PROCEEDINGS OF THE 2002 IEEE INTERNATIONAL CONFERENCE ON CONTROL APPLICATIONS

Volume 1

CCA 2002

SEPTEMBER 18-20, 2002
Scottish Exhibition and Conference Centre,
Glasgow, Scotland, U.K.

Sponsored by the IEEE Control Systems Society

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Foreword

On behalf of the IEEE Control Systems Society, the Organising Committees and the International Programme Committees we should like to welcome you to the Joint 2002 Conference on Control Applications and the Computer Aided Control Systems Design Symposium in Glasgow, Scotland, U.K.

Many of you may well remember that Glasgow was the location for the Conference on Control Applications in 1994. So we are pleased to be able to extend the warmest of welcomes once more. In the intervening years the city has changed and the historic Victorian past of Glasgow has been much more widely recognised. You will find the city has been extensively pedestrianised and visitors now tell us that we have a beautiful city as well as an extremely friendly one. The conference is located in the new Scottish Exhibition and Conference Centre by the side of the River Clyde. All the session rooms are equipped with state of the art data projection facilities and so we expect to see a high level of presentation through-out the conference.

The Conference on Control Applications, 2002

From the very beginning the IEEE's CCA Conference has been an international event that is held outside the United States at least every three years. The focus of these meetings is on the use of *Advanced Control in Industrial Applications* and the Glasgow meeting has an excellent range of application sessions across industrial sectors.

The four Plenary presentations for the CCA Conference are:

- Professor Kumpati Narendra, Yale University, who will be considering the question of when to tune controllers.
- Dr Jeff Cook of Ford Motor Company, in Dearborn, U.S.A will consider problems in automotive powertrain control applications and the opportunities these provide.
- Professor Sanjoy Mitter of MIT will discuss the very topical subject of the convergence between communications, computing and control sciences.
- Professor Roger Benson, F.Eng., of ABB, who will present the final CCA Plenary on the use of automation in process control.

The CCA Plenary lectures therefore cover a range from new technologies and concepts to real applications experience with advanced control. There will be five parallel sessions of the CCA Conference and two for the CACSD and delegates will be able to attend either, since they will be held in the same area of the Exhibition Centre. The sessions cover technical areas that have real applications potential, in addition to industry specific subjects that demonstrate the importance and value of the control systems discipline.

Two Special Sessions have been organised on the theme of Control, and Industrial Problems. The first is sponsored by the local IEE Section who have arranged for a group of industrialists and engineers from industries to give short presentation on current industrial problems in a wide range of industrial sectors. The second Special Session has been organised to allow delegates to learn something of international and national funding mechanisms that are in place to assure the future developments of the control discipline and its application.

The Computer Aided Control System Design Symposium, 2002

The CACSD Symposium 2002 will run in parallel and has three Plenary Speakers:

- Ing. Adriano Cavalanti Da Silva of Darmstadt University who will talk on advanced graphic simulation methods.
- Dr Barry Lennox of the University of Manchester who will speak on Principal Component Analysis methods.
- Dr Paul Austin of INVENSYS who will speak on the use of predictive control in the paper industry.

The Symposium comprises two tracks over two days and covers topics which include research work on multi-objective control system design and non-linear control system design methods.

The Tutorial Workshops

Four really excellent Tutorial Workshops have been organised covering both CCA and CACSD topics. Controller performance assessment, nonlinear control design, modelling and simulation using the internet and petri nets in control are all current state-of-the-art topics in industrial control and CACSD. We kindly thank the Workshop Chairs Mike Masten and Gerald Hearns and the Workshop presenters for all their effort in arranging these events.

Social and Hospitality Programme

In parallel with the technical events there is a strong social programme that follows the usual tradition including both a welcoming reception and a farewell reception. In addition, there will be a civic reception in Glasgow City Chambers, which is a very impressive building in the middle of Glasgow that represents the seat of local Government. There will also be a conference banquet at the Moat House Hotel which is next the Exhibition Centre. The banquet will have a strong Scottish theme in the menu and a welcoming piper. Unfortunately Scotland can not provide its own wine but a wee dram when you arrive at the banquet should more than compensate for this. The venue should provide an excellent opportunity for networking and for exhibitors. In addition to the excellent facilities in the Exhibition Centre next to the River Clyde, delegates will have the opportunity to walk along the Clyde or across to the new Science Centre that includes a range of interesting exhibits.

Thanks and Acknowledgements

Firstly we should like to thank staff at the SECC (Robin Miller and Jacqui Thomson) for their care and help in putting together the facilities we needed to host the conference at the SECC. The Lord Provost of Glasgow is also thanked for hosting a welcoming Civic Reception for conference delegates. We should also like to thank Bob Hamm and Lisa Pernacciaro of Omnipress who helped us create the Proceedings and CD ROMS's with efficiency and courtesy.

For compiling the Technical Programme, overseeing the Review Process and creating the timetable we thank Professors Derek Atherton (CCA) and Neil Munro (CACSD) along with the Invited Session Chairs Professor Harris McClamroch and Dr Dawei Gu and the respective International Programme Committees for such an excellent programme of papers and Plenary speakers.

The Organising Committee deserve thanks, too. An event like this cannot come together without teamwork and Jacqueline Wilkie, Paul Kalata, Ron Leigh and Mike Johnson worked tirelessly to bring the event together.

Final grateful thanks go to the CCA/CACSD Secretariat Drew Smith, Sheena Dinwoodie and Ann Hall for their amazing effort and unfailing good humour during the last twelve months of organising the 2002 CCA/CACSD event.

We extend a warm welcome to all our delegates and hope that you enjoy your visit, and achieve all your personal conference objectives.

Michael Grimble	John Gray
General Chair CCA	Chair CACSD

P.S.: We would like to acknowledge the following individuals who accepted as Chairs and Co-Chairs after the Author Index was published. Thank you for lending your support and time for the following sessions:

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CONFERENCE HIGHLIGHTS

Technical Program Overview

With the assistance of an excellent Technical Program Committee, we have been able to put together a very exciting technical program for the Joint 2002 Conference on Control Applications and the Symposium on Computer Aided Control Systems Design. In order to retain the character of CCA and CACSD, we have maintained separate tracks for the two as can be found on the Conference Overview pages. The technical program is spread over three days and each day we have morning, early afternoon, and late afternoon sessions. There are four CCA Plenary Lectures. A summary of Technical Program can be seen in the Program at a Glance – note that the titles of sessions have been abbreviated to accommodate the program on a single page.

CCA Plenary Lectures

CCA Plenary 1 Kumpati Narendra **Date:** Wednesday 18th September, 2002
Lomond Auditorium, 08.45 a.m.

Address: Centre for System Science,
Department of Engineering and Applied Science,
PO Box 208267,
New Haven,
CT 06520-8267,
Yale University, USA

Title: To Tune, To Switch, or To Switch and Tune? Adapting to Constantly Changing Environments

Abstract:

The term "Adaptive Control" was defined in the late 1950s, and during the following four decades has come to refer to systems that monitor their own performance, and adjust their characteristics to cope with changing environments. For the most part, research in the field has dealt with plants with constant but unknown parameters, and adaptation is carried out by the incremental adjustment (tuning) of controller parameters based on the measurements of the input and the output of the plant. The methods, originally developed for deterministic linear systems, have been extended to linear stochastic systems, as well as nonlinear systems in which the parameters occur linearly. Demonstrating that the adaptive system is stable, that all the signals remain bounded, and that performance of the system is improved by adaptation have been the main topics discussed in the literature.

Intuitively, it seems reasonable to expect such adaptation to perform satisfactorily even in the presence of small plant parameter perturbations as well as slow but large variations, and such problems have also been discussed in the literature.

With systems becoming more complex, and adaptive control finding application in wider domains, controllers are increasingly called upon to cope with sudden and large variations in plant parameters, as well as changes that occur constantly. New adaptive paradigms are needed to deal with such situations. In the past decade, methods have been developed based on multiple models of the plant where adaptation is carried out by discontinuous changes in controller parameters (switching).

The lecture will discuss both tuning and switching in adaptive control, and how the two can be combined to address a much wider class of problems in adaptation. While the new methodology has given rise to many new theoretical questions, the emphasis of the lecture will be on the application to practical problems, including aircraft control, process control, and the control of mechanical systems.

Biographical Sketch:

Professor K.S. Narendra received his Bachelor of Engineering degree with honors in Electrical Engineering from the University of Madras in 1954, and the M.S. and Ph.D. degrees from Harvard University in 1955 and 1959 respectively. He received an honorary M.A. degree from Yale University in 1968 and an honorary Doctor of Science degree from his alma mater (now Anna University in Madras) in 1995. Currently, he is Professor of Electrical Engineering and Director of the Center for Systems Science at Yale University.

Professor Narendra's research since 1961 has addressed four different areas: Stability Theory (1961-1972), Learning Automata (1968-1987), Adaptive Control (1970-present) and Artificial Neural Networks (1988-present). Concurrent with research he has directed forty doctoral students at Harvard and Yale Universities, and collaborated with over fifty postdoctoral and visiting fellows.

Professor Narendra is the author of four books on stability, learning automata, adaptive systems and neural networks (in preparation), and the editor of four others. He is the recipient of the Franklin V. Taylor Award (1972) of the IEEE Systems, Man, and Cybernetics Society, the George S. Axelby best paper award (1988) of the Control Systems Society, and the Outstanding Paper Award (1991) of the Neural Network Council. He is a Life Fellow of the IEEE, a Fellow of IEE (U.K.), a Fellow of the American Association of the Advancement of Science, and a member of the Connecticut Academy of Science and Engineering (1995). He was awarded the American Automatic Control Council Education Award in 1990, the Leadership Award of the Neural Network Society (1994) and the Bode Prize in 1995.

Professor Narendra has served on numerous national and international committees as well as the advisory boards of various institutes and universities around the world. His current interests are in the control of complex systems in the presence of large time-varying uncertainties.

CCA Plenary 2 Jeff Cook

Date: Wednesday 18th September 2002
Lomond Auditorium, 01.00 p.m.

Address: Ford Motor Company
2101 Village Road,
PO Box 2053,
MD 2036/SRL
Dearborn, MI 48121- 2053

Title: **Opportunities in Automotive Powertrain Control Applications**

Abstract:

Automotive emissions regulations and the requirement for improved fuel economy have driven innovation in powertrain design and control for more than three decades. In Europe, "Stage I" emission standards were introduced in 1992; in the United States, the very first requirements on automotive pollution control date to the mid-1960's. Throughout the world, much has been accomplished in this important area: almost everywhere, passenger vehicles are immensely cleaner and more fuel-efficient than they were only a relatively few years ago. The job, however, is far from done. In Europe, a 60% reduction in tailpipe emissions of oxides of nitrogen (NOx) is required in the next decade to transition from the current "Stage III" to "Stage V" emission levels (and diesels will be as clean as gasoline vehicles). In the United States, a ten-times reduction in NOx is necessary over the

same time period to achieve California's most stringent requirements. As for fuel economy, the European Automobile Manufacturers Association has committed to a reduction in carbon dioxide emissions (essentially, fuel consumption) for new passenger cars by over 25% to an average of 140 g/km by 2008. Corporate Average Fuel Economy (CAFE) regulations impose a minimum fleet average miles per gallon requirement in the U.S. Reductions in emissions and fuel consumption are societal obligations (regulated or not), but they cannot be accomplished with a disregard for performance: customers want vehicles that are fun to drive, responsive and achieve good fuel economy; they expect environmental stewardship.

These generally competing requirements of performance, fuel economy and emissions have fostered the development of advanced technology powertrains that are typically complex and control intensive: they incorporate new sensors and actuators, effect new methods of operation and are crucially dependent on the embedded control system to deliver the benefits of innovative powertrain hardware.

Although the control design problems for these advanced technology systems are in themselves difficult ones, achieving the required system performance is not the only challenge. The control systems for these complex powertrains must be developed at minimal cost and deployed in record time to meet the expectations of a competitive market. Today, the cost structure of the automotive industry imposes constraints on engineering resources, while rapid time-to-market pressures put the powertrain controller on the critical path of a vehicle's development schedule. Consequently, a systematic, model-based control development process that relies on modern Computer Aided Control Systems Design (CACSD) tools and methods is essential.

This plenary talk will describe a few of these "control-critical" advanced technology powertrain systems, some control solutions and some remaining opportunities. In addition, a systems engineering process that supports the development of advanced control systems in a production automotive environment will be presented.

Biographical Sketch:

Jeffrey A. Cook is a Staff Technical Specialist at the Ford Motor Company, Scientific Research Laboratory. His research addresses modeling and control of advanced technology automotive engines for improved fuel economy and emissions, and improvements in systems engineering processes for the design of automotive powertrain controls. He holds more than 20 patents on engine systems technology, and is an author of over 40 technical publications on automotive powertrain modeling and model-based control design. He is a Fellow of the IEEE. He received the BS degree in Mechanical Engineering from the Ohio State University in 1973, and an MS degree in Electronic and Computer Control Systems from Wayne State University in 1985.

CCA Plenary 3 Sanjoy Mitter **Date:** Friday 20th September 2002
Lomond Auditorium, 08.45 a.m.

Address: Massachusetts Institute of Technology
77, Massachusetts Avenue
Lab. For Information & Decision Systems
Cambridge, MA 02139
USA

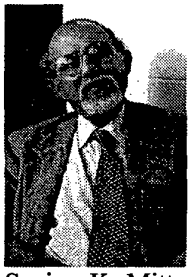
Title: System Science: The Convergence of Communication, Computation and Control

Abstract:

This lecture is concerned with the study of large networks having a combination of sensing, control, communication and capabilities; ranging from rapidly deployable sensors to instrumented infrastructure. I argue that to study these problems a new synthesis of communication,
control and computation is needed.

In this context, the boundary between sensors, actuators and control systems is blurred and each node of the network may reconfigure itself to act as a sensor, or actuator, or even as part of the environment (for instance posing as landmark for navigation of other nodes). The loop could include human operators at the highest level of abstraction, and the network itself represents a large, hybrid, hierarchical, composition, event-driven control system.

Biographical Sketch:



Sanjoy K. Mitter received his Ph.D. degree from the Imperial College of Science and Technology in 1965. He taught at Case Western Reserve University from 1965 to 1969. He joined MIT in 1969 where he has been a Professor of Electrical Engineering since 1973. He was the Director of the MIT Laboratory for Information and Decision Systems from 1981 to 1999. He has also been a Professor of Mathematics at the Scuola Normale, Pisa, Italy from 1986 to 1996. He has held visiting positions at Imperial College, London; University of Groningen, Holland; INRIA, France; Tata Institute of Fundamental Research, India and ETH, Zürich, Switzerland. He was the McKay Professor at the University of California, Berkeley in March 2000 and has held visiting positions in several American universities. He is a Fellow of the IEEE and a Member of the National Academy of Engineering. He is the winner of the 2000 IEEE Control Systems Award. His current research interests are Communication and Control in a Networked Environment, the relationship of Statistical and Quantum Physics to Information Theory and Control and Autonomy and Adaptiveness for Integrative Organization.

CCA Plenary 4 Roger Benson

Date: Friday 20th September, 2002
Lomond Auditorium, 01.00 p.m.

Address: ABB Automation (UK) Ltd,
Gunnels Wood Road,
Stevenage,
Herts.,
SG1 2EL, U.K.

Title: **Smart Control For Tomorrows Processes**

Author – Professor R S Benson FREng – Director Technology – ABB UK

Abstract:

Reviewing the history of control in the processes industries it is clear that four key technologies have significantly influenced the performance.

- Process Control that has evolved from single loop pneumatic control through to multivariable dynamic matrix control applied to whole plants and potentially sites.
- Communication / interface technology where the evolution from pneumatic instruments through electronics to field bus and the current Industrial^{IT} standard has been dramatic.
- The ability to model, initially in the steady state but now dynamically, the basic manufacturing processes.
- The improvements in the understanding of process engineering, process design and integration of the supply chain.

The paper will review the history in all four areas and suggest that as we enter the twentieth century, all four are approaching a point of integration.

There are two major drivers for change and potential restructuring of the industry.

- The poor financial and perceived performance of industry.
- The competitive pressures of the supply chain.

As a supplier to the process industries ABB recognises these strengths and is responding accordingly. The trend in the processes is towards a spectrum of manufacturing processes from the ever-larger continuous plants at the source of feedstock through to the distributed, intensified and small plants that work on a made to order basis at the point of use. In both cases these are "smart plants" where the control, and the knowledge, must be used to match the process output and quality to an ever more variable demand. This demands certain characteristics of the "smart controllers". In addition the capabilities of the core technologies are allowing ever-larger processes to be controlled. The total supply chain from raw material through to the final customer is effectively a set of dynamic processes. The scope of smart control is now extending to the control of such processes with phrases such as profitability to promise gaining acceptance.

The paper will review how ABB is tackling this whole complex scenario through the development and exploitation of its Industrial^{IT} platform.

Biographical Sketch:

Professor Roger Benson FREng

Roger Benson is Technology Director of ABB Limited and the Manager of the Refinery and Petrochemical Programme.

Prior to joining ABB he spent 30 years with ICI where he was Chief Engineer of Engineering Technology. Positions prior to that included creating the Manufacturing Technology capability; head of the Control / Electrical Function; starting New Businesses and a Works Maintenance Manager and a Control Engineer. Since 1994 he has been a judge for the UK Best Factory Award. From 1997 to 1999 he was a member of Manufacturing Foresight Panel. Since 1998 he has been chairman of the CPACT Foresight Initiative. In 2000 he was appointed to the EPSRC User Panel. In 1995 he completed a two year period with the Innovation Unit of the DTI, which included joint authoring "Competitiveness – how the best UK companies are Winning" and "Manufacturing Winners". While with the DTI he was the Process Sector Programme Manager for the EPSRC Innovative Manufacturing Initiative. In 1999 he was appointed a Fellow of the Royal Academy of Engineering. He is a Visiting Professor to the Centre of Process Systems Engineering at Imperial College, the Department of Chemical Engineering at the University of Newcastle and the University of Teesside. He is the author of the IChemE book on "Benchmarking Process Manufacturing", over 30 published papers, and has given much presentation on Innovation, Process Control, Benchmarking, World-class manufacturing and the future of the Process Industries.

In 1997 he presented the UKACC lecture and in 1998 the Plenary address at the IChemE Research Conference. In 1984 he was a finalist for the Prince of Wales Award for Innovation.

A native of Haslingden in Lancashire, he was educated at Swansea University and UMIST.

He and his wife Kathlyn live near Northallerton, North Yorkshire.

TUTORIAL WORKSHOPS

There are four Tutorial Workshops to be held at the CCA/CACSD event. They will be held on Tuesday 17th September, 2002. The venue for the Workshops is the James Weir Building at the University of Strathclyde.

http://www.strath.ac.uk/maps/james_weir.htm

The lecture theatres being used are on Level 4 of this building.

WORKSHOP 1

Tutorial Workshop 1 Controller Performing Monitoring

Organisers Nina Thornhill and Mike Grimble
Room M413, Level 4 James Weir Building,
University Of Strathclyde

WORKSHOP 2

Tutorial Workshop 2 Design, Validation, And Implementation Of Logic Control Systems For Industrial Automation Using Petri Nets

Organisers Dawn Tilbury And Luca Ferrarini
Room M422A, Level 4 James Weir Building,
University Of Strathclyde

WORKSHOP 3

Tutorial Workshop 3 Web-Based Course On Modelling Of Multidisciplinary Systems With Simulation Across The Internet

Organiser Herman Mann
Room M412, Level 4 James Weir Building,
University Of Strathclyde

WORKSHOP 4

Tutorial Workshop 4 Nonlinear Dynamic Models For Computer Control

Organiser Ronald K. Pearson
Room M415, Level 4 James Weir Building,
University Of Strathclyde

SPECIAL SESSIONS DATE: Thursday 19th September, 2002

Special Session ThM7:	Control Problems and Solutions in Industry
Chair: D. R. Booth	Co-Chair: R. Dahtz
Location:	Carron 2
Time:	ThM7 10.00 to 12.00 noon

What are the practical control issues in industry today? What solutions are being found? In this Round Table session, a number of practitioners from various industries such as distilling, paper, IT manufacturing, brewing, vinyl flooring and nuclear power, will outline real control problems, with or without solutions. Each topic will then be discussed by the panel and the audience - this should highlight useful alternatives and areas worth exploring. This session should be of value to engineers in industry, solution providers, researchers and developers.

This Round Table event is arranged by the Electronics, Control and Informatics Section of IEE, Scotland

Special Session ThA7:	Funding the Future of Control
Chair: M. J. Grimble	Co-Chair: A.W. Ordys
Location:	Carron 2
Time:	ThA7 14.00 to 15.40

Control and its applications continue to be a thriving engineering and scientific area. Despite being an identifiable discipline it is rarely funded as such. Usually funding for control research and development has to be found in other engineering and application programmes. In Europe, Framework 6 is almost with us and it is necessary for the Control community to make an impact if research support is to emerge. In this special session, representatives of European and national funding bodies will discuss the mechanisms which exist to fund fundamental and applications research in control engineering.

EXHIBITORS: Hall 1

John Wiley and Sons Ltd
Springer Verlag London
National Instruments

SOCIAL EVENTS

Social Events

Welcome Reception — **Tuesday, 17th September 2002, 6.00p.m. - 7.30p.m.**
Hall 1, Loch Suite, SECC

A Welcoming Reception for all conference attendees and their accompanying guests will be held on Tuesday evening. A ticket for one complimentary drink is included with each regular registration fee. This is an excellent opportunity to meet old and new friends and to make plans for the week of conference activities.

Civic Reception — **Wednesday 18th September 2002, 7.30p.m.**
Glasgow City Chambers, George Square, Glasgow

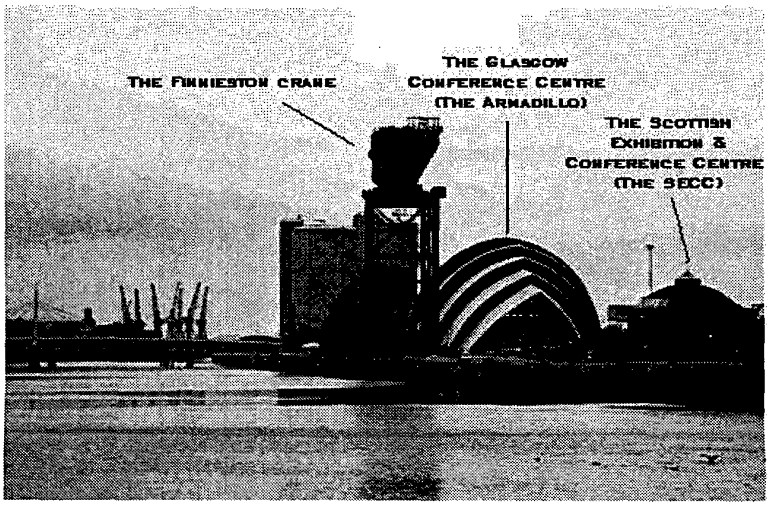
A Civic Reception has been arranged and all conference attendees and their guests are invited to attend. The reception is a chance to visit one of Glasgow's Victorian masterpieces since the City Chambers have a riotous rococo interior of marble, brass and oak.

Conference Banquet — **Thursday 19th September 2002, 7.00p.m. for 7.30p.m.**
Moat House Hotel, SECC

The Conference Banquet will provide an opportunity for social interactions and a chance to enjoy a special Scottish Meal. There will be a short ceremony, including the presentation of the Springer Verlag Best Paper Prize, the John Wiley Prize, the Control System Society Best Student Paper prize and the Howard Kaufman Best Student Awards. Extra banquet tickets may be purchased at the Registration Desk until Wednesday, 18th September, subject to availability. If you plan to miss the Banquet, please return your ticket as early as possible to the Registration Desk; returned tickets will be made available to students or retirees who would like to attend.

Farewell Reception — **Friday 20th September 2002, 4.00p.m. - 6.00p.m.**
Hall 1, Loch Suite, SECC

The Farewell Reception will be a special time to relax after the conference, to say goodbye to friends, and to make plans for future conferences. All registrants and their accompanying guests are invited.



Hospitality Programme

For accompanying partners, friends and conference attendees too, there will be a full hospitality programme.

Wednesday 17th September 2002: Orientation Meeting and Glasgow City Tour

This informal morning gathering will enable visitors to meet and learn something of the local attractions. There will be a presentation about Glasgow and an opportunity to learn about Glasgow's restaurants, visitor attractions, shopping and local amenities and transportation. A short Glasgow City Centre bus tour will be arranged to see the sights.
Event 1 Lecture on Glasgow and local bus trip.

Thursday 19th September 2002: Football, Lunch and Culture

This outing is planned as a visit to the famed Glasgow Rangers Football Stadium at Ibrox. The visit will comprise a tour and opportunity to stock up on football gear from the Rangers Shop at the Stadium. The party will then move on to lunch at the Art Lover's café for nice food and delightful surroundings. We could visit the Victorian walled Garden adjacent the Cafe. After lunch, there will be tour of the Charles Rennie Mackintosh inspired House for an Art Lover. More souvenirs can be purchased from the shop at the House. This is all followed by a swift visit to the Burrell Collection in Pollok Park. There is the famous herd of Scottish Highland cattle just local and of course the Museum to explore. Coach transportation will be provided.
Event 2 (numbers limited to 50) Visit to Ibrox football stadium, lunch and visit at House for the Art Lover, visit to the Burrell Collection.

Friday 20th September 2002: Edinburgh - Scotland's Capital City

This outing is a day trip involving a visit to Edinburgh Castle, a walk down the Royal Mile with the opportunity for some shopping. Lunch will be arranged at the Crown Plaza Hotel on the Royal Mile. This will be followed by a visit to Holyrood Palace . There may be time for a little more shopping before returning to Glasgow. The travel to Edinburg is by Scotrail and the outing involves plenty of walking , so sensible shoes are advised.
Event 3 Group train travel to and from Edinburgh leaving from Glasgow Queen Street Station. Entry to Edinburgh Castle. Guided walk down Royal Mile. Lunch at the Crown Plaza Hotel. Entry to Holyrood Palace for visit and tour.

Programme at a Glance : WEDNESDAY 18TH SEPTEMBER, 2002							
	CCA					CACSD	
TRACK	**1**	**2**	**3**	**4**	**5**	**6**	**7**
ROOM	**Lomond**	**Alsh 1**	**Alsh 2**	**Boisdale 1**	**Boisdale 2**	**Carron 1**	**Carron 2**
08.30	LOMOND: Welcome						
08.45	LOMOND: CCA Plenary Lecture 1: Kumpati Narendra, Yale University						
09.30	**HALL 1 MORNING COFFEE**						
	CCA					CACSD	
WM 10.00 –12.00	Power Systems	Neuro-Fuzzy Control	Observer Design	Motor Control	Aircraft Control	Multiobjective Control System Design	Numerical Software & Applications
12.00-13.00	**LUNCH**						
13.00	LOMOND: Welcome						
13.05	LOMOND: CCA Plenary Lecture 2: Jeff Cook, Ford Motor Company						
	CCA					CACSD	
WA 14.00 –15.40	Control of Mechanical Systems	Robotics I	Aerospace System Applications	PID Tuning	Missile and Satellite Control	Nonlinear Control Designs	Control System Design
15.40– 16.00	**HALL 1 AFTERNOON TEA**						
	CCA					CACSD	
WE 16.00 –17.40	Noise and Vibrations	Robotics II	Steel Processing	Chemical Processes	Automobile Control	Intelligent Systems	PID and Robust Control
17.40	LOMOND: Welcome						
17.45-18.30	LOMOND: CACSD Plenary Lecture 1: Adriano Cavalcanti Da Silva, Darmstadt University						
19.30	**Civic Reception, City Chambers, George Square, Glasgow**						

Programme at a Glance : THURSDAY 19TH SEPTEMBER, 2002							
	CCA					CACSD	
TRACK	**1**	**2**	**3**	**4**	**5**	**6**	**7**
ROOM	**Lomond**	**Alsh 1**	**Alsh 2**	**Boisdale 1**	**Boisdale 2**	**Carron 1**	**Carron 2**
08.30	LOMOND: Welcome						
08.45	LOMOND: CACSD Plenary 2: Barry Lennox, University of Manchester						
09.30	**HALL 1 MORNING COFFEE**						
	CCA					CACSD	
ThM 10.00 –12.00	Active Control Methods	Manipulator Control	Communicati on Systems	Distributed Parameter Systems	PID Control	Optimal Control	Special Session 1 Industrial Control
12.00-13.00	**LUNCH**						
13.00	LOMOND: Welcome						
13.05	LOMOND: CACSD Plenary 3: Paul Austin, INVENSIS						
	CCA					CACSD	
ThA 14.00 – 15.40	Adaptive and Optimal Control	Control of Disk Drives	Predictive Control I	Control System Design and Performance	Control of Engines	Modelling	Special Session 2 Control Funding
15.40 – 16.00	**HALL 1 AFTERNOON TEA**						
	CCA					CACSD	
ThE 16.00 – 18.00	Visual Servo Mechanis ms	Power Wheelchair Control	Complex System Applications	Supervision and Monitoring of Processes	Controller Design 1	LFT-based Uncertainty Modelling … for Aircraft	Numerical Methods & Algorithms
19.00 for 19.30	**Conference Banquet, Moat House Hotel**						

Programme at a Glance : FRIDAY 20TH SEPTEMBER, 2002							
	CCA						
TRACK	**1**	**2**	**3**	**4**	**5**	**6**	**7**
ROOM	**Lomond**	**Alsh 1**	**Alsh 2**	**Boisdale 1**	**Boisdale 2**	**Carron 1**	**Carron 2**
08.30	LOMOND: Welcome						
08.45	LOMOND: CCA Plenary Lecture 3: Sanjoy Mitter, Massachusetts Institute of Technology						
09.30	**HALL 1 MORNING COFFEE**						
	CCA						
FM 10.00 –12.00	Integrated Control Applications	Dissipative Control Methods	Modelling	Process Control	Controller Design II	Ship and Hovercraft Control	Stability and System Theory
12.00-13.00	**LUNCH**						
13.00	LOMOND: Welcome						
13.05	LOMOND: CCA Plenary 4: Roger Benson, ABB Automation(UK) Ltd						
	CCA						
FA 14.00 –16.00	Miscellaneous Applications	Trajectory Planning & Manufacture	Modelling and Simulation	Predictive Control II	Controller Design III	System Theory + Filtering	Stability
16.00–18.00	**HALL 1 AFTERNOON TEA AND FARE-YE WELL RECEPTION**						

CCA '02
Wednesday, September 18, 2002

Lomond

CCA Plenary Lecture 1
08:30-09:30

To Tune, To Switch, or To Switch and Tune? Adapting to Constantly Changing Environments

Kumpati Narendra
Centre for System Science, Yale Univ.

Chair: TBD
Co-Chair: TBD

Lomond

CCA-WM1
Power Systems
Chair: TBD
Co-Chair: TBD

10:00 CCA-1
Application of Control Lyapunov Functions to Static Var Compensator
Ghandhari, Mehrdad — Royal Inst. of Tech.

10:20 CCA-7
A Controller based on Resonant Filters for a Series Active Filter used to Compensate Current Harmonics and Voltage Unbalance
Escobar, G. — Northeastern Univ.
Stanković, A. M. — Northeastern Univ.
Cardenas, V. — Univ. de San Luis Potosí
Mattavelli, P. — Univ. of Udine

10:40 CCA-13
Repetitive Control of Power Conversion System from a Distributed Generator to the Utility Grid
Liang, J. — Imperial College
Green, T. C. — Imperial College
Weiss, G. — Imperial College
Zhong, Q.-C. — Imperial College

11:00 CCA-19
Systematic Tuning of Nonlinear Power System Controllers
Hiskens, Ian A. — Univ. of Illinois

11:20 Paper Not Available
Global Control of Complex Systems
Hill, David J. — City Univ. of Hong Kong

11:40 CCA-25
Impedance Matching Controllers to Extinguish Electromechanical Waves in Power Networks
Lesieutre, Bernard C. — Cornell Univ.
Scholtz, Ernst — Massachusetts Inst. of Tech.
Verghese, George C. — Massachusetts Inst. of Tech.

Alsh 1

CCA-WM2
Neuro-Fuzzy Control
Chair: Zhu, Q. M. — Univ. of West England
Co-Chair: Zhang, Y. M. — Univ. of Kentucky

10:00 CCA-31
Fuzzy Classification of Plasma Reflection for Keyhole Sensing and Control
Losch, Breton E. — Univ. of Kentucky
Zhang, YuMing — Univ. of Kentucky

10:20 CCA-37
Neural Networks and Optimization Problems
Gaiduk, A. R. — Taganrog Radio Eng. Univ.
Vershinin, Y. A. — Coventry Univ.
West, M. J. — Coventry Univ.

10:40 CCA-42
Comparative Study of Alternative Fuzzy Logic Control Strategies of Permanent Magnet Brushless AC Drive
Zhu, Z. Q. — Univ. of Sheffield
Shen, J. X. — Univ. of Sheffield
Howe, D. — Univ. of Sheffield

11:00 CCA-48
Optimal Control of Batch Processes Incorporating Model Prediction Confidence Bounds based on Multiple Neural Networks
Xiong, Zhihua — Univ. of Newcastle
Zhang, Jie — Univ. of Newcastle

11:20 CCA-54
Towards Neural Adaptive Hovering Control of Helicopters
Guo, Lingzhong — Univ. of the West of England
Melhuish, Chris — Univ. of the West of England
Zhu, Quanmin — Univ. of the West of England

11:40 CCA-59
Neurofuzzy Model based l_∞ Predictive Control of Nonlinear CSTR System
Wu, Q. — Huazhong Univ. of Sci. & Tech.
Wang, Y. J. — Huazhong Univ. of Sci. & Tech
Zhu, Q. M. — Univ. of Western England
Warwick, K. — Univ. of Reading

Alsh 2

CCA-WM3
Observor Design
Chair: Yaz, E. — Marquette Univ.
Co-Chair: Bates, D. G. — Univ. of Leicester

10:00 CCA-65
Robust Exponential Stabilization for a class of Nonlinear Dynamical Systems with Unmatched Uncertainties
Yu, Kai — Harbin Inst. of Tech.
Zhao, Chang-An — Harbin Inst. of Tech.
Duan, Guang-Ren — Harbin Inst. of Tech.

10:20 CCA-69
Replacement of a Lift Sensor by a Model based Lift Observer
Zimmer, G. — Siemens Power Generation

10:40 CCA-74
Design of Full Order Unknown Input Observers with H_∞ Performance
Amato, Francesco — Univ. di Reggio Calabria
Mattei, Massimiliano — Univ. di Reggio Calabria

11:00 CCA-76
Nonlinear Observer Performance in Chaotic Synchronization with Application to Secure Communication
Amirazodi, Javid — Univ. of Arkansas
Yaz, Edwin E. — Marquette Univ.
Azemi, Asad — Penn State Univ.
Yaz, Yvonne I. — Carthage College

11:20 CCA-82
Variable Structure Observer Design in Matrix Second-Order Formulation for Linear and Nonlinear Vibrating Systems using Velocity Measurements
Cao, Tri-Tan Van — Flinders Univ.
He, Fangpo — Flinders Univ.
Sammut, Karl — Flinders Univ.
Chen, Lei — Flinders Univ.

11:40 CCA-88
State Observer for a Class of Nonlinear Systems and its Application
Chen, Xinkai — Kinki Univ.
Zhai, Guisheng — Wakayama Univ.

Biosdale 1

CCA-WM4
Motor Control

Chair: Stocks, M. — Lulea Univ. of Tech.
Co-Chair: Tapia, G. — Univ. of The Basque Country

10:00 CCA-94
Propulsion and Levitation Control in a Linear Electrodynamic Motor
Campo, Alexandre — CEFET-SP
Pait, Felipe — Univ. of São Paulo

10:20 CCA-100
Robust PI Control for Servo DC Motor
Dobra, Petru — Tech. Univ. of Cluj

10:40 CCA-102
Control and Trajectory Tracking by Flatness of a Time-Variant Stator Flux Motor
Rotella, F. — LGP-ENIT
Ayadi, M. — LGP-ENIT
Carrillo, F. J. — LGP-ENIT

11:00 CCA-108
Open Loop Stabilization of the Rotor Angular Speed in the Induction Machine
Stocks, Mikael — Luleå Univ. of Tech.
Medvedev, Alexander — Luleå Univ. of Tech.

