

## CONTROLO 2006

Monday, September 11<sup>th</sup>

8:30-9:00 Amphitheater

### OPENING CERIMONY

PL-1 9:00 AM-10 AM Amphitheater

### NONLINEAR SYSTEM IDENTIFICATION USING KERNELS AND INFORMATION THEORETIC LEARNING

**José C. Príncipe**

Computational NeuroEngineering Laboratory  
University of Florida, USA

MA-1 10 AM-11:00 AM 02.1

### SUBSPACE IDENTIFICATION

SUBSPACE CLOSED LOOP IDENTIFICATION OF A  
TWO TANKS SYSTEM

Ediberto Vásquez Díaz, César de Prada Moraga

SUBSPACE IDENTIFICATION OF LINEAR  
PARAMETER VARYING SYSTEMS WITH  
INNOVATION-TYPE NOISE MODELS

Paulo Lopes dos Santos, José Arquel Ramos, Jorge Leite  
Martins de Carvalho

SUBSPACE IDENTIFICATION OF A TWO-TANK  
HYBRID SYSTEM

José Borges, Vincent Verdult, Michel Verhaegen, Miguel  
Ayala Botto

MA-2 10 AM-11:00 AM 02.2

### MODELING AND STATE ESTIMATION

SYSTEM MODELLING WITH REAL PARAMETRIC  
UNCERTAINTIES

Paulo Oconnor Shirley, João Miranda Lemos

USING PARTICLE FILTERING FOR STATE  
ESTIMATION OF CHEMICAL PROCESSES UNDER  
CONTROL

Belmiro Duarte, Andrey Romanenko

A MULTIPLE-MODEL APPROACH TO MODEL  
COMPLEX NONLINEAR SYSTEMS

Pedro Miguel Silva, Victor Becerra, Ivan Khoo, João Calado

MA-3 10 AM-11:00 AM 02.3

### OPTIMAL CONTROL

COMPARISON BETWEEN REGULARITY  
ASSUMPTIONS FOR MIXED CONSTRAINED  
CONTROL PROBLEMS

María do Rosário Pinho, Javier Rosenblueth

NONSMOOTH OPTIMAL CONTROL PROBLEMS  
WITH SWITCHING FUNCTIONS OF ORDER ZERO

Hans Joachim Oberle

COMPARISON OF NONDEGENERATE NECESSARY  
CONDITIONS OF OPTIMALITY APPLIED TO  
CALCULUS OF VARIATIONS PROBLEMS

Sofia Lopes, Fernando A.C.C. Fontes

MA-4 10 AM-11:00 AM Amphitheater

### GUIDANCE AND CONTROL

$H^\infty$  ESTIMATION OF SYSTEMS WITH IMPLICIT  
OUTPUTS: AN APPLICATION TO POSE  
ESTIMATION OF AUTONOMOUS VEHICLES

António Pedro Aguiar, João Pedro Hespanha

A 2D SENSOR BASED CONTROL LAW FOR  
HOMING OF AUVS IN THE HORIZONTAL PLANE

Pedro Tiago Martins Batista, Carlos Jorge Silvestre, Paulo  
Jorge Oliveira

ATTITUDE CONTROL OF UNMANNED VEHICLE  
SYSTEM BASED ON CONSTRAINED SLIDING  
MODE STRATEGY

Youngwoo Kim, Sinya Matsuzaki, Tatsuo Narikiyo

MA-5 11:30 AM-12:30 PM 02.1

### LINEAR SYSTEMS

MODEL VALIDATION ON ITERATIVE  
IDENTIFICATION AND CONTROL SCHEMES: A  
FREQUENCY DOMAIN APPROACH

Pedro Balaguer, Ramon Vilanova

STATE FEEDBACK DESIGN TO OBTAIN STANDARD  
FORM RESPONSES

Derek P. Atherton

ON A REDUCED-ORDER AND PROPER DOUBLY  
COPRIME FACTORIZATION

Wataru Kase, Yasuhiko Mutoh

MA-6 11:30 AM-12:30 PM 02.2

### ADAPTIVE ROBUST CONTROL

ADAPTIVE CONTROL OF CONTINUOUS TWO  
INPUT – TWO OUTPUT SYSTEM

Marek Kubalcik, Vladimír Bobál

ROBUST DISCRETE TIME SIMPLIFIED ADAPTIVE  
CONTROL

Rabin Ben Yamin, Isaac Yaesh, Uri Shaked

CONTROL OF THE HIMAT AIRCRAFT VIA  
ALGEBRAIC  $\mu$ -SYNTHESIS

Marek Dłapa, Roman Prokop

MA-7 11:30 AM-12:30 PM 02.3

### FUZZY CONTROL APPLICATIONS

ROBUST PREDICTIVE FUZZY CONTROL

Jana Paulusová, Stefan Kozák

NAVIGATION OF A MOBILE ROBOT USING FUZZY  
CONTROLLERS DETERMINED BY  
REINFORCEMENT LEARNING METHODE (FACL)

