PROGRAMME

20-22 SEPTEMBER 2006

Instituto Superior Técnico, Lisbon, Portugal

ORGANIZERS
7TH IFAC CONFERENCE ON MANOEUVRING AND CONTROL OF MARINE CRAFT

20-22 SEPTEMBER 2006
LISBON PORTUGAL

SPONSORS

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Institute for Systems and Robotics (ISR)
Lisbon, Portugal

IFAC – International Federation of Automatic Control

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Instituto Superior Técnico (IST) and
Institute for Systems and Robotics (ISR), Portugal

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Fernando Lobo Pereira, Institute Syst.Robotics / Univ.Porto, Portugal
SCOPE and VENUE

The 7th IFAC Conference on Manoeuvring and Control of Marine Craft (MCMC'2006) will be held in Lisbon, Portugal, from September 20-22, 2006. The conference will take place at the Instituto Superior Técnico (IST), the school of engineering of the Technical University of Lisbon.

The MCMC’2006 will provide an excellent opportunity for the presentation and discussion of research and development work in the general area of automatic control with applications to the maritime field. Specific topics will include guidance and control, monitoring and surveillance, optimization and operations planning, modelling and identification, and operational safety. Motivated by recent, fast paced developments in the area, special attention will also be given to the discussion of a number of topics that include navigation, guidance, and control of robotic marine platforms and systems, including autonomous surface and underwater vehicles. Researchers and practitioners from these fields will be brought together to discuss common theoretical and practical problems, describe scientific and commercial applications, and explore avenues for future research.

This Conference is the seventh of a series of IFAC-sponsored meetings in the field of Manoeuvring and Control of Marine Craft, held on a triennial basis. The last two editions took place in Spain (MCMC’2003) and Denmark (MCMC’2000).

The MCMC’2006 is organized by the Instituto Superior Técnico (IST) in cooperation with the Institute for Systems and Robotics (ISR) and the Portuguese Association of Automatic Control (APCA), a national member organization of the International Federation of Automatic Control (IFAC).
SOCIAL PROGRAMME

WELCOME RECEPTION
Wednesday September 20, 2006 18:15 -19:00
Congress Center of IST

CONFERENCE BANQUET*
Thursday September 21, 2006 20:00 - 22:00
OCEANARIUM, EXPO 98

Other social activities to be proposed and arranged with local tour operator at the registration desk

* Included in the registration fee, extra tickets available at the registration desk.

INFORMATION FOR PARTICIPANTS

The registration desk will be available at the Main Hall of the conference, locate in the Congress Center of the Instituto Superior Técnico.

All sessions will take place in the Congress Center of the Instituto Superior Técnico.

Plenary sessions and the opening and closing ceremonies will take place at the main Amphitheatre.

Coffee breaks will be served next to the Main Hall of the conference.

Speakers should introduce themselves to the chairperson 10 minutes before the starting of their sessions. In order to reduce the time between presentations, it is recommended that electronic files for projection be ready and tested in the computer of the room before the session begins.
Wednesday, 20th of September

MCMC 2006 PROGRAMME

Wednesday, 20th of September

8:00 – Conference registration starts

9:00 – 9:30 Opening session – Room Amphitheatre

9:30 – 10:30 PLENARY SESSION
ROOM AMPHITHEATRE

MARINE ROBOTS: ADVANCED TOOLS FOR MARINE SCIENCE
Dana Yoerger (WHOI, USA)

10:30 – 11:00 Coffee break

11:00 - 12:20 [WeA-1] CONTROL OF UNDERWATER VEHICLES I
Chair: Ettore Barros (Univ. São Paulo - USP, Brasil)
ROOM AMPHITHEATRE

ROBUST DIVING CONTROL OF AN AUV
Lionel Lapierre, Vincent Creuze, Bruno Jouvencel
(LIRMM, Montpellier, France)

UNDERACTUATED AUV ROBUST CONTROL
Decio C. Donha, Juan C.C. Luque (Univ. São Paulo - USP, Brasil)

11:00 - 12:20 [WeA-2] POWER AND PROPULSION SYSTEMS
Chair: Asgeir Sørensen (NTNU, Norway)
ROOM 02.1

EXPERIMENTAL VALIDATION OF A MARINE PROPELLER
THRUST ESTIMATION SCHEME
L. Pivano, Ø. N. Smogeli, T. A. Johansen, T. I. Fossen (NTNU, Norway)

