ANNUAL REPORT 2003 – DSP TC, IEEE CAS SOCIETY

Chairman: Prof. T. Saramäki
Secretary: Prof. H. K. Kwan
Past Chairman: Prof. P. S. R. Diniz

(1) TC Meeting: The Digital Signal Processing Technical Committee met from 12:00 p.m. till 14:00 p.m. on the 28th of May in the year 2002, in the Sonoram Room at the Scottdale Princess Resort Hotel in Scottdale, Arizona, USA, during ISCAS 2002. Eighteen members and seven invited researchers attended the meeting to approve last year's minutes, report activities sponsored by the DSP Technical committee, report ongoing Technical Committee activities, and discuss future plans and activities. Regrets were received from two members. The members attending the meeting were: Sankar Basu, R. Bregovic (substitute for M. Gabbouj), S. C. Chan, Paulo Diniz, Karan Egiazarian, Hakan Johansson, Lina Karam, Masayuki Kawamata, H. K. Kwan, Yong Ching Lim, Yoshikazu Miyanaga, Josef A. Nossek, B. Nowrouzian, Soo-Chang Pei, See-May Phoong, Tapio Saramaki, M. N. S. Swamy, P. P. Vaidyanathan. The following seven researchers were invited to attend the meeting: U. B. Desai, Say-Wei Foo, K. C. Ho, Yong Lian, Yuan-Pei Lin, Sootorn Oraintara, and Ravi P. Ramachandran. Regrets: