



IFAC Newsletter Issue 1 (February)

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IFAC Technical Committees and their Scopes

Last but not least, we introduce the Coordinating Committee on Global and Educational Issues of Automation to our readers

Coordinating Committee on Global and Educational Issues of Automation

Chair:



L. Martensson, Sweden
lana@lector.kth.se

Technical Committee on Control Education

Chair:



H.P. Jörgl, Austria
joergl@impa.tuwien.ac.at

Addresses university education and continuing education issues in control engineering. Methodology for improving the education of theory, application, and also improve the accessibility of control systems education. Promoting works in control engineering laboratories, experimentation, computer aided design, and teachware. Cooperation and technology transfer between academia and industry. Control engineering education in developing countries in contact with the IFAC TC on Developing Countries.

Technical Committee on Social Impact of Automation

Chair:



J. Cernetic, Slovenia
jankko.cernetic@ijs.si

Addresses all aspects of the relation of automation to social environments. Social effects of automation, socially desirable requirements for the development of automated systems, socially acceptable alternatives for design of automated systems. Includes environmental, health, and safety implications of automation, engineering ethics, professional responsibility, and public policy.

Technical Committee on Developing Countries

Chair:



A.T. Dinibütün, Turkey
talhad@dogus.edu.tr

Fosters development of automation and related topics (such as education and training for automation) in developing countries. Control and automation compatibility with backgrounds, economical structure and society of developing countries. Stimulates their interest in IFAC, invites and assists NMOs to organize workshops, symposia and regional conferences to bring together scientists and specialists to compare their experiences.

Periodic Control Systems - PSYCO 2001
IFAC Workshop
Cernobbio – Como, Italy, 27-28 August 2001

Periodic control has reached a notable degree of maturity thanks to the developments of the last decades. Besides the theoretical achievements, significant applications have emerged.

This workshop aimed at presenting the full picture of the area for the first time by gathering the experts of the field and all interested researchers, coming from universities and industries. The workshop was organized by the Italian National Member Organization of IFAC, i.e. CNR (Consiglio Nazionale delle Ricerche), with the sponsorship of the Technical Committees on "Linear Systems" and "Control Design".

The program consisted of technical sessions, organized in two parallel streams, and two plenary lectures. The first plenary lecture, given by Prof. Jason Speyer (University of California at Los Angeles, USA), was devoted to survey the main achievements of periodic control methods in hypersonic cruise and guidance. Prof. Yutaka Yamamoto (Kyoto University, Japan) presented the second plenary lecture, focused on repetitive control. The technical sessions consisted of 44 papers, covering the following subjects: Periodic systems analysis, time-series, hybrid and sampled-data systems, periodic systems control, numerical methods, multirate signals and processes, repetitive and nonlinear control. Twelve papers were organized in sessions devoted to a number of applications, including aerospace, jet and diesel engines, gas turbines, nuclear reactors, power systems, satellites, environmental sciences and finance.

There were 62 participants from Australia (1), Belgium (1), China (2), Croatia (1), Denmark (2), France (1), Germany (6), India (1), Israel (2), Italy (11), Japan (13), Korea (1), Poland (1), Portugal (1), Romania (1), Russia (1), Spain (1), Sweden (2), Switzerland (3), UK (2), USA (8).

The meeting was an occasion to get exposed to new ideas, meet friends and enjoy the lake atmosphere of Cernobbio-Como.

Due to the interest raised by this meeting, some distinguished Japanese participants have expressed the intention to organize a second PSYCO workshop in Yokohama on August 30 and September 1, 2004.

The program of the workshop can still be viewed at www.elet.polimi.it/psyco

Sergio Bittanti (IPC Chair)
Patricio Colaneri (NOC Chair)

Adaptation and Learning in Control and Signal Processing - ALCOSP 2001
IFAC Workshop
Cernobbio – Como, Italy, 29-31 August 2001

In control and signal processing, adaptation is a natural tool to cope with real-time changes in the dynamical behaviour of signals and systems. Traditionally, this area is strongly connected with prediction and identification. Recently, there has been an increasing attention for switching and supervising methods, and a special attention has been given to learning as a tool of improved adaptation.

This workshop aimed at presenting the full picture of the area by gathering the experts of the field and all interested researchers, from universities and industries. It was organized by the Italian National Member Organization of IFAC, namely CNR (Consiglio Nazionale delle Ricerche), with the sponsorship of the Technical Committees on "Adaptive Control and Learning" and "Stochastic Systems".