OVERVIEW OF PROPULSION CONTROL FOR SURFACE
VESSELS
Eivind Ruth, Øyvind N. Smogeli, Asgeir J. Sørensen (NTNU, Norway)

MIMO CONTROLLER CONCEPT FOR VESSELS WITH
MODERN STEERING GEARS
Holger Korte (MATNAV, Germany)
Bernhard P. Lampe, Jens Ladisch, Matthias Wulff, Cathleen Korte
(Univ. Rostock, Germany)

OPERATING CRITERIA FOR DESIGN OF POWER
MANAGEMENT SYSTEMS ON SHIPS
Damir Radan, Øyvind N. Smogeli, Asgeir J. Sørensen, Alf Kåre Ådnanes
(NTNU, Norway)
11:00 - 12:20 [WeA-3] ROLL MOTION CONTROL
Chair: Geoff Roberts (Coventry Uv., UK)
ROOM 02.2
APPLICATION OF INVERSE CONTROL FOR BETTER ROLL STABILIZATION OF SHIPS USING ACTIVE ANTIROLL TANKS
Reza Moaleji, Alistair R. Greig (Univ. College London, UK)
NONLINEAR CONTROL DESIGN FOR INTEGRATED RUDDER ROLL STABILIZATION
Reza Pawel Majecki, Reza Katebi, Michael J. Grimble (Univ. Strathclyde, UK)
THE APPLICATION OF SWITCHED CONTROL FOR SHIP ROLL STABILISATION
G. Roberts, V. Cournou, B Vinsonneau, K. Burnham (Coventry Uv., UK)
ADVANCED CONTROL STRATEGIES FOR THE ROLL STABILIZATION OF OCEAN MOTORYACHTS
Giulia Gerini, Gianluca Ippoliti, Sauro Longhi, Giuseppe Orlando (Univ. Ancona, Italy)
Pasquale Scala (ISA Yachts, Ancona, Italy)

12:20 – 14:00 Lunch

14:00 - 15:00 PLENARY SESSION
ROOM AMPHITHEATRE
INSTRUMENTS FOR MARINE NAVIGATION: A HISTORICAL PERSPECTIVE
Malhão Pereira (Cmdt. Portuguese Navy)

15:00 - 16:20 [WeB-1] CONTROL OF UNDERWATER VEHICLES II
Chair: Decio Donha (USP, Brasil)
ROOM AMPHITHEATRE
WEATHER OPTIMAL DYNAMIC POSITIONING OF UNDERACTUATED AUVS USING OUTPUT FEEDBACK CONTROL
Jon e. Refsnes, Asgeir J. Sørensen, Kristin Y. Pettersen (NTNU, Norway)

OBSERVER DESIGN FOR UNDERWATER VEHICLES WITH POSITION AND ANGLE MEASUREMENT
Jon E. Refsnes, Kristin Y. Pettersen, Asgeir J. Sørensen (NTNU, Norway)

NONLINEAR CONTROL OF AN UNDERWATER TRANSDUCER TOWED VEHICLE
Francisco C. Teixeira, A. Pedro Aguiar, António M. Pascoal (IST/ISR, Portugal)

CONTROL OF THE MAYA AUV IN THE VERTICAL AND HORIZONTAL PLANES: THEORY AND PRACTICAL RESULTS
15:00 - 16:20 [WeB-2] VISION IN MARINE ROBOTICS
Chair: Massimo Caccia (CNR-ISSIA Genova, Italy)
ROOM 02.1

VISION-BASED SLAM FOR ROVs: PRELIMINARY EXPERIMENTAL RESULTS
Massimo Caccia (CNR-ISSIA Genova, Italy)

VISION-BASED AUTONOMOUS SURFACE VEHICLE DOCKING MANOEUVRE
Martins, J. M. Almeida, E. P. Silva (ISEP, Porto, Portugal)
F. L. Pereira (FEUP, Porto, Portugal)

VISION SYSTEMS IN THE CONTROL OF AUTONOMOUS UNDERWATER VEHICLES
Jonathan Horgan, Daniel Toal (Univ. Limerick, Ireland)

VISION-BASED CONTROL IN AUTONOMOUS MANIPULATION FOR INTERVENTION MISSIONS AUV
Giacomo Marani (Univ. Hawaii, USA), J. Yuh (NSF, USA)

15:00 - 16:20 [WeB-3] COOPERATIVE SHIP CONTROL
Chair: Kristin Pettersen (NTNU, Norway)
ROOM 02.2

