Manufacturing Congress '97 was organised jointly between Massey University and International Computer Science Conventions (ICSC) of Canada. The event was held from 18–21 November at Albany Campus, Massey University in Auckland, New Zealand. This inaugural WMC attracted the participation of over 30 nations and many aspects of manufacturing systems, manufacturing technology and manufacturing management were presented by high profile authors. WMC '97 was dedicated to Philip Crosby for his devotion to the field of quality and more specifically his “Quality is Free” impetus to the quality revolution in the late 70’s.

The congress began on 18 November 1997 by offering two free stimulating tutorials to all fully registered delegates in the areas of Hybrid Connectionist-based Intelligent Information Systems – Methodologies, Tools, Industrial Applications (by N. Kasabov, M. Purvis and R. Kozma) and How to Conduct Socio – Technical Re-design in Manufacturing Firms (by A.J. Sense and R. Badham).

Keynote speakers included Professor A.K. Kochhar of UMIST (Shifting Manufacturing Paradigms – Implementing Lean and Agile Manufacturing Systems), Charles McLean from NIST (Prospects for Manufacturing Engineering Software Integration), Professor B. Bergman of Linköping University (Total Quality Management Applied to the Manufacturing Process), Professor N. Okino from Kyoto University (Springy Systems for Agile and Flexible Manufacturing), Professor S. Fukii of Kobe University (Manufacturing System Simulation for Virtual Factory), Professor N.D. Burns, Loughborough University (Change at the Company) and Professor R.M. Hodgson of Massey University (Machine Vision – the Problem or the Solution?).

Over 120 papers were presented at the congress. All the papers were reviewed by the members of the international

technical committee for WMC '97. Papers presented covered a wide range of subject areas including Agile Manufacturing, Holonomic Systems, Fuzzy Logic and Neural Networks in Manufacturing, Virtual Manufacturing, Concurrent Engineering, Production Scheduling, Manufacturing Systems Modelling, Robotic Handling, Image Processing, Flexible Learning and Business Process Re-engineering to name a few.

The great input from the member of the International Steering Committee and the International Technical Committee for WMC '97 facilitated a highly fruitful and worthwhile congress. WMC is around for many years to come and already plans are underway for WMC '99 which is to be held in the UK to be followed by WMC 2001 in the USA.

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#### **FIFTH IFAC SYMPOSIUM ON ROBOTS CONTROL SYROCO '97 (3–5 SEPTEMBER 1997)**

SYROCO '97 was the fifth of the IFAC series of triennial Symposia on Robot Control. Previous events were held in Barcelona (Spain), 1985; Karlsruhe (Germany), 1988; Vienna (Austria), 1991 and Capri (Italy), 1994. SYROCO '97 was held from September 3 to 5, 1997 in the "Cité des Congrès" in Nantes, France. The Chairman of the International Programme Committee was Bernard ESPIAU from INRIA Rhône Alpes (FRANCE); the Chairman of the National Organizing committee was Wisama KHALIL from IRCyN (Ecole Centrale de Nantes-FRANCE).

##### *1. Technical Program*

Out of the 200 submitted papers the international programme committee have accepted 126 papers in the final Technical Program. This consisted of 33 sessions arranged in 3 parallel series for the 3 days of the Symposium, bringing together contributions from 298 leading researchers.

The accepted papers are published in three-volume set of Preprints. Each volume contains the papers presented in a separate volume. The final version of the proceedings will

be published by Elsevier Science Ltd within a few months.

The papers of SYROCO '97 covered a range of topics relevant to the field of robot control, including modelling and identification, force and compliance control, robot control techniques (adaptive, robust, learning, . . .), vision control, grasp control, flexible robots, non-holonomic robotic systems, walking robots, control design and architectures, teleoperation, and underwater robots.

The IPC Committee organized three invited plenary sessions: Professor Steven Dubowsky, from MIT-Cambridge, presented a lecture entitled "A perspective of the advancement of robotic systems during the past 15 years"; Professor Friedrich PFEIFFER from TU of München presented a lecture entitled "Robots with unilateral constraints", and Professor Shankar SASTRY, from the University of California, presented a lecture entitled "Air traffic Management Systems: At the intersection of Control theory and Robotics".

The more relevant topics of the conference were: Flexible robots modelling and control; Mobile robots and non holonomic system control; Walking robots modelling and control; Force control; Manipulator control.

##### *2. Participants*

About 180 participants have registered to SYROCO '97; about 32 participants in the conference were from an industrial environment. There were 40 Ph.D students from all the world, enjoying students fees. The program organizing committee, thanks to a financial support from the Ministry of National Education, have invited 9 researchers from the East European countries (travel and accommodations). 10 more grants have been allocated to Ph.D students (registration fees only).

##### *3. Tutorials*

Three Tutorials were organized on September 2, in the Ecole Centrale de Nantes. These tutorials concerned: Robot manipulator interaction with environment: force and motion control; Control systems which compensate for friction; Modelling and control of wheeled mobile robots: theoretical results and applications.

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