The program consisted of three plenary lectures, one for each morning, plus technical sessions organized in two parallel streams.

The first plenary lecture, given by Prof. R. Isermann (Darmstadt University of Technology, Germany), was devoted to nonlinear identification and adaptive control in combustion engines. Dr. M. Vidyasagar (Tata Consultancy Services, Secunderabad, India) presented the second plenary lecture on "A learning theory approach to identification and stochastic adaptive control". Finally, S. Haykin (McMaster University, Hamilton, Canada) discussed a novel application to wireless communications by turbo-learning.

The technical sessions consisted of 78 papers, organized in the following sessions. Model reference and Predictive Control, Multiple Model Control, Adaptive Control, 1 and 2, Adaptive Control and Learning, Learning, Adaptive Control of Nonlinear Systems, Supervisory Control, Neural Networks for Control, PID Design methods, Sliding Mode, Adaptive Filtering and Estimation, Identification Methods, 1 and 2. Many papers treated specific applications. In particular, three sessions were fully devoted to specific areas of engineering, namely Applications to Mechanical and Bio-Mechanical Systems, Applications to Mechanical Systems, Applications to Power Plants and Software Tools.

The welcome address was presented jointly by the Sergio Bittanti (IPC Chairman) and Pedro Albertos (IFAC President).

There were 107 participants from 26 Countries. The meeting was an occasion to get exposed to new ideas, meet friends and enjoy the lake atmosphere of Cernobbio-Como. Some distinguished Japanese participants have expressed the intention to organize the next ALCOSP workshop in Yokohama in 2004.

The program of the workshop can still be found on the web site www.elet.polimi.it/ALCOSP

Sergio Bittanti (IPC Chair)

Control Engineering Practice

Papers from the December 2001 Issue

Reliable Computation of the Robustness Margin for a Flexible Aircraft
(G. Ferreres, J.-M. Biannic)
A Concurrent Design of Input Shaping Technique and a Robust Control for High-speed/High-precision Control of a Chip Mounter
(P.H. Chang, J. Park)

Special Section on System Identification
Preface on the Special Section on System Identification
(R. Smith)
System Identification of an Open Water Channel
(E. Weyer)
Fitting Nonlinear Low-order Models for Combustion Instability Control
(W.J. Dunstan, R.R. Bitmead, S.M. Savaresi)
Preserving Stability/Performance when Facing an Unknown Time-delay
(S. Diop, I. Kolmanovsky, P.E. Moraal, M. van Nieuwstadt)
H-infinite Parameter Identification for Inflight Detection of Aircraft Icing: The Time-varying Case
(J.W. Melody, T. Hillbrand, T. Basar, W.R. Perkins)
Identification of the Tennessee Eastman Challenge Process with Subspace Methods
(B.C. Juricek, D.E. Seborg, W.E. Larimore)
Exponential ARX Model-based Long-range Predictive Control Strategy for Power Plants
(H. Peng, Z. Ozaki, Y. Toyoda, K. Oda)
Extended Kalman Filtering and Weighted Least Squares Dynamic Identification of Robot
(M. Gautier, Ph. Poignet)
Qualitative Modelling for Automatic Identification of Mathematical Models of Chemical Reaction Systems
(D. Schaich, R. Becker, R. King)
Conference Calendar

Papers from the January 2002 Issue

Call for Papers: Special Issue on Control Methods for Telecommunications Networks

Nonlinear Continuous-discrete Observers: Application to Emulsion Polymerization Reactors
(C.-M. Astorga, N. Othman, S. Othman, H. Hammouri, T.-F. McKenna)
Automatic Realization of Human Experience for Controlling Variable-pressure Boilers
(S. Goto, M. Nakamura, S. Matsumura)
Control of Mobile Robots with Uncertainties in the Dynamic Model: A Discrete Time Sliding Mode Approach with Experimental Results
(M.L. Corradini, G. Orlando)
A Solution to the Singular Inverse Kinematic Problem for a Manipulation Robot Mounted on a Track
(R. Muszynski)
Adaptive IMC Control for Drug Infusion for Biological Systems
(J. Hahn, T. Edison, T.F. Edgar)