CONTROLLER DESIGN FOR A FLEET OF SHIPS
E. Shimizu (Tokyo University of Marine Science and Technology, Japan)
E. Pedersen (NTNU, Norway)

AUTONOMOUS SCALED SHIPS FOR EXPERIMENTAL STUDY OF COOPERATIVE MARINE ROBOTICS
C. Leon, J.M. Giron-Sierra, S. Esteban (Univ. Complutense de Madrid, Spain)

16:20 – 16:50 Coffee break

16:50 - 18:10 [WeC-1] FORMATION CONTROL
Chair: João Sousa (FEUP, Portugal)
ROOM AMPHITHEATRE

LEADER-FOLLOWER DYNAMIC SYNCHRONIZATION OF SURFACE VESSELS
Erik Kyrkjebø, Kristin Y. Pettersen (NTNU, Norway)

FORMATION CONTROL OF UNDERACTUATED MARINE VEHICLES WITH COMMUNICATION CONSTRAINTS
Even Børhaug, Alexey Pavlov, Reza Ghabcheloo, Kristin Y. Pettersen, António Pascoal, Carlos Silvestre (NTNU, Norway and IST/ISR, Portugal)

COORDINATED PATH FOLLOWING CONTROL OF MULTIPLE AUVS IN THE PRESENCE OF COMMUNICATION FAILURES AND TIME DELAYS
Reza Ghabcheloo, A. Pedro Aguiar, António Pascoal, Carlos Silvestre (IST/ISR, Portugal)

GUIDED FORMATION CONTROL FOR FULLY ACTUATED MARINE SURFACE CRAFT
Morten Breivik, Maxim V. Subbotin, Thor I. Fossen (NTNU, Norway)
Wednesday, 20th of September

16:50 - 18:10 [WeC-2] FAULT DETECTION AND TOLERANT SYSTEMS
Chair: Zoran Vukic
ROOM 02.1

FAULT-TOLERANT SENSOR FUSION FOR MARINE NAVIGATION
Mogens Blanke (Tech. Univ. Denmark, Denmark)

FUZZY FAULT DETECTION AND ISOLATION IN ELECTRO-HYDRAULIC MARINE CONTROL SYSTEMS
L. F. Mendonça, C. A. Silva, L. F. Baptista (ENIDH-IDMEC, Portugal)

COMPARISON OF TWO FREQUENCY BASED PI METHODS ON SHIPS DYNAMICS
R. Ferreiro García (Univ. Coruña, Spain), M. Haro Casado (Univ. Cádiz, Spain)

16:50 - 18:10 [WeC-3] MOTION PLANNING
Chair: Giovanni Indiveri
ROOM 02.2

MOTION PLANNING FOR COORDINATED OPERATION OF MULTIPLE NONHOLONOMIC VEHICLES UNDER CONSTANT DISTURBANCE
Jorge Silva (ISEP, Porto, Portugal)
João Sousa (FELIP, Porto, Portugal)

INTELLIGENT SHIP STEERING SYSTEM
Roman Śmierchalski (Gdynia Maritime University, Poland)

ON PLANNING SMOOTH PATHS FOR MARINE VEHICLES
Giovanni Indiveri, Gianfranco Parlangeli (Univ. Lecce, Italy)

Thursday, 21st of September

8:30 – 9:30 PLENARY SESSION
ROOM AMPHITHEATRE

FUTURE DEVELOPMENTS AND APPLICATIONS OF MARINE ROBOTICS
James Bellingham (MBARI, USA)

9:30 - 10:30 [ThA-1] PATH-FOLLOWING AND TRAJECTORY TRACKING
Chair: L. Lapierre (LIRMM, Montpellier, France)
ROOM AMPHITHEATRE

LOS PATH FOLLOWING FOR UNDERACTUATED UNDERWATER VEHICLE
Even Børhaug, Kristin Y. Pettersen (NTNU, Norway)

PATH FOLLOWING PREVIEW CONTROL OF AUVS: AN APPLICATION TO THE INFANTE VEHICLE
Nuno Paulino, Carlos Silvestre, Rita Cunha, António Pascoal (IST/ISR, Portugal)

MANOEUVRE-AUTOMATON BASED MOTION PLANNING AND TRAJECTORY TRACKING OF AN AUTONOMOUS MARINE VEHICLE
W. Naeem, C. S. Tan, R. Sutton, J. Chudley (Univ. Plymouth, UK)