Souissi Abdelkarim, Rezine Hacene

A FUZZY RULE-BASED SUPERVISORY SYSTEM FOR IMPROVED DRUM BOILER-TURBINE OPERATIONS DURING LOAD REJECTIONS  
Ahcène Habbi, Mimoun Zemat

<b>MA-8</b>	<b>11:30 AM-12:30 PM</b>	<b>Amphitheater</b>
<b>MOBILE ROBOTS I</b>		

THE POTENTIAL FIELD METHOD AND THE NONLINEAR ATTRACTOR DYNAMICS APPROACH: WHAT ARE THE DIFFERENCES?

Eliana Oliveira Costa e Silva, Estela Bicho, Wolfram Erhagen

TIME OPTIMAL CONTROL OF A MOBILE ROBOT USING A NEURAL NETWORK: A CHEBYSHEV POLYNOMIAL APPROACH

Erik van der Noll, Ton van den Boom, Ben Klaassens

MOTION PLANNING AND CONTROL OF VEHICLES WITH NONHOLONOMIC CONSTRAINTS: THEORY AND APPLICATIONS

Amit Ailon

<b>PL-2</b>	<b>2:00 PM-3:00 PM</b>	<b>Amphitheater</b>
<b>OPTIMIZATION-BASED CONTROL OF HYBRID DYNAMICAL SYSTEMS</b>		
<b>Alberto Bemporad</b>		
Dipartimento di Ingegneria dell'Informazione University of Siena, Italy		

<b>MP-1</b>	<b>3:00 PM-4:00 PM</b>	<b>02.1</b>
<b>SWITCHED CONTROL SYSTEMS</b>		

ON-LINE LEARNING FOR MULTIPLE MODEL ADAPTIVE CONTROL

João Miguel Lourenço, João Miranda Lemos

INVERTED PENDULUM STABILISATION IN AN NCS SCHEME WITH PACKET LOSSES

Eric Ostertag, Joana Carvalho-Ostertag

STABILITY OF INTERCONNECTED SWITCHED SYSTEMS

Isabel Brás, Ana Carapito, Paula Rocha

<b>MP-2</b>	<b>3:00 PM-4:00 PM</b>	<b>02.2</b>
<b>FAULT DETECTION AND ISOLATION</b>		

FAULT TOLERANT CONTROL OF A THREE TANK BENCHMARK USING PREDICTIVE CONTROL

Luís Mendonça, João M.C. Sousa, José Sá da Costa

APPLICATION OF A FAULT-TOLERANT CONTROL STRATEGY TO A NONLINEAR PLANT USING A ROBUST FAULT DIAGNOSIS APPROACH

Alberto Lebre Cardoso, António Dourado

FAULT DETECTION SCHEME USING THE AGENTS PARADIGM

Mário Mendes, João Calado, José Sá da Costa

<b>MP-3</b>	<b>3:00 PM-4:00 PM</b>	<b>02.3</b>
<b>NEURAL NETWORKS CONTROL</b>		

BAYESIAN ADAPTIVE CONTROL OF NONLINEAR SYSTEMS WITH FUNCTIONAL UNCERTAINTY

Randa Herzallah, David Lowe

NEURAL ADAPTIVE DUAL CONTROLLER WITH DYNAMIC STRUCTURE

Miroslav Šimandl, Ladislav Král

<b>MP-4</b>	<b>3:00 PM-4:00 PM</b>	<b>Amphitheater</b>
<b>CONTROL APPLICATIONS I</b>		

