35th International Symposium on Robotics
March 23-26, 2004
Paris - Nord Villepinte / France
The very latest developments in robotics are inside this box.

Want to be at Paris-Nord Villepinte when we unwrap it?

We look forward to seeing you at the exhibition Industrie 2004 between March 22 and 26. The event will be held in conjunction with the 35th International Symposium on Robotics.

See you at the ABB booth, Hall 51058.
Welcome to ISR 2004

Sympa is very proud to have been selected by IFR for the organisation of its 2004 symposium. We have invested all our professionalism in it and assure you that this event, the most important in the robotics field, will be one to remember. ISR’s special feature is that it acts as a conduit between research and industry. For this purpose, we have organised the symposium at the same time as Industrie 2004, the biggest exhibition in France dedicated to “Manufacturing technologies”, and one in which robots have an important place. Industry and laboratories will be under the same roof in Paris Nord Villepinte, the easy-access exhibition facility, less than 1 hour from most European capitals.

Jean-Paul Nodier
Symap President

Jean-Paul Bugaud
Symap Director

From 23 to 26 March 2004, Paris will be the robotics capital, featuring both industrial and service robotics. The 35th International Symposium on Robotics, organised by Symap (Syndicat de la Machine-outil, assemblage et robotique) [Machine tool, assembly and robotics association] will host over 600 delegates from all over the world; 200 presentations selected by an International Scientific Committee will look at every aspect of the latest research developments: industrial, service, new technologies, markets and applications, economic and social aspects. ISR 2004 will benefit from an exceptional synergy with Industrie 2004, the big exhibition for French and International industry where most of the industrial robots will be presented; a dedicated platform will show the most recent changes to Service robots.

As president of the Organising Committee and Vice President of the International Federation of Robotics, I am proud to welcome ISR 2004 to Paris, making this a unique event for the Robotics community.

Jean-Luc Burquier
Organising Committee
President

On behalf of the International Federation of Robotics, I congratulate SYMAP on their success in planning a remarkable event - the 35th Annual International Symposium on Robotics. Working with Exposium, they have created an exciting and challenging programme. There are over 200 papers selected from a record number of submissions. There is a vast range of topics from new advances in industrial robots, and walking and climbing robots to leading-edge developments in intelligent sensing, vision, modelling, simulation and control systems. In addition, many papers will be presented on the direct interaction between human and robot - including a special demonstration area showing the latest developments in service robotics.

ISR 2004 promises to be a great event. You will have a difficult time choosing what to attend. There will be interesting subjects for everyone. We will all be impressed and challenged by the future ahead for those of us working in the robotics field.

Paul Johnston
IFR President

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*Note: topics and speakers subject to change. Check on this page www.isr2004.com for the latest details

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Official Internet Cafe Sponsor

www.robotics.e-symposium.com
The International Federation of Robotics was established in January 1987 as a professional, private, non-profit federation. Robotics is a branch of science and technology with a special emphasis on automation in all fields of human activity and has become the symbol for advanced technology in modern society. Scientists from over 40 countries will participate at the ISR 2004 Robotics Symposium. Nowadays, one can find research activities, in both industrial and service robotics, on all continents. New technologies will accelerate these activities as particular needs arise in human society in such sectors as medicine, manufacturing, environmental, space exploration and so on.

We are proud to organize the ISR 2004 Symposium and share knowledge and experience with all participants at this exceptional event in an exceptional city: Paris.

The 3 keyNotes

**M. Dominique Peccoud,**
BIT- Switzerland (Geneva)
*Conference:* robotics, ethics, society
Tuesday March 23, 2004: 10.00 - 11.00 a.m

**M. Susumu Tachi,**
University of Tokyo – Japan
*Conference:* robotics, research and the future
Wednesday March 24, 2004: 9.00 - 10.00 a.m

**M. Brian Carlisle,**
Adept - USA
*Conference:* robotics, technology and industry
Thursday March 25, 2004: 9.00 - 10.00 a.m

Note: topics and speakers subject to change. Check on this page www.isr2004.com for the latest details
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Committees

The next International Symposium on Robotics ISR 2004 will take place in March 2004 in Paris, France. As Chairman of the International Scientific Committee I am very proud to welcome you to this prestigious annual event. Scientists from over 40 countries have answered to our Call for Papers. The ISR 2004 Symposium will therefore have a large international dimension and will give you an opportunity to learn more about the latest technological developments through the numerous research projects presented in both industrial and service robotics. A rare opportunity to participate you should not miss. Beyond the scientific and technological aspects, several interesting programmes to meet with your peers from all over the world and to discover the world’s most beautiful city Paris, are proposed. I am personally looking forward to meet you at the ISR 2004 Symposium and wish you a very useful and active participation.
The holding of ISR 2004 with INDUSTRIE 2004 makes this a truly exceptional event that brings together products from around the world in the industrial robotics field.

By bringing together, here in Paris, all the robotics specialists and the leading manufacturers, we are guaranteeing a quality of dialogue and making this the key event for all users. With 3,000 exhibitors, 180,000 m² of exhibition space and 100,000 international visitors, INDUSTRIE 2004 combines 8 state-of-the-art exhibitions covering all equipment, services and solutions for industrial design, production and manufacture: mechanical, pneumatic and hydraulic systems – automation – drive systems – machine-tools – tooling – robotics – welding - cutting – assembling – fixtures – handling – quality – test/measurement – thermal processing – CAD/CAM – CAPM – ERP – CAMM.

Robotics will be the theme for the INDUSTRIE 2004 Exhibition together with the ISR 2004 Symposium and also with a demonstration platform dedicated to service robotics, as well as mini-conferences bringing together manufacturers, integrators and end users. And finally, the range of robotic different applications will be highlighted with integrator villages located directly in the application sectors such as welding, surface processing, assembly and inspection.

Find out more at www.industrie-expo.com

Special edition on service robotics! “Robotics premiere”

Reflecting the current expansion in service robotics, a presentation area has been created at the heart of INDUSTRIE 2004, with the support of robot manufacturers and research laboratories. This will be an opportunity to see the very latest advances in robotics.

In addition to the information provided during the Symposium, there will be a visual presentation highlighting current developments in the field of robotics.

The service robotics “Robotics Premiere” platform will therefore present demonstrations of service robots in their key user sectors: home automation – medical – hazardous working environments – edutainment… or in their related contexts such as hospitals, homes, factories, etc. The service robotics platform will be the meeting point for the leading partners in service robotics (laboratories, researchers, universities, private companies, etc.), Congress participants, visitors to INDUSTRIE 2004 and the media (trade, general press, TV-Radio, etc.).

Industrial robots at work

Other than the International Symposium on Robotics (ISR), with its greater emphasis on research, INDUSTRIE 2004 will host the largest number of industrial robotics exhibitors ever seen in France. There will be demonstrations covering all fields of application.

In addition to this, there will also be mini-conferences held every day (March 23-24-25) on current applications presented by the manufacturers, integrators and the end users, among the sectors covered: consumer products, luxury products, cars and accessories, transport and logistics.

(Full programme available on www.industrie-expo.com)
Tuesday March, 23 2004

8:00 - 9:00 a.m: Registration
9:00 - 9:45 a.m: TU 00 Opening Session
10:00 - 11:00 a.m: TU 01 KeyNote: Dominique Peccoud (Switzerland): Robotics, Ethics, Society
11:00 - 12:30 p.m: Parallel sessions
   TU 11: Humanoids and animaloids
   TU 12: Progress and new technology in control
   TU 13: Haptic interfaces
   TU 14: Micro and nanorobotics
12:30 - 2:00 p.m: Lunch
2:00 - 3:30 p.m: Parallel sessions
   TU 21: Walking and climbing robots
   TU 22: Visual servoing (1)
   TU 23: Human-robot Interface
   TU 24: Manufacturing
4:00 - 5:30 p.m: Parallel sessions
   TU 31: Wheeled like mobile robots
   TU 32: Visual servoing (2)
   TU 33: Virtual reality
   TU 34: Home - education - entertainment (1)

Wednesday March, 24 2004

8:00 - 9:00 a.m: Registration
9:00 - 10:00 a.m: WE 01 KeyNote: Susumu Tachi (Japan): Robotics Research and the Future
10:00 - 11:30 a.m: Parallel sessions
   WE 11: Parallel and hybrid robots (1)
   WE 12: Identification and calibration (1)
   WE 13: Visual Recognition of environments
   WE 14: Home - education - entertainment (2)
11:45 - 1:15 p.m: Parallel sessions
   WE 21: Parallel and hybrid robots (2)
   WE 22: Identification and calibration (2)
   WE 23: Planning and collaborative robotics (1)
   WE 24: Medical application (1)
1:15 - 2:00 p.m: Lunch
2:00 - 3:30 p.m: Parallel sessions
   WE 31: Robots components (1)
   WE 32: Industrial robot improvements (1)
   WE 33: Planning and collaborative robotics (2)
   WE 34: Medical application (2)
3:45 - 5:15 p.m: Parallel sessions
   WE 41: Robots components (2)
   WE 42: Industrial robot improvements (2)
   WE 43: Planning, localisation and obstacles detection
   WE 44: Application into hostile environments (1)
7:00 - 8:00 p.m: Cocktail and Award
8:00 - 11:00 p.m: ISR Gala Dinner

Thursday March, 25 2004

9:00 - 10:00 a.m: TH 01 KeyNote:
Brian Carlisle (USA): Robotics , Technology and Industry
10:00 - 11:30 a.m: Parallel sessions
   TH 11: Theoretical approaches (1)
   TH 12: Performances - standarts
   TH 13: Robotics and society (1)
   TH 14: Application into hostile environments (2)
12:00 noon - 1:30 p.m: Parallel sessions
   TH 21: Theoretical approaches (2)
   TH 22: Safety
1:30 - 2:30 p.m: Lunch
2:30 - 6:30 p.m: Invited sessions
   TH 31: Biomimetic Robotics
   TH 32: Climbing and Walking Robots
   TH 33: Nano and Micro Robotics
6:30 p.m:TH 02: Closing session

Note: topics and speakers subject to change. Check on this page www.isr2004.com for the latest details
CEA List is a research department inside CEA, which is a French R&D governmental agency whose field of expertise ranges from nuclear industry to bio sciences. Based in Ile-de-France (in the neighbourhood of Paris), LIST combines basic research and industrial R&D within a dynamic structure, and is mainly financed by industrial contracts.