18:15 – Welcome reception

Thursday, 21st of September

MULTI PSEUDO BANG BANG CONTROL GENETIC OPTIMIZATION FOR SHIP TRAJECTORY PLANNING
J.M. Giron-Sierra, Santiago Cifuentes, Juan Jimenez (Univ.Complutense Madrid, Spain)
9:30 - 10:30 [ThA-2] SHIP MODELLING AND IDENTIFICATION
Chair: R. Ferreiro (Univ. Coruña, Spain)
ROOM 02.1

A FREQUENCY-DOMAIN APPROACH TO MODELLING AND IDENTIFICATION OF THE FORCE TO MOTION VESSEL RESPONSE
Tristan Perez, Øystein Lande (NTNU, Norway)

AN IMPROVEMENT IN AIS: THE IDENTIFICATION OF THE SHIP
Manuel Haro Casado (Univ. Cádiz, Spain)
Ramon Ferreiro (Univ. Coruña, Spain)

LOW ORDER POTENTIAL DAMPING MODELS FOR SURFACE VESSELS
Kari Unneland, Thor I. Fossen, Paul Van Dooren, Olav Egeland (NTNU, Norway)

9:30 - 10:30 [ThA-3] AUV MISSION PLANNING
Chair: R. Katebi (ICC, Univ. of Strathclyde, UK)
ROOM 02.2

AUTONOMOUS AND DECENTRALIZED MISSION PLANNING FOR CLUSTERS OF UUVS
L. Giovannini, J. Balderud, R. Katebi (ICC, Univ. of Strathclyde, Glasgow, UK)

SAMPLE: SIMULATION AIDED MISSION PLANNING ENVIRONMENT
Daniele Cecchi (ISME, Univ. of Pisa, Italy)
Stefano Fioravanti (NURC, NATO Undersea Research Centre, Italy)

10:30 – 11:00 Coffee-break

11:00 - 12:20 [ThB-1] NETWORKED MARINE VEHICLES
Chair: A. Aguiar (IST/ISR, Portugal)
ROOM AMPHITHEATRE

RBF-BASED ADAPTIVE ON-LINE PLANNING OF AUV TEAMS ENVIRONMENTAL MISSIONS
Andrea Caiti, Andrea Munafò, Riccardo Viviani (ISME, Univ. of Pisa, Italy)

COORDINATED CONTROL OF MARINE VEHICLES – A SURVEY
M. Barišić, Z. Vukić, N. Mišković (Univ. Zagreb, Croatia)

SEASURE: THE USE OF A PUBLISH/SUBSCRIBE COMMUNICATIONS MIDDLEWARE FOR NETWORKED VEHICLE SYSTEMS
Eduardo R. B. Marques, Gil M. Gonçalves, João B. Sousa (USTL-FELIP, Portugal)
11:00 - 12:20 [ThB-2] MOTION CONTROL OF SURFACE VESSELS  
Chair: A. Tiano (Univ. Pavia, Italy)  
ROOM 02.1

BACKSTEPPING TECHNIQUE FOR THE TRACKING CONTROL OF AN UNDERACTUATED SURFACE VESSEL  
J. Ghommam, F. Mnif, A. Benali, N. Derbel (Lab. de Vision et Robotique, France and Ecole Nationale d’Ingénieurs de Sfax, Tunisia)

GUIDED DYNAMIC POSITIONING FOR MARINE SURFACE VESSELS  
Morten Breivik, Thor I. Fossen. Jann Strand (NTNU, Norway)

MOTION CONTROL CONCEPTS FOR TRAJECTORY TRACKING OF FULLY ACTUATED SHIPS  
Morten Breivik, Thor I. Fossen (Centre for Ships and Ocean Structures, NTNU, Norway)

A PATH-FOLLOWING CONTROLLER FOR THE DELFIMX AUTONOMOUS SURFACE CRAFT  
Pedro Gomes, Carlos Silvestre, António Pascoal, Rita Cunha (IST/ISR, Portugal)

12:20 – 14:00 Lunch

14:00 – 15:00 PLENARY SESSION  
ROOM AMPHITHEATRE

COLLABORATIVE VEHICLES IN FUTURE NAVAL MISSIONS, OBSTACLE DETECTION AND AVOIDANCE  
Anthony Healey (Naval Postgraduate School, Monterey, CA, USA)