DETECTION AND CLASSIFICATION OF CLEARANCE ANOMALIES ON OVER-HEAD POWER LINES

Alberto Vale, João Gomes-Mota

PREDICTIVE CONTROL FOR ABR TRAFFIC IN ATM NETWORKS

Francisco R. Rubio, José Fornés, J. Luis Guzmán, Manuel Berenguel

"HARDWARE-IN-THE-LOOP" CONTROL USING THE PARTICLE SWARM OPTIMISATION ALGORITHM

João Paulo Coelho, Paulo Moura Oliveira, José Boaventura Cunha

<b>MP-5 (invited)</b>	<b>4:30 PM-5:50 PM</b>	<b>02.1</b>
<b>INFINITE HORIZON OPTIMAL CONTROL I</b>		

A UNIFORM TURNPIKE IN THE ROBINSON-SOLOW-SRINIVASAN MODEL

Mohammed Ali Khan, Alexander J. Zaslavsky

INFINITE-HORIZON PONTYAGRIN PRINCIPLES WITHOUT INVERSION

Joel Blot

AN INFINITE HORIZON CHEAP CONTROL OF SYSTEMS WITH STATE DELAYS

Valery Y. Glizer

OPTIMAL GROWTH IN THE TWO-SECTOR RSS MODEL: A CONTINUOUS TIME ANALYSIS

Mohammed Ali Khan, Tapan Mitra

<b>MP-6 (invited)</b>	<b>4:30 PM-5:50 PM</b>	<b>02.2</b>
<b>BIOTECHNOLOGICAL APPLICATIONS</b>		

LINEAR MODEL PREDICTIVE CONTROL STRATEGIES APPLIED TO A BATCH SUGAR CRYSTALLIZER

Luis Sánchez Dediós, Petia Georgieva, Sebastião Foyo de Azevedo

MODELLING AND END-PRODUCT PREDICTION OF INDUSTRIAL FERMENTATION BATCHES CONSIDERING INFORMATION FROM PREVIOUS PROCESS STAGES

Ana Patrícia Ferreira, João Almeida Lopes, José Cardoso de Menezes

USING METABOLIC KNOWLEDGE FOR ADVANCED BIOPROCESS MONITORING AND CONTROL: EXEMPLIFICATION WITH A RECOMBINANT BHK-21 CELL LINE

Ana Teixeira, Carlos Alves, Paula Alves, Manuel Carrondo,  
Rui Oliveira

**SPECIFIC GROWTH RATE REGULATION IN A  
SIMULATED FED-BATCH E. COLI FERMENTATION**

Isabel Rocha, Eugénio Campos Ferreira

**MP-7 (invited) 4:30 PM-5:50 PM 02.3**

**FRACTIONAL CALCULUS IN CONTROL**

**FRACTIONAL ORDER CONTROL. A CRITICAL  
REVIEW**

Blas M. Vinagre, Concepción A. Monje

**TUNING-RULES FOR INTEGER PIDS THAT MAKE  
THEM LOOK LIKE FRACTIONAL**

Duarte Valério, José Sá da Costa

**DISCRETIZATION OF THE FRACTIONAL-ORDER  
DIFFERENTIATOR/INTEGRATOR BY THE  
RATIONAL CHEBYSHEV APPROXIMATION**

Miguel Romero, Angel P. de Madrid, Carolina Mañoso,  
Roberto Hernandez

**ON FRACTIONAL SLIDING MODE CONTROL**

Blas M. Vinagre, Antonio J. Calderón

**MP-8 (invited) 4:30 PM-5:50 PM Amphitheater**

**MOBILE ROBOT COMPETITIONS**

**MICRO-RATO ROBOTICS CONTEST: TECHNICAL  
PROBLEMS AND SOLUTIONS**

Luis Almeida, José Luís Azevedo, Bernardo Cunha, Pedro  
Fonseca, Nuno Lau, Artur Pereira

**BRIDGING THE GAP: LEARNING IN THE ROBOCUP  
SIMULATION AND MIDSIZE LEAGUE**

Thomas Gabel, Roland Hafner, Sascha Lange, Martin  
Lauer, Martin Riedmiller

**ROBOCUPJUNIOR: A TEMPTATION KIDS CANNOT  
RESIST**

Gerhard Kraetschmar, Elizabeth Sklar, Jeffrey Johnson

**CHALLENGES AND SOLUTIONS IN AN  
AUTONOMOUS MOBILE ROBOT COMPETITION**

Paulo Afonso, José Luís Azevedo, Carlos Cardeira, Manuel  
Bernardo Cunha, Pedro Lima, Vitor Santos