11:20 CCA-114
Sensorless Speed Control of Induction Motors with Minimum Loss
Seleme, Jr., Seleme I. — UDESC
do Prado Jr., Alcindo — UDESC
S. Marques, Luiz Carlos — UDESC

Biosdale 2

CCA-WM5
Aircraft Control

Chair: Juang, J.- G. — Natl. Taiwan Ocean Univ.
Co-Chair: Bates, D. G. — Univ. of Leicester

10:00 CCA-120
A Switching Scheme for Full-Envelope Control of a V/STOL Aircraft using LQ Bumpless Transfer
Turner, M. C. — Univ. of Leicester
Aouf, N. — McGill Univ.
Bates, D. G. — Univ. of Leicester
Postlethwaite, I. — Univ. of Leicester
Boulet, B. — McGill Univ.

10:20 CCA-126
A Frequency Domain Identification-Control Approach for a Flexible Aircraft
Demourant, Fabrice — ONERA-CERT
Ferreres, Gilles — ONERA-CERT

10:40 CCA-132
Integrated Propulsion-Based Flight Control System Design for a Civil Transport Aircraft
Härefors, M. — Volvo Aero Corp.
Bates, D. G. — Univ. of Leicester

11:00 CCA-138
On the Robustness Properties of H_∞ Integrated Flight and Propulsion Controllers for a Large Transport Aircraft
Gatley, S. L. — Univ. of Leicester
Härefors, M. — Volvo Aero Corp.
Bates, D. G. — Univ. of Leicester

11:20 CCA-144
Aircraft Landing Control based on Fuzzy Modeling Networks
Juang, Jih-Gau — Natl. Taiwan Ocean Univ.
Chio, Jern-Zuin — Natl. Taiwan Ocean Univ.

11:40 CCA-150
Application of Time Delay Neural Network to Automatic Landing Control
Juang, Jih-Gau — Natl. Taiwan Ocean Univ.
Chang, Hao-Hsiang — Natl. Taiwan Ocean Univ.

Lomond

CCA Plenary Lecture 2
13:00-14:00

Opportunites in Automotive Powertrain Control Applications

Jeff Cook and Jing Sun
Ford Motor Company
Jessy Grizzle
Univ. of Michigan

Chair: TBD
Co-Chair: TBD

Lomond

CCA-WA1
Control of Mechanical Systems

Chair: Johansen, T. A. — Norwegian Univ. of Sci. & Tech.
Co-Chair: Gustaffson, T. — Luleå Univ. of Tech.

14:00 — CCA-156
Modeling and Flat Control Law for a Fine Pointing System based on Semi Active Magnetic Bearings
Mahout, Vincent — LAAS/CNRS
Prats, Xavier — LAAS/CNRS
Mignot, Jean — CNES

14:20 — CCA-162
Modeling and Observer-Based Nonlinear Control of a Magnetic Levitation System
Munaro, Celso José — Federal Univ. of Espirito Santo
Filho, Moacir Rosado — Federal Univ. of Espirito Santo
Borges, Raquel Machado — Federal Univ. of Espirito Santo
Munareto, Saul da Silva — Federal Univ. of Espirito Santo
da Costa, Wagner Teixeira — Federal Univ. of Espirito Santo

14:40 — CCA-168
A New Anti-Vibration Algorithm for Active Magnetic Bearings Application
Tamisier, Vincent — Supélec
Font, Stéphane — Supélec
Carrere, François — Soc. de Mécanique Magnétique

15:00 — CCA-174
Wave Synchronizing Crane Control during Water Entry in Offshore Moonpool Operations
Sagatun, Svein I. — Norsk Hydro Exploration & Prod.
Johansen, Tor A. — Norweigian Univ. of Sci. & Tech.
Fossen, Thor I. — Norweigian Univ. of Sci. & Tech.
Nielsen, Finn G. — Norsk Hydro Exploration & Prod.

15:20 — CCA-180
Automatic Control of Unmanned Cranes at the Pasir Panjang Terminal
Gustafsson, Thomas — Luleå Univ. of Tech.
Heidenback, Claes — ABB Ind./Crane Systems

Alsh 1

CCA-WA2
Robotics I

Chair: de Jager, B. — Eindhoven Univ. of Tech.
Co-Chair: Wang, Z. — Univ. of Durham

14:00 — CCA-186
Experimentally Supported Control Design for a Direct Drive Robot
Kostić, Dragan — Eindhoven Univ. of Tech.
de Jager, Bram — Eindhoven Univ. of Tech.
Steinbuch, Maarten — Eindhoven Univ. of Tech.

14:20 — CCA-192
A H_∞-Weighting Scheme for PID-Like Motion Control
Schönhoff, Ulrich — Darmstadt Univ. of Tech.
Nordmann, Rainer — Darmstadt Univ. of Tech.

14:40 — CCA-198
Indirect Fuzzy Adaptive Model-Following Control for Robot Manipulators
Goléa, Noureddine — Oum El-Bouaghi Univ.

15:00 — CCA-203
Predictive Control of Robotic Manipulators
Valle, F. — Univ. of Valladolid
Tadeo, F. — Univ. of Valladolid
Alvarez, T. — Univ. of Valladolid

15:20 — CCA-209
PID Stabilization of a Position-Controlled Manipulator with Wrist Sensor
Roy, Anindo — Univ. of Arkansas at Little Rock
Iqbal, Kamran — Univ. of Arkansas at Little Rock

Alsh 2

CCA-WA3
Aerospace System Applications

Chair: Gorinevsky, D. — Honeywell Labs.
Co-Chair: Nwadiogbu, E. — Honeywell Labs.

14:00 — CCA-215
Model-Based Diagnostics for an Aircraft Auxiliary Power Unit
Gorinevsky, Dimitry — Honeywell AES Lab.
Dittmar, Kevin — Honeywell Eng. Sys. & Serv.
Mylaraswamy, Dinkar — Honeywell ACS Lab.
Nwadiogbu, Emmanuel — Honeywell Eng. Sys. & Serv.

14:20 — CCA-221
The use of Novelty Detection Techniques for Monitoring High-Integrity Plant
King, S. P. — Rolls-Royce
King, D. M. — Rolls-Royce
Anuzis, P. — Rolls-Royce
Astley, K. — Rolls-Royce
Tarassenko, L. — Oxford Univ.
Hayton, P. — Oxford Univ.
Utete, S. — Oxford Univ.

14:40 — CCA-227
Condition-Based, Diagnostic Gas Path Reasoning for Gas Turbine Engines
Krok, Michael J. — GE Global Research Center
Ashby, Malcom J. — GE Aircraft Engines

15:00 — CCA-235
A Nonlinear UIO Scheme for the FDI on a Small Commercial Aircraft
Amato, Francesco — Univ. di Reggio Calabria
Mattei, Massimiliano — Univ. di Reggio Calabria
Iervolino, Raffaele — Univ. di Napoli Federico II
Paviglianiti, Gaetano — Univ. di Reggio Calabria

15:20 — CCA-241
A Control Scheme for Resource Management in Satellite Systems
Priscoli, Francesco Delli — Univ. of Rome "La Sapienza"
Pietrabissa, Antonio — Univ. of Rome "La Sapienza"

Biosdale 1

CCA-WA4
PID Tuning

Chair: Bravington, C. — Omron
Co-Chair: Moradi, M. — Univ. of Strathclyde

14:00 — CCA-247
Robust MIMO PID Tuning Method
Moradi, M. H. — Univ. of Strathclyde
Katebi, M. R. — Univ. of Strathclyde
Johnson, M. A. — Univ. of Strathclyde

14:20 CCA-253
PID Controller Tuning via Quasi Pole Assignment Method
Shimizu, Kiyotaka — Keio Univ.
Honjo, Kota — Keio Univ.

14:40 CCA-260
Design and Experimental Evaluation of an Evolutionary Neural-Net based PID Controller
Suzuki, Michiyo — Hiroshima Univ.
Katayama, Masaru — Hiroshima Univ.
Yamamoto, Toru — Hiroshima Univ.

15:00 CCA-266
A Design of PID Control System using GA and GMDH Network
Sakaguchi, Akihiro — Sasebo Natl. College of Tech.
Yamamoto, Toru — Hiroshima Univ.

15:20 CCA-272
Multivariable PID Controller Design using Online Generalized Predictive Control Optimisation
Uduehi, D. — Univ. of Strathclyde
Ordys, A. — Univ. of Strathclyde
Grimble, M. J. — Univ. of Strathclyde

Biosdale 2

CCA-WA5
Missile and Satellite Control

Chair: Ziegler, B. — Tech. Univ. of Denmark
Co-Chair: Fradkov, A. — Russian Academy of Sci.

14:00 CCA-278
Controller Synthesis and Real-Time Simulation of the Net Recovery Phase of a Remotely Piloted Vehicle
Singh, Satendra — Indian Air Force
Narayana, B. V. L. — Indian Inst. of Tech.
Mishra, Atit — Indian Inst. of Tech.
Banavar, Ravi N. — Indian Inst. of Tech.
Srinivasan, K. V. — Bangalore

14:20 CCA-284
Attitude Control of a Small Conventional Launcher
Amato, F. — Univ. di Reggio Calabria
Ambrosino, G. — Univ. di Napoli
Filippone, E. — Centro Ital. Ricerche Aero.
Iervolino, R. — Univ. Degli Studi Di Napoli Federico II

14:40 CCA-290
Combined Adaptive Autopilot for an UAV Flight Control
Andrievsky, Boris R. — Russian Academy of Sci.
Fradkov, Alexander — Russian Academy of Sci.

15:00 CCA-292
Drag-Free Motion Control of Satellite for High-Precision Gravity Field Mapping
Ziegler, Bent — Tech. Univ. of Denmark
Blanke, Mogens — Tech. Univ. of Denmark

15:20 CCA-298
Ellipsoid Methods for Formation Flying Control of Two Nano-Satellites
Veres, S. M. — Univ. of Southampton
Rokitianski, D. Ya — Univ. of Southampton
Gabriel, S. B. — Univ. of Southampton
Rogers, E. — Univ. of Southampton

Carron 1

CACSD-WA6
Nonlinear Control Designs

Chair: Giron-Sierra, J. — Univ. Complutense de Madrid
Co-Chair: Katebi, M. R. — Univ. of Strathclyde

14:00 See CACSD Proceedings
Multiobjective Automotive Drive by Wire Controller Design
Zavala, Jose C. — Univ. of Sheffield
Stewart, Paul — Univ. of Sheffield
Fleming, Peter J. — Univ. of Sheffield

14:20 See CACSD Proceedings
Controllability Analysis of Multiobjective Control Systems
Stewart, Paul — Univ. of Sheffield
Jewell, G. W. — Univ. of Sheffield
Clark, R. E. — Univ. of Sheffield
Fleming, Peter J. — Univ. of Sheffield

14:40 See CACSD Proceedings
Measurement of the Road Gradient using an Inclinometer Mounted on a Moving Vehicle
Mangan, S. — Univ. of Liverpool
Wang, J. — Univ. of Liverpool
Wu, Q. H. — Univ. of Liverpool

15:00 CCA-304
The Control of Specific Actuators for Fast Ferry Vertical Motion Damping
Giron-Sierra, Jose M. — Univ. Complutense de Madrid
Katebi, Reza — Strathclyde Univ.
de la Cruz, Jesus M. — Univ. Complutense de Madrid
Esteban, Segundo — Univ. Complutense de Madrid

15:20 Paper Not Available
Adaptive Parity Relations for Fault Detection in Nonlinear Uncertain Systems
Shumsky, Alexey Ye — Russian Academy of Sci.

Lomond

CCA-WE1
Noise and Vibrations

Chair: Sano, A. — Keio Univ.
Co-Chair: Kangning, W. — Natl. Univ. of Singapore

16:00 CCA-310
Mechatronic Experiment on Remote Vibration Signature Analysis via the Internet
Tan, K. K. — Natl. Univ. of Singapore
Wang, K. N. — Natl. Univ. of Singapore
Tang, K. Z. — Natl. Univ. of Singapore

16:20 CCA-316
Active Control of Mechanical Vibrations using Dynamic Variable Structure Control
Llanes-Santiago, Orestes — I.S.P.J.A.E.
Ríos-Bolívar, Miguel — Univ. de Los Andes

16:40 CCA-321
Nonlinear Active Vibration Absorber Design for Flexible Structures
Chen, Lei — Flinders Univ.
He, Fangpo — Flinders Univ.
Sammut, Karl — Flinders Univ.
Cao, Tan — Flinders Univ.

17:00 CCA-327
Active Control of Vibrations using Generalised PI Control: An Application to a Non-Linear Mechanical System
Marquez, R. — Univ. de Los Andes
Ríos-Bolívar, M. — Univ. de Los Andes

Alsh 1

CCA-WE2
Robotics II
Chair: Tokhi, M. O. — Univ. of Sheffield
Co-Chair: Feng, Z. — Univ. of Southampton

16:00 CCA-333
A Lyapunov-Based Design of Robust Control for a Robot using Neural Networks
Barambones, O. — Univ. del País Vasco

16:20 CCA-339
The Simulation and Concept of a Pipe Crawling Robot for Earthquake Rescue
Wang, Zhelong — Univ. of Durham
Appleton, Ernest — Univ. of Durham

16:40 CCA-345
Practical Stabilization of Wheeled Mobile Robots based on Control Lyapunov Function
Xinzhe, Pei — Harbin Inst. of Tech.
Zhiyuan, Liu — Harbin Inst. of Tech.
Run, Pei — Harbin Inst. of Tech.
Hong, Chen — Jilin Univ.

17:00 CCA-350
H_∞ Autopilot Design for an Autonomous Underwater Vehicle
Feng, Zhengping — Univ. of Southampton
Allen, Robert — Univ. of Southampton

17:20 CCA-355
Design and Development of Single Side Driven Wheelchairs by using Internal Model Control
Suzuki, Ryoichi — Kanazawa Inst. of Tech.
Tani, Masashi — Kanazawa Inst. of Tech.
Kobayashi, Nobuaki — Kanazawa Inst. of Tech.

Alsh 2

CCA-WE3
Steel Processing
Chair: Hearns, G. — Alstom
Co-Chair: van Ditzhuijzen, G. — Corus Group

16:00 CCA-361
Identification and Model Predictive Control of a Slab Reheating Furnace
van Ditzhuijzen, Gustaaf — Corus Research, Dev. & Tech.
Staalman, Dirk — Corus Research, Dev. & Tech.
Koorn, Arnold — Corus Strip Products

16:20 CCA-367
Quantitative Feedback Theory for Rolling Mills
Hearns, G. — Univ. of Strathclyde
Grimble, M. J. — Univ. of Strathclyde

16:40 CCA-373
Application of Efficient Nonlinear Predictive Control to a Hot Strip Finishing Mill
Bulut, B. — Univ. of Strathclyde
Ordys, A. W. — Univ. of Strathclyde
Grimble, M. J. — Univ. of Strathclyde

17:00 CCA-379
Control of Mass Flow in a Hot Strip Mill using Model Predictive Control
Schuurmans, J. — Corus Research, Dev. & Tech.
Jones, T. — Corus Research, Dev. & Tech.

17:20 CCA-385
Multivariable Circle Criterion: Stable Fuzzy Control of a Milling Process
Schmitt-Braess, G. — Univ. Erlangen-Nürnberg
Haber Guerra, R. E. — Inst. de Automática Ind.
Haber, R. H. — Univ. de Oriente
Alique, A. — Inst. de Automática Ind.

Biosdale 1

CCA-WE4
Chemical Processes
Chair: Tadeo, F. — Univ. of Valladolid
Co-Chair: Zhang, J. — Univ. of Newcastle

16:00 CCA-391
Robust Constrained Regulator Problem for Linear Uncertain Continuous-Time Systems: Application to a pH-Process
Mesquine, Fouad — Cadi Ayyad Univ.
Benlamkadem, Abdellatif — Cadi Ayyad Univ.
Tadeo, Fernando — Univ. de Valladolid

16:20 CCA-397
Neural Networks Based Model Predictive Control of an Industrial Polypropylene Process
Wei, Jianli — Tsinghua Univ.
Xu, Yongmao — Tsinghua Univ.
Zhang, Jie — Univ. of Newcastle

16:40 CCA-403
Tuning of Predictive Controller using Performance Assessment Measures: Application to pH Control
Alvarez, T. — Univ. of Valladolid
Tadeo, F. — Univ. of Valladolid
Grimble, M. J. — Univ. of Stratchclyde

17:00 CCA-409
A Steady State Model for Propylene Polymerization in an Industrial Loop Reactor and its Application in Melt Index Predication
Jiang, Jingbo — Tsinghua Univ.
Xu, Yongmao — Tsinghua Univ.
Zhang, Jie — Univ. of Newcastle

17:20 CCA-415
Industrial Application of Non-Equilibrium Model: Simulation and Analysis of Ethylene Fractionator
Meng, Zhang — Tsinghua Univ.
Yongmao, Xu — Tsinghua Univ.
Xinggao, Liu — Tsinghua Univ.
Jie, Zhang — Univ. of Newcastle

Biosdale 2

CCA-WE5
Automobile Control
Chair: Saeki, M. — Hiroshima Univ.
Co-Chair: Giovanni, L. — Univ. of Strathclyde

16:00 CCA-421
Path Following Control of Articulated Vehicle by Backward Driving
Saeki, Masami — Hiroshima Univ.

16:20 CCA-427
A Comparative Study of Different Solutions to the Path-Tracking Problem for an Articulated Vehicle
Bolzern, Paolo — Politecnico di Milano
Locatelli, Arturo — Politecnico di Milano

16:40 CCA-435
Robust Steer-by-Wire Control based on the Model Regulator
Güvenç, Bilin Aksun — Istanbul Tech. Univ.
Güvenç, Levent — Istanbul Tech. Univ.

17:00 CCA-441
Nonlinear Vehicle Stability Control Using Disturbance Observer
Hahn, Jin-Oh — Korea Air Force Academy
Hur, Jae-Woong — Seoul Natl. Univ.
Yi, Kyongsu — Hanyang Univ.
Kang, Soojoon — Korea Air Force Academy
Lee, Kyo Il — Seoul Natl. Univ.

17:20 CCA-447
Robust Pole Location for an Active Suspension Quarter-Car Model through Parameter Dependent Control
Leite, Valter J. S. — CEFET-MG
Peres, Pedro L. D. — Univ. of Campinas

CCA '02
Thursday, September 19, 2002

Lomond

CCA-ThM1
Active Control Methods
Chair: Veres, S. M. — Univ. of Southampton
Co-Chair: Sano, A. — Keio Univ.

10:00 CCA-453
Direct Fully Adaptive Active Noise Control Algorithms without Identification of Secondary Path Dynamics
Ohta, Yuhsuke — Keio Univ.
Kohno, Toshikazu — Honda Co.
Ohmori, Hiromitsu — Keio Univ.
Sano, Akira — Keio Univ.

10:20 CCA-459
Convergence Conditions for Multi-Channel Free-Field Sound Cancelling Systems
Wright, Selwyn — Univ. of Huddersfield
Atmoko, Hidajat — Univ. of Huddersfield
Vuksanovic, Branislav — Univ. of Derby

10:40 CCA-465
Model Verification for Active Control of Microvibrations
Aglietti, G. S. — Univ. of Southampton
Langley, R. S. — Univ. of Cambridge
Rogers, E. — Univ. of Southampton
Gabriel, S. B. — Univ. of Southampton

11:00 CCA-471
GA-Based Neuro-Fuzzy Controller of Flexible-Link Manipulator
Siddique, M. N. H. — Univ. of Sheffield
Tokhi, M.O. — Univ. of Sheffield

11:20 CCA-477
An Integrated System for Active Vibro-Acoustic Control and Damage Detection on a Typical Aeronautical Structure
Viscardi, Massimo — Univ. of Naples "Federico II"
Lecce, Leonardo — Univ. of Naples "Federico II"

11:40 CCA-483
Stability Analysis of Secondary Path Estimation during FSF-Based Feedback Control
Meurers, T. — Univ. of Southampton
Veres, S. M. — Univ. of Southampton

Alsh 1

CCA-ThM2
Manipulator Control
Chair: Mann, G. K.I. — Memorial Univ. of Newfoundland
Co-Chair: Fusco, G. — Univ. degli Studi di Cassino

10:00 CCA-489
Controllability Properties of a Planar 3R Underactuated Manipulator
Mahindrakar, Arun D. — Indian Inst. of Tech.
Banavar, Ravi N. — Indian Inst. of Tech.

10:20 CCA-495
Model-Free Intelligent Control of a 6-DOF Stewart-Gough based Parallel Manipulator
Mann, George K. I. — Memorial Univ. of Newfoundland
Surgenor, Brian W. — Queen's Univ.

10:40 CCA-501
End-Point Control of a Flexible-Link Manipulator using H_∞ Nonlinear Control via a State-Dependent Riccati Equation
Shawky, A. — Univ. of Strathclyde
Ordys, A. — Univ. of Strathclyde
Grimble, M. J. — Univ. of Strathclyde

11:00 CCA-507
Tip Trajectory Tracking for a One-Link Flexible Manipulator using Causal Inversion
Wang, Xuezhen — Iowa State Univ.
Chen, Degang — Iowa State Univ.

11:20 CCA-513
Experiments of On-Line Path Following under Joint Limits for an Industrial Robot Manipulator
Antonelli, Gianluca — Univ. degli Studi di Cassino
Chiaverini, Stefano — Univ. degli Studi di Cassino
Fusco, Giuseppe — Univ. degli Studi di Cassino

Alsh 2

CCA-ThM3
Communication Systems
Chair: Moradi, M. — Univ. of Strathclyde
Co-Chair: Wilson, D. I. — Karlstad Univ.

10:00 CCA-519
End to End Congestion Control of Packet Switched Networks
Jagannathan, S. — The Univ. of Missouri-Rolla

10:20 CCA-525
Real-Time Capability Analysis for Switch Industrial Ethernet Traffic Priority-Based
Chen, Jiming — Zhejiang Univ.
Wang, Zhi — Zhejiang Univ.
Sun, Youxian — Zhejiang Univ.

10:40 CCA-530
Control-Theoretic Bandwidth-on-Demand Protocol for Satellite Networks
Priscoli, Francesco Delli — Univ. of Rome "La Sapienza"
Pietrabissa, Antonio — Univ. of Rome "La Sapienza"

11:00 CCA-536
Characteristic of Multi-Class Multi-Queue System
Wang, Zhi — Zhejiang Univ.
Song, Ye-qiong — LORIANENSEM
Yu, Hai-bin — Shenyang Inst. of Automation
Chen, Ji-ming — Zhejiang Univ.
Sun, You-xian — Zhejiang Univ.

11:20 CCA-542
Admission Controller Design for High-Speed Networks: A Hybrid System Approach
Jagannathan, S. — The Univ. of Missouri-Rolla

Biosdale 1

CCA-ThM4
Distributed Parameter Systems
Chair: Burns, J. A. — Virginia Tech.
Co-Chair: King, B. B. — Virginia Tech.

10:00 CCA-548
Boundary Layer Control for the Viscous Burgers' Equation
Burns, John A. — Virginia Polytechnic Inst.
Zietsman, Lizette — Virginia Polytechnic Inst.
Myatt, James H. — Wright-Patterson AFB

10:20 Paper Not Available
Robust Reduced Order Compensators for Distributed Parameter Systems via LQG Balancing
King, Belinda — Virginia Tech.

10:40 Paper Not Available
Multiobjective Control Design for High Performance Smart Material Transducers
Smith, Ralph C. — North Carolina State Univ.

11:00 Paper Not Available
Implications on Non-Normality on the Problem of Controlling Shear Flows
Bamieh, Bassam — Univ. of California Santa Barbara

11:20 CCA-554
Output Regulation for Delay Systems: Tracking and Disturbance Rejection for an Oscillator with Delayed Damping
Gilliam, David S. — Texas Tech Univ.
Shubov, Victor I. — Texas Tech Univ.
Byrnes, Christopher I. — Washington Univ.
Vugrin, Eric D. — Virginia Polytechic Inst. & State Univ.

Biosdale 2

CCA-ThM5
PID Control
Chair: Sato, K. — Saga Univ.
Co-Chair: Atherton, D. P. — Univ. of Sussex

10:00 CCA-559
Reduced Order Proportional Integral Compensator for Disturbance Suppression in Oil Well Drill-Strings
Al-Harthi, Mosleh — Univ. of Arkansas
Yaz, Edwin E. — Marquette Univ.

10:20 CCA-565
Unified Approach to Decentralized Control
Macháček, Jiří — Univ. of Pardubice

10:40 CCA-571
A Model-Driven PID Control System and its Case Studies
Shigemasa, Takashi — Toshiba Corp.
Yukitomo, Masanori — Toshiba Corp.
Kuwata, Ryuichi — Toshiba Corp.

11:00 CCA-577
Conditional Integration on PID for Types 1 and 2 Control Systems
Ferreiro García, Ramón — Univ. de La Coruña
Pérez Castelo, Francisco Javier — Univ. de La Coruña

11:20 CCA-582
Tracking Control to Moving Object of Liquid Container Transfer with Vibration Damping
Noda, Y. — Toyohashi Univ. of Tech.
Yano, K. — Toyohashi Univ. of Tech.
Terashima, K. — Toyohashi Univ. of Tech.

11:40 CCA-588
Adaptive PI Control Method for Positioning Control using Linear Slider - Feedforward Control Approach -
Sato, Kazuya — Saga Univ.
Honda, Hideki — Yaskawa Electric Corp.
Hayakawa, Aki — Saga Univ.
Watanabe, Keigo — Saga Univ.

Lomond

CCA-ThA1
Adaptive and Optimal Control
Chair: Wu, Q. H. — Univ. of Liverpool
Co-Chair: Ordys, A. W. — Univ. of Strathclyde

14:00 CCA-594
Adaptive Control of Coupled Drives Apparatus based on Polynomial Theory
Kubalčík Marek — Tomas Bata Univ.
Bobál, Vladimír — Tomas Bata Univ.

14:20 CCA-600
Indirect Adaptive Control of Two Wheeled Vehicle by Quantized Input and Output
Konaka, Eiji — Nagoya Univ.
Suzuki, Tatsuya — Nagoya Univ.
Okuma, Shigeru — Nagoya Univ.

14:40 CCA-606
An Extension of Discrete-Time Model Reference Adaptive Control by using Coprime Factorization Approach
Yanou, Akira — Kinki Univ.
Inoue, Akira — Okayama Univ.
Hirashima, Yoichi — Okayama Univ.

15:00 CCA-611
Decentralised Nonlinear Adaptive Output-Feedback Controller based on High Gain State and Perturbation Observer
Jiang, L. — Univ. of Liverpool
Wu, Q. H. — Univ. of Liverpool

15:20 CCA-617
Optimal Regulator for Third Degree Polynomial Systems
Basin, Michael V. — Auto. Univ. of Nuevo Leon
Alcorta Garcia, Maria Aracelia — Auto. Univ. of Nuevo Leon

Alsh 1

CCA-ThA2
Control of Disk Drives

Chair: Zhou, Y. — Philips Optical Storage
Co-Chair: Filardi, G. — Lab. d'Automatique de Grenoble

14:00 CCA-623
Modelling, Identification and Performance Analysis of a DVD Player
Filardi, Giampaolo — STMicroelectronics
Besançon-Voda, Alina — Lab. d'Auto. de Grenoble
Sename, Olivier — Lab. d'Auto. de Grenoble
Schroeder, Heinz-Jöerg — STMicroelectronics

14:20 CCA-629
Modelling the Focus Error Characteristic of a DVD Player
Hnilička, Bohumil — Lab. d'Auto. de Grenoble
Besançon-Voda, Alina — Lab. d'Auto. de Grenoble
Schröder, Heinz-Jörg — STMicroelectronics
Filardi, Giampaolo — STMicroelectronics

14:40 CCA-631
Estimator-Based Sliding Mode Control of an Optical Disc Drive under Shock and Vibration
Zhou, Yu — Philips Optical Storage
Steinbuch, Maarten — Eindhoven Univ. of Tech.
Kostić, Dragan — Eindhoven Univ. of Tech.

15:00 CCA-637
Deterministic Method for Obtaining Nominal and Uncertainty Models of CD Drives
Vidal, E. — Aalborg Univ.
Stoustrup, J. — Aalborg Univ.
Andersen, P. — Aalborg Univ.
Pedersen, T. S. — Aalborg Univ.
Mikkelsen, H. F. — Bang & Olufsen a/s

15:20 CCA-643
Decoupling Control of Pickup Head Motion in Near-Field Optical Disk Drives
Liu, T. S. — Natl. Chiao Tung Univ.
Liu, P. C. — Natl. Chiao Tung Univ.

Alsh 2

CCA-ThA3
Predictive Control I

Chair: Pietrabissa, A. — Univ. of Rome
Co-Chair: Jagannathan, S. — Univ. of Missouri-Rolla

14:00 CCA-645
Application of Multivariable GPC to a Four Tank Process with Unstable Transmission Zeros
García-Gabín, Winston — Univ. de Los Andes
Camacho, Eduardo F. — Univ. de Sevilla

14:20 CCA-651
Efficient Implementation of Min-Max Model Predictive Control with Bounded Uncertainties
Álamo, T. — Univ. of Sevilla
Ramírez, D. R. — Univ. of Sevilla
Camacho, E. F. — Univ. of Sevilla

14:40 CCA-657
Robust MPC of Constrained Discrete-Time Nonlinear Systems based on Uncertain Evolution Sets: Application to a CSTR Model
Marruedo, D. Limón — Univ. de Sevilla
Bravo, J. M. — Univ. de Sevilla
Álamo, T. — Univ. de Sevilla
Camacho, E. F. — Univ. de Sevilla

15:00 CCA-663
Restricted Structure Adaptive Predictive Control of Nonlinear Systems
Grimble, M J. — Univ. of Strathclyde
Martin, P. — Univ. of Strathclyde

15:20 See CACSD Proceedings
Intelligent User-Support System for Modeling and Simulation
Ševčenko, Michal — Czech Tech. Univ. in Prague
Mann, Heřman — Czech Tech. Univ. in Prague

Biosdale 1

CCA-ThA4
Control System Design and Performance

Chair: Reynolds, L. — Thames Water
Co-Chair: Thornhill, N. — Univ. College London

14:00 CCA-669
Impedance Control of a Compression Cardiac Assist Device
Davies, Gareth — Univ. of Leeds
Levesley, Martin C. — Univ. of Leeds
Walker, Peter G. — Univ. of Leeds
Brown, Michael D. — WS Atkins Consultants Ltd.
Watterson, Kevin — Univ. of Leeds

14:20 CCA-675
A Note on Feedback Linearizing Control for Open-Channel Hydraulic Systems
Georges, Didier — Inst. Natl. Polytech. de Grenoble
Dulhoste, Jean-François — Univ. de Los Andes
Besançon, Gildas — Inst. Natl. Polytech. de Grenoble

14:40 CCA-681
Evaluation Control Performance: Methods and Applications
Jämsä-Jounela, S-L. — Helsinki Univ. of Tech.
Poikonen, R. — Helsinki Univ. of Tech.
Georgiev, Z. — Helsinki Univ. of Tech.
Zuehlke, U. — Univ. of Iceland
Halmevaara, K. — Helsinki Univ. of Tech.

15:00 CCA-687
Analysis of Plant-Wide Disturbances using Conditional Entropy
Dobson, J. Paul — Univ. College London
Thornhill, Nina F. — Univ. College London

15:20 CCA-689
Improved On-Line Process Fault Diagnosis using Stacked Neural Networks
Zhang, Jie — Univ. of Newcastle

Biosdale 2

CCA-ThA5
Control of Engines

Chair: Bruzelius, F. — Chalmers Univ. of Tech.
Co-Chair: Munro, N. — UMIST

14:00 CCA-695
A Simply Structured Multivariable Control System for the Rolls-Royce Spey Engine
Nobakhti, A. — UMIST
Munro, N. — UMIST

14:20 CCA-701
Estimating Exhaust Manifold Pressure in a Turbocharged Diesel Engine
Fredriksson, Jonas — Chalmers Univ. of Tech.
Egardt, Bo — Chalmers Univ. of Tech.

14:40 CCA-707
Model based Design in the Development of Thermodynamic Systems and their Electronic Control Units
Orehek, Martin — Inst. for Real-Time Comp. Sys.
Robl, Christian — Vodafone Pilotentwicklung GmbH

15:00 CCA-713
LPV-Based Gain Scheduling Technique Applied to a Turbo Fan Engine Model
Bruzelius, F. — Chalmers Univ. of Tech.
Breitholtz, C. — Chalmers Univ. of Tech.
Pettersson, S. — Chalmers Univ. of Tech.

15:20 CCA-719
Improved SI Engine Modelling Techniques with Application to Fault Detection
Vinsonneau, J. A. F. — Coventry Univ.
Shields, D. N. — Coventry Univ.
King, P. J. — Jaguars Cars Ltd.
Burnham, K. J. — Coventry Univ.

Lomond

CCA-ThE1
Visual Servo Mechanisms

Chair: Fu, L.- F. — Natl.Taiwan Univ.
Co-Chair: Chang, W.- C. — Natl. Taipei Univ. of Tech.

16:00 CCA-725
Zoom-Based Head Tracker in Complex Environment
Kuo, Teng-Kai — Natl. Taiwan Univ.
Fu, Li-Chen — Natl. Taiwan Univ.
Jean, Jong-Hann — St. John's & St. Mary's Inst. of Tech.
Chen, Pei-Ying — Natl. Taiwan Univ.
Chan, Yu-Ming — Natl. Taiwan Univ.

16:20 CCA-731
A Self-Calibrated Speaker Tracking System using both Audio and Video Data
Hu, J. — Natl. Chiao Tung Univ.
Su, T. M. — Natl. Chiao Tung Univ.
Cheng, C. C. — Natl. Chiao Tung Univ.
Liu, W. H. — Natl. Chiao Tung Univ.
Wu, T. I. — Natl. Chiao Tung Univ.

16:40 CCA-736
Design and Implementation of a Real-time Pan-tilt Visual Tracking System
Chen, Kung-Ye — Natl. Cheng Kung Univ.
Cheng, Ming-Yang — Natl. Cheng Kung Univ.
Tsai, Mi-Ching — Natl. Cheng Kung Univ.

17:00 CCA-742
Robotic Eye/Arm Coordination via Visual Servoing
James Tsay, T. I. — Natl. Cheng Kung Univ.
Lee, M. K. — Natl. Cheng Kung Univ.
Wang, G. L. — Natl. Cheng Kung Univ.
Hsu, M. S. — Natl. Cheng Kung Univ.
Lai, C. H. — Natl. Cheng Kung Univ.

17:20 CCA-748
Integrated Vision and Force Control of a 3-DOF Planar Robot
Chang, Wen-Chung — Natl. Taipei Univ. of Tech.
Wu, Cheng-Chang — Natl. Dong Hwa Univ.

17:40 CCA-754
A Vision based Air Hockey System with Fuzzy Control
Wang, Wen-June — Natl. Central Univ.
Tsai, I-Da — Natl. Central Univ.
Chen, Zhi-Da — Natl. Central Univ.
Wang, Guo-Hua — Natl. Central Univ.

Alsh 1

CCA-ThE2
Power Wheelchair Control

Chair: TBD
Co-Chair: TBD

16:00 CCA-760
Who's Intelligent? Wheelchair, Driver or Both?
Nisbet, Paul D. — Univ. of Edinburgh

16:20 CCA-766
Experiences in Assisted Mobility: The SIAMO Project
Mazo, M. — Univ. de Alcalá
García, J. C. — Univ. de Alcalá
Rodríguez, F. J. — Univ. de Alcalá
Ureña, J. — Univ. de Alcalá
Lázaro, J. L. — Univ. de Alcala
Espinosa, F. — Univ. de Alcalá

16:40 CCA-772
WAD Project where Attractor Dynamics Aids Wheelchair Navigation
Mallet, Pierre — CNRS
Schöner, Gregor — Univ. Bochum

17:00 CCA-778
TetraNauta: A Intelligent Wheelchair for users with Very Severe Mobility Restrictions
Vincente Diaz, S. — Univ. of Seville
Amaya Rodríguez, C. — Univ. of Seville
Díaz del Río, F. — Univ. of Seville
Civit Balcells, A. — Univ. of Seville
Cagigas Muñíz, D. — Univ. of Seville

17:20 CCA-784
VAHM: A user Adapted Intelligent Wheelchair
Pruski, Alain — Univ. of Metz
Ennaji, Mourad — Univ. of Metz
Morère, Yann — Univ. of Metz

17:40 CCA-790
SIRIUS: Improving the Maneuverability of Powered Wheelchairs
Civit-Balcells, A. — Univ. of Seville
Diaz del Rio, F. — Univ. de Sevilla
Jimenez, G. — Univ. de Sevilla
Sevillano, J. L. — Univ. de Sevilla
Amaya, C. — Univ. de Sevilla
Vicente, S. — Univ. de Sevilla

Alsh 2

CCA-ThE3
Complex System Applications

Chair: TBD
Co-Chair: TBD

16:00 CCA-796
Computer-Aided Distribution Network Designing System
Taniguchi, Yoshio — Hitachi Microsoftware Sys., Inc.
Onoyama, Takashi — Hitachi Software Eng. Co., Ltd.
Tsuruta, Setsuo — Hitachi, Ltd.

16:20 CCA-802
Intelligent Evolutional Algorithm for Distribution Network Optimization
Onoyama, Takashi — Hitachi Software Eng., Co., Ltd.
Maekawa, Takuya — Hitachi Software Eng., Co., Ltd.
Kubota, Sen — Hitachi Software Eng., Co., Ltd.
Taniguchi, Yoshio — Hitach Microsoftware Sys., Inc.
Tsuruta, Setsuo — Hitachi , Ltd.

16:40 CCA-808
Final Shape Prediction by using ROT, DC, Coil Yard Consistent Simulator in Hot Rolling Plant
Ogai, Harutoshi — Nippon Steel Corp.
Ito, Masahiro — Nippon Steel Corp.
Hirayama, Ryu — Nippon Steel Corp.

17:00 CCA-814
A Parallel Tabu Search based Approach to Optimal Network Reconfigurations for Service Restoration in Distribution Systems
Mori, Hiroyuki — Meiji Univ.
Ogita, Yoshihiro — Toshiba Corp. Power Sys. & Serv. Co.

17:20 CCA-820
A Model-Following Adaptive Controller using Radial Basis Function Networks
Ibayashi, Tomohiro — Meiji Univ.
Hoya, Tetsuya — RIKEN
Ono, Osamu — Meiji Univ.
Ishida, Yoshihisa — Meiji Univ.

17:40 CCA-825
Application and Evaluation of DNA Computing Simulation by List based Processing
Ono , Osamu — Meiji Univ.
Yamamoto, Kohji — Meiji Univ.
Yamamoto, Tsuneto — Meiji Univ.
Mochiduki, Issei — Meiji Univ.

Biosdale 1

CCA-ThE4
Supervision and Monitoring of Processes

Chair: Keviczky, L. — Hungarian Academy of Sci.
Co-Chair: Howell, J. — Univ. of Glasgow

16:00 CCA-830
Data-Based Adviser to Operators of Complex Processes
Ettler, Pavel — COMPUREG Plzeň
Nedoma, Petr — Inst. of Info. Theory & Automation

16:20 CCA-832
Fault Classification using Time Variable ART2-A Networks
Benítez-Pérez, H. — IIMAS, UNAM
García-Nocetti, Fabian — IIMAS, UNAM

16:40 CCA-838
PI Loop Status Monitoring
Xia, Chunming — Univ. of Glasgow
Howell, John — Univ. of Glasgow

17:00 CCA-844
Fault Localization based on Loop Status Monitoring
Xia, Chunming — Univ. of Glasgow
Howell, John — Univ. of Glasgow

17:20 CCA-850
An Application of Software Design Methods to Manufacturing Systems Supervision and Control
Bonfè, Marcello — Univ. di Ferrara
Donati, Claudio — Tetra Pak Carton Ambient S.p.A.
Fantuzzi, Cesare — Univ. di Modena e Reggio Emilia

17:40 CCA-856
Design of Remote Environmental Monitoring Systems
Lee, Jin-Shyan — Natl. Chiao-Tung Univ.
Hsu, Pau-Lo — Natl. Chiao-Tung Univ.

Biosdale 2

CCA-ThE5
Controller Design I

Chair: Sarma, S. — Indian Inst. of Tech. Guwahati
Co-Chair: Tapia, G. — Univ. of The Basque Country

16:00 CCA-862
Integrated Control/Structure Design for Planar Tensegrity Models
de Jager, Bram — Technische Univ. Eindhoven
Skelton, Robert E. — Univ. of California at San Diego
Masic, Milenko — Univ. of California at San Diego

16:20 CCA-868
Evolutionary Computation in Designing a Robust PD Sway Controller for a Mobile Crane
Kawada, Kazuo — Hiroshima Univ.
Sogo, Hiroyuki — Takamatsu Natl. College of Tech.
Yamamoto, Toru — Hiroshima Univ.
Mada, Yasuhiro — Hiroshima Univ.

16:40 CCA-874
Controller Design for Linear Unstable Systems with Position and Rate Actuator Saturation
Tarbouriech, Sophie — LAAS-CNRS
Garcia, Germain — LAAS-CNRS
Langouët, Patrice — LAAS-CNRS

17:00 CCA-880
A New Simple and Robust Control Strategy for Wind Farm Reactive Power Regulation
Tapia, Gerardo — Univ. of the Basque Country
Tapia, Arantxa — Univ. of the Basque Country
Sáenz, José Ramón — Univ. of the Basque Country

17:20 CCA-886
On the Design of Sampled-Data Model-Reference Control Systems
Blachuta, Marian — Silesian Tech. Univ.
Grygiel, Rafal — Silesian Tech. Univ.

17:40 CCA-892
Digital Controller Implementation by Block Digital Filtering
Sarma, Santanu — Indian Inst. of Tech.
Majhi, S. — Indian Inst. of Tech.
Gogoi, A. K. — Indian Inst. of Tech.

CCA '02
Friday, September 20, 2002

Lomond

CCA Plenary Lecture 3
08:30-09:30

Systems Science :The Convergence of Communication,Computation and Control

Sanjoy Mitter
Massachusetts Institute of Technology

Chair: TBD
Co-Chair: TBD

Lomond

CCA-FM1
Integrated Control Applications

Chair: Izadi-Zamanabadi, R. — Aalborg Univ.
Co-Chair: Katebi, M. R. — Univ. of Strathclyde

10:00 CCA-897
Integrated Control in a Power Production System – A Case Story on Multi-Level Advanced Control
Moelbak, Tommy — Elsam A/S

10:20 CCA-903
A Generic Sensor Model for Wastewater Treatment Plant Control
Wade, Matthew John — Univ. of Strathclyde
Katebi, Reza — Univ. of Strathclyde

10:40 CCA-909
Control of an Autonomous Vehicle for Registration of Weed and Crops in Precision Agriculture
Nielsen, K. M. — Aalborg Univ.
Andersen, P. — Aalborg Univ.
Pedersen, T. S. — Aalborg Univ.
Bak, T. — Aalborg Univ.
Nielson, J. D. — Aalborg Univ.

11:00 CCA-915
Towards High Performance in Industrial Refrigeration Systems
Thybo, Claus — Danfos A/S
Izadi-Zamanabadi, Roozbeh — Aalborg Univ.
Niemann, Henrik — Tech. Univ. of Denmark

11:20 CCA-921
Fault Tolerance and Reliability in Integrated Ship Control – The ATOMOS Concept
Nielsen, Jens Dalsgaard — Aalborg Univ.
Izadi-Zamanabadi, Roozbeh — Aalborg Univ.
Schiøler, Henrik — Aalborg Univ.

11:40 Oral Presentation Only
New Requirements for Onboard Instrumentation – Solas CH. V Reg. 15 VS. Atomos: The Missing Link?
Petersen, E.S. — Hjortekaersvej 99

Alsh 1

CCA-FM2
Dissipative Control Methods

Chair: Sugimoto, K. — Nora Inst. of Sci. &Tech.
Co-Chair: Song, Y. — Brunel Univ.

10:00 CCA-927
Control of the Output Stochastic Distributions via Lyapunov Function Analysis
Wang, Hong — UMIST
Zhang, Jianhua — UMIST

10:20 CCA-932
Pole Shifting with Modal Dissipative Control
Fujinaka, Toru — Osaka Prefecture Univ.
Chen, Gan — Osaka Prefecture Univ.
Shibata, Hiroshi — Osaka Prefecture Univ.
Omatu, Sigeru — Osaka Prefecture Univ.

10:40 CCA-938
Nonlinear Disturbance Attenuation Controller for Turbo-Generators in Power Systems via Recursive Design
Sun, Y. Z. — Tsinghua Univ.
Cao, M. — Tsinghua Univ.
Mei, S. W. — Tsinghua Univ.
Shen, T. — Sophia Univ.
Song, Y. H. — Brunel Univ.

11:00 CCA-944
Modelling and Control of Magnetic Suspension Systems
Yu , H. — Univ. of Bradford
Yang, T. C. — Sussex Univ.
Rigas, D. — Univ. of Bradford
Jayawant, B. V. — Sussex Univ.

11:20 CCA-950
Design and Analysis of Discrete-Time Q-Dissipative Control Systems: Stability Margin Perspective
Sugimoto, Kenji — Nara Inst. of Sci. & Tech.
Satoh, Atsushi — Nara Inst. of Sci. & Tech.

11:40 CCA-954
Stabilization of Time-Varying Pseudo-Hamiltonian Systems
Cheng, Daizhan — Chinese Academy of Sci.

Alsh 2

CCA-FM3
Modelling

Chair: Chowdhury, F. N. — Univ. of Louisiana
Co-Chair: Zhang, J. — Univ. of Newcastle

10:00 CCA-960
A Discrete Microstructure Model based Modeling and Control Method for Financial Markets
Peng, H. — Central South Univ.
Ozaki, T. — Inst. of Statistical Mathematics
Haggan-Ozaki, V. — Sophia Univ.

10:20 CCA-966
Improving Long Range Prediction for Nonlinear Process Modelling through Combining Multiple Neural Networks
Ahmad, Zainal — Univ. of Newcastle
Zhang, Jie — Univ. of Newcastle

10:40 CCA-972
Robust Estimation for an Uncertain Linear Model of an Activated Sludge Process
Gómez-Quintero, Claudia-Sophya — LAAS-CNRS
Queinnec, Isabelle — LAAS-CNRS

11:00 CCA-978
A Case Study of Highway Traffic Flow Model – Model Validation and Simulation
Yang, Jiann-Shiou — Univ. of Minnesota

11:20 CCA-984
A Neural Network Approach for Freeway Traffic Flow Prediction
Messai, Nadhir — UTBM-SeT
Thomas, Philippe — UTBM-SeT
Lefebvre, Dimitri — GREAH - Univ. du Havre
El Moudni, Abdellah — UTBM-SeT

11:40 CCA-990
Obtaining Neural Networks based State Space Models using Time-Lagged Neurons
Chowdhury, Fahmida N. — Univ. of Louisiana at Lafayette
Rao, Nageswara K. — Univ. of Louisiana at Lafayette
Siddhanti, Venugopal — Univ. of Louisiana at Lafayette

Biosdale 1

CCA-FM4
Process Control

Chair: Bosgra, O. K. — Delft Univ. of Tech.
Co-Chair: Duncan, S. — Univ. of Oxford

10:00 CCA-992
Adaptive Predictive Expert (ADEX) Control: Application to Waste Water Treatment Plants
Riesco, J. — ADEX
Calvo, J. — Alfatec
Martín-Sánchez, J. M. — ETSI de Minas

10:20 CCA-998
Noise Suppression in Buffer-State Iterative Learning Control, Applied to a High Precision Wafer Stage
Dijkstra, B. G. — Delft Univ. of Tech.
Bosgra, O. H. — Delft Univ. of Tech.

10:40 CCA-1004
Control of Average Temperature in a Spray Deposition Process
Pathirana, Pubudu — Univ. of Oxford
Duncan, Stephen — Univ. of Oxford
Jones, Paul — Univ. of Oxford

11:00 CCA-1010
Internal Interconnections in TMP Processes
Rosenqvist, F. — Chalmers Univ. of Tech.
Berg, D. — Chalmers Univ. of Tech.
Karlström, A. — Chalmers Univ. of Tech.
Eriksson, K. — Chalmers Univ. of Tech.
Breitholtz, C. — Chalmers Univ. of Tech.

11:20 CCA-1016
Convex Optimization for Control Analysis – Application to the Steam Generator Water Level
Hbaïeb, Slim — Supélec
Font, Stéphane — Supélec
Bendotti, Pascale — Electricité De France
Falinower, Clément-Marc — Electricité De France

11:40 CCA-1022
How to Improve Control System Performance using FF Function Blocks
Chen, Jiming — Zhejiang Univ.
Wang, Zhi — Zhejiang Univ.
Sun, YouXian — Zhejiang Univ.