The project-based culture of its 300 scientists, engineers and technicians makes it a natural partner for industry seeking breakthrough technology, from the initial concept down to working demonstrators.

CEA-LIST is primarily concerned with the development of technology that combine software and hardware to form highly integrated complex systems – “software intensive systems”.

The research activities are structured into industry-driven projects, around three major themes:

- Embedded systems: embedded systems are everywhere around us. CEA-LIST focuses on the method and tools to successfully design such a system with appropriate architecture, software, and an optimal level of safety.

- Interactive systems: researchers in this theme study the interface between our world and the digital world, the sensors and the actuators, with major stress on haptics and tactile interfaces for VR applications and robotics.

- Sensors and signal processing: this topic covers the interpretation of the signals surrounding us by custom sensors.
Programme by Topics

I. Robot Architectures and Components
TU11 Humanoids and animaloids
TU21 Walking and climbing robots
TU31 Wheeled like mobile robots
WE11 Parallel and hybrid robots (1)
WE21 Parallel and hybrid robots (2)
WE31 Robots components (1)
WE41 Robots components (2)

II. Interactive Robotics and Virtual Reality
TU13 Haptic interfaces
TU23 Human-robot Interface
TU33 Virtual reality
WE13 Visual recognition of environments

III. Identification and Control
TU12 Progress and new technology in control
TU22 Visual servoing (1)
TU32 Visual servoing (2)
WE12 Identification and calibration (1)
WE22 Identification and calibration (2)
WE32 Industrial robot improvements (1)
WE42 Industrial robot improvements (2)

IV. Planning and Navigation
WE23 Planning and collaborative robotics (1)
WE33 Planning and collaborative robotics (2)

V. Safety and Performances
TH12 Performances - standarts
TH22 Safety

VI. Application
TU14 Micro and nanorobotics
TU24 Manufacturing
TU34 Home - education - entertainment (1)
WE14 Home - education - entertainment (2)
WE24 Medical application (1)
WE34 Medical application (2)
WE44 Application into hostile environments (1)
TH14 Application into hostile environments (2)
TH24 Application of new robots

VII. Theoretical Approaches to Model or Control
TH11 Theoretical approaches (1)
TH21 Theoretical approaches (2)

VIII. Robotics and Society
TH13 Robotics and society (1)
TH23 Robotics and society (2)

Invited KeyNote
TU01 Robotics, ethics, society
WE01 Robotics research and the future
TH01 Robotics, technology and industry

Invited Sessions
THS31 Biomimetic Robotics
THS32 Climbing and Walking Robots
THS33 Nano and Micro Robotics

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TU 11: Humanoids and animaloids

- Building bodies for brains: Wolff Kriste and Peter Nordin - Chalmers University of Technology, Göteborg (Sweden)
- A robotic head for multisensor fusion: Kevin Warwick, I.C.B. Goodhew - Department of Cybernetics, University of Reading, Whiteknights (United Kingdom)
- NGA - The new technology for humanoid robot: Li Mingjian - Nanyang Technological University, Nanyang (Singapore)
- Anthropomorphic oculomotor with three-degree-of-freedom spherical parallel link: Jamie K. Paik, Y.B. Bang, B.H. Shin, C. Lee - Seoul National University, Seoul (Korea)

TU 12: Progress and new technology in control

- Development of a sensing device monitoring robot-environment interactions: Rezia M. Molfino, E. Bruzzone, M. Zoppi - PMARlab - DIMEC - University of Genova, Genova (Italy)
- Observer based control and stabilization of a biped robot: Yannick Aousten, V. Lebastard, F. Pleston - Ecole Centrale de Nantes, Moscow State Lomonosov University, Nantes, Moscow (France, Russia)
- Fast robust controllers for a MITSUBISHI PA-10 manipulator developed under QNX neutrino: Cyprian Wronka, A. Uhlmann, M.W. Dunnigan, A.M.S. Zalzala - Watt University, Edinburgh (United Kingdom)
- Real-time implementation of on-line trained neurocontroller for a BLDC Motor: Yousy Atia, M.M. Salem M.B. Zahrani, A.M. Zaki - Electronic Research Institute, Giza (Egypt)

TU 13: Haptic interfaces

- Impulsive forces for haptic rendering of rigid contacts: Daniela Constantinescu, S.E. Salcudean, E.A. Croft - University of British Columbia, Vancouver (Canada)
- Tactile interfaces, a state of the art survey: Mohamed Benali-Koudjia, M. Hafez, J-M Alexandre, A. Kheddar - CEA LIST SRSI, Laboratoire Systèmes Complexes, Fontenay-aux-Roses, Evry (France)
- Active force feedback in real-life industrial robot applications: Hendrik Van Brussel - Katholieke Universiteit Leuven, Leuven (Belgium)
- Physical damping estimation for stable haptic interaction with 6-DOF haptic device: Zhi Lou, J. Kim, J. Ryu - Human-Machine-Computer Interface Laboratory, Gwangju (Korea)
- Study of new architectures for gyroscopic torque based ungrounded haptic interfaces: Emmanuel Brau, F. Gosselin, J-P. Lallemand - CEA LIST, Université de Poitiers, Fontenay-aux-Roses, Poitiers (France)

TU 14: Micro and nanorobotics

- Automated weighing in pharmaceutical R&D using industrial automation: Rodrigo B. Zapiajin, K.W. Young, A. Stanley - Warwick Manufacturing Group of University of Warwick, Technology Development department of GlaxoSmithLine, Coventry (United Kingdom)
- First result of the progression of the micro robotic tip for colonoscopy: Guillaume Thomann, T. Redarce, G. Chen, M. Betemps - Laboratoire d’Automatique Industrielle, Villeurbanne (France)
- Robust H. controller design for bilateral micro-teleoperation over the internet: A. Ferreira, Moussa Boukhnifer - Université d’Orléans, Bourges (France)

TU 21: Walking and climbing robots

- Design and control of humanoid robot locomotion with passive legs and upper body actuation: Paul Chandana, H. Yokoi - University of Zurich, Hokkaido University, Zurich, Sapporo (Switzerland, Japan)
- Dynamic model of a four-legged walking robot: Massimo Callegari, A. Suardi, D. Scaradozzi - Polytechnic University of Marche in Ancona, Ancona (Italy)
- Propulsion impulse control for a gait model and a biped robot: Paul Bourassa, P. Micheau, M-A Roux - Université de Sherbrooke, Québec (Canada)
- The feet for two legged walking robots: Ion Simionescu, I. Ion - University of Bucharest, Bucharest (Romania)
- Robot, the hexapod mobile robot: András Balázs, A. Molnár, B. Pécskai, B. Supola, Z. Vánczy - Budapest Polytechnic, Budapest (Hungary)

> 8:00 - 09:00 a.m: Registration
> 9:00 - 09:45 a.m: TU 00 Opening Session
> 10:00 - 11:00 a.m: KeyNote: Dominique Peccoud - Robotics, Ethics, Society BIT, Geneva (Switzerland)
> 11:00 - 12:30 a.m: Parallel sessions
> 12:30 - 2:00 p.m: Lunch
> 2:00 - 3:00 p.m: Parallel sessions
**TU 22: Visual servoing (1)**

- Spatial control of high speed robot arms using a tilted camera - Friedrich Lange, G. Hirzinger - Institute of Robotics and Mechatronics. Webling (Germany)
- Visual servoing based positioning of a mobile robot - Tommaso Gramegna, L. Venturino, G. Cicirelli, T. D'Orazio, G. Attolico - Istituto di Studi sui Sistemi Intelligenti per l'Automazione - CNR. Bari (Italy)
- Dynamic position-based visual servoing of robotic manipulators - Paulo J. Sequeira Gonçalves, J.R. Caldas Pinto - Escola Superior de Tecnologia, Instituto Superior Técnico. Castelo Branco, Lisboa (Portugal)
- Visual servoing with omnidirectional sensor from lines - Youcef Mezouar, I. Hadj Abdelkader, P. Martinet - LASMEA. Aubière (France)
- An novel outlier rejection approach for stable 3D tracking - Jing Leng, H. Wang - Nanyang Technological University. Nanyang (Singapore)

**TU 23: Human-robot Interface**

- Teaching a humanoid robot from books - Arthur M. ARSENIO - MIT Computer Science and Artificial Intelligence Laboratory. Cambridge (USA)
- Robot navigation based on oral and gestured commands - Rodrigo Montufar-Chaveznavia - Computer Science Department, INAOE. Puebla (Mexico)
- User friendly operation of industrial robots with a new robot controller interface - Freund Eckhard, F. HEINZE, A. Hyppi, T. Koch - University of Dortmund. Dortmund (Germany)
- An experimental model of an autonomous mobile robot with intelligent control system and advanced natural language interfaces - Man’ko Searge, M. Romanov, V. Lokhin, V. Seregin, A. Yashunsky - Moscow State Institute of Radiotechnic, MIREA. Moscow (Russia)
- Interaction forces during bi-manual manipulation - Mhemet Arif Adli - Marmara University. Istanbul (Turkey)