**6:00 - 7:00 PM Hall 02**

**WELCOME RECEPTION**

## CONTROLO 2006

Tuesday, September 12<sup>th</sup>

PL-3 9:00 AM-10 AM Amphitheater

### FAULT DETECTION OF NONLINEAR SYSTEMS

**Michel Verhaegen**

Delft University of Technology,  
The Netherlands

TA-1 (invited) 10:00 AM-11:00 AM 02.1

### CONTROL, OPTIMIZATION AND COMPUTATION I

INTERPOLATION CURVES ON THE SPHERE BY ROLLING AND WRAPPING

Knut Hüper, Fátima Silva Leite

A DISTURBED DIFFERENTIAL NASH GAME APPROACH FOR GAS NETWORK OPTIMISATION

Teresa Paula Azevedo-Perdicoulis, Gerhard Jank

AN OPTIMAL CONTROL PROBLEM FOR SPLINES ASSOCIATED TO LINEAR DIFFERENTIAL OPERATORS

Rui Carreira Rodrigues, Fátima Silva Leite

TA-2 10:00 AM-11:00 AM 02.2

### EVOLUTIONARY ALGORITHMS

AGENT BASED OPTIMIZATION OF THE MAX-SAT PROBLEM USING WASP SWARMS

Pedro Caldas Pinto, Thomas A. Runkler, João M.C. Sousa

PARTICLE SWARM OPTIMIZATION VERSUS GENETIC ALGORITHM IN MANIPULATOR TRAJECTORY PLANNING

Eduardo José Solteiro Pires, Paulo Moura Oliveira, José António Tenreiro Machado, José Boaventura Cunha

BAKER'S YEAST FERMENTATION PARAMETERS ESTIMATION: AN EVOLUTIONARY APPROACH

Celina P. Leão, Lino A. Costa, Filomena O. Soares

TA-3 10:00 AM-11:00 AM 02.3

### ROBOTICS I

TIP POSITION CONTROL EXPERIMENTS FOR A PLANAR ROBOT WITH ONE FLEXIBLE LINK

Jorge Miguel Martins, Luis Filipe Baptista, Nuno Filipe Boia, José Sá da Costa

CONTROL METHOD OF DYNAMIC BIPED WALKING ON IRREGULAR TERRAIN USING NEURAL OSCILLATORS

Satomi Hattori, Tadashi Komatsu

PREDICTIVE CONTROL OF AN UNDERACTUATED BRACHIATION ROBOT USING LINEARIZATION

Vinicius Menezes de Oliveira, Walter Fetter Lages

TA-4 10:00 AM-11:00 AM Amphitheater

### INDUSTRIAL APPLICATIONS

AUTOMATIC TUNING OF THE SUPERHEAT CONTROLLER IN A REFRIGERATION PLANT

Henrik Rasmussen, Claus Thybo, Lars Finn Larsen

POM SPACE REDUCTION AND RECURSIVE CLUSTERING FOR MONITORING OF INDUSTRIAL PROCESSES

Justo Elias Matheus, António Dourado, Jorge Oliveira Henriques, Maria Antónia Santos, Dora Nogueira