15:00 - 16:00 [ThC-1] UNDERWATER POSITIONING  
Chair: G. Conte (University Marche, Ancona, Italy)  
ROOM AMPHITHEATRE

SIMULTANEOUS ACOUSTIC NAVIGATION OF MULTIPLE AUVS  
Aníbal Matos, Nuno Cruz (ISR, Univ. do Porto, Portugal)

A NONLINEAR FILTER FOR RANGE-ONLY ATTITUDE AND POSITION ESTIMATION  
A. Alcocer, P. Oliveira, A. Pascoal (ISR/IST, Lisboa, Portugal)

USE OF A RANGEMETER IN ADVANCED AND MODULAR SUBSEA POSITIONING SOLUTIONS  
François Crétoillier, Pierre-Yves Moreau (iXSea SAS, France)
15:00 - 16:00 [ThC-2] Marine Systems Modelling
Chair: T. Perez (NTNU, Norway)
ROOM 02.1

EFFECTS OF A MUDDY BOTTOM ON THE STRAIGHT-LINE STABILITY
Guillaume Delefortrie, Marc Vantorre (Ghent Univ., Belgium)

PROGRESS TOWARDS A METHOD FOR PREDICTING AUV DERIVATIVES
Ettore A De Barros (USP, Brasil)
António M Pascoal (IST/ISR, Portugal)
Elgar De Sa (NIO, Goa, India)

MODELLING AND CONTROL OF TOP TENSIONED RISERS IN DEEP WATERS
Anne M. Rustad, Carl M. Larsen, Michael S. Triantafyllou, Franz S. Hover, André H. Jacobsen, Asgeir I. Sorensen (NTNU, Norway and MIT, USA)

16:00 – 16:20 Coffee break

16:20 - 17:20 [ThD-1] Navigation I
Chair: L Whitcomb (Johns Hopkins University, USA)
ROOM AMPHITHEATRE

BLUEFIN UUV NAVIGATION RESULTS
Scott Willcox, Jerome Vaganay (Bluefin Robotics Co., Cambridge, MA, USA)

USBL/INS INTEGRATION TECHNIQUE FOR UNDERWATER VEHICLES
M. Morgado, P. Oliveira, C. Silvestre, J.F. Vasconcelos (ISR/IST, Portugal)

16:20 - 17:20 [ThD-2] Ship Manoeuvring and Control I
Chair: Tayfun Cimen (Turkish Naval Research Center Command, Turkey)
ROOM 02.1

A SHIP’S MINIMUM TIME APPROACHING CONTROL FOR AUTOMATIC BERTHING USING NEURAL NETWORK AND MODEL PREDICTIVE COMPENSATOR
Naoki Mizuno (Nagoya Inst. of Tech., Nagoya JAPAN)
Makoto Takasu (Nagoya Railroad Co., Ltd., Nagoya JAPAN), Tadatsugi Okazaki (National Maritime Research Inst., Tokyo JAPAN)
Kohei Ohtsu (Tokyo Univ. of Marine Sci. and Tech., Tokyo JAPAN)

ON-LINE NONLINEAR OPTIMAL MANEUVERING CONTROL OF LARGE TANKERS IN RESTRICTED WATERWAYS
Tayfun Çimen (ARMERKOM, Istanbul, Türkiye and ROKETSAN Missiles Industries Inc., Ankara Türkiye)

THE VALUATION FOR EXTERNAL DISTURBANCES ON SHIP MANEUVERABILITY
Katsuro Kijima, Yoshitaka Furukawa (Kyushu Univ., Fukuoka, Japan), Kimihiko Yano (Toyota Motor Co., Toyota, Japan), Ichiro Aoki (Oshima Shipbuilding Co., Ltd., Nagasaki, Japan)
CONTROL OF MARINE SYSTEMS
Chair: B. Lampe (University of Rostock, Germany)
ROOM 02.2

A CONTROL FOR TRACKING AND STABILIZATION OF AN UNDERACTUATED NON-LINEAR R.C. HOVERCRAFT
Joaquín Aranda, Dictino Chaos, Sebastián Dormido-Canto, Rocío Muñoz, José Manuel Díaz (UNED, Spain)

PREDICTIVE CONTROL IN HEAVY-LIFT OFFSHORE MARINE OPERATIONS
Saverio Messineo, Tristan Perez, Olav Egeland (NTNU, Norway)