**TU 24: Manufacturing**

- Autonomous manufacture of large steel fabrications - EC: Project: G1RD-2000-00461 “NOMAD” - Nicholas Spong, K. Herman, A. Lylynoja - TWI Ltd, Caterpillar Belgium S.A. Delft OY. Cambridge, Gosselies, Espoo (United Kingdom, Belgium, Finland)
- Knowledge model for the configuration of modular assembly workstations. specification and for distributed conceptual design - Svetan Ratchev, H. Hitendra, N. Loehse - University of Nottingham. Nottingham (United Kingdom)
- The robotizer: a vision-controlled hand-arm system for manipulating bottles and glasses - Ulrich Hillenbrand, B. Brunner, C. Borst, G. Hirzinger - DLR Institute of Robotics and Mechatronics. Wessling (Germany)
- Bosch Rexroth robots presentation - Pascal Lapp - Bosch Rexroth S.A.S. Chelles (France)
- “Automated setting” in glazing manufacturer of automobile bodywork elements in series production - Bernard Gillet - PCI. Meudon (France)

**TU 31: Wheeled like mobile robot**

- Indoor transport - George Paul, M. Lafary, W. Kennedy, J. Dietsch - ActivMedia Robotics. Amherst (United States)
- Stair climbing in a wheeled mobile robot (MSRox) - Mohsen Moradi Dalvand, M.M. Moghadam - Tarbiak Modares University. Tehran (Iran)
- Non linear control for car like mobile robots in presence of sliding - application to guidance of farm vehicle using a single RTK GPS - Roland Lenain, B. Thuilot, C. Cariou, P. Martinet - Cemagref, LASMEA. Aubière (France)
- The problem of controlling a mobile single-wheel robot with an unperturbed gyrostabilized platform - Yu G. Martynenko, A.V. Lensky, A.I. Kobrin - Moscow Power Engineering Institute, Institute of Mechanics of Moscow Lomonosov State University. Moscow (Russia)
- All terrain mobile robot base - Faruk E. Kececi - Izmir Institute of Technology. Izmir (Turkey)

**TU 32: Visual servoing (2)**

- Pattern recognition and image based visual servoing for object grasping - Noureddine Ouadah, M. Hamerlain - Robots structure and dynamic team. Alger (Algeria)
- Robot model-based tracking for robot vision applications. Application of invariant moments to visual serving and pose estimatives - Andrew I. Comport, E. Marchand, O. Tahri, F. Chaumette - IRISA - INRIA. Rennes (France)
- Image based visual servoing from groups of 3D points - Florian Schramm, A. Lottin, G. Morel - CEA LIST, Université Paris 6 - LR. Fontenay-aux-Roses, Paris (France)

**TU 33: Virtual reality**

- Design of a virtual reality workshop as a helpful tool for the microworld modelling - Cédric Anthierens, J-L Impagliazzo - LSIMMA. Toulon (France)
- A four-screens immersive projection technology cockpit for telexistence - Nadji Cherief, D. Sekiguchi, N. Kawakami, S. Tachi - The University of Tokyo. Tokyo (Japan)
- Design method of a multifingered slave manipulator of a humanoid robot for telexistence - Riichiro Tadakuma, Y. Asahara, I. Kawabuchi, N. Kawakami, S. Tachi - University of Tokyo. Tokyo (Japan)
- Virtual worker reachable space evaluation with prioritized inverse kinematics - Ronan Boulic, P. Baerlocher, I. Rodriguez, M. Peinado, D. Meziat - Swiss Federal Institute of Technology, University of Alcalá. Lausanne, Madrid (Switzerland, Spain)
- V-R simulation in the field of body-in-white production-line planning - S. Römberg - TMS Produktionssysteme GmbH - Linz. (Austria)

**TU 34: Home - education entertainment (1)**

- On the control of an escaping robot - Fethi Belkhouce, B. Belkhouce - Tulane University. New Orleans Louisiana (United States)
- The integrated challenges of real world intelligent mobile robotics - François Michaud, T. Barfoot, G. D’Eleuterio - Université de Sherbrooke, University of Toronto Institute for Aerospace Studies. Québec, Toronto (Canada)
- Robotics education, teleprogramming, telecontrol through the internet - Giuseppe Gini - DEI, Politecnico di Milan. Milan (Italy)
- Same results of the development of SLR 1500 robot control system with artificial intelligence application - Klaus Müller, S. Schmeisser, V. Poppeová, J. Uricek, R. Zahoransky, P. Janko - University of Applied Sciences Mittweida, Faculty of Mechanical Engineering, University of Zilina. Mittweida, Zilina (Germany, Slovakia)

> 4:00 - 5:30 p.m : Parallel sessions
Wednesday March 24, 2004

> 8:00 - 9:00 a.m: Registration

> 9:00 - 10:00 a.m: KeyNote: Susumu Tachi, Robotics, Research and the Future - University of Tokyo (Japan)

> 10:00 - 11:30 a.m: Parallel sessions

WE 11: Parallel and hybrid robots (1)
- Artefact based calibration and verification of parallel kinematics machines Cédric Baradat, D. Deblaise, E. Bazin, P. Maurine - Institut National des Sciences Appliquées. Rennes (France)
- Towards a new delta robot: an inverted delta Mohamed Bouri, R. Clavel, W. Maeder, M.Y. Zerrouki - Ecole Polytechnique Fédérale de Lausanne. Lausanne (Switzerland)
- Isotropic design of a 3 DOF micro device based on parallel kinematics Irène Fassi, G. Legnani - ITIA - CNR, Universita di Brescia. Milan, Brescia (Italy)
- Dynamic modeling of some structures of parallel robots Ibrahim Ouarda, K. Wisama Institut de Recherche Cybernétique de Nantes. Nantes (France)
- On leg-wheel robots: dynamics, simulation and experiment Majid M. Moghaddam, S. Bozorghmehri - Tarbiat Modarres University. Tehran (Iran)

WE 12: Identification and calibration (1)
- Vision robot based absolute accuracy measurement calibration and uncertainty evaluation Mohamed Damak, J. Grosbois - Dynalog. Lille (France)
- 6 Degree-of-freedom metrology and robot control Henrik Kihlman, R. Loser - Linköping University, Leica Geosystems AG. Sweden
- Optimisation of a low-cost wire sensor based calibration procedure for industrial manipulators Diego Tosi, G. Legnani, P.L. Magnani - Universita di Brescia. Brescia (Italy)
- Calibration of the 5-dof parallel kinematics HITA-STT Hélène Frayssinet, R. Clavel, M. Thurneysen, D. Jeannerat Ecole Polytechnique Fédérale de Lausanne, Willemoin - Machines S.A. Lausanne, Bascocourt (Switzerland)
- Kinematic calibration of linear-actuated parallel mechanisms from leg observation Pierre Renaud, N. Andreff, S. Krut, G. Gogu - IFMA, LIRMM. Aubière, Montpellier (France)

WE 13: Visual recognition of environments
- Extracting human-body from disparity Image Jian Lu, K. Hamajima - National Institute of Industrial Safety, Tokyo (Japan)
- Volumetric representation of obstacles through wide baseline set of images Rimon Elias, R. Laganière - VIVA Research Lab University of Ottawa. Ontario (Canada)
- Foveated vision for space-variant scene reconstruction Timothy A. Boyling, J.P. Siebert - University of Glasgow. Glasgow (United-kingdom)
- On orbit experiment of image measurement for debris removal robot Heihachiro Kamimura, S. Nishida, S. Kawamoto, H. Hashimoto, S. Kimura, S. Nakasuka - National Aerospace Laboratory, National Space Development agency, Communications Research Laboratory. University of Tokyo. Tokyo, Ibaraki-ken (Japan)
- Digital compass for mobile robot Abhilash Ramakrishnan - Multimedia Digitals. Chennai (India)

WE 14: Home - education entertainment (2)
- WEB remote control of machine-tools the whole world within less than one half-second Jean Vareille, P. Le Parc, L. Marcé - Université de Bretagne Occidentale Equipe LIMI. Brest (France)
- Museum robots: multi-robot systems for public exhibition Ben Hurt, K. Warwick - Department of Cybernetics University of Reading. Whiteknights (United-kingdom)
- Ball interception by a mobile robot goalkeeper using the parallel navigation Fethi Belkhouche, B. Belkhouche Tulane University. New Orleans Louisiana (United States)
- Robodhark: a gantry pool player robot Mohammad Ebne Alian, S. Bagheri Shouraki, M.T. Anzari Shalmani, P. Karimian, P. Sabzemzandar Sharif University of Technology. Tehran (Iran)
- Robots’ role in ubiquitous computing household environment Yong K. Hwang, M. Lee, D. Lee - Digital Media Lab. Seoul (Korea)

WE 21: Parallel and hybrid robots (2)
- Rigidity analysis of T3R1 parallel robot uncoupled kinematics Belhassen Chedli Bouzgarrou, J.C. Faureoux, G. Gogu, Y. Heerah - LaRAMA, IFMA. Aubière (France)
- Development of a parallel mechanism machine for a fusion reactor Huapeng Wu, H. Handroos, J. Kilikki, J. Kovanen, Y. Liu, P. Pessi - Lappeenranta University of Technology. Lappeenranta (Finland)
- Evaluation of the potential for employing a parallel mechanism as a milling machine tool Guilherme Rasli, T.A. Hess Coelho - University of Sao Paulo. Sao Paulo (Brazil)
- New anthropomorphic robotic manipulators with only isolated singularities Grigore Gogu, P. Coiffet - Institut Français de la Mécanique, Laboratoire de robotique de Versailles. Aubière, Velizy (France)
- A simple and scalable force actuator Edoardo Torres-Jara, J. Banks - Massachusetts Institute of Technology. Cambridge (United States)
WE 22: Identification and calibration (2)