COLOR SEGMENTATION USING FUZZY GOALS AGGREGATION FOR BLACK RUBBER INSPECTION

Rodrigo Bernardo Gil, Vitor José Rocha, José Novais

TA-5 (invited) 11:30 AM-12:30 PM 02.1

### INFINITE HORIZON OPTIMAL CONTROL II

STABILITY OF OPTIMAL POLICIES OF UNICOST MARKOV DECISION PROCESSES

Arie Leizarowitz, Alexander J. Zaslavski

ON SEMICONTINUITY OF FUNCTIONALS IN INFINITE HORIZON OPTIMAL CONTROL PROBLEMS

Sabine Pickenhain, Valeriya Lykina, Marcus Wagner

GOOD PROGRAMS AND OVERTAKING OPTIMAL PROGRAMS IN THE RSS MODEL

Alexander J. Zaslavski

TA-6 11:30 AM-12:30 PM 02.2

### ROBOTICS II

ACTIVE CROSS-SECTION DESIGNS FOR A FLEXIBLE ROBOT LINK

João Reis, José Sá da Costa

TRACKING SYSTEM USING TEXTURE CUE BASED ON WAVELET TRANSFORM

Manuel J. Ferreira, Cristina Peixoto Santos

ON THE MODELING OF STRUCTURAL DAMPING AND DYNAMIC PARAMETER IDENTIFICATION OF A RIGID-FLEXIBLE PLANAR MANIPULATOR

Alexandre N. Paris, Jorge Miguel Martins, José Sá da Costa

TA-7 11:30 AM-12:30 PM 02.3

### DESIGN METHODS

A LINEAR PROGRAMMING APPROACH TO LOOP-SHAPING

Antonio Sala, Jorge Bondia

SHORT-TERM BEHAVIOUR PHENOMENON IN MV CONTROL UNDER AMPLITUDE CONSTRAINT

Andrzej Królikowski, Dariusz Horla

TA-8 (invited) 11:30 AM-12:30 PM Amphitheater

**NATURE INSPIRED SYSTEMS: MODELING,  
OPTIMIZATION AND CONTROL I**

CONTRIBUTIONS TO PARAMETER ESTIMATION  
USING FEEDFORWARD NEURAL NETWORKS

Hugo Alonso, Teresa Mendonça, Paula Rocha

CONTROLLER FALSIFICATION THROUGH VIRTUAL  
REFERENCE FOR NEUROMUSCULAR BLOCKADE  
CONTROL

Claudia Manuelli, Edoardo Mosca

NON-INVASIVE TIME-SPATIAL TEMPERATURE  
SIMULATION USING NEURAL NETWORKS

César Alexandre Teixeira, Maria Graça Ruano, António  
Eduardo Ruano, Wagner Coelho Pereira

PL-4 2:00 PM-3:00 PM Amphitheater

**INNOVATIVE RESEARCH CHALLENGES  
ARISING IN GAS TURBINE ENGINE  
CONTROL**

**Peter Fleming**

Automatic Control and Systems Engineering  
The University of Sheffield, UK

TP-1 3:00 PM-4:00 PM 02.1

**HYBRID AND DISCRETE EVENT  
SYSTEMS I**

DESIGN SPACE OF A DUAL-RATE SWITCHING  
CONTROLLER

Max Mauro Santos, Luis Almeida, Josep M. Fuertes

FORMAL VERIFICATION OF INDUSTRIAL  
CONTROLLERS: WITH OR WITHOUT A PLANT  
MODEL?

José Machado, Bruno Denis, Jean-Jacques Lesage

A MULTI-AGENT SYSTEM WITH DISTRIBUTED  
COORDINATION FOR CONTROLLING A SINGLE  
ROBOT

Bianca Innocenti, Beatriz López, Joaquim Salvi

TP-2 3:00 PM-4:00 PM 02.2

**STOCHASTIC SYSTEMS**

ADAPTIVE CRITIC METHODS FOR SYSTEMS WITH  
FUNCTIONAL UNCERTAINTIES

Randa Herzallah, David Lowe

EXPONENTIAL STABILITY OF STOCHASTIC  
SWITCHED SYSTEMS

Vojislav Z. Filipovic

GAUSSIAN SUM BASED METHODS FOR NEURAL  
NETWORK PARAMETERS ESTIMATION: ASPECTS  
AND COMPARISON

Pavel Hering, Miroslav Šimandl

TP-3 3:00 PM-4:00 PM 02.3

**MATHEMATICAL CONTROL THEORY I**

COMPARISON OF THE PROPERTIES OF STATE-  
CONTROLLABILITY AND STATE-REACHABILITY  
WITH BEHAVIORAL CONTROLLABILITY FOR  
PERIODIC SYSTEMS

José Carlos Aleixo, Teresa Pedroso de Lima, Paula Rocha

INVARIANCE PROPERTIES OF MEASURE DRIVEN  
DIFFERENTIAL INCLUSIONS

Fernando Lobo Pereira, Geraldo Nunes Silva

LARGE-TIME DYNAMICS OF THE REACHABLE  
SETS TO LINEAR IMPULSIVE CONTROL SYSTEMS

Elena Goncharova, Alexander J. Ovseevich

TP-4 3:00 PM-4:00 PM Amphitheater

**CONTROL APPLICATIONS II**

PHASE CONTROL BY LATCHING APPLIED TO THE  
ARCHIMEDES WAVE SWING

Pedro Beirão, Duarte Valério, José Sá da Costa

ADAPTIVE CONTROL OF ANESTHESIA

Teresa Mendonça, Hugo Magalhães, Catarina Nunes, João  
Miranda Lemos

A MULTIVARIABLE APPROACH TO THE CONTROL  
OF AN INTERNAL COMBUSTION ENGINE

Alberto Rubio, Manuel Gil Ortega, Carlos Vivas, Francisco  
R. Rubio

TP-5 4:30 PM-6:00 PM Hall 02

**POSTERS SESSION**

EFFICIENT CONTROL ENGINEERING WITH PLC  
VENDOR INDEPENDENT PROGRAMMING AND  
PARAMETERIZATION

Yauheni Veryha, Slawomir Jalowicki, Srinivas Nidamarthi

NEURO-FUZZY SYSTEM APPLIED DURING  
PENICILLIN G ACYLASE (PGA) PRODUCTION  
PROCESS

Edson Romano Nucci, Rosineide Gomes Silva, V.R. Souza,  
R.L.C. Giordano, Roberto Campos Giordano, António José  
Gonçalves Cruz

LIBRARY OF CONTROLLERS FOR SELF – TUNING  
MULTIVARIABLE CONTROL

Miroslav Maca, Marek Kubalcík

MODELING AND EVALUATION OF TEMPERATURE  
CROSS-TALK IN A BIOCHIP FOR DNA ANALYSIS

Bertinho Andrade Costa, João Miranda Lemos, M.S.  
Piedade, L. Sousa, T. Almeida, J. Germano, P. Freitas, H.  
Ferreira, F. Cardoso

A COMPARISON BETWEEN IMAGE FEATURES IN  
UNCALIBRATED FUZZY VISUAL SERVOING

Paulo Sequeira Gonçalves, Alexandre Paris, Camilo  
Christo, João M.C. Sousa, João Caldas Pinto

A VEHICLE SIMULATOR ON A MOTION PLATFORM  
FOR VEHICLE DYNAMIC EVALUATION

Jonas Sjöberg, Jonas Fredriksson, K. Sahli

NONLINEAR INTERNAL MODEL CONTROL OF  
CSTR

Jakub Novák, Vladimír Bobál, Jiri Vojtesek

AUTONOMOUS PLATFORM FOR DISTRIBUTED  
SENSING AND ACTUATION OVER BLUETOOTH

Ezequiel T. Coelho, José A. Afonso, Paulo Carvalhal,  
Cristina Peixoto Santos, Manuel J. Ferreira, Luís F. Silva,  
Heitor Almeida

**ON-LINE MONITORING AND REMOTE OPERATION  
OF AN INJECTION MOLDING MACHINE**

Tatiana Zhiltsova, Jorge Ferreira, Mónica Oliveira

**CONTROLLER OPTIMIZATION AND MODELLING OF  
AN OMNI-DIRECTIONAL MOBILE ROBOT**

André Scolari Conceição, António Paulo Moreira, Paulo J.  
Costa

<b>TT</b>	<b>4:30 PM-6:00 PM</b>	<b>Amphitheater</b>
<b>THE ROBUST MULTIPLE-MODEL ADAPTIVE CONTROL METHOD</b>		

