The 46th IEEE Conference on Decision and Control (CDC) was held Wednesday through Friday, December 12–14, 2007 at the New Orleans Hilton Riverside, Louisiana. The hotel is located on the banks of the Mississippi river, within easy walking distance of New Orleans’ French Quarter and its main attractions. The choice of venue was made before New Orleans was hit by Hurricane Katrina in the fall of 2005. While this disaster led to much apprehension in our preconference planning, the city of New Orleans and the Hilton were ready to host the conference, with excellent meeting facilities, dining and entertainment venues, and a first-class hotel staff ready to respond to our conference needs. In addition to the sponsorship of the IEEE Control Systems Society (CSS), the 46th CDC was technically cosponsored by the Society for Industrial and Applied Mathematics, the Institute for Operations Research and Management Sciences, the Japanese Society for Instrument and Control Engineers, and the European Union Control Association. The conference also received financial support from industrial sponsor United Technologies and from the National Science Foundation (NSF).

A special aspect of the conference was that almost all of the technical presentations, exhibits, plenary talks, coffee breaks, receptions, and the conference registration were held in close proximity of each other. While at times this proximity gave a crowded appearance, this arrangement enhanced the interaction among participants and easy flow among the diverse conference activities.

**TECHNICAL PROGRAM AND REGISTRATION**

The 46th IEEE CDC attracted broad interest throughout the world, with a total of 1637 regular and invited paper submissions. All regular and invited paper submissions followed the peer-review process orchestrated by the Conference Editorial Board, led by Thomas Parisini, and the Conference Program Committee, led by Program Chair Jim Spall. The review process provided an average of 2.5 reviews per paper. Of these submitted papers, 1077 papers were recommended for acceptance, giving an acceptance rate of 66%. A separate review process was followed for selected tutorial papers and special sessions, bringing the total number of papers recommended for acceptance to 1094.

The Program Committee, led by Program Chair Jim Spall, Vice Chair for Invited Sessions Andy Teel, Vice Chair for Interactive Sessions John Watkins, and Vice Chair for Tutorial and Special Sessions Fahmida Chowdhury, worked diligently in July to organize the technical program into a coherent three-day program. The Committee developed a schedule that accommodated all papers recommended for presentation. One of the critical decisions was to continue the experiment of using interactive sessions. Given the number of acceptances, the program was organized into seven time slots with 18 parallel oral sessions and two sessions consisting solely of interactive presentations. Thus, 338 papers were scheduled for interactive presentation, along with 756 scheduled for oral presentation.

The conference continues to have a strong international presence, as indicated in Figure 1. Compared to the previous year, the percentage of papers with authors from the United States dropped from 46% to 37%. The percentage of papers from the Asia-Pacific region increased from 14% to 20%, and papers from Europe, the Middle East, and Africa increased from 33% to 36%. While the United States had the most authors at the conference, there was a strong presence from Italy, France, China, Japan, Canada, and Australia, with over 100 authors from each of these countries.
The conference was preceded by technical workshops on December 11, 2007, following the precedence of offering all workshops on a single day, at a reduced cost to attendees. Thanks to the efforts of CSS Vice-President for Member Activities Maria Elena Valcher, the conference also offered free registration for CSS student members who attended a workshop.

The following workshops were conducted with a total attendance of 53:

» “Non-Model Based Intelligent Control of Engineering Systems,” organized by Warren Dixon (University of Florida, Gainesville)

» “Identification of Hybrid Models via Generalized Principal Component Analysis,” organized by Rene Vidal (Johns Hopkins University, USA) and Yi Ma (University of Illinois, Urbana-Champaign)

» “Optimization on Manifolds,” organized by P.-A. Absil (Department of Mathematical Engineering, Universite Catholique de Louvain, Belgium), Knut Huper (National ICT Australia), and Rodolphe Sepulchre (Department of Electrical Engineering and Computer Science, Universite de Liege, Belgium).