- Complete parameter identification of parallel manipulators with partial pose measurements using a new measurement device  Abdul Rauf, S.G. Kim, J. Ryu - Kwangju Institute of Science and Technology, Gwangju (Korea)
- Stiffness analysis of the orthoglide using a flexible-link model Félix Majou, C. Gosseill, P. Wenger, D. Chablat - Institut de Recherches en Communication Cybérnetique de Nantes, Université Laval. Nantes, Québec (France, Canada)
- Feedback control design for an intelligent two-wheeled vehicle. hardware and software fault detection and fault tolerance Michael Baloh, Y. Sorel - INRIA. Le Chesnay (France)

WE 23: Planning and collaborative robotics (1)

- Some experiments exploring an unknown environment with an autonomous mobile robot Antoni Burguera, Y. González, G. Oliver - Balearic Islands University. Palma de Mallorca (Spain)
- Indoor navigation of mobile robot: an image based approach Guillaume Blanc, Y. Mezouar, T. Chateau, P. Martinet LASMEA. Aubière (France)
- Autonomous navigation and security : a 13'000h/3'000Km case study Nicola Tomatis, S. Bouabdallah, R. Piguet, G. Terrien, R. Siegwart - BlueBots S.A., Swiss Federal Institute of Technology. Lausanne. Lausanne (Switzerland)
- Robotic grasping planner for arbitrary 3D objects Constant Rémont, C. Michel, V. Perdereau, M. Drouin - Université Pierre et Marie Curie. Paris (France)
- Multi-robot task allocation method for multiple heterogeneous tasks with priorities José Guerrero, G. Oliver - Université de les îles Balears. Palma de Mallorca (Spain)

WE 24: Medical applications (1)

- Haptic feedback control of omni-directional wheelchair considering user’s comfort and safety Juan Urbano, T. Miyoshi, K. Terashima, H. Kitagawa Tohohashi University of Technology. Gifu National College of Technology. (Japan)
- Information processing for a smart wheelchair control Alain Pruski, Y. Morère LASC - Université de Metz. Metz (France)
- Development of surgery supporting manipulator for RA0 Masaru Yanagihara, H. Hatano, M.G. Fujie, H. Yano - Waseda University. Fuji Onsen hospital. Tokyo (Japan)
- Robots in medicine: a survey of in-body nursing aids Francesco Cepolina, R.C. Michelini - PMARlab-DIMEC-UNIGE University of Genova. Genova (Italy)

WE 31: Robots components (1)

- Design of a pneumatic manipulator in direct contact with an operator Michael Van Damme, F. Daerden, D. Lefebre - Vrije Universiteit Brussel. Bruxelles (Belgium)
- Development of a new actuator for a small biped walking entertainment robot - using the optimization technology of electromagnetic field analysis Tetsuharu Fukushima, Y. Kuroki, T. Ishida - Intelligent Dynamics Laboratory Sony Corporation. Tokyo (Japan)
- Virtuose 6D: a new industrial master arm with innovative ball-screw actuators Philippe Garrec, J-P. Friconneau, F. Louveau - CEAM. Fontenay-aux-Roses (France)
- Lightweight harmonic drive gears for next generation robots Rolf Slatter, H. Koenen - Harmonic Drive AG. Limburg an der Lahn (Germany)
- Hand force feedback for the study of virtual prototypes Panagiotis Stergiopoulos, P. Fuchs, C. Laurgeau - Robotics Center Ecole des Mines de Paris. Paris (France)

WE 32: Industrial robot improvements (1)

- A new real-time control architecture for advanced machines: distributed automation and digital machine vision using IEEE-1394 Joachim Melis - Adept (Germany)
- Multi-controller robot cooperation Ken Stoddard - KUKA Development Laboratories. Rochester Michigan (United States)
- Real time controller abstraction layer Jean-Michel Bonnet - Saint-Étienne. Faverages (France)
- Effective use of ethernet for robot application Rege Shishir - KUKA Development Laboratories. Rochester Hills (United States)
- Profibus PC based motion control with application to a new 5 axis parallel kinematics Mohamed Bouri, P. Pham - Ecole Polytechnique Fédérale de Lausanne. Lausanne (Switzerland)

WE 33: Planning and collaborative robotics (2)

- Motion planner algorithm minimizing energy for non holonomic mobile robot François Guérin, A. Faure, M. Gorka, E. Leclercq - Faculté des Sciences et Techniques Université du Havre. Le Havre (France)
- Application of ant - based control in intelligent manufacturing systems Yves Salvez, T. Berger, C. Tahon - Laboratoire d’Automatique et de Mécanique Industrielles et Humaines. Valenciennes (France)
- AGVs motion planning and control Andrzej Maslowski Research Institute for Automation and Measurements. Warsaw (Poland)
- Central milk testing logistics Hans Vos, J. Bagi - Flexlink AB. Hoofddorp (The Netherlands)
- Robot distributed coordination for shared transportations of goods Giovanni C. Pettinario, A. Ramirez-Serrano IDSIA-USI / SUPSI. University of Calgary. Canton Ticino, Alberta (Switzerland, Canada)

> 1:15 - 2:00 p.m: Lunch
> 2:00 - 3:30 p.m: Parallel sessions
WE 34: Medical applications (2)

- Safe childbirth by instrumented obstetric forceps
  Ruimark Silveira, O. Dupuis, A. Dittmar, G. Delhomme, M. Betemps, T. Redarce - LAI INSA, Hôpital Edouard Herriot, LMP INSA. Villeurbanne, Lyon (France)
- SIRA, a robotic system for elderly assistance
  Luis M. Bergasa, R. Barea, M.E. Lopez, M. Escudero, J.A. Hernandez (Spain)
- Learning and control in assistive robotics for the elderly
  Mark H. Lee, Q. Meng - University of Wales, Wales (United-Kingdom)
- Integrating an industrial robot and multi-camera computer vision system into a patient positioning system for high-precision radiotherapy
  Evan A. de Kock - IThemba LABS. Somerset West (South Africa)

WE 41: Robots components (2)

- Servo pneumatics - an alternative drive technology for robots
  Rüdiger Neumann, M. Göttert - Festo AG & Co. KG. Esslingen (Germany)
- A novel six d.o.f. three finger gripper design and cable automation
  Jonathan Cheung, R. Thompson, A. Dilkes, T. Armstrong, M. Penny - QinetiQ Ltd. Hampshire (United-Kingdom)
- Innovation of rotary positioning mechanisms
  Vladimir Cop, J. Smrcek, V. Soltys, J. Bernard - SPINEA Technical University Kosice. VAPOS (Slovakia, Czech Republic)
- Presentation of a low cost vision based surface inspection system in the form of an automatic lawn mower
  Dominique Meizel - CNRS. Compiègne (France)
- Rapid GUI development for the KUKA robot controller using microsoft NET framework
  Edward Volcic - KUKA Development Laboratories. Rochester Hills (United States)

WE 42: Industrial robot improvements (2)

- Next generation of station alignment - challenges and solutions
  Stefan Axelsson - Volvo Car Corporation. Göteborg (Sweden)
- Computer aided robotics combined with a finite element analysis for the welding processes
  Fredrik Danielsson, M. Eriksson - University of Trollhattan Uddevalla. Trollhattan (Sweden)
- Fully wireless power & communication concept demonstration for robotic applications
  Guntram Scheible, J. Kjellsson - ABB Corporate Research. Västerås (Sweden)
- Disturbance observer based torque compensator for industrial robot with flexible joints
  Min Kyu Park, J. Sung Hur, S. Hun Lee, J. Hyuk Song - Hyundai-Heavy Industry Ltd. (Korea)
- Parallel kinematics robot and innovative vision system
  Guillaume Perolle - Fatronik. Elgoibar (Spain)

WE 43: Planning, localisation and obstacles detection

- Autonomous mobile robot dynamic environment mapping through multi sensor data fusion
  Yingjie Sun - Shanghai Jiao Tong University. Changai (China)
- Localization by omnidirectional image retrieval and egomotion
  M. Mouaddib Ei - CREA Université de Picardie (France)
- Human presence detection and tracking for a concierge robot
  Inaki Rano, B. Raducanu, S. Subramanian - University of The Basque Country, Technical University of Eindhoven. San Sebastian, Eindhoven (Spain, The Netherlands)

WE 44: Application into hostile environments (1)

- Taipan 2: a new AUV for very shallow water applications
- A robotic equiment for the guidance of a vectored thruster AUV
  Rinaldo C. Michellini - University of Genova. Genova (Italy)
- The development of a robotic system for maintenance and inspection of power lines
  José Rocha, J. Sequeira - Escola Superior de Tecnologia de Setubal, Instituto de Sistemas e Robotica. Sebutal, Lisboa (Portugal)
- Mines detection and removal walking machine with orthogonal propeller
  V. Zhoga, V. Volchkov, N. Frolova, D. Pokrovsky - Volgograd State Technical University. Volgograd (Russia)
- Utility mobile robots for search and their monitoring system for rescue operation
  Shigeru Kobayashi, T. Takamori, M. Takashima, A. Ikeuchi, S. Takashima, H. Fukumoto - Kobe City College of Technology, Faculty of Engineering Kobe University, The Graduate School of Science & Technology Kobe University. Kobe (Japan)

> 3:45 - 5:15 p.m : Parallel Sessions

> 7:00 - 8:00 p.m:
  Cocktail and Award

> 8:00 - 11:00 p.m:
  ISR Gala Dinner
Comau presents its New Robots.
The non-stop Specialists Team.