Special Section on Modelling and Control in Biomedical Systems
(E.R. Carson)
Mathematical Model for Educational Simulation of the Oxygen Delivery
(P.M. Sa Couto, W.L. van Meurs, J.F. Bernardes, J.P. Marques de Sa, J.A. Goodwin)
A New Generic Approach to Model Reduction for Complex Physiologically Based Drug Models
(M. Mahfouf, D.A. Linkens, D. Xue)
A Finite Element Model for Predicting the Biomechanical Behaviour of the Human Lumbar Spine
(T. Pitzen, F. Geisler, D. Matthis, H. Muller-Storz, D. Barbier, W.-I. Steudel, A. Feldges)
Identification of Black-box Nonlinear Models for Lower Limb Movement Control Using Functional Electrical Stimulation
(F. Previdi)
Chronic Disease Management: A Systems Model Relating Outcomes, Reporting, Monitoring, Interventions and Satisfaction
(A.M. Albisser, A.S. Hodel, J.B. Albisser, A. Wanner)
Towards the Development of Computerised Healthcare Delivery in the Hospital Setting
(M.A. Hughes, E.R. Carson, M.A. Makhlof, C.J. Morgan, R. Summers)
Conference Calendar

15th IFAC World Congress

Barcelona, Spain, 21-26 July, 2002

The **XV IFAC World Congress** to be held in Barcelona, **b'02**, will be the first IFAC World Congress to take place in the Third Millennium. As such, it will be a good opportunity to highlight the new directions of Automatic Control Science and Technology. In this context the Congress puts emphasis on:

- **Emergent Automatic Control Application Fields.** New applications in industry and services, and their technological implications.
- **Social Challenge of Automation and Control Theory.** Analysis of the social impact of control and automation at the turn of the century.
- **Use of Advanced Information Technologies at the Congress.** The Congress itself is being an example of how advanced information technologies can promote scientific and technical exchange among international experts.

The International Program Committee is pleased to communicate that the response to our Call for Papers has been excellent. More than 2500 papers have been submitted to the IFAC b'02 Congress. Approximately 1700 have been accepted, involving about 2300 authors from 68 countries. With 32 proposals, the reaction to the Call for Tutorial Workshops has also been very positive. The selected Workshops will be held during Saturday July 20 and Sunday July 21, prior to the Congress opening.

As in the previous IFAC Congresses, there will be a prize for the best Application Paper, and a Young Author Prize. Also a prize offered by the Spanish IFAC National Member Organisation, CEA-IFAC, will be awarded to the best Poster Paper.

The virtual track, an innovative idea of this IFAC World Congress, has also received high interest: more than 200 papers have been proposed to participate in pre-discussion sessions via Internet, and 10 proposals for open forums have been received. A selection of them will be available for discussion before the Congress.

Seven Plenary Sessions have been programmed for the five days of the Congress. Each day will start with a Plenary Session, followed by 20 parallel tracks organised in a morning session and a midday session. In the afternoon different kinds of sessions have been programmed, depending on the day: poster sessions, oral sessions, panel discussions, and also plenary sessions.

Therefore, all those attending the **IFAC World Congress b'02** will have the opportunity to participate in a high-level scientific and technical congress, to share some days with outstanding specialists in Automatic Control from all over the world, and will also understand why Barcelona is one of the most frequently visited cities in the world.

Barcelona has always been a friendly city towards all cultures. Barcelona has a rich past, a dynamic present, and an exciting future. Situated by the coast, its climate is Mediterranean and mild. In July, its coasts and beaches invite you to have a pleasant stay here.

We look forward to seeing you in Barcelona, at the XV IFAC World Congress.

Gabriel Ferraté
NOC Chairman

Luis Basañez / Juan Antonio de la Puente
IPC Chairmen

Pedro Albertos
IFAC President

Virtual Track

IFAC b'02 allows virtual congress participation via the Internet in two different ways: **Paper pre-discussions** and **Open Forums**.

The access to the Virtual Track can be made through a menu from the b'02 main website.

Participation in papers pre-discussion (from April 1 to June 15, 2002)

Paper pre-discussion will offer the opportunity to discuss, via the Internet and prior to the Congress, about a limited number of the accepted papers among registered participants and authors, according to the following rules:

- At paper submission, the authors have indicated if the paper may be included in the virtual track. Only papers accepted for presentation at the Congress have been considered for virtual track pre-discussion.
- The virtual track papers require the previous registration of at least one author.
- All registered congress participants will have access and may contribute to paper pre-discussions. Each participant is allowed to make up to two different contributions on the same paper.
- The responsibility of replying to participants of the pre-discussion paper lies with its assigned author. There will be no limit on the number of replies an author decides to make.
- More than 50 papers will be available for pre-discussion. The list of accepted papers for virtual track pre-discussion will be available from the Congress web site in March.