Biosdale 2

CCA-FM5
Controller Design II

Chair: Atherton, D. P. — Univ. of Sussex
Co-Chair: De La Fuente, M. J. — Univ. de Valladolid

10:00 CCA-1027
An Efficient NeuroFuzzy Speed Controller for Large Industrial DC Motor Drives
Ismail, Abdulla — United Arab Emirates Univ.
Sharaf, A. M. — United Arab Emirates Univ.

10:20 CCA-1032
Fuzzy Control of a Neutralization Process
Fuente, M. J. — Univ. of Valladolid
Robles, C. — Univ. of Valladolid
Casado, O. — Univ. of Valladolid
Tadeo, F. — Univ. of Valladolid

10:40 CCA-1038
A Robust Adaptive Fuzzy Control Applied to Disturbed Uncertain MIMO Systems
Essounbouli, N. — UFR Sci. Exactes et Naturalles
Hamzaoui, A. — UFR Sci. Exactes et Naturalles
Benmahammed, K. — Univ. Ferhat Abbas Setif
Zaytoon, J. — UFR Sci. Exactes et Naturalles

11:00 CCA-1044
Analysis of Uncertain Transfer Functions in Factored Form
Tan, Nusret — Inonu Univ.
Atherton, Derek P. — Univ. of Sussex

11:20 CCA-1050
Design a Controller for a Steam Generator of a Power Plant using Robust Control and Genetic Algorithm
Le Mauff, Frédéric — Supélec
Duc, Gilles — Supélec

11:40 CCA-1056
Calibratable Model-Based Controllers
Christen, Urs — Ford Forschungszentrum Aachen

Carron 1

CCA-FM6
Ship and Hovercraft Control

Chair: Ohtsuka, T. — Osaka Univ.
Co-Chair: Aranda, J. — UNED

10:00 CCA-1058
An Optimal Control of Marine Propulsion System Considering Ship Dynamics
Kashima, Tadashi — Kobe City College of Tech.
Takata, Jun — Sumitomo Heavy Ind., Ltd.

10:20 CCA-1064
Marine Course-Changing Manoeuvre: A Comparative Study of Control Algorithms
Velasco, Francisco J. — Univ. de Cantabria
Rueda, Teresa M. — Univ. de Cantabria
López, Eloy — Univ. del Pais Vasco
Moyano, Emiliano — Univ. de Cantabria

10:40 CCA-1070
Experimental and Robustness Analysis of a Multivariable Control for Vertical Dynamic of a High Speed Craft
Aranda, J. U.N.E.D.
Revilla, J. U.N.E.D.
Diaz, J. M. U.N.E.D.
Ruipérez, P. U.N.E.D.

11:00 CCA-1076
Nonlinear Receding Horizon Control of an RC Hovercraft
Seguchi, Hiroaki Osaka Univ.
Ohtsuka, Toshiyuki Osaka Univ.

11:20 CCA-1082
Experimenting a Fuzzy Controller on a Fast Ferry
López, R. Univ. Complutense de Madrid
Santos, M. Univ. Complutense de Madrid
Polo, O. Univ. Complutense de Madrid
Esteban, S. Univ. Complutense de Madrid

11:40 CCA-1088
Nonlinear Moving Horizon State Estimation for a Hovercraft with Continuation/GMRES Method
Soneda, Yusuke Osaka Univ.
Ohtsuka, Toshiyuki Osaka Univ.

Carron 2

CCA-FM7
Stability and System Theory

Chair: Schmitt-Brae, G. Univ. Erlangen-Nürnberg
Co-Chair: Veres, S. M. Univ. of Southampton

10:00 CCA-1094
A Nyquist Criterion for Time-Varying Periodic Systems, with Application to a Hydraulic Test Bench
Pommier, Valérie ENSICA
Sabatier, Jocelyn Univ. Bordeaux
Garcia Iturricha, Aitor Univ. Bordeaux
Oustaloup, Alain Univ. Bordeaux

10:20 CCA-1100
A Generalized Circle Criterion and Its Fields of Application
Schmitt-Braess, G. Univ. Erlangen-Nürnberg

10:40 CCA-1106
Analysis of Regions of Stability for Linear Systems with Saturating Inputs through an Anti-Windup Scheme
Gomes da Silva, Jr., J. M. UFRGS
Tarbouriech, S. LAAS-CNRS
Reginatto, R. UFRGS

11:00 CCA-1112
Robust $_{\mu}$-Infinity Stabilization for Interval Plants
Ji, Baowei Univ. of Florida
Latchman, Haniph A. Univ. of Florida
Crisalle, Oscar D. Univ. of Florida

11:20 See CACSD Proceedings
An Information Theoretic Interpretation for H_∞ Entropy
Zhang, Hui Zhejiang Univ.
Sun, Youxian Zhejiang Univ.

11:40 CCA-1118
Implementation of Polynomial Algebra via Spectra
Zezula, P. Czech Tech. Univ. in Prague
Ježek, J. Czech Academy of Sci.
Šebek, M. Czech Tech. Univ. in Prague

Lomond

CCA Plenary Lecture 4
13:00-14:00

Smart Control for Tomorrows Processes

Benson Roger
ABB Automation (UK) Ltd

Chair: TBD
Co-Chair: TBD

Lomond

CCA-FA1
Miscellanous Applications

Chair: Valasek, J. Texas A&M Univ.
Co-Chair: Wilkie, J. Univ. of Strathclyde

14:00 CCA-1120
Development of an Internet Home Control System
Tan, K. K. Natl. Univ. of Singapore
Soh, C. Y. Natl. Univ. of Singapore
Wang, K. N. Natl. Univ. of Singapore

14:20 CCA-1126
Dynamics of Atomic Force Microscopes: Experiments and Simulations
El Rifai, Osamah M. Massachusetts Inst. of Tech.
Youcef-Toumi, Kamal Massachusetts Inst. of Tech.

14:40 CCA-1132
Multi-Mode Piezoelectric Shunt Damping with a Highly Resonant Impedance
Moheimani, S.O.R. Univ. of Newcastle
Behrens, S. Univ. of Newcastle

15:00 CCA-1138
Vision based Controller for Autonomous Aerial Refueling
Kimmett, Jennifer Texas A&M Univ.
Valasek, John Texas A&M Univ.
Junkins, John L. Texas A&M Univ.

15:20 CCA-1144
On Transient Behavior Analysis of Random Early Detection Gateway using a Control Theoretic Approach
Kisimoto, Motohisa Osaka Univ.
Ohsaki, Hiroyuki Osaka Univ.
Murata, Masayuki Osaka Univ.

15:40 CCA-1147
Nonlinear Identification of Thermoacoustic Instabilities with Limit Cycles in a Rijke Tube
Agostino, F. Politecnico di Milano
Baldini, G. CESI
Bittanti, S. Politecnico di Milano
De Marco, A. Politecnico di Milano
Poncia, G. United Tech. Research Center
Prandoni, W. CESI
Scarpellini, M. Politecnico di Milano

Alsh 1

CCA-FA2
Trajectory Planning and Manufacture

Chair: Sawada, Y. — Kyoto Inst. of Tech.
Co-Chair: Morselli, R. — D.I.I. Univ. of Modena & Reggio Emilia

14:00 CCA-1153
Deadlock-Free Scheduling Method using Petri Net Model Analysis and GA Search
Gang, Xu — Shanghai Jiaotong Univ.
Wu, Zhiming — Shanghai Jiaotong Univ.

14:20 CCA-1159
Robust Near Time-Optimal Trajectory Planning by Intermediate Targets Assignment
Turnau, Andrzej — St. Staszic Tech. Univ.
Szymkat, Maciej — St. Staszic Tech. Univ.
Korytowski, Adam — St. Staszic Tech. Univ.

14:40 CCA-1165
Third Order Trajectory Generator Satisfying Velocity, Acceleration and Jerk Constraints
Zanasi, R. — Univ. of Modena & Reggio Emilia
Morselli, R. — Univ. of Modena & Reggio Emilia

15:00 CCA-1171
Collision Detection for a Flexible Cantilever-Beam Subject to Random Disturbance based on Innovation Process
Sawada, Yuichi — Kyoto Inst. of Tech.

15:20 CCA-1177
Positioning Trajectory Generator with Nonlinear Constraints
Morselli, R. — Univ. of Modena & Reggio Emilia
Zanasi, R. — Univ. of Modena & Reggio Emilia

Alsh 2

CCA-FA3
Modelling and Simulation

Chair: Keviczky, L. — Hungarian Academy of Sci.
Co-Chair: Rabbath, C. A. — McGill Univ.

14:00 CCA-1183
Direct Control in Bond Graph by State Estimated Feedback for MIMO LTI Systems
Gilberto, González-A. — Univ. of Nuevo Leon
Galindo, R. — Univ. of Nuevo Leon

14:20 CCA-1189
Integration and Synchronization of Discrete Formalisms and Continuous Models in Modelica
Deparade, André — Univ. of Dortmund
Pereira Remelhe, Manuel A. — Univ. of Dortmund
Engell, Sebastian — Univ. of Dortmund

14:40 CCA-1195
Energy based Model of a Common Rail Injector
Morselli, Riccardo — Univ. of Modena & Reggio Emilia
Corti, Enrico — Univ. of Bologna
Rizzoni, Giorgio — The Ohio State Univ.

15:00 CCA-1201
Improved Distributed Simulations of Electric Systems via an Optimal Digital Control Technique
Lechevin, N. — Univ. of Quebec at Trois-Rivieres
Rabbath, C. A. — Defence R&D Canada

15:20 CCA-1207
UML-Based Modeling and Multi-Threaded Simulation for Hybrid Dynamic Systems
Lee, Jin-Shyan — Natl. Chiao-Tung Univ.
Hsu, Pau-Lo — Natl. Chiao-Tung Univ.

Biosdale 1

CCA-FA4
Predictive Control II

Chair: Camacho, E. F. — Univ. of Sevilla
Co-Chair: Rodriguez, T. M.R. — Univ. de Cantabria

14:00 CCA-1213
A Generalized Predictive Control Benchmark Index for MIMO Systems
Uduehi, D. — Univ. of Strathclyde
Ordys, A. — Univ. of Strathclyde
Grimble, M. J. — Univ. of Strathclyde

14:20 CCA-1219
Application of a Predictive Sliding Mode Controller to a Heat Exchanger
de la Parte, Mercedes Pérez — Univ. de Sevilla
Camacho, Eduardo F. — Univ. de Sevilla

14:40 CCA-1225
Application of Predictive Control to a Toy Helicopter
Balderud, Jonas — Karlstad Univ.
Wilson, David I. — Karlstad Univ.

15:00 CCA-1230
Application of MPC with Multiple Objective for a Solar Refrigeration Plant
Zambrano, Darine — Univ. de Los Andes
Camacho, Eduardo F. — Univ. de Sevilla

15:20 CCA-1236
Robustification of GPC Controlled System by Convex Optimisation of the Youla Parameter
Rodriguez, Pedro — Supélec
Dumur, Didier — Supélec

15:40 CCA-1242
Comparison of Different Predictive Controllers with Multi-Objective Optimization. Application to an Olive Oil Mill
Núñez-Reyes, A. — Univ. de Sevilla
Scheffer-Dutra, C. B. — Univ. Federal de Santa Catarina
Bordons, C — Univ. de Sevilla

Biosdale 2

CCA-FA5
Controller Design III

Chair: Barbot, J. P. — ENSEA
Co-Chair: Kamwa, I. — Hydro-Quebec/Laval Univ.

14:00 CCA-1248
Using Measures of Controllability and Observability for Input and Output Selection
Heniche, Annissa — Hydro-Québec
Kamwa, Innocent — Hydro-Québec

14:20 CCA-1252
Nonlinear Control of Power Factor Precompensators: An Experimental Study
Karagiannis, D. — Imperial College
Mendes, E. — SUPÉLEC
Ortega, R. — SUPÉLEC
Astolfi, A. — Imperial College

Carron 1

CCA-FA6
Systems Theory and Filtering

Chair: Kalata, P. — Drexel Univ.
Co-Chair: Chowdhury, F. N. — Univ. of Louisiana

Carron 2

CCA-FA7
Stability

Chair: Wu, Q. H. — Univ. of Liverpool
Co-Chair: Galindo, R. — Univ. of Nuevo Leon