Comau Robotics presents its new range of SMART NH robots. The new models, with payload ranging from 130 to 220 kg, are even more reliable and feature a new mechanical design. The hollow wrist solution on the NH remains unrivalled. The new C40 control unit, with a computing power fifty times greater than before, assures higher speed and accuracy. Comau has also renewed its 5 to 16 kg SMART NS range. The SMART NX1 family, with a maximum payload of 700 kg, continues to feature the most powerful robots in the world. Twenty-five years after its first robot, Comau is proud to confirm its role as a world leader.
Thursday March 25, 2004

> 9:00 - 10:00 a.m: KeyNote: Brian Carlisle Robotics, Technology and Industry - Adept - (USA)

> 10:00 - 11:30 a.m: Parallel sessions

TH 11: Theoretical approaches (1)
- Chaos based associative memories for pattern recognition
  Laurent Laval, M. Pernollet - Laboratoire Robotique de Versailles. Vélizy (France)
- Generating appearance-based maps using an artificial immune system
  Mark Neal, F. Labrosse - University of Wales. Aberystwyth (United-Kingdom)
- Traking control for wheeled mobile manipulators
  Jean-Yves Fourquet, V. Padois, P.Chiron, A. Carriay - Laboratoire de Génie de Production. Tarbes (France)
- Optimization of robot ase location using a hybrid genetic algorithm
  Dimitri Sagris, S. Mitsu, K.D. Bouzakis, G. Mansour - Aristotleles University of Thessaloniki. Thessaloniki (Greece)

TH 12: Identification and calibration (1)
- Autonomous mobile robot : technology trends forecasts
  I.K. Sharma - Ministry of Communication & Information Technology. New Delhi (India)
- Fitts law evaluation test for UGV (unmanned ground vehicles) human-machine interfaces; evaluation of virtual prototype manipulator
  Marcus Penny, S. Cotter, N. Smith, K. Wong J. Barrett, C. Coram - Laboratory of Génie de Production. Tarbes (France)
- Robots and safetyBUS p within the automotive industry
  Thomas Kramer - SafetyBUS p Club international e.V. Ostfildern (Germany)
- Intelligent robot, a key to improving global competitiveness of manufacturing sector
  Shinsuke Sakakibara - Robot Laboratory FANUC Ltd. Yamanashi Prefecture (Japan)
- Graphical visualization of dynamic features of robotic manipulators
  Galina V. Tzetkova - Bulgarian Academy of Sciences. Sofia (Bulgaria)

TH 13: Visual recognition of environments
- Legal aspects of intelligent agents in Europe & USA
  Alain Bensoussan - Alain Bensoussan Avocats. Paris (France)
- Bomb disposal robots: state of the art and an innovative solution for airspace security
  Sandro Costo, R. Molfino, M. Zoppi - PMARlab – DIMEC University of Genova. Genova (Italy)
- Adoption of robotics technology transfer in Iran
  Mahdi Ahmadi, F. Farkhooi, A. Ghoreshi Mediseh, A. Rasoolzadeh - Farda Development Research Institute. (Iran)
- Profitable intelligent manufacturing systems for the future
  Jon Bagiu, B. Johansson - Flexlink AB/Chalmers. Göteborg (Sweden)

TH 14 : Home - education entertainment (2)
- Advanced control applied to teleoperation in hostile environments; control and repair inside pipes in nuclear environment
  Jacques Guillot - EDF R&D. Chatou (France)
- A remotely-operated robotic platform for underwater decommissioning tasks
  Emanuele Cavallo, R.C. Michelin, R.M. Molfino - PMARlab–DIMEC-UNIGE University of Genova. Genova (Italy)
- Large reflector assembly in orbit by a mobile space robot
  Shin-Ichiro Nishida, T. Yoshikawa - National Aerospace Laboratory of Japan. Kyoto University. Kyoto (Japan)
- Assembly and stimulation environment for redundant manipulator systems based on DLR’s 3rd robot generation
  Rainer Krenn, B. Schäfer, G. Hirzinger - Institute of Robotics and Mechatronics. Wessling (Germany)
- An underground robotic equipment for leachate draining and landfill remediation
  Matteo Zoppi, A. Barbieri, R.C. Michelin - PMARlab–DIMEC–UNIGE University of Genova. Genova (Italy)

> 12:00 noon - 1:15 p.m: Parallel sessions

TH 21: Theoretical approaches (2)
- Global fuzzy controller for a flexible one-link manipulator ascended to mobile robot
  Rahma Boucetta, M. Benrejeb - L.A.R.A. Engineering School of Tunis. Tunis (Tunisia)
- Using STEP (ISO 10303) to describe robots in manufacturing processes
  Lothar Klein - LKSsoftWare GmbH. Edag (Germany)
- Behavior based control architecture and action selection mechanisms
  Maki K. Habib - Monash University. Malaysia. Selangor (Malaysia)
- Indoor environment recognition based on ambient classification and people detection
  Marco Pirrone, F. Capone, F. Pirri, M. Romano - Autonomous Agent Laboratory for Cognitive Robotics. Roma (Italy)

TH 22: Safety
- Virtual machine for risk prevention
  Jacques Marsot, F. Gardeaux, J. Ciccotelli - INRS. Vandoeuvre Les Nancy (France)
- Safety of human-robot co-operation with a human-like robot arm by applying reflexes; interpretation of contacts in human-robot interaction by a multisensory diagnosis system
  Sadi Yigit, C. Burghart, H. Woern, O. Kerpa - University of Karlsruhe. Karlsruhe (Germany)
- Industrial robot and automation safety
  Weng Low - Occupational Safety and Health Service. Auckland (New-Zealand)
- Safe human-robot cooperation for robots in the low payload range
  Peter Heiligensetzer - KUKA Roboter GmbH. Augsburg (Germany)
- Innovation in robot safety
  Yannick Le Héno - Pilz France Electronic. Strasbourg (France)
TH 23: Robotics and society (2)

- Subject field analysis in terms of human activity
  Tatiana L. Martinova - Moscow State College Institute of Radioengineering, Electronics and Automation. Moskow (Russia)
- A new business model for easy to use and application oriented motion controllers
  ADAM Bruno Alexandre Haag, B.Adam - Cerebellum Automation. Alex (France)
- Demands for and on robots in the food industry
  Klas H. Bengtsson - ABB. (Sweden)

TH 24: Application of new robots

- Development of a kinematic controller for the dockwelder placer mechanism
  Henrik G. Petersen - University of Southern Denmark. (Denmark)
- The concept of a miniature window cleaning robot development potentialities for a mass product
  Florian Simons, R.D. Schraft - Fraunhofer Institute for Manufacturing Engineering and Automation. Stuttgart (Germany)
- A new prototype of robot for automatic fruit picking
  Junzo Abbate, I. Rizzuto, G. Muscato, M. Prestifilippo - CRAM, Università degli Studi di Catania. Catania (Italy)
- Laundering tasks performed by a robot spreading out and sorting of crumpled laundry
  Fumiaki Osawa, H. Seki, Y. Kamiya - 0. Kanazawa (Japan)

> 1:15 - 2:15 p.m: Lunch

> 2:15 - 6:30 p.m: Invited Sessions

THS 31: Biomimetic Robotics

Agné Guillet & Jean-Arcady Meyer - AnimatLab/UPMC-CNRS. (France)

- Behavioural strategies of the artificial mouse
  Miriam Fend, S. Boyet, V.V. Hafner - Artificial Intelligence Lab. Zurich (Switzerland)
- An amphibious robot capable of snake and lamprey-like locomotion
  Alessandro Crespi, A. Guignard, A. Badetscher, A.J. Ipsenert - EPFL. Lausanne (Switzerland)
- Biomimetic smart antenna shapes for ultrasonic sensors in robots
  Rolf Müller, J.C.T. Hallam - Maersk institute, University of southern Denmark. (Denmark)
- Visual stabilisation and guidance of micro aerial robots: a biomimetic approach
  F. Ruffier, S. Violett, N. Francheschi - Movement and Perception Lab. Marseille (France)
- Anytime adaptation in a neural network controlling a walking hexapod
  Gildas Bayad, P. Hénafr, J-A Meyer - AnimatLab, LIRIS. Paris, Versailles (France)
- Single motor driver contruction of hyper-redundant robot
  Ananiev, E. Petrov, B. Hadijskys, I. Kalaykov - Örebro university, Velo Devices LLC. Örebro, West Babylon (Sweden, United States)
- The embodiements of cockroaches behaviour in a micro-robot
  Simon Garnier, R. Jeanson, M. Asapdour, C. Jost, J. Gautrais, G. Theraulaz - Université Paul Sabatier, Swiss Federal Institute of Technology. Toulouse, Lausanne (France, Switzerland)
- Psikharpax, an autonomous and adaptive artificial rat
  Jean-Arcady Meyer, A. Guillet, P. Pirim - AnimatLab, BEV. Paris (France)
- Biomimetic control system of human pinch movement
  S. Bensmail, M. Renault, F.B. Ouedzou, M. Dufosse - LIRIS, Université Versailles. (France)
- Biomimetic reactive navigation system using optical flow on a micro-UAV in urban environment
  L. Muratet, S. Doncieux, J-A Meyer, T. Druot - AnimatLab, Université. Paris (France)

THS 32: Climbing and Walking Robots

Manuel A. Armada - Industrial Automation Institute . Madrid (Spain)