In addition, Bozenna Pasik-Duncan and Pamela Whiffen organized an education workshop titled “The Power, Beauty, and Excitement of the Cross-Boundary Nature of Control.” This workshop is the latest in a series geared toward middle and high school students and teachers to promote interest in science and engineering, with a focus on automatic control. Nearly 250 students and teachers from schools in the New Orleans area participated in the workshop this year.
SPECIAL SESSIONS

One of the consequences of condensing the CDC to three days (unlike past four-day CDCs) is that fewer opportunities were available for presenting special sessions and events. The 46th CDC included several special sessions, held either during the lunch break or on Wednesday evening. The first special session on Wednesday, December 12, was a discussion of “Research Ethics and Related Issues in Research and Education,” organized by Fahmida Chowdhury. This session, chaired by Bozenna Pasik-Duncan and Karlene Hoo, included guest speakers Mary Juhas from NSF and sociologist Nilanja Dasgupta, as well as a panel discussion. The session presented a lively discussion on programs for developing engineering ethics and broadening participation in engineering.

Wednesday evening included two parallel sessions. The first of these was a special session, “Plain Talk on Control for a Wide Range of the Public,” sponsored by the CSS and ACC Technical Committees on Control Education and Bozenna Pasik-Duncan. This session consisted of a series of talks discussing the history of feedback control, targeting an audience of noncontrol engineering professionals and the general public. In parallel, Eduardo Misawa of NSF presented a session on “Transformative Research: Unique Opportunity for Control Engineering.” This session discussed how NSF is refocusing on “transformative” research to encourage “high-risk” projects at the cutting edge of research instead of projects that promised only incremental advances. Eduardo discussed NSF’s new five-year initiative on “Cyber-enabled Discovery and Innovation (CDI)” as an example of this new direction.

During the lunch break on Thursday, Fahmida Chowdhury and May-Win Thein organized a session titled “How to Present Your Work and Yourself.” This session, which included presentations by Program
Chair Jim Spall, Dawn Tilbury, and exhibitor Jeannie Falcon, discussed the topics of how to prepare technical presentations and resumes as well as how to conduct a job search in both academia and industry.

**PLENARY PRESENTATIONS AND BODE LECTURE**

Among the highlights of CDC 2007 were the two plenary presentations and the Bode Lecture. The CDC 2007 returned to the format of plenary sessions (rather than semiplenary), and selected the plenary talks to appeal to a broad audience. Both plenary sessions and the Bode lecture were well attended, with over 900 audience members present at each talk.

The conference opened with a plenary talk by Tryphon Georgiou on Wednesday morning on “The Meaning of Distance in Spectral Analysis.” His talk presented various approaches for comparing power spectral distributions and drew interesting connections with information geometry and a diverse suite of applications.

On Thursday morning, Peyton Young presented a plenary talk titled “Strategic Learning.” Young is a faculty member at Oxford University and president of the Game Theory Society. His talk explored alternative dynamic mechanisms whereby players in a game can learn equilibrium strategies by adapting to observed outcomes in repeated plays.

P.S. Krishnaprasad delivered the Bode lecture on Friday morning. His talk, “Pursuit and Cohesion: in Nature and by Design,” discussed geometric patterns observed in studies of flying insects, birds, and bats and suggested sensorimotor feedback mechanisms that explain these patterns. The emphasis of the talk was on identifying feedback laws that lead to superior performance and suggested that such mechanisms can serve as models for feedback control of robots performing similar activities.
CSS AWARDS CEREMONY AND CONFERENCE BANQUET

The Annual CSS Awards Ceremony was held on Thursday (see “2007 IEEE CSS Awards Ceremony.”) In keeping with recent practice, the Awards Ceremony was held prior to the conference banquet. The ceremony was well attended, with over 400 people in the audience.

