

Outgoing Editorial

I. INTRODUCTION

My two year term as Editor-in-Chief (EiC) of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS PART—I: REGULAR PAPERS (IEEE TCAS-I) comes to an end on December 31, 2007. While these two years have kept us busy managing the day-to-day operation of the journal, it is now appropriate to provide a status report to the entire readership of IEEE TCAS-I. Some of the data presented here were collected for the purpose of providing a customary five-year report to the IEEE Technical Activities Board. Others have been generated for the present purpose from the IEEE TCAS-I electronic database. In an attempt to present a more comprehensive picture of the status of the journal, statistical data beginning from 2004 (since the last IEEE TCAS-I reorganization) is reported, wherever possible.

II. REVIEW POLICY

- 1) All papers were submitted to the electronic database dubbed *Manuscript CAS*—a home-grown software currently in use for several IEEE Circuits and Systems (CAS) publications. All reviews were conducted and recommendations were made via this same database as well. The URL, which to the best of my knowledge, will continue to be used for this purpose, is <http://tcas1.polito.it>.
- 2) Each paper received an average of three reviews. All papers received at least two reviews. Some papers for which two strong and coinciding opinions were received from reviewers may have been decided upon based on two reviews only. A small number of submissions were returned without review either because the topics discussed were outside the scope of IEEE TCAS-I, or were obviously substandard as judged by the Associate Editor (AE) (these are the only papers that may not have received two or more reviews). The detailed statistics on the number of reviews received for all decisions made (including decisions on revised versions) during the period January 2006 through October 2007 are displayed in Fig. 1. The data are drawn from the *Manuscript CAS* Database.

Fig. 1 shows that 4.32% of the decisions were based only on one review. These manuscripts were either comments on previously published papers, or were outright rejects based on the topics discussed (often because the topic discussed was out of scope and the Editorial Board did not feel that they had the expertise to review them). Of all decisions, 11.66% of manuscripts received two reviews. These were first versions which received two strong and coincident reviews on the basis of which the Editorial Board felt that there was no need to seek further opinion. More than 50.43% papers were reviewed by three reviewers. The percentage of papers that received four, five, six, or even seven reviews are also shown in the chart. Clearly, these are cases in which conflicting opinions were obtained and we sought extra reviews to arrive at the final decision. Special issue papers are not included in this statistics.

- 3) Submissions longer than 14 pages in IEEE 2-column format are strongly discouraged, and are, in fact, returned without review. In exceptional circumstances, a paper may become longer than 14 pages after review and may have been allowed to be published. The current page charge policy of IEEE TCAS-I is to charge page charges for every page beyond the first nine pages.
- 4) Any submission shorter than six pages in IEEE 2-column format was returned to the submitting author with the suggestion that it be submitted to the sister publication IEEE TRANSACTIONS FOR CIRCUITS AND SYSTEMS—II: EXPRESS BRIEFS (IEEE TCAS-II).
- 5) A policy on plagiarism has been formulated and is available on the website of the IEEE CAS Society. Reports on research results that have already appeared elsewhere are not entertained by IEEE TCAS-I. This includes self-plagiarism and prior publications (even by the same author) in conference proceedings as well; substantially more than what has already been reported in a conference proceedings is needed for a paper to be entertained by IEEE TCAS-I, and for it not to fall under the plagiarism rules. At present, IEEE maintains a list of prohibited authors which may prevent an author from submitting papers to IEEE TCAS-I. The list is periodically updated by IEEE, and is communicated to the EiC of IEEE TCAS-I from the IEEE Intellectual Property Rights Office.

III. SUBMISSION STATISTICS

IEEE TCAS-I has been receiving a steady stream of papers over the last four years. Fig. 2 shows the monthly submission of IEEE TCAS-I papers from January 2004 through October 2007, and is drawn from the *Manuscript CAS* Database. The numbers count fresh submissions i.e., do not include the submissions of revised versions. On an average, 74 brand-new papers are received every month (the surge during March 2004 is explained by the fact that in an attempt to make a transition to the *Manuscript CAS* Database, a large number of papers from the previous generation of IEEE TCAS-I were deposited in the Database around this time). Curiously enough, the month of May always seems to be a month of low submission! Beginning from January 2006 till October 2007, we received a total of 2397 submissions. Among these, 810 were revised versions and 1587 were original submissions.

A. Acceptance Rate and Review Time

During the period beginning from January 2004 to October 2007, a total of 3415 papers were submitted (not counting submission of revised versions), whereas a total of 1024 papers were accepted amounting to an approximate average acceptance rate of 30%.

The histogram of the time for first decision during the years 2006 and 2007 (until October 2007) are shown in Fig. 3 (a) and (b). The average time for first decision during 2006 was 165 days with a median value of 146 days. The corresponding numbers in 2007 (until October 2007) were 186 days and 146 days, respectively.

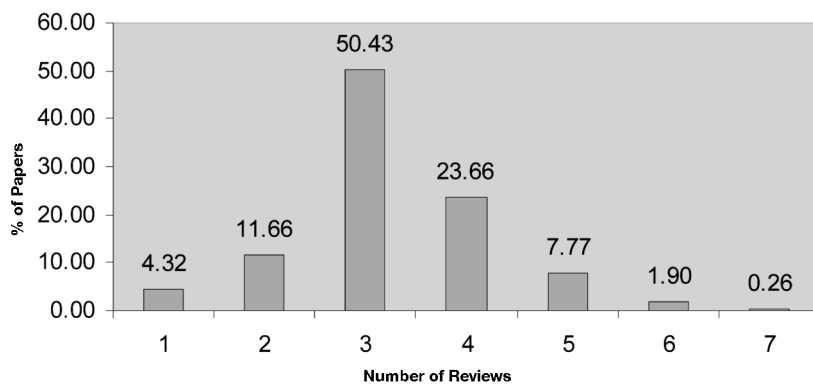


Fig. 1. Number of reviews on each version: 2006–2007.

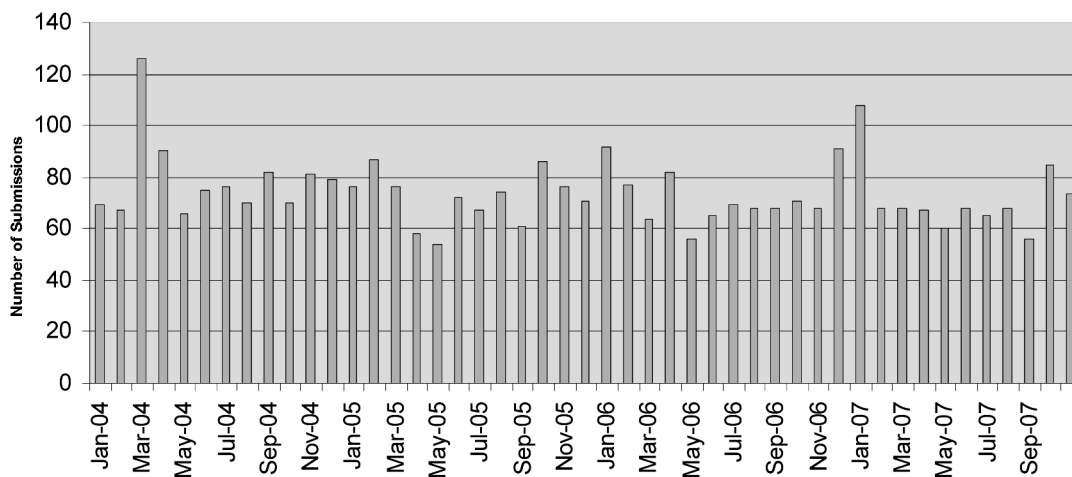


Fig. 2. Monthly submissions from January 2004 to October 2007.

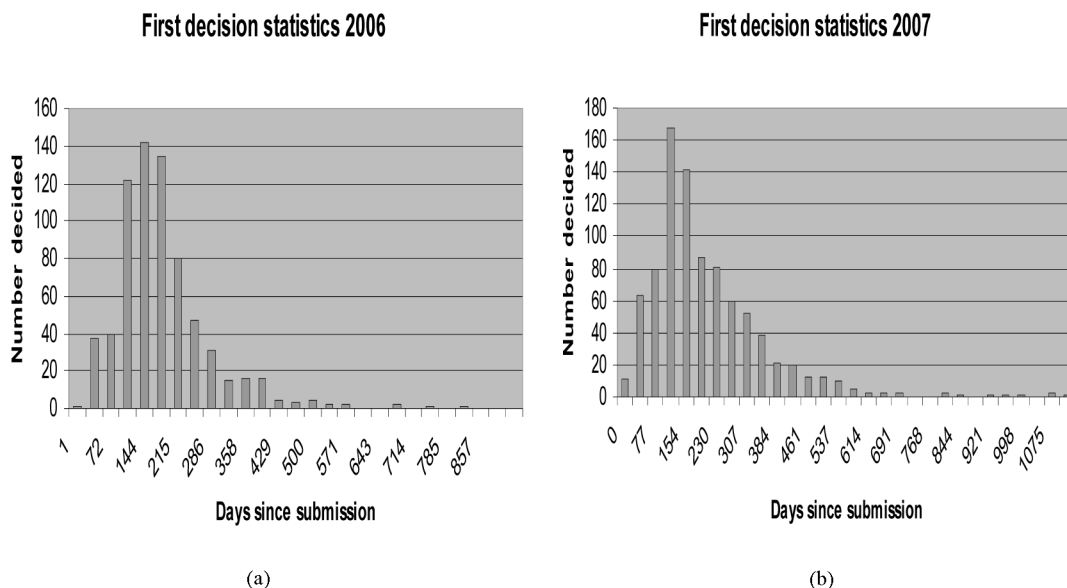


Fig. 3. Histogram of first decision in 2006 and 2007.

B. Backlog

IEEE TCAS-I currently has an annual page budget of 2960 pages. As of writing of this report in early November 2007, IEEE TCAS-I has a sufficient number of accepted papers to fill the May 2008 issue, which amounts to a seven-month post-acceptance backlog. However, for the last two years, IEEE TCAS-I has adopted the preprint posting policy for accepted

papers, which means that as soon as an acceptable final version is received by IEEE staff from the author together with other necessary documentation (e.g., copyright form, originals figures etc.) the paper is electronically posted to IEEE Xplore. Despite the fact that such electronic publications do not appear with a page number, the paper can legitimately be taken to be accepted for publication, and can be cited by others.

TABLE I

IEEE Region	2006	2005	2004	2003	2002
Regions 1 – 6 (U.S.A.)	29.6	25.1	30.6	19.3	17.3
Region 7 (Canada)	5.6	5.6	5.1	6.8	6.7
Region 8 (Europe/Africa)	31.4	38.8	41	33.5	35.6
Region 9 (Central/South America)	0.7	3.4	1.2	3.6	4.6
Region 10 (Asia/Pacific)	32.8	27	22.1	36.7	35.9

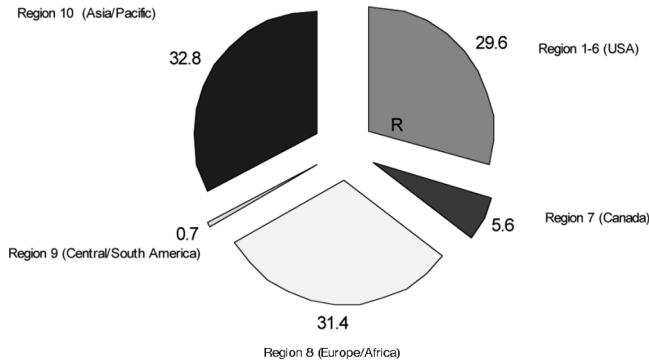


Fig. 4. Geographical distribution of submitted papers in 2006 by percent.

C. Geographic Distribution of Papers

The geographic distribution of submitted papers from different IEEE regions is shown in Fig. 4.

More details on these data for the past several years are shown in Table I. The numbers in this table for the years 2002 and 2003 are not to be compared with those for 2004–2006, because IEEE TCAS-I was radically reorganized at the end of 2003, and the present version of IEEE TCAS-I began to appear only in 2004. A definite upward trend in submission from Region 10 (Asia/Pacific countries) is noted. Indeed, the number of submissions from Region 10 has been the largest and has superseded that from Regions 1–6 during the last several years.

IV. EDITORIAL BOARD

The Editorial Board currently consists of approximately 50 members. It began with 24 AEs in January 2006, and has grown to approximately 50 due to increased submission rate and diversity of topics. The EiC has been ably assisted by Deputy EiC Ron Chen, City University of HongKong, Hong Kong. The geographical distribution of the current Editorial Board is: North America (including Canada) 52%, Asia (including Australia) 26%, Europe 20%, and South America 2%. Every attempt was made to balance the composition of the Editorial Board to be consistent with the geographical distribution of the paper submissions discussed above. Slightly more than 10% the members of the current Editorial Board were from industry and nonacademic institutions.

The effective number of AEs functioning at a given time is larger than mentioned above. The reason for this is that the current CAS policy for transition from one Editorial Board to the next (with the change of EiC) is that the AEs belonging to a previous Editorial Board continue to handle papers assigned to them even after their terms expire, thus assisting the incoming EiC. Thus, at a given time, some AEs from the earlier Editorial Board continue to handle papers as well.

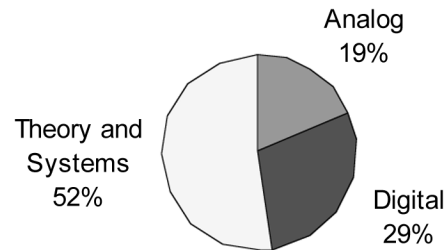


Fig. 5. Distribution of accepted papers by category: 2006–2007.

V. SCOPE OF THE TRANSACTIONS

Beginning from 2004, the scope of IEEE TCAS-I was divided into the following three broad categories.

- 1) *Theory and Systems*: Circuits and Systems Theory and Fundamentals, Neural Networks and Systems, Cellular Neural Networks, Nonlinear Circuits and Systems, Chaos and Bifurcations, Graphs and Computational Methods, Power Electronics and Systems, Fixed and Adaptive Digital Filters, Multi-Dimensional Systems and Multi-Rate Systems, Wavelets and Filter Banks, Signal Processing for Multimedia, and Wireless Communications Systems.
- 2) *Analog Circuits and Systems*: Analog Filters and Signal Processing, Mixed-Signal and Mixed-Mode Circuits and Systems, RF Circuits, Analog Circuits for Communications Systems, Data Converters and Transceivers, Integrated Sensors, Microelectromechanical Systems, Optoelectronic Circuits and Systems, and Analog Systems for Biotechnology.
- 3) *Digital Circuits and Systems*: Digital Circuits and Architectures, Architectures for Arithmetic and Cryptography, Architectures for Signal Processing and Communications, Architectures and Circuits for Digital Filters and Signal Processing, Systems-on-Chips, Biomedical Circuits, Circuits and Systems for Life Sciences, and as well as for Nanotechnology.

Understandably, many papers cannot be pigeonholed into only one of the above three categories. However, an approximate distribution of papers in these three categories accepted during the period from January 2006 to October 2007 is shown in Fig. 5. No conscious attempt was made to maintain a fixed distribution among these categories, and the numbers indicate the natural evolution over the last two years. Approximately half of the accepted papers are in the Theory and Systems category, with the rest being in the other two categories. It may be noted that these numbers are somewhat consistent with the pre-2004 history of IEEE TCAS-I and IEEE TCAS-II, when only papers in the category of Theory and Systems were included under IEEE TCAS-I and the rest were included under IEEE TCAS-II.

TABLE II

Journal Title	2006 Total Cites	Impact Factor	Immediacy Index	No of 2006 Articles	Cited Half-Life
IEEE Trans. Circ. & Syst. - Part I	3751	1.139	0.103	263	6.1
IEEE Trans on Comp. Aided Design	2357	0.838	0.077	234	8
IEEE Trans. on VLSI Systems	1027	0.771	0.052	134	5.6
J. of VLSI Sig. Processing Systems	303	0.344	0.045	67	5.8
Analog and Integrated Circuits	394	0.298	0.113	133	6.9
J. Circuits Systems and Computers	159	0.116	0.051	39	8.4
IEEE J. Solid State Circuits	7148	2.002	0.234	290	6.8
Circuits Syst. & Signal Processing	171	0.184	0.022	45	8.2

A. Overlap of Scope With Other IEEE Transactions

The scope of IEEE TCAS-I partially overlaps with several other IEEE Transactions and Journals, resulting from the fact that the interests of the IEEE CAS Society partially overlap with several other IEEE Societies. This is both its strength and weakness. The IEEE CAS Society has in the past played a pivotal role in spawning other societies and councils within IEEE. Potential for overlap exists with the following publications of other societies: IEEE TRANSACTIONS ON SIGNAL PROCESSING, IEEE TRANSACTIONS ON POWER ELECTRONICS, IEEE JOURNAL OF SOLID-STATE CIRCUITS, IEEE TRANSACTIONS ON AUTOMATIC CONTROL, and IEEE TRANSACTIONS ON COMMUNICATIONS.

VI. SPECIAL ISSUES

Several special issues were published during 2006-2007, or are currently scheduled for publication. These include the following.

- 1) Advances on Life Science Systems, (October 2006).
- 2) Smart Sensors (January 2006).
- 3) Nano-Electronic Circuits and Nano-Architectures (November 2007).
- 4) Systems Biology (January 2008).

In the January 2006 Editorial, we discussed the possibility of joint special issues with other IEEE Societies (this was also supported by the past Vice-President for Publications and the IEEE CAS Administration). The Special Issue on Systems Biology mentioned above is an example of this effort. The Special Issue is to appear jointly with IEEE TRANSACTIONS ON AUTOMATIC CONTROL. Furthermore, a Special Section on Analog Circuits was published in January 2006 from a small selection of papers published in the *Proceedings of the International Symposium on Circuits and Systems (ISCAS) 2006*.

Special Issue proposals were circulated among the members of the Editorial Board for their opinion on the relevance and timeliness of the proposed topic. If approved, an open Call for Papers on the special topic was announced well in advance of the deadline for paper submission. Reviews for Special Issue papers were handled in the same manner as regular issues, except that the Guest Editor(s) of the special issue assumed the role of the AEs. The same review criteria applicable to regular issues of the journal were also in force for the special issues.

The IEEE CAS Society has spun off many emerging topics in the form of new transactions (bio-circuits and systems), and technical councils (nanotechnology and electronic design automation) in the recent years. It is, therefore, not unreasonable to expect that fewer topical Special Issues will be published in the near future. Several tutorials/survey articles were also solicited

from experts on specific topics. While several authors agreed in principle to contribute such articles, only one was received on the use of Groebner basis in circuits and systems, and is due to appear in the February 2008 issue.

VII. ASSESSMENT OF QUALITY

Widely accepted metrics exist for comparing periodicals with respect to the "impact" they have on the field. For those unfamiliar with them, the definitions of these standardized measures are given in the following.

- 1) *Impact Factor*: Average number of citations of articles over a two-year period divided by the number of articles published in the journal in the same period.
- 2) *Immediacy Index*: The proportion of citations that refer to articles appearing within the most immediate past period.
- 3) *Citation Half-Life*: The number of journal publication years going back from the current year which account for 50% of the total citation received by the journal during the current year.

We next compare IEEE TCAS-I with five competitor publications in terms of the metrics mentioned above (the choice of these five publications are somewhat arbitrary, but are not very unreasonable). For each of these five competitor publications, in Table II, the 2006 Total number of Citations, Impact Factor, Citation Half-Life, Immediacy Index, and Number of Articles Published in 2006 are listed.

The impact factor of IEEE TCAS-I has experienced a mildly upward trend during the last several years. **Impact factors during the past five years have been: 0.956 (2002), 1.061 (2003), 0.933 (2004), 1.252 (2005), and 1.139 (2006).**¹

The ranking of IEEE TCAS-I ranking in terms of impact factor is 64 among the 206 publications in the 2006 Electrical and Electronic Engineering Index and 68th among the 115 publications in the 2006 IEEE Publications Index.

IEEE TCAS-I has a citation half-life of 6.1, which ranks it 77th among 206 journals in the 2006 Electrical and Electronic Engineering index and 50th among 115 journals in the 2006 IEEE Publications index.

IEEE TCAS-I has an immediacy index of 0.103, which ranks it 84th among 206 journals in the 2006 Electrical and Electronic Engineering Index and 72nd among 115 journals in the 2006 IEEE Publications Index. Immediacy index is a measure of how topical and urgent the published papers are.

¹Data in the rest of this section were obtained from IEEE Librarian, Mary Jane Miller.

TABLE III

	2006 (upto June)	2005	2004	2003	2002
No of Xplore "hits"	384,013	378,982	313,558	221,205	n/a

Since IEEE TCAS-I is very diverse and lacks focus in certain respects (both its strength and its weakness), its immediacy index tends to be lower than it could have been otherwise. The more widely known impact factor should be taken as a more appropriate performance metric for journals with this type of broad coverage.

- 4) *IEEE Xplore "hits"*: The new form of IEEE TCAS-I, after its reorganization in 2004, has contributed to the improvement of various performance indicators. One such indicator used within the IEEE is the Xplore "hits" as displayed in Table III. A very significant increase in the number of IEEE Xplore "hits" is noted. More is expected due to recent publication of special issues of topical interest mentioned previously in this report.

VIII. FINANCIAL PERFORMANCE²

The net income, after deducting expenses, from IEEE TCAS-I has steadily increased from \$274 700 in 2004 to

²Data obtained from Executive Director Heidi Zazza, IEEE CAS Administrative Office.

\$245 100 in 2005 to \$385 900 in 2006. While this upwards of 40% increase has come from all categories of subscriptions, the lion's share of this increase has come from packaged revenue received through IEEE Xplore subscriptions.

All in all, IEEE TCAS-I is in excellent shape. It is also a good time and place to thank all those who helped to carry out the arduous task of running the daily operation of the journal. In addition to the 50 plus AEs and the reviewers, Guanrong (Ron) Chen, City University of Hong Kong, Hong Kong, who served as the Deputy Editor-in-Chief deserves a special vote of thanks. Other than handling papers in his own area of expertise, Ron also managed a number of controversial decisions that came up during the past two years. The IEEE staff at the Piscataway, NJ office include Lauren Caruso, Anuradha Gupte, and Mona Mittra, all of whom also provided indispensable help during the past several years.

SANKAR BASU, *Editor-in-Chief*
National Science Foundation
Arlington, VA 22230 USA



Sankar Basu (S'79–M'80–SM'89–F'02) received the Ph.D. degree in electrical engineering from the University of Pittsburgh, Pittsburgh, PA.

He is currently the Program Director of the Computer Science and Engineering (CISE) Directorate, National Science Foundation (NSF), Arlington, VA, where he is primarily responsible for the design automation for micro and nanosystems, as well as involved in funding statistical learning theory and pattern recognition research. Prior to joining NSF, he was with IBM T. J. Watson Research Center, Yorktown Heights, NY, where he was involved in statistical learning, speech, and multimedia signal processing. He has also been a Faculty Member with the Stevens Institute of Technology, Hoboken, NJ, where he taught and conducted funded research (Air Force, NSF), and was a Visiting Senior Scientist with the Naval Underwater Systems Center, East Lyme, CT. During this period, he was also an Alexander von Humboldt Fellow, Ruhr University, Bochum, Germany. From 1988 to 1989, he was with the Massachusetts Institute of Technology (MIT) Laboratory for Information and Decision Systems (LIDS), Cambridge. His past research interests have been in

the analytical aspects of circuits, signals, and systems mostly within the framework of IEEE Circuits and Systems Society. He is author or coauthor of over 100 publications including two special volumes on wavelets and filter banks, and an edited book on statistical learning theory. He holds six U.S. patents with several more pending.

Dr. Basu was the Keynote Speaker at the First International Workshops on n -D systems (NDS) in 1998, in Lagow, Poland, and again in 2000, in Czocho Castle, Poland. He has served as an Associate Editor of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS and IEEE TRANSACTIONS ON MULTIMEDIA. He was the Editor-in-Chief of IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: EXPRESS BRIEFS from 2004 to 2006, and has been the Editor-in-Chief of IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS and also served on the Editorial Boards of the *Journal of Applied Signal Processing*, *European Signal Processing Association* (EURASIP), and the *Journal of Multidimensional Systems and Signal Processing*. He was a Guest Editor of Special Issues of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS and IEEE TRANSACTIONS ON MULTIMEDIA, and the *Journal of VLSI Signal Processing Systems for Signal, Image, and Video Technology*. Dr. Basu has organized and chaired sessions, has been a Panelist in many Technical Conferences in the areas of circuits, systems, signal processing, statistical learning theory, and has been on multiple Technical Committees of IEEE Societies in these fields. He served as a General Chair in 2000, and subsequently became the Steering Committee Chair for the IEEE International Conference on Multimedia & Expo (ICME) a conference that has, since then, become a major international conference of the IEEE. He was a co-organizer for the NATO Advanced Study Institute on Statistical Learning Theory and Applications in July 2002. Dr. Basu was elected a Fellow of the IEEE for his contributions to the theory and applications of multidimensional circuits, systems, and signal processing. He is a member of Eta Kappa Nu and Sigma Xi.