- Bomb disposal robots: state of the art and an innovatiive solution for airplane security
  Sandro Costa, R. Molfino, M. Zopp - University of Genova. Genova (Italy)
- A climbing robot based on under pressure adhesion for the inspection of concrete walls
  K. Berns, C. Hillenbrand - University of Kaiserslautern. Kaiserslautern (Germany)
- Using walking robots for humanitarian de-mining tasks
  P. Gonzales de Santos, E. Garcia, T. Guardabrazo, J.A. Cobano - Instituto de Automatica Industrial. Madrid (Spain)
- Min-tracker V3.0 - a mobile robot for educational and research purposes
  P. Dutkiewicz, T. Jedwabny, M. Kielczewski, M. Kowalski, M. Lawnczak, M. Michalek, K. Kozlowski, D. Pazderski - Poznan University of Technology. Poznan (Poland)
- Powering and actuation of a bio-robotic walking orthosis
- Climbing strategies for remote maneuverability of roboclimber
  Manuel A. Armada, S. Nabulsi - Intituto de Automatica Industrial. Madrid (Spain)
- Design of a single sliding suction cup robot for inspection of non porous vertical wall
  D. Longo, G. Muscato - Università degli Studi di Catania. (Italy)
- In service inspection robotized tool for tanks filled with hazardous liquids – Robotbank Inspec M. P. Ribeiro - Instituto de Soldadura e Qualidade. (Portugal)

THS 33: Nano and Microrobotics

Nadine Le Fort-Piat - UMR CNRS. Besançon (France)

- Nano and microrobotics: present and future
  Ana Almansa-Martin - ARC Seibersdorf research GMBH. (Austria)
- A micromanipulation station based on a new integrated microprehensile microrobot on chip (MMOC)
  Joël Aigrus, Y. Urushima, C. Clévy, R. Perez, A. Hubert, N. Chaillet - UMR CNRS. Besançon (France)
- High thrust force linear actuators
  Sébastien Mazeroille, R. Rabe, T. Varidel, A. Bergander, J.M. Breguet - EPFL. Lausanne (Switzerland)
- Micropositioning by pushing with control by reinforcement learning
  Cédric Adda, N. Le Fort-Piat, G. Laurent - UMR CNRS. Besançon (France)
- Versatile nanohandling robot cell in a Scanning Electron microscope
  Sergej Fatikow - Division Microrobotics and Control Engineering University of Oldenburg. Oldenburg (Germany)
- Automated wire handling in a ‘micro factory’
  A. Steinecker, A. Codourey - CSEM. Alpnach (Switzerland)
- Real time tele-nanomanipulation assisted by virtual environments
  Medhi Ammi, A. Ferreira, G. Gouaisbaut - Laboratoire Vision et Robotique, LAAS. Bourges, Toulouse (France)
- Altruistic behavioural control architecture for cooperative box-pushing task
  R. Allen - University of Leeds. Leeds (United-Kingdom)

> 6:30 p.m: TH 02 Closing session
The Technical Tours

Friday March 26, 2004

Champagne Technical Tour

“Champagne Nicolas Feuillatte”
“Champagne Mumm”

Morning: visit the wine cellars of the “Champagne Nicolas Feuillatte”
Traditional lunch: “Champagne MUMM”
Afternoon: visit the wine cellars of the “Champagne Mumm”

Enter into the heart of the Champagne legend and experience the grape’s journey all the way to the glass in your hand… first hand!

The “champagne Nicolas Feuillatte” invites you to discover the entire champagne-making process by visiting their top-of-the-range automated premises. You will be welcomed into this modern and spacious site, and you will be shown absolutely everything: the vat houses, the blending, turning, and disgorging processes, etc. Take part in authentic wine course. You will then head for the premises of the prestigious “PA Mumm & Cie”, where lunch will be served. Afterwards all the secrets of their champagne will be revealed to you, from the art of blending through to the slow ageing process in the cellars. You will be an expert!

This visit will last for about an hour, and then the “PA Mumm & Cie” will invite you to taste their finest vintages.

Automobile Technical Tour

Renault and the “Château de Versailles”

Morning: visit the Renault Flins factory
Lunch: gastronomic Versailles restaurant
Afternoon: visit the “Château de Versailles” and all its splendours.

A behind-the-scenes view of the future Renault vehicles!

Renault, the leading name in the European automobile industry, invites you to a guided tour of one of its manufacturing premises. Its high performance automated plants ensure that Renault is also amongst the top companies in the global automobile market.

This is your chance to see the workings of the Pierre Lefaucheux factory in Flins close up, and to discover all the stages involved in the manufacture of the Twingo and Clio vehicles, two classic French urban models.

At lunchtime, allow yourself to be tempted by a gastronomic menu with a “made in France” guarantee in an elegant and convivial setting - a pleasure for your eyes and taste buds.

In the afternoon, the programme is to retrace the footsteps of the “Sun King” and take in all the charms of the aptly named “Splendours of Versailles”.

The talent of the now famous architects and decorators, who built the château under the orders of Louis XIV, ensured that it would become the most prestigious courtly residence in Europe.

During this guided visit you will be able to discover all the secrets of the spectacular gardens of Versailles as well as the history of the most sumptuous rooms in the palace. A truly royal visit!

TT1: Champagne
170 € / HT

TT2: Automobile
130 € / HT

TT 1: Champagne Technical Tour
(transport – lunch – visit of cellars included)
The Technical Tour is a company visit which includes for the:
“CHAMPAGNE” TECHNICAL TOUR
Visits of the “Champagne Nicolas Feuillate” and “Champagne Mumm”
8:30 a.m: leave Parking Paris-Nord Villepinte
11:00 – 12:30 p.m: visit cellars of “Champagne Nicolas Feuillatte” (1 hr cella visit and tasting)
12:30 – 1:15 p.m: Transfer by bus Chouilly – Reims
1:30 p.m: typical lunch: “Champagne Mumm”
3:00 p.m: visit of the cellars of the “Champagne Mumm” (1:30 hr cella visit and tasting)

Leave Parking Paris-Nord Villepinte: 8:30 a.m
Return to Paris planned for: 7:00 p.m
Deadline for registration: January 15, 2004

TT 2: Automobile Technical Tour
(transport – lunch - visit of Renault and the “château de Versailles” included)
The Technical Tour is a company visit which includes for the:
“AUTOMOBILE” TECHNICAL TOUR
Visits of RENAULT and the CHATEAU DE VERSAILLES
7:00 a.m: leave Parking Paris-Nord Villepinte
8:30 a.m: visit installations at Renault Flins
12:00 noon - 1:00 p.m: transfer by bus from Aubergenville to Versailles
3:00 p.m: Lunch
3:00 – 5:00 p.m: visit of “Château de Versailles” and its splendours. (Guided group tour 1:30 hr)

Departure: 7:00 a.m
Return to Paris planned for: 7:00 p.m
Deadline for registration: January 15, 2004

The organiser reserves the right to cancel or modify these visits. Please note: the tour is subject to minimum attendance, and space is limited.

To register for the Technical Tour: TT1 or TT2 refer to the attached registration file.
Ladies, Paris is at you feet...

Together with Rome, Paris is known as the city with the most famous monuments and places. The various Kings and Presidents of the Republic who succeeded one another in the course of France’s history have left their architectural and cultural imprint. This customised programme allows you to discover the riches that make Paris one of the most beautiful capitals in the world.

**Tuesday 23**

**Visit of Paris**

**Cruise on the Seine**

**DEPARTURE:** Paris Vision 9.15 a.m (see the map)

**DURATION:** 3.30

By boat re-live 2000 years of Parisian history. During this cruise and mini-bus excursion, you pass through the most prestigious city areas enabling you to admire their many historical monuments: the Champs de Mars, and the Eiffel Tower, Champs-Elysées, Concorde Square, Madeleine, Opera, Notre-Dame, Ile de la Cité and the Latin Quarter.

**Wednesday 24**

**Visit of Paris**

**Montmartre**

**DEPARTURE:** Paris Vision 9.15 a.m (see the map)

**DURATION:** 3.00

Discover Paris and its history through the city is major landmarks and monuments: Madeleine, Opera, Vendôme Square, Concorde, Arch of Triumph and Champs-Elysées, Eiffel Tower (photo stop) Invalides, Louvre, Sacré-Cœur, Moulin of the Galette, the vineyards and Place du Tertre.

**Thursday 25**

**Paris Art Highlights, Notre-Dame**, Louvre Museum

**DEPARTURE:** Paris Vision 9.15 a.m (see the map)

**DURATION:** 3.30

A major architectural feat, a gothic masterpiece and subject of the historical novel written by Victor Hugo, you will be filled with wonder by the guided visit of Notre Dame cathedral, begun by Maurice Sully in 1163. You will then go to the Louvre where your guided visit will be centred around three works of world renown: the Venus de Milo, the Victory of Samothrace and the Mona Lisa, painted by Leonardo da Vinci at the beginning of the 16th century. Those avid for further knowledge may wish to extend their visit by exploring other departments in the world’s largest museum.

Specials offers

Ladies, your all inclusive “ladies programme” includes:


Visit all excursion departures are at: 9.15 a.m. The meeting point is Paris Vision Rivoli 214, rue de Rivoli, 75001 Paris. The excursions are organised by: Paris Vision Rivoli - Metro TUILERIES

Benefit from a 10% discount on all your purchases at The Galeries “Lafayette”, situated in the heart of Paris, the most famous department store in France. Because of its architecture and incomparable selection of goods it is a must for any foreign visitor to Paris. The Galeries Lafayette is now the symbol of Parisian creation and of French elegance throughout the world. It presents the greatest names in fashion, beauty, accessories and in the art of entertaining. Specific services are proposed: duty-free for export, reception desk, free fashion shows, group welcome, Lafayette gourmets, 8 restaurants, etc.