In honor of the awardees, CDC 2007 and CSS hosted a reception after the Awards Ceremony. The ceremony and reception were held adjacent to the banquet, making the events accessible to most of the conference attendees. Thanks to a grant from CSS, the conference included banquet tickets for all students, making the banquet a shared event for all participants. In his last official act, 2007 CSS President Ted Djaferis passed the gavel to 2008 President David Castañón. Finally, CDC 2008 Program Chair Thomas Parisini invited the audience to CDC 2008 in Cancún, Mexico.
FINAL THOUGHTS AND THANKS
Managing such a large event takes a large group of dedicated volunteers, and the 46th CDC benefited from the efforts of many of our CSS members. The technical program was created with leadership from Program Chair Jim Spall and Vice-Chairs Andrew Teel, Fahmida Chowdhury, and John Watkins and support by the Technical Program Committee. Pradeep Misra provided technical support through PaperPlaza in setting up the program and preparing the conference proceedings. Thomas Parisini oversaw the Conference Editorial Board, which provided reviews of all submissions.

Yannis Paschalidis led a registration staff that included newcomers Linda Grosser and Raven Pratt. Pirooz Vakili managed the production of conference publications and worked with authors to satisfy the IEEE criteria for publication. Hua Wang and MaryAnn Straub provided valuable expertise in conference finance, while Mario Sznaier organized the technical workshops at the conference. Reza Olfati-Saber, with the assistance of Faryar Jabbari, handled the student arrangements. Finally, Huimin Chen and his students from the University of New Orleans provided invaluable support in assembling the registration packages and ensuring that all conference events ran smoothly.

On a personal note, the most gratifying aspect of the conference was interacting with the CDC 2007 participants, renewing old acquaintances, and making numerous new ones. The incredible breadth and depth of our field was on display at the conference for all to enjoy, and it was clear that most did. I want to express my appreciation to all the volunteers and participants for creating an enjoyable and stimulating conference!

—David Castañón
General Chair
Banquet Photos
The 2007 IEEE CSS Awards Ceremony was held in the Grand Ballroom of the Hilton New Orleans Riverside Hotel, Louisiana, on Thursday, December 13. CSS President Ted Djaferis welcomed the attendees and introduced Panos Antsaklis, chair of the Standing Committee on Awards, who described the IEEE and CSS awards and thanked the CSS awards subcommittee chairs for their hard work.

The 2007 subcommittee chairs are:
- Steve Morse: George S. Axelby IEEE Transactions on Automatic Control Outstanding Paper Award
- Mrdjan Jankovic: IEEE Transactions on Control Systems Technology Outstanding Paper Award
- Bonnie S. Heck: IEEE Control Systems Magazine Outstanding Paper Award
- Siva Banda: Control Systems Technology Award
- Jan Willems: Antonio Ruberti Young Researcher Prize
- Mario Sznaier: CDC Best Student Paper Award
- L.K. Mestha: CCA Best Student Paper Award.

Vice-President of Member Activities Maria Elena Valcher presented the Outstanding Chapter Award, which recognizes a chapter for demonstrating a high level of activity, innovation, or growth. The 2007 Award went to the Japan Chapter of the IEEE CSS, chaired by Kenko Uchida, in recognition of their quality activities, including lectures and workshops. The Japan Chapter organized a significant number of high-level workshops or symposia, most of them sponsored by SICE and each of them bringing together a noteworthy number of scientists. Such symposia and workshops covered a broad range of different topics. Over the period May 2006–May 2007, the workshop topics ranged from “Lagrangian and Hamiltonian Methods for Nonlinear Control” to “Decentralized Autonomous Systems” and to “Adaptation and Learning Control.” The award was presented to Chapter Secretary Akira Kojima.

The first Distinguished Member Award was given to Dennis Bernstein from the University of Michigan, who was recognized for his contributions to system identification, state estimation, and adaptive control and for his service to the control community, including CSS. He and his students have developed several control testbeds to motivate and validate new methods for attitude, noise, and vibration control. He has been the editor-in-chief of the IEEE Control Systems Magazine since 2003. In that position, he has facilitated special issues ranging from undergraduate control education to controlled fusion to complex networks.