DIGITAL CONTROL WITH GUARANTEED PERFORMANCE UNDER NON-CENTERED STOCHASTIC DISTURBANCES
V.O. Rybinskii, E.N. Rosenwasser, B.P. Lampe (Univ. Ocean Technology, Russia and Univ. Rostock, Germany)

SLIDING CONTROLLER FOR SHIP COURSE STEERING
Mirosław Tomera, Roman Śmierzchalski (Gdynia Maritime University, Poland)

20:00 – 22:00 Banquet - Oceanarium, Expo98
9:30 - 10:50 [FrA-2] SIMULATORS AND VIRTUAL LABS  
Chair: Pere Ridao (Univ. Girona, Spain)  
ROOM 02.1

REMOTE TRAINING IN AUV CONTROL USING HIL SIMULATORS  
P. Ridao, E. Hernandez, N. Palomeras, M. Carreras (Univ. of Girona, Spain)

VIRTUAL UNDERWATER LAB: EFFICIENT TOOL FOR SYSTEM INTEGRATION AND UUV CONTROL DEVELOPMENT  
E. Omerdic, J. Riordan, L. Molnar, and D. Toal (Mobile & Marine Robotics Research Centre, Univ. of Limerick, Ireland)

REAL-TIME SONAR SIMULATOR INTEGRATED WITH VEHICLE CONTROL AND NAVIGATION FOR OCEAN-FLOOR MAPPING APPLICATIONS IN SURVEY-SCALE ENVIRONMENTS  
James Riordan, Edin Omerdic, Levente Molnar, Daniel Toal (Mobile & Marine Robotics Research Centre, Univ. of Limerick, Ireland)

WAVESIM - WATER VEHICLE SIMULATOR  
António Santos, Aníbal Matos (Ocean Systems Group, Univ. Porto, Portugal)

10:50 – 11:20 Coffee-break

9:30 - 10:50 [FrA-3] ROV/AUV Development  
Chair: Elgar de Sa (NIO, Goa, India)  
ROOM 02.2

ROMEO ROV ANTARCTIC EXPLOITATION FOR BENTHIC RESEARCH  
R. Bono, G. Bruzzone, G. Bruzzone, M. Caccia, E. Spirandelli, G. Veruggio (CNR-ISSIA, Italy)

MECHANICAL DESIGN AND DEVELOPMENT ASPECTS OF A SMALL AUV – MAYA  
R. Madhan, Elgar Desa, S. Prabhudesai, Ehrlich Desa, A. Mascarenhas, Pramod Maurya, G. Navelkar, S. Afzulpurkar, S. Khalap, L. Sebastiao (NIO, India and IST/ISR, Portugal)

DESIGN OF AGENT-NET BASED CONTROL SYSTEM OF MARINE SYSTEM  
Ikuo Yamamoto (MARITEC, Japan Agency for Marine-Earth Sci. and Tech.)

UNDERWATER RESEARCH VEHICLES IN EUROPE: THE EUROCEAN DATABASE  
Marta Entradas, Laurent d’Ozouville (EurOcean Office, Lisbon, Portugal), António Pascoal (IST/ISR, Portugal)

11:20 - 12:20 [FrB-1] NAVIGATION II  
Chair: R. Sutton (University of Plymouth, UK)  
ROOM AMPHITHEATER

SOFT COMPUTING DESIGN OF A MULTI-SENSOR DATA FUSION NAVIGATION SYSTEM FOR AN UNMANNED SURFACE VEHICLE  
T. Xu, J. Chudley, R. Sutton (Univ. Plymouth, UK)

AN APPROACH TO UNDERWATER SLAM USING MECHANICAL SCANNING SONAR  
G. Conte, S. M. Zanoli, L. Gambella, D. Scaradozzi (Univ. Marche, Italy)

AUV LOCALIZATION IN STRUCTURED UNDERWATER ENVIRONMENTS USING AN A PRIORI MAP  
David Ribas, José Neira, Pere Ridao, Juan D. Tardós (Univ. Girona, Spain and Univ. Zaragoza, Spain)
Friday, 22nd of September

11:20 - 12:20 [FrB-2] DYNAMIC POSITIONING I
Chair: E. Tannuri (Univ. São Paulo, Brasil)
ROOM 02.1

CLARIFICATION OF THE LOW-FREQUENCY MODELLING CONCEPT FOR MARINE CRAFT
Andrew Ross, Tristan Perez, Thor. I. Fossen (NTNU, Norway)