Before your visit discover this prestigious boutique on: www.galerieslafayette.com.

Your discount card will be handed to you during your visit to “Cruise on the Seine”.

Conducted by a qualified guide-interpreter. Please note: the tour is subject to minimum attendance, and space is limited.

The organiser Exposium reserves the right to cancel or modify these visits. Excursions cannot be sold separately. The price includes all visits and services offered and mentioned above. Meals are not included in this service, except the Gala Dinner at the Lido, on March 24, 2004, and the Technical Tour on March 26, 2004 (deadline: January 15, 2004).

To register for the (all-inclusive) Ladies programme refer to the attached registration file.
Named after Joseph F. Engelberger*, known throughout the world as the founding force behind industrial robotics, the Engelberger Robotics Awards are the world’s most prestigious robotics honor. Since its inception in 1977, awards have been presented to 89 robotics leaders from the United States, Korea, Canada, Japan, Italy, England, France, Germany, Poland, Sweden, Australia, Norway, and Switzerland. The 2004 Engelberger Robotics Award winners receive an honorarium and a special commemorative medal.

This Award Ceremony will take place, Wednesday March 24, just before the ISR Gala Dinner

*Joseph Engelberger will personally present the awards to the winners.

The “Champs Elysées” is reputedly the most beautiful Avenue in the world... It deserves to host one of the greatest shows in Paris: The variety show “Bonheur” of the LIDO DE PARIS! A show full of surprises, sensuality and rejoicing in the grand tradition of the “Made in Paris” shows for your Gala evening.

The LIDO DE PARIS welcomes you in all its splendour! “Bonheur” the major Paris show with 80 artists and special effects, 600 costumes and astonishing attractions that will make for an unforgettable evening.

Shuttle “Parc d’Expositions Paris-Nord Villepinte” leaves at 17:30 p.m
Lido, 116Bis av Champs Elysées 75008 Paris from 8 p.m (Shuttle - Dinner and show included).

The ISR Awards Gala Dinner is included in the: “Pass 3 days + Gala Dinner . Refer to the attached registration file.
115 trade exhibitions that lead their industries

A crossroads for industries and markets, a confluence of ideas, discover the n°1 event for your industry, connect, right now, to our website www.exposium.fr
Your exhibition is already there!
## Registration - Information

Return the enclosed form by mail (completed form and payment enclosed) for the attention of:
EXPOSIUM – ISR 2004 1, rue du Parc F- 92593 Levallois Perret – Cedex France
You can download the registration form at: www.isr2004.com

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## Congress Participant Pass

### The pass

Your pass allows you to enjoy the conference programme at will, at the pace and on the days that are suitable for you and to optimally manage your participation in ISR 2004.

### Your pass covers

- access to all proposed conferences on the chosen day(s) indicated on the reservation form subject to available places. No place reservations are possible,
- a copy of the conference proceedings,
- lunch and coffee breaks on the chosen day(s),
- access to the INDUSTRIE 2004 – SITS 2004 exhibitions during 3 days upon presentation of your name badge
- access to the VIP club,
- access to the Award Ceremony and Gala Dinner, if you choose this option,
- access to the animations, exhibitor workshops and mini-conferences held at INDUSTRIE 2004 and SITS 2004 (subject to available places),
- the official event catalogue.

Your pass will be issued to you at the Paris-Nord Exhibition Centre, at the welcome desk in HALL 6 " Registered Congress Participants " on March 22, 2004 between 14:00 and 17:00 p.m and on March 23-24, 2004 from 8:00 a.m onwards.

### Opening hours of the Symposium and of the INDUSTRIE 2004 SITS 2004 exhibitions

<table>
<thead>
<tr>
<th>Day</th>
<th>Conferences ISR 2004</th>
<th>INDUSTRIE 2004 &amp; SITS 2004 exhibitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday March 22, 2004</td>
<td>Registration 2:00 p.m</td>
<td>9:00 a.m - 6:00 p.m</td>
</tr>
<tr>
<td>Tuesday March 23, 2004</td>
<td>Registration as from 8:00 a.m 9:00 a.m - 5:30 p.m</td>
<td>9:00 a.m - 6:00 p.m</td>
</tr>
<tr>
<td>Wednesday March 24, 2004</td>
<td>Registration as from 8:00 a.m 9:00 a.m - 5:30 p.m</td>
<td>9:00 a.m - 6:00 p.m</td>
</tr>
<tr>
<td>Thursday March 25, 2004</td>
<td>9:00 a.m - 6:00 p.m</td>
<td>9:00 a.m - 6:00 p.m</td>
</tr>
<tr>
<td>Friday March 26, 2004</td>
<td>Technical Tours</td>
<td>9:00 a.m - 5:00 p.m</td>
</tr>
</tbody>
</table>

Reminder: Access to the INDUSTRIE 2004 and SITS 2004 exhibitions is FREE on presentation of the Pass ISR 2004 bearing your name. On site, without invitation the entrance fee to the exhibition is of €30 (Tax incl.). Complete information on these exhibitions is available at: www.industrie-expo.com and, www.sits.com.
Access

Different means of transport are available to reach Paris-Nord Villepinte. Download all the access maps at www.isr2004.com, under the heading “practical information”.

The RER B is the most straightforward and quickest way of transport to Parc d’Expositions Paris-Nord Villepinte.

**BY ROAD**

Take the A1 or A3 motorway towards Lille then the A104 towards Soissons. Follow the signs to the “Parc d’Expositions” and go to the “Visitors” entrance.

**BY TRAIN**

Take the TGV (HST) to the station of Charles de Gaulle airport. You can then reach the Parc d’Expositions by RER (Suburban Transit).

(From Roissy take the RER Line B towards St Rémy les Chevreuse – Get off at the station “Parc d’ Expositions”)

**BY RER**

From Paris take the RER Line B towards Roissy – Get off at the station “Parc d’Expositions” (there is a train approximately every 8 mins – Travel time: 25 minutes from the Gare du Nord station)

From Roissy take the RER Line B towards St Rémy les Chevreuse – Get off at the station “Parc d’Expositions”

**BY PLANE**

You can land either at Paris Charles de Gaulle or Paris Orly. (However, the airport Paris Charles de Gaulle is closer to the exhibition)

From Charles de Gaulle, you can reach the Parc des Expositions in 5 mins by car, taxi or RER (take the RER Line B towards St Rémy les Chevreuse – Get off at the station “Parc d’Expositions”)

From Orly airport you must go by car, taxi or RER (Take the Orlyval and get off at Antony, then take the RER B towards Roissy CDG and get off at the station "Parc d’Expositions")

Reduction

Validity: from 15/03/2004 to 31/03/2004. Reductions recorded on: GGAIRAFEVENTNEGO

On the France metropolitain network

On presentation of the exhibition invitation card you can obtain up to 45% reduction (subject to conditions) to attend the event. Contact 0 820 820 820* to obtain your electronic ticket.

On the international network

AIR France agencies and reservation centres throughout the world will offer preferential rates for departures from your country.

For the DOM-TOM: adapted official Air France rates.

List of the Air France agencies and reservation centres on the Internet at: www.airfrance.com

Hotels

ATI, official central booking office for the Symposium, is pleased to propose you negotiated rates for your hotel booking - Hotels situated nearby the symposium and in the center of Paris. And all practical information enabling you to organise your stay.

Please contact:

ATI, 46, rue Lauriston 75016 Paris - France
Tel: 33 (0)1 47 27 15 15 Fax: 33 (0)1 44 05 01 48
email: isrhotes@ati-abotel.com
web: www.ati-abotel.com - password: isrhotes

Proceedings

2 documents will be given: the abstracts on a printed book + full text (and posters) on a CD ROM.
All delegates will receive a copy of the proceedings of ISR 2004 SYMPOSIUM free of charge, produced from the documents supplied by the speakers. The official records of the conference are available at the conference reception of Hall 6.

Official Language

The conferences will be held in English only. Abstracts and complete texts of the proceedings will all be written in English.

Location

Parc d’Expositions de Paris - Nord Villepinte - Zac Paris Nord II all Erables 93420 VILLEPINTE / Tel: 33 (0)1 48 63 30 30

Symposium Secretariat

IFR Secrétariat
39-45 rue Louis Blanc
92308 Paris La Défense cedex - France
Tel: 33 1 47 17 67 00 Fax: 33 1 47 17 67 25
www.ifr.org

Exposium
1, rue du Parc
F - 92593 LEVALLOIS PERRIN - France
Tel: 33 1 49 68 54 77 Fax: 33 1 49 68 54 94
www.exposium.fr
Registration Form

1 form per person. Please photocopy for any additional registration

ISR 2004: March 23-26, 2004 – Paris-Nord Villepinte Exhibition Centre - France

Please complete this form IN CAPITAL LETTERS and return it to us (with your payment) by mail to: EXPOSIUM-Congrès ISR 2004 1, rue du Parc F-92593 Levallois- Perret Cedex - FRANCE

Registration number (delivered by the ISR Scientific Committee):

Family Name:........................................ First Name:........................................

Company/Institution:...........................................................................................................

Address:...................................................................................................................................

Postcode:........................................ City: ......................................................... Country:........................................

Tel:........................................................................................................................................ Mobile:........................................ Fax: ........................................ E-mail:........................................