The second Distinguished Member award was presented to Thomas Parisini from the University of Trieste, who was recognized for his research contributions in neural-network approximations for nonlinear optimal control, fault diagnosis of nonlinear systems, control of distributed systems as well as for his service to the control community. He is the chair of the CSS Conference Editorial Board, has served as a CSS Distinguished Lecturer, and was a member of the CSS Board of Governors. He is also an associate editor of Automatica, International Journal of Control, and the International Journal of Robust and Nonlinear Control, and was an associate editor of the IEEE Transactions on Automatic Control and of the IEEE Transactions on Neural Networks. He has been involved in several IEEE CSS sponsored conferences, and is the program chair of the 2008 IEEE CDC in Cancún, Mexico.

IEEE CSS Awards Chair Panos Antsaklis welcomes the 46th CDC attendees to the awards ceremony.

Roberto Tempo and M. Vidyasagar, the 2008 Control Systems Field Award Winner, at the awards ceremony.
Richard Middleton, vice-president of Conference Activities, presented the CDC Best Student-Paper Award, which recognizes excellence in a paper whose primary author is a student member of the IEEE. This year, there were four award papers and four student finalists:

» Finalist: Johan Karlsson, RIT Sweden
   Advisor: Anders Lindquist
   Paper Title: “Stable Rational Approximation in the Context of Interpolation and Convex Optimization,” by Johan Karlsson and Anders Lindquist

» Finalist: Stephen L. Smith, University of California, Santa Barbara
   Advisor: Francesco Bullo

» Finalist: Emanuele Garone, University of Calabria, Italy
   Advisor: A. Casavola
   Paper Title: “LQG Control For Distributed Systems Over TCP-like Erasure Channels,” by Emanuele Garone, Bruno Sinopoli, Andrea Goldsmith, and A. Casavola

» Finalist and Awardee: Sun Yu, University of Illinois at Urbana-Champaign
   Advisor: P. G. Mehta

Yutaka Yamamoto, vice-president for Publication Activities, presented the three paper awards. The first award was for the IEEE Control Systems Magazine Outstanding Paper Award for an article or column published during the two calendar years prior to the year of the

VP Membership Activities Maria Elena Valcher presents the best chapter award to Japan Chapter Secretary Akira Kojima.

Yutaka Yamamoto presents the Control Systems Technology Outstanding Paper Award to Reza Moheimani.

VP Membership Activities Maria Elena Valcher with Distinguished Member Award recipients Dennis Bernstein, left, and Thomas Parisini, right.

David Castañón presents a plaque to Ted Djaferis in recognition of his contributions to CSS.
award, based on impact and benefit to CSS members. This award was presented to James M. Bailey, Emory University, and Wassim M. Haddad, Georgia Institute of Technology, for their article “Drug Dosing in Clinical Pharmacology,” IEEE Control Systems Magazine, vol. 25, no. 2, pp. 35–51, April 2005.

The IEEE Transactions on Control Systems Technology Outstanding Paper Award, for a paper published during the two calendar years prior to the year of the award, based on originality, relevance of the application, clarity of exposition, and demonstrated impact on control systems technology, was presented to Andrew J. Fleming and S.O. Reza Moheimani, University of Newcastle, Australia, for their paper, “Sensorless Vibration Suppression and Scan Compensation for Piezoelectric Tube Nanopositioners,” IEEE Transactions on Control Systems Technology, vol. 14, no. 1, pp. 33–44, Jan. 2006.

The George S. Axelby Outstanding Paper Award, which is presented for papers published in IEEE Transactions on Automatic Control during the two calendar years prior to the year of the award, is based on originality, clarity, potential impact on the theoretical foundations of control, and practical significance in applications. The award was given to Michael Rotkowitz, Australian National University, and Sanjay Lall, Stanford University, for their paper, “A Characterization of Convex Problems in Decentralized Control,” IEEE Transactions on Automatic Control, vol. 51, no. 2, pp. 274–286, Feb. 2006.