STABILITY AND PERFORMANCE OF THE STATION-KEEPING FOR FULLY ACTUATED VESSELS WITH NON-LINEAR PID CONTROL
A. González, M. García (NAVANTIA, Spain)
A. Ollero (Univ. Seville, Spain)

TOWARDS STATION-KEEPING USING GPI CONTROLLERS
Jérôme Jouffroy (NTNU, Norway)

12:20 – 14:00 Lunch-break

14:00 – 15:00 PLENARY SESSION
ROOM AMPHITHEATRE

TIME DOMAIN MODELS OF MARINE SURFACE VESSELS BASED ON SEAKEEPING COMPUTATIONS
Tristan Perez (NTNU, Norway)

15:00 - 16:00 [FrC-1] DYNAMIC POSITIONING II
Chair: J. Jouffroy (NTNU, Norway)
ROOM AMPHITHEATRE

POSITION MOORING BASED ON STRUCTURAL RELIABILITY
Per Ivar Barth Berntsen, Ole Morten Aamo, Bernt J. Leira (NTNU, Norway)

ROBUST CONTROL DESIGN BY QFT METHODOLOGY FOR DYNAMIC POSITIONING PROBLEM OF A MOORED FLOATING PLATFORM

EXPERIMENTAL SET-UP FOR EXPERIMENTS WITH DYNAMIC POSITIONING SYSTEM
H. Morishita, E. Tannuri, G. Lago (Univ. of São Paulo, Brazil)

15:00 - 16:00 [FrC-2] SHIP MANOEUVRING AND CONTROL II
Chair: J. Giron-Sierra (Univ. Complutense de Madrid, Spain)
ROOM 02.1

EXPERIMENTAL STUDY ON THE MANOEUVRING MOTION OF A PLANING BOAT
Michio Ueno, Tadashi Nimura, Yoshiaki Tsukada, Hideki Miyazaki (National Maritime Research Institute, Japan)

SHIP COURSE-KEEPING VIA NONLINEAR ADAPTIVE CONTROL SYNTHESIS
Zenon Zwierczewicz (Maritime Univ. of Szczecin, Poland)

EXPERIMENTAL SEAKEEPING CONTROL RESULTS WITH AN AUTONOMOUS SCALED FAST SHIP
J. Recas, S. Esteban, J.M. Giron-Sierra, J.M. Riola (Univ. Complutense de Madrid, Spain)

EVOLUTIONARY ALGORITHMS APPLICATION IN A SHIP AUTOPILOT SYSTEM WITH OPTIMAL CONTROLLER
Piotr Nikonczuk (Tech. Univ. of Szczecin, Poland)
Adam Lozowicki (Maritime Univ. of Szczecin, Poland)

16:00 – 16:30 Coffee break

16:30 – 17:00 Closing session – Room Amphitheatre
**MCMC2006**
7th Conference on Manoeuvring and Control of Marine Craft
Lisbon, 20-22 September 2006