My job title/function is (only select one)

☐ A.01 Corporate Management
☐ A.02 Manufacturing Management
☐ A.03 Manufacturing Engineering
☐ A.04 Production Management
☐ A.05 Production Engineering
☐ A.06 Process Control Engineering
☐ A.07 Educator

My company’s primary industry is (only select one)

☐ B.01 Aerospace
☐ B.02 Automotive Manufacturer
☐ B.03 Automotive Supplier
☐ B.04 Consumer Goods
☐ B.05 Defence/Military
☐ B.06 Education
☐ B.07 Electronics
☐ B.08 Food & Beverage
☐ B.09 Furniture
☐ B.10 Medical Devices
☐ B.11 Paper/Printing
☐ B.12 Pharmaceuticals
☐ B.13 Plastics
☐ B.14 Textiles

My company is (only select one)

☐ C.01 OEM
☐ C.02 System Integrator
☐ C.03 End User
☐ C.04 Robot Supplier
☐ C.05 Vision Supplier
☐ C.06 Consulting Firm
☐ C.07 Government Facility
☐ C.08 Research Lab
☐ C.09 University

Registration for conferences

Tick the selected Pass:

DELEGATES

Full rate Special rate for registration before 1/01/2004

□ TP3S 3-day Pass + Gala dinner 1600 € (incl. VAT) 1400 € (incl. VAT)
□ TP3 2-day Pass 1100 € (incl. VAT) 890 € (incl. VAT)
□ TP1 1 day Pass 500 € (incl. VAT)

STUDENTS (on presentation of a valid student card)

Special rate

□ SEP3S 3-day Pass + Gala dinner 450 € (incl. VAT)
□ SEP3 2-day Pass 280 € (incl. VAT)
□ SEP1 1 day Pass 130 € (incl. VAT)

SPEAKERS

Special rate

□ SCP3S 3-day Pass + Gala dinner 1150 € (incl. VAT)

Other services offered to registered delegates

☐ JTT Technical Tour (choice): Friday March 26, 2004
☐ JTD Ladies programme
☐ JCP Proceedings of all lectures (USB) 200 € (incl. VAT)
☐ JCD CD Rom of all presentations
☐ JSRG Special Gala Dinner 300 € (incl. VAT)

TT + JD: registration until January 15, 2004*

Select the sessions you wish to attend. This does not constitute a commitment and does not reserve a place.

Payment

Specify the invoicing address if different from that shown above:

Company/Institution:..........................................................................................................

Address:...................................................................................................................................

Postcode:........................................ City: ......................................................... Country:........................................

Attention: Your registration will only be accepted upon receipt of this form completed and signed. The payment should be enclosed with the order.

Mode of payment

☐ I certify that I am aware of the General Conditions of Participation in the ISR 2004 Symposium shown on the back of this form and am sending you my payment inclusive of taxes.
☐ Bank transfer for the attention of EXPOSIUM / Congrès ISR
Bank Code: VIREMENT: for the attention of EXPOSIUM / Congrès ISR 2004 (attach a copy of the transfer slip) Crédit commercial de France CCF
40, Passage de l’Arche, 92090 La Défense – France. Bank code: 30056 - branch code: 00024
Account: 00 24 2275 144 - RIB key: 43 - domiciliation CCF Paris AGE

Please indicate the name of the delegate and/or the invoice number.

☐ Cheque: must be enclosed with your registration request, payable to EXPOSIUM / Congrès ISR 2004, 1 rue du parc 92593 Levallois - Perret- Cedex France. We will send you an invoice.

I declare that I accept unreservedly and without restriction the general conditions of participation in the ISR 2004 Symposium and renounce any right of recourse against the organizer.

Company stamp (compulsory): Signature (compulsory):

Through us, you may receive propositions from other companies or associations. If you do not wish this, just write to us with your contact details and the name of the event. In accordance with article 27 of the law of 06/01/1978, you have the right to access and rectify the information held on you.

* (as evidenced by postmark)
The present general conditions of participation in the ISR 2004Symposium are systematically given or sent to each customer to enable them to register. Any request for registration to the Symposium implies full, entire and unreserved acceptance by the delegate, speakers of these conditions. No particular condition can override these conditions, unless with the formal written agreement of the organiser. No contrary condition posed by the delegate shall therefore, in the absence of express acceptance, be enforceable upon the organiser, whenever it may have been brought to its attention.

For all registrations, complete the attached registration form and return it with your payment to: EXPOSIUM-Congrès ISR 2004 1, rue du Parc F-92359 Levallois-Perret Cedex - France.

If you want to change the day, please notify the fact by fax to 33 01 49 68 54 84 before February 15, 2004*.

RATES AND REDUCTIONS

(*as evidenced by the postmark)

RATES : REGISTRATION TO SYMPOSIUM

Delegates rates

Special rate for registration before 15/01/04* after 15/01/04*
3-day Pass + Gala dinner 1250 € / EXCL. TAXES 1400 € / EXCL. TAXES
3-day Pass 1150 € / EXCL. TAXES 1200 € / EXCL. TAXES
1 day Pass 500 € / EXCL. TAXES 500 € / EXCL. TAXES

Students rates (On presentation of a valid student card)

Special rate until March 26 2004 included*
3-day Pass + Gala dinner 450 € / EXCL. TAXES
3-day Pass 380 € / EXCL. TAXES
1 day Pass 130 € / EXCL. TAXES

Speakers rates

Special rate until March 26 2004 included*
3-day Pass + Gala dinner 1150 € / EXCL. TAXES

Other services offered by ISR 2004

DESCRIPTION OF THE SERVICES

Technical Tour: visit the Friday March 26, 2004 (deadline: 15/01/04*)

TT1 : Champagne 170 € / EXCL. TAXES
TT2 : Automobile 130 € / EXCL. TAXES

See the page 17 (Technical Tours) - organiser: Exposium

Fixed rate Ladies Programme (deadline: 15/01/04*)
March 23, 24, 25 and 26, 2004 600 € / EXCL. TAXES

See the page 18 (Ladies programme) - organiser: Exposium + Paris Vision

Proceedings and CD Rom

Price of the CD Rom 100 € / EXCL. TAXES the unit

(CD Rom with Full Papers and Posters)

Price of the proceedings

100 € / EXCL. TAXES the unit

(printed version of Abstracts)

(within available stock limits, inclusive of shipping - deadline: 30/06/04*).

ISR Gala Dinner

Cocktail-show and dinner / Transport included - valid for 1 person (space is limited) 150 € / EXCL. TAXES

See the page 19 (ISR Awards Gala Dinner)

To register for Technical Tour TT1 or TT2, complete the attached registration form and return it with your payment to: EXPOSIUM-Congrès ISR 2004 1, rue du Parc F-92359 Levallois-Perret Cedex - France, before January 15, 2004*. (Number of reservations limited, depending on availability). The organiser may cancel or modify these visits if the number of participants is insufficient.

MODE OF PAYMENT

Your registration will be accepted on receipt of this form completed and signed. Payment is in cash and must be enclosed with your order. Your payment must reach us inclusive of all taxes.

You can pay by

TRANSFER: For the attention of EXPOSIUM / Congrès ISR 2004 (attach a copy of the transfer slip) Crédit commercial de France CCF, 40, Passage de l’Arche, 92090 La Défense – France.

Bank code: 30056 - branch code: 00024
Account: 00 24 2275 144 - RIB key: 43 – Domiciliation CCF Paris AGE

Please indicate the name of the delegate, speakers and/or the invoice number, the Congrès ISR 2004 reference and keep a receipt of the transfer confirmation.

CHEQUE: for the attention of EXPOSIUM / Congrès ISR 2004 1, rue du Parc F-92359 Levallois-Perret Cedex - France

CANCELLATION

Cancellations in writing received by registered letter with acknowledgement of receipt before February 15, 2004* will be reimbursed, except that 20% of the total of the order will be withheld for administrative costs.

After February 15, 2004*, in the event of cancellation by the participant, the full amount remains due.

However, participants may be replaced by any other person from the same company until the delegate badges are collected.

The organiser reserves the right to modify the content of the programme, the speakers and the times of speeches if, despite their best efforts, circumstances so require.

CANCELLATION by Exposium

If the number of participants is insufficient, the organiser reserves the right to cancel the conference and all related services, including in particular the proceedings and the CD Rom, the “Technical Tour”, the “Ladies Programme” and the “ISR Gala Dinner”, without any liability on its part.

Exhibitors who have returned the registration form for the conference and reserved the services listed above, will be informed of the cancellation of the operation by February 15, 2004* at the latest. They will be reimbursed the full amount invoiced and actually paid on the date of the cancellation.

To register for Technical Tour TT1 or TT2, complete the attached registration form and return it with your payment to: EXPOSIUM-Congrès ISR 2004 1, rue du Parc F-92359 Levallois-Perret Cedex - France, before January 15, 2004*. (Number of reservations limited, depending on availability). The organiser may cancel or modify these visits if the number of participants is insufficient.

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Find up-to-date

ISR information on the internet:

www.isr2004.com
and
www.ifr.org

Your contact: isr2004@exposium.fr
Pour vous, nous saisissons les technologies mondiales

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PINCES DE ROBOTS
Avec CCMOP intégrez un pôle robotique fort et bénéficiez du meilleur des technologies mondiales : pinces de préhension, angulaires, parallèles, à ouverture totale, 2 ou 3 axes… de fabrication CCMOP, Robohand ou EOA.

ROBOT GRIPPERS
CCMOP, leaders in the robotics sector, bring you the benefit of the world's best technologies: gripper clamps, angular, parallel, full opening, 2 or 3-axes, and more, made by CCMOP, Robohand or EOA.

Bâtiment Aristote - 9, avenue du Maréchal - 95108 ARGENTEUIL Cedex - FRANCE
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E-mail : ccmop@ccmop.com
Site web : www.ccmop.com