Jay Farrell, vice president of Technical Activities, presented the Control Systems Technology Award, which recognizes outstanding contributions to control systems technology either in design and implementation, or in project management. This award can be conferred on an
individual or a team. The recipient of this year’s award was Andrzej Banaszuk, United Technologies Corporation, “for contributions in the areas of control of compressor instabilities, combustion instabilities, and other fluid flow instabilities in aerospace systems.” After working for seven years in various positions at Georgia Tech, the University of Colorado, Boulder, and the University of California, Irvine, Dr. Banaszuk joined United Technologies Research Center in 1997. Dr. Banaszuk’s primary work over the last decade has been in the application of results from control and dynamical systems to problems in turbomachinery. He has worked on various problems in this area, including active control of stall and surge, passive and active control of flutter, and control of combustion instabilities in commercial and military turbomachines. The award recognizes his contributions to these technical areas.

Ted Djaferis presented the 2007 Antonio Ruberti Young Researcher Prize, which recognizes distinguished cutting-edge contributions by a young researcher to the theory or application of systems and control, to Alessandro Astolfi, Imperial College, London, “for contributions to the theory and applications of nonlinear control systems.”

Ted Djaferis presented the 2007 Hendrik W. Bode Lecture Prize, which recognizes distinguished contributions to control systems science or engineering. The recipient delivers a plenary lecture at the CDC, evaluating a significant contribution to control systems science or engineering. This year’s award went to P.S. Krishnaprasad, University of Maryland, “for fundamental contributions to the theory of control of natural and synthetic physical systems.” P.S. Krishnaprasad presented the Bode Lecture on Friday, December 14, 2007. He was selected for this award...
Remarks on Receiving the IEEE Control Systems Award

To receive the IEEE Control Systems Award is a great honor and a great feeling, which really overwhelms me. It is a natural occasion to reflect on one’s past research, influences, and scientific development.

As I look back, I realize that I haven’t traveled very far: I am still in the same office I moved into in 1976, when I got my chair in Linköping. Most of the research that is mentioned in the citation, I performed within a stone’s throw from my Ph.D. dissertation in 1974. I am also, by the way, married to my dear wife, Ann-Kristin, since almost 40 years. So the picture that emerges is that of a quite conservative, faithful, and not so adventurous person.

This makes it important to look back to the 1970s, which clearly must have been formative years. I finished my master’s degree in 1970 and then started as a Ph.D. student in Karl Johan Åström’s famous and energetic group. This was clearly the most decisive step in my research career. I spent half a year in 1972 in Yakov Tsypkin’s laboratory in Moscow as a pre-doc and visited Tom Kailath as a post-doc at Stanford after my Ph.D. in 1974. This means that I, in the course of a few years in the early 1970s, had three influential mentors: Åström, Tsypkin, and Kailath. While these three mentors had quite different research focuses, they had one common denominator: They taught me to have a constructive attitude to mathematics. By all means, study mathematics, use mathematics, master mathematics, and even occasionally indulge in mathematics, but realize that our problem area is not mathematics, it is nature. The quotation by Joshua Chover that Tom Kailath used in the preface of his Linear Systems book captures this nicely: “The goal of mathematics is discovery, not proof.” Clearly this first half of the 1970s formed my scientific tastes under the influence of these three scientific giants.

In 1976 I moved to Linköping to fill the chair of Automatic Control. There were virtually no activities there, and I had to put a lot of effort in building up a group and form an educational program. This process was very educational for me, at least.