Participation in Open Forums (from April 1 to June 15, 2002)

In the run-up to the event, **IFAC b'02** will promote discussions via the Internet, or 'open forums', on specific topics of interest. At the time of the congress, panel discussions will examine and analyse the material previously discussed via the internet. The following rules will be applicable:

- A promoter assigned by the IPC will lead and co-ordinate each Open Forum and its corresponding Panel Discussion at the Congress.
- All registered congress participants may contribute to all open forums. Each participant is allowed to submit up to two different contributions at the same Open Forum.
- The promoter will be responsible for structuring and summarising the Open Forum contributions for their panel discussion on the live track. This document will also include the list of contributors.
- On the merit of their contributions, the promoter may select some participants of the Open Forum as members of the corresponding live track panel discussion.

Remember:

- The access to the Virtual Track will be made through a menu from the Congress website and the results of the discussions will be available there.
- Full participation in the Virtual Track will be restricted to registered Congress participants. However, non registered participants will be allowed to access the list of selected pre-discussion papers and the list of active open-forums.
- A login name and a password will be made available to registered participants for full participation.

Congress Publications

The congress publications consists of an **Abstracts Book** (including the Final Program), a **CD-ROM** containing the entire technical material of the Congress, and a **Plenary Volume** consisting of the plenary papers and selected surveys papers. One copy of each will be provided to every participant as part of the registration fee. Abstracts & Final Program information will also be available on the Congress website.

Venue & Dates

Congress Dates	Sunday - Friday, July 21-26, 2002
Pre-Congress Tutorials Dates	Saturday - Sunday, July 20-21, 2002
Open Forums Period	April 1 - June 15, 2002
Paper Pre-discussion Period	April 1 - June 15, 2002

Congress Venue

Universitat Politècnica de Catalunya (UPC)
Campus Nord
c/ Jordi Girona, 31
08034 - BARCELONA, Spain

Congress Registration Fees

	<u>Full Registration</u>	<u>Student Registration</u> ⁽¹⁾
Advance ⁽²⁾	€ 540	€ 200
On-site	€ 640	€ 270

(1) A certification as full time student is required

(2) Before March 30, 2002

Secretariat

IPC & NOC Postal address

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	Saturday 20	Sunday 21	Monday 22	Tuesday 23	Wednesday 24	Thursday 25	Friday 26
9	Workshop Tutorial	Workshop Tutorial	Plenary Session P-Mo-M	Plenary Session P-Tu-M	Plenary Session P-We-M	Plenary Session P-Th-M	Plenary Session P-Fr-M
10			Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11	Workshop Tutorial	Workshop Tutorial	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions
12			T-Mo-M0..T-Mo-M21	T-Tu-M0..T-Tu-M21	T-We-M0..T-We-M21	T-Th-M0..T-Th-M21	T-Fr-M0...T-Fr-M21
13	Lunch Time	Lunch Time	Lunch Time	Lunch Time	Lunch Time	Lunch Time	Lunch Time
14	Workshop Tutorial	Workshop Tutorial	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions	Technical (Oral & Poster) Sessions
15			T-Mo-A0..T-Mo-A21	T-Tu-A0...T-Tu-A21	T-We-A0..T-We-A21	T-Th-A0...T-Th-A21	T-Fr-A0...T-Fr-A21
16	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
17	Workshop Tutorial	Workshop Tutorial	Plenary Session P-Mo-E	Technical (Oral & Poster) Sessions	Plenary Session P-We-E	Technical (Oral & Poster) Sessions	Closing Ceremony
18			Panel Discussions	T-Tu-E0....T-Tu-21n	Panel Discussions	T-Th-E0...T-Th-E21	
19		Opening Ceremony	D-Mo-E1..D-Mo-E5		D-We-E1..D-We-E5		