### Schedule

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<tbody>
<tr>
<td><strong>Wednesday 20-September-2006</strong></td>
<td></td>
</tr>
<tr>
<td>8:00 - 17:00</td>
<td>Registration</td>
</tr>
<tr>
<td>9:00 - 9:30</td>
<td>Opening session</td>
</tr>
<tr>
<td>9:30-10:30</td>
<td>Plenary Session: Marine Robots: Advanced Tools for Marine Science, Dana Yoerger</td>
</tr>
<tr>
<td>Room: Amphitheatre</td>
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<tr>
<td>10:30-11:00</td>
<td>Coffee-break</td>
</tr>
<tr>
<td>11:00 - 12:20</td>
<td>Control of Underwater Vehicles I Power and Propulsion Systems Roll Motion Control</td>
</tr>
<tr>
<td>Room: Amph.</td>
<td>Room: 02.1 Room: 02.2</td>
</tr>
<tr>
<td>12:20 - 14:00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>Plenary Session: Instruments for Marine Navigation: A Historical Perspective, Malhão Pereira</td>
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<tr>
<td>Room: Amphitheatre</td>
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<tr>
<td>15:00 - 16:20</td>
<td>Control of Underwater Vehicles II Vision in Marine Robotics Cooperative Ship Control</td>
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<tr>
<td>Room: Amph.</td>
<td>Room: 02.1 Room: 02.2</td>
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<tr>
<td>16:20-16:50</td>
<td>Coffee-break</td>
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<tr>
<td>16:50 - 18:10</td>
<td>Formation Control Fault Detection and Tolerant Systems Motion Planning</td>
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<tr>
<td>Room: Amph.</td>
<td>Room: 02.1 Room: 02.2</td>
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<tr>
<td>18:15</td>
<td>Welcome Reception Congress Center IST, Hall 02</td>
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<tr>
<td><strong>Thursday 21-September-2006</strong></td>
<td></td>
</tr>
<tr>
<td>8:00 - 17:00</td>
<td>Registration</td>
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<tr>
<td>8:30-9:30</td>
<td>Plenary Session: Future Developments and Applications of Marine Robotics, James Bellingham</td>
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<tr>
<td>Room: Amphitheatre</td>
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<tr>
<td>9:30 - 10:30</td>
<td>ThA-1 Paths-Following and Trajectory Tracking</td>
</tr>
<tr>
<td>ThA-2</td>
<td>Ship Modelling and Identification</td>
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<tr>
<td>ThA-3</td>
<td>AUV Mission Planning</td>
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<tr>
<td>Room: Amph.</td>
<td>Room: 02.1 Room: 02.2</td>
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<tr>
<td>10:30-11:00</td>
<td>Coffee-break</td>
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<tr>
<td>11:00 - 12:20</td>
<td>ThB-1 Networked marine vehicles Motion Control of Surface Vessels Collision Avoidance Systems</td>
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<tr>
<td>Room: Amph.</td>
<td>Room: 02.1 Room: 02.2</td>
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<tr>
<td>12:20 - 14:00</td>
<td>Lunch Break</td>
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<tr>
<td>14:00-15:00</td>
<td>Plenary Session: Collaborative Vehicles in Future Naval Missions, Obstacle Detection and Avoidance, Anthony Healey</td>
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<td>Room: Amphitheatre</td>
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<tr>
<td>15:00 - 16:00</td>
<td>ThC-1 Underwater Positioning Marine Systems Modelling</td>
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<tr>
<td>ThC-2</td>
<td>Marine Systems Modelling</td>
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<tr>
<td>16:20 - 17:20</td>
<td>ThD-1 Navigation I Ship Manoeuvring and Control I Control of Marine Systems</td>
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<tr>
<td>ThD-2</td>
<td>Room: 02.1 Room: 02.2</td>
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<tr>
<td>Room: Amph.</td>
<td>Room: 02.1 Room: 02.2</td>
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<tr>
<td>20:00</td>
<td>Banquet - Oceanarium, Expo98</td>
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</table>
# MCMC2006
7th Conference on Manoeuvring and Control of Marine Craft
Lisbon, 20-22 September 2006

## Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 - 17:00</td>
<td>Registration</td>
</tr>
<tr>
<td>8:30-9:30</td>
<td>A Survey of Underwater Vehicle Navigation: Recent Advances and New Challenges Louis Whitcomb Room: Amphitheatre</td>
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<tr>
<td>9:30 - 10:50</td>
<td>FrA-1 Modelling and Control of Marine Vehicles Room: Amphitheatre</td>
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<tr>
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<td>FrA-2 Simulators and Virtual Labs Room: 02.1</td>
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<tr>
<td></td>
<td>FrA-3 ROV/AUV Development Room: 02.2</td>
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<td>10:50-11:20</td>
<td>Coffee-break</td>
</tr>
<tr>
<td>11:20 - 12:20</td>
<td>FrB-1 Navigation II Room: Amphitheatre</td>
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<tr>
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<td>FrB-2 Dynamic Positioning I Room: 02.1</td>
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<tr>
<td>12:20 - 14:00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>Time Domain Models of Marine Surface Vessels Based on Seakeeping Computations, Tristan Perez Room: Amphitheatre</td>
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<tr>
<td>15:00 - 16:00</td>
<td>FrC-1 Dynamic Positioning II Room: Amphitheatre</td>
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<tr>
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<td>FrC-2 Ship Manoeuvring and Control II Room: 02.1</td>
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<tr>
<td>16:00-16:30</td>
<td>Coffee-break</td>
</tr>
<tr>
<td>16:30-17:00</td>
<td>Closing ceremony</td>
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## Notes

- **SPONSORS**
  - **FCT** Fundação para a Ciência e a Tecnologia
    - Ministério da Ciência, Tecnologia e Ensino Superior
  - LUSO-AMERICAN FOUNDATION