You know, the driving forces in life are good luck and timing. I guess nothing illustrates that better for me than the telephone call I got from Jack Little, the president of Mathworks, in March 1986. He asked me if I would like to write a Matlab toolbox on system identification. I said no, I am not a good programmer, but he persuaded me. I guess that I have had ample opportunities to prove that my judgment was right, but I have also enjoyed the programming of this toolbox and the interaction with its users immensely. I believe writing the software is the ultimate “follow through” for a theoretician: If you write the software, you will find that people use your perspective and methods, without having to like them and without having to understand them.

Being a scientist means that you are part of a collective and cosmopolitan effort. Having friends in science around the world and seeing a Ph.D. student grow up and continue to grow I think is the real joy for a researcher. I have had about 140 different coauthors in my publications and my 56th Ph.D. student graduated last week. Time does not permit me to name them here and now, so let me take this opportunity to thank them all collectively for all the fun we have had together.

I have also had another set of coworkers who have made me understand that there is much more to life than proving theorems and writing software. They are my four grandchildren, my two sons, and above all my wife Ann-Kristin. She is really the one who deserves the credit for this award.

Lennart Ljung
and Lihua Xie. The following CSS members were elected Fellows by other IEEE Societies, with the evaluation society indicated in parenthesis: Henk A. P. Blom (AES), Moyuen Chow (IE), Alessandro De Luca (RA), Xiaohong Guan (PE), Takayuki Kawahara (SSC), Steven B. Leeb (PEL), Peter Magyar (IA), Nikolaos Papanikolopoulos (RA), David Skellern (CAS), Raman M. Unnikrishnan (Education), Jun Wang (CIS), and Ning Xi (NTC).

William A. Gruver presented the IEEE Control Systems Technical Field Award. This award is for meritorious achievement in contributions to theory, design, practice, or technique, as evidenced by publications or patents in the areas of control systems science, engineering, or technology. This year’s recipient was Lennart Ljung, professor of the chair of Automatic Control at the University of Linköping, “for seminal contributions to system identification and its impact on industrial practice.” His acceptance speech appears in “Remarks on Receiving the IEEE Control Systems Award.” William Gruver announced that the 2008 winner for this award is Mathukumalli Vidyasagar.

Ted Djaferis announced the winner of the 2008 Judith Resnik award. This award recognizes outstanding contributions to space engineering, within the fields of interest of the IEEE. The Award is named in honor of IEEE Member Judith Resnik, who was a mission specialist on the NASA Space Shuttle Challenger, which exploded on January 28, 1986. The 2008 winner is Meyya Mayyappan from NASA Ames Research Center.

CSS President-Elect David Castañón presented Ted Djaferis with a plaque citing his volunteer service for the IEEE and CSS. The plaque citation stated:

In appreciation for contributions to the IEEE Control Systems Society as
» Finance Chair, American Control Conference, 1985
» Program Vice-Chair, IEEE Conference on Decision and Control, 1991
» Publications Chair, IEEE Conference on Decision & Control, 1995
» Program Chair, IEEE Conference on Decision and Control, 1997
» General Chair, IEEE Conference on Decision and Control, 2001
» Vice-President, Member Activities, 2002–2003
» Vice-President, Conference Activities, 2004–2005
» President-Elect, 2006
» President, 2007
» Past President, 2008.

Ted Djaferis closed the awards ceremony by thanking everyone for attending and encouraging nominations for future awards.

The CSS Award winners. (Back row, from left) S.O. Reza Moheimani (IEEE Transactions on Control Systems Technology Outstanding Paper Award), Michael Rotkowitz (George S. Axelby Outstanding Paper Award), Sanjay Lall (George S. Axelby Outstanding Paper Award), Wassim Haddad (IEEE Control Systems Magazine Outstanding Paper Award), and Akira Kojima (Best Chapter). (Front row) Andrzej Banaszuk (Control Systems Technology Award), Lennart Ljung (IEEE Control Systems Technical Field Award), P.S. Krishnaprasad (2007 Hendrik W. Bode Lecture Prize), and Sun Yu (CDC Student Paper Award).