**THE ROBUST MULTIPLE-MODEL ADAPTIVE  
CONTROL METHOD: A TUTORIAL**

Michael Athans

## CONTROLO 2006

Wednesday, September 13<sup>th</sup>

PL-5 9:00 AM- 10 AM Amphitheater

### CONTROL LESSONS LEARNED DURING THE CASSINI / HUYGENS: MISSION TO EXPLORE THE SATURNIAN MOON TITAN

**Klaus Schilling**

Julius-Maximilians University of Wurzburg,  
Germany

WA-1 (invited) 10:00 AM-11:00 AM 02.1

### NATURE INSPIRED SYSTEMS: MODELING, OPTIMIZATION AND CONTROL II

ON THE USE OF COMPOSITE LOCAL MODELS FOR NONLINEAR SYSTEM IDENTIFICATION APPLIED TO SYSTEMS BIOLOGY

José Borges, Vincent Verdult, Michel Verhaegen, Miguel Ayala Botto

PRACTICAL IMPLEMENTATION ISSUES FOR SWITCHING BETWEEN STABILIZING CONTROLLERS

José Pedro Gaivão, Elsa Santos, Teresa Mendonça, Paula Rocha

ON THE OPTIMAL DOSES OF TRANSCRIPTASE AND PROTEASE INHIBITORS IN THE TREATMENT OF HIV-SEROPOSITIVE PATIENTS

Denise Cabral Cardoso Hardt, Marco António Leonel Caetano, Takashi Yoneyama

WA-2 (invited) 10:00 AM-11:00 AM 02.2

### CONTROL, OPTIMIZATION AND COMPUTATION II

GEOMETRICAL SYNTHESIS FOR NONCOERCIVE NONCONVEX OPTIMAL CONTROL PROBLEMS

Manuel Guerra

HESSIAN OF THE RIEMANNIAN SQUARED DISTANCE FUNCTION ON CONNECTED LOCALLY SYMMETRIC SPACES WITH APPLICATIONS

Ricardo Ferreira, João Xavier

REGULARITY OF SOLUTIONS TO SECOND-ORDER INTEGRAL FUNCTIONALS IN VARIATIONAL CALCULUS

Moulay Rchid Sidi Ammi, Delfim Torres

WA-3 10:00 AM-11:00 AM 02.3

### AGRICULTURAL APPLICATIONS I

PREDICTIVE CONTROL APPLIED TO A WATER CANAL PROTOTYPE

Daniel Canarias, João Figueiredo, Manuel Rijo

OPTIMIZATION-BASED APPROACH FOR A BETTER CENTRIFUGAL SPREADING

Teddy Virin, Jonas Koko, Emmanuel Piron, Philippe Martinet, Michel Berducat

A TOOL FOR ACTIVATED SLUDGE INTEGRATED DESIGN

Fawzat A.M. Alawneh, Pastora Vega, Mario Francisco, Roberto Sandin

WA-4 10:00 AM-11:00 AM Amphitheater

### MULTI-AGENT COOPERATIVE ROBOTS

IMPROVING SELF LOCALIZATION AND OBJECT LOCALIZATION BY A TEAM OF ROBOTS USING SENSOR FUSION

Abdolkarim Pahliani, Pedro Lima

MIXED INTEGER PROGRAMMING APPROACH FOR MULTI-AGENT COOPERATIVE OBJECT PUSHING

Hassan Fazelinia, Luis Rodrigues, Ali Akgunduz

MOBILE ROBOT COORDINATION USING FORMATION FUNCTION

Wojciech Kowalczyk, Krzysztof Kozlowski

WA-5 11:30 AM-12:30 PM 02.1

### HYBRID AND DISCRETE EVENT SYSTEMS II

ROBUST FEEDBACK MPC FOR PIECEWISE AFFINE SYSTEMS: A MLD APPROACH

Miguel Pedro Silva, Miguel Ayala Botto, José Sá da Costa

EXTENSION OF A LOCAL LINEAR CONTROLLER TO A STABILIZING SEMI-GLOBAL PIECEWISE AFFINE CONTROLLER

Behzad Samadi, Luis Rodrigues

MOVING HORIZON ESTIMATION FOR HYBRID SYSTEMS WITH UNKNOWN INPUTS

Luis Miguel Pina, Miguel Ayala Botto

WA-6 11:30 AM-12:30 PM 02.2

### AEROSPACE

A GAIN-SCHEDULING APPROACH FOR AIRSHIP STABILIZATION

Alexandra Moutinho, José Raúl Azinheira

AN AUTOPILOT FOR A SMALL AIRCRAFT: EXPLORING ADAPTIVE CONTROL

José Miguel Fiuza, Leonardo Bione Silva, João Miranda Lemos, Bertinho Andrade Costa

AEROSPACE LAUNCH VEHICLE ROBUST CONTROL: A VARIABLE STRUCTURE APPROACH

Mohsen Bahrami, Jafar Roshanian, Behrouz Ebrahimi

<b>WA-7</b>	<b>11:30 AM-12:30 PM</b>	<b>02.3</b>
<b>AGRICULTURAL APPLICATIONS II</b>		

MODELLING AND PREDICTIVE CONTROLLER DESIGN OF AN EXPERIMENTAL WATER CANAL  
Pedro Abrantes Silva, Miguel Ayala Botto, João Figueiredo

A MODULAR APPROACH TO THE MODELLING OF AN EXPERIMENTAL IRRIGATION CANAL  
Fernando Jorge Machado, Nuno Filipe Nogueira

INTERNAL MODEL BOUNDARY CONTROL OF HYPERBOLIC SYSTEM : APPLICATION TO THE REGULATION OF CHANNELS  
Valérie dos Santos, Youssef Touré

<b>WA-8</b>	<b>11:30 AM-12:30 PM</b>	<b>Amphitheater</b>
<b>MODELING AND SIMULATION</b>		

DYNAMIC MODELLING AND SIMULATION OF AN INDUSTRIAL UOP FCC UNIT WITH A HIGH EFFICIENCY REGENERATOR  
Joana Lis Fernandes, Carla Pinheiro, Nuno Oliveira, José Inverno, Fernando Ramôa Ribeiro

MODELING, SIMULATION AND CONTROL OF ERBIUM-DOPED FIBER AMPLIFIERS  
Nebojsa Petrovacki, Zoran D. Jelicic

MODELING, IDENTIFICATION AND SIMULATION OF A NEUTRALIZATION SYSTEM  
Sérgio Paiva, João Teotônio Manzi

<b>PL-6</b>	<b>2:00 PM- 3:00 PM</b>	<b>Amphitheater</b>
<b>COMPUTER AND ROBOT VISION: LEARNING FROM BIOLOGY</b>		
<b>José Santos Victor</b>		
Institute for Systems and Robotics, Instituto Superior Técnico, Portugal		

<b>WP-1</b>	<b>3:00 PM-4:00 PM</b>	<b>02.1</b>
<b>CONTROL EDUCATION</b>		

INVERTED PENDULUM VIRTUAL CONTROL LABORATORY  
José Lima, José Gonçalves, Paulo Costa, António Paulo Moreira

MODERN COMPUTER GAMES TECHNOLOGY IN SYSTEMS AND CONTROL EDUCATION  
Bruno Teixeira Vigário, António Pessoa Magalhães, Francisco Teixeira Freitas

IMPROVING SIMULATION AND EXPERIMENTATION IN MARINE ENGINEERING EDUCATION USING AUTOMATION DEDICATED SOFTWARE  
Carlos Silva, Gabriel Serrador, Luis Filipe Baptista

<b>WP-2</b>	<b>3:00 PM-4:00 PM</b>	<b>02.2</b>
<b>CONTROL APPLICATIONS III</b>		

DEVELOPMENT OF AN AUTOMATED VERTICALITY ALIGNMENT SYSTEM FOR A VIBRO-LANCE  
Charles James Taylor, Essam M. Shaban, Arun Chotai, Steve Ako

DESIGN AND EXPERIMENTATION OF A PERSONAL PENDULUM VEHICLE  
Mirco Fiacchini, Antidio Viguria, Ramon Cano, Alberto Prieto, Francisco R. Rubio, Javier Aracil, Carlos Canudas-de-Wit

PREDICTIVE FUNCTIONAL CONTROL OF TEMPERATURE USING BOTH FLOW AND TEMPERATURE: THE ENTALPY GEAR-BOX  
Mohamed Tarek Khadir

<b>WP-3</b>	<b>3:00 PM-4:00 PM</b>	<b>02.3</b>
<b>MATHEMATICAL CONTROL THEORY II</b>		

AUTONOMICITY AND THE ABSENCE OF FREE VARIABLES FOR BEHAVIORS OVER FINITE RINGS  
Margreta Kuijper, Raquel Pinto, Jan Willem Polderman, Paula Rocha

A CHERNOFF SCHEME TO APPROXIMATE A NONLOCAL PARABOLIC PROBLEM  
Moulay Rchid Sidi Ammi

<b>WP-4</b>	<b>3:00 PM-4:00 PM</b>	<b>Amphitheater</b>
<b>MOBILE ROBOTS II</b>		

MODEL IDENTIFICATION OF A FOUR WHEELED OMNI-DIRECTIONAL MOBILE ROBOT  
André Scolari Conceição, António Paulo Moreira, Paulo Costa

TEMPORAL COORDINATION OF SIMULATED TIMED TRAJECTORIES FOR TWO VISION-GUIDED VEHICLES: A NONLINEAR DYNAMICAL SYSTEMS APPROACH  
Cristina Peixoto Santos

TRAJECTORY PLANNING AND SLIDING MODE CONTROL FOR WMR TRAJECTORY-TRACKING AND PATH-FOLLOWING RESPECTING HUMAN COMFORT TRAVEL  
Razvan Solea, Urbano Nunes, Adrian Filipescu

<b>16:30-17:00</b>	<b>Amphitheater</b>
<b>AWARDS AND CLOSING CERIMONY</b>	