SESSION CODE: X-Y-Zi

X: P Plenary Session
 T Technical (Oral& Poster) Session
 D Panel Discussion

Y: Mo ...Fr Day of the week

Z: M Morning
 A Afternoon
 E Evening
 i: Parallel session i

Automatica

Papers from the March 2002 Issue

Papers

- Adaptive Vibration Isolation for Axially Moving Strings: Theory and Experiment
(Y. Li, D. Aron, C.D. Rahn)
- A Cumulant Based Algorithm for the Identification of Input-Output Quadratic Systems
(P. Koukoulas, V. Tsoukas, N. Kalouptsidis)
- Asymptotically Optimal Controls of Hybrid Linear Quadratic Regulators in Discrete Time
(R.H. Liu, Q. Zhang, G. Yin)
- Predictive Pole Placement Control with Linear Models
(P.J. Gawthrop, E. Ronco)
- Subspace-based System Identification: Weighting and Pre-filtering of Instruments
(T. Gustafsson)
- Convex Synthesis of Localized Controllers for Spatially Invariant Systems
(G.A. de Castro, F. Paganini)

Brief Papers

- Interval-excitation through Impulse Sequences. A Technical Comma
(F. Giri, F.Z. Chaoui, Y. Rochdi)
- Robust Nyquist Array Analysis Based on Uncertainty Descriptions from System Identification
(D. Chen, D.E. Seborg)
- A Decomposition Approach for the Solution of the Unit Loading Problem in Hydroplants
(M. Breton, S. Hachein, A. Hammadia)
- Robust Control of Uncertain Distributed Delay Systems with Application to the Stabilization of Combustion in Rocket Motor Chambers
(Feng Zheng, P.M. Frank)
- Scaling and Redundancy for L11-conditioned Two Input, Two Output Plants
(J.S. Freudenberg, R.H. Middleton)
- Guaranteeing Cost Strategies for Linear Quadratic Differential Games under Uncertain Dynamics
(F. Amato, M. Mattei, A. Pironti)
- On the Design of Multivariable PID Controllers via LMI Approach
(F. Zheng, Q.-G. Wang, T.H. Lee)
- Nonlinear Decentralized Controller Design for Multimachine Power Systems Using Hamiltonian Function Method
(Zairong XI, Daizhan Cheng, Q. Lu, S. Mei)
- Recursive Identification under Scarce Measurements. Convergence Analysis
(R. Sanchis, P. Albertos)
- A Receding Horizon Unbiased FIR Filter for Discrete-time State Space Models
(W.H. Kwon, P.S. Kim, S.H. Han)

Technical Communiques

- A Revised Kleinman Algorithm to Solve Algebraic Riccati Equation of Singularly Perturbed Systems
(H. Mukaidani, H. Xu, K. Mizukami)

Correspondence

- Comment on "The Use of Routh Array for Testing the Hurwitz Property of a Segment of Polynomials
(A.L. Tits)
- Author's Reply
(Chyi Hwang, S.-F. Yang)

Book Reviews

- System Design through MATLAB, Control Toolbox and SIMULINK, by Krishna K. Singh and Gayatri Agnihotri
(P. Thomas, Reviewer)
- Intelligent Control Based on Flexible Neural Networks, by Mohammad Teshnehlab and Keigo Watanabe
(G.A. Robithakis, Reviewer)
- An Introduction to Hybrid Dynamical Systems, by A. van der Schaft and H. Schumacher
(P.E. Caines, Reviewer)

Papers from the April 2002 Issue

Editorial

- Jacques Louis Lions
(P. Bernhard)

Papers

- Halo Orbit Mission Correction Manoeuvres Using Optimal Control

(S.D. Ross, R.S. Wilson)

Interconnection and Damping Assignment Passivity-based Control of Port-controlled Hamiltonian Systems

(R. Ortega, A. van der Schaft, B. Maschke, G. Escobar)

Bifurcation Control of Rotating Stall with Actuator Magnitude and Rate Limits: Part II – Control Synthesis and Comparison with Experiments

(Y. Wang, S. Yeung, R.M. Murray)

Criteria for Robust Absolute Stability of Time-varying Nonlinear Continuous-time Systems

(D. Liu, A. Molchanov)

Constrained Stabilization Problems for Linear Plants

(A.Saberi, J. Han, A.A. Stoorvogel)

Minimal Partial Realization from Generalized Orthonormal Basis Function Expansions

(T.J. De Hoog, Z. Szabo, P.S.C. Heuberger, J. Bokor, P.M.J. van den Hof)

Adaptive NN Control of Uncertain Nonlinear Pure-feedback Systems

(S.S. Ge, C. Wang)

Brief Papers

LQ Performance Bounds for Adaptive Output Feedback Controllers for Functionally Uncertain Nonlinear Systems

(M. French, Cs. Szepesvari, E. Rogers)

Notch Filter Feedback Control in a Class of Chaotic Systems

(Chaohong Cai, Z. Xu, W. Xu, G. Feng)

On the Equivalence of Causal LTI Iterative Learning Control and Feedback Control

(P.B. Goldsmith)

Identification of Continuous-time AR Processes from Unevenly Sampled Data

(E.K. Larsson, T. Söderström)

Technical Communiques

Robust Stability of Uncertain Delay-differential Systems of Neutral Type

(Q.L. Han)

Complete Parametric Approach for Eigenstructure Assignment in a Class of Second-order Linear Systems

(G.-R. Duan, G.-P. Liu)

An Exponential Stability Result for the Wave Equation

(Ö. Morgül)

Robust Detection of Sensor Faults by means of a Statistical Test

(D. Juricic, M. Zele)

Correspondence

Comments on "A Robust Model Reference Adaptive Control for Non-minimum Phase Systems with Unknown or Time-varying Delay"

(M.F. De Mathelin)

Comments on "Intelligent Optimal Control of Robotic Manipulator Using Neural Networks"

(M. Jungbeck, J.J.F. Cerqueira)

WHO IS WHO IN IFAC



Prof. Lena Martensson
Member of the Technical Board

Professor Martensson has a background as a psychologist and got her PhD in industrial ergonomics at KTH, which is Sweden's oldest (175 years) and biggest technical university (15 000 undergraduate students and 2000 post graduate students). Being a professor in human – machine systems means a responsibility to teach the students about the implications for the operator in complex technical systems concerning work content, education, training and risks.

Five doctoral students deal with human factors in aviation. Having carried out research in engineering and process industry Professor Mårtensson got involved in aviation after an aircraft accident that took place in Sweden ten years ago. The information overload in cockpit during the critical minutes became a research area for two doctoral students: auditory warnings as well as alert messages. "Training for automation" of pilots in highly automated aircraft like Airbus is the subject for one doctoral student. The roles of the pilot and the air traffic controller in the new technology for communication, navigation, surveillance and air traffic management (CNS/ATM) is another doctoral subject. Other students deal with the development of computer network in process industry.

During the 1980ies Lena served on a governmental commission giving advice to Ministry of Industry on computerization of the industry.

At the Royal Institute of Technology Professor Martensson holds the position of vice chairman of the Faculty giving advice to rector and to the board of the university. On the national level Lena is a board member of various organizations concerned with human factors, like the Association of the Swedish psychologists and the Swedish Center for human factors in aviation.

The list of publications of professor Mårtensson covers some 80 titles in books, international journals, text books, etc.. The subjects are work organization, work environment, training of operators, risk assessments, rescue work in various kinds of industry like engineering industry, process industry, marine industry and within aviation.

Lena has been a member of the IFAC TC on Social Implications of Automation since 1975. She has held many positions within IFAC, ranging from Vice-Chair of the TC on Social Effects of Automation (1981-84), Chair of the same Committee, Vice-Chair of the Technical Board, in charge of the TCs on Biomedical Engineering, Control Education, Developing Countries and Social Effects of Automation, member of the Publications Committee to two periods as Coordinating Committee Chair, responsible for the areas of Control Education, Developing Countries and Social Implications of Automation.

In 1999 Lena was presented with the IFAC award for Outstanding Services.

The challenge for the future for professor Mårtensson is to get more engineering students interested in the human subject and to get more doctoral students to devote themselves to human factors. With every major accident in industry and in transportation there is a growing awareness among politicians and among the general public as to the importance of designing technical systems for and with the user.

Lena is married to Leif. They have got two sons, Henrik just got his Master's degree in engineering at KTH. Magnus just started as a student at KTH to become an engineer in four year's time. The family spends the holiday time onboard the family's yacht S/Y Martina, mostly sailing in the archipelago of Stockholm with its thousands of islands. Another favourite holiday is skiing in the Austrian alps or spending time at the hospitable "Pension Quereeder" in Admont, Austria, where the beautiful surroundings offer good opportunities for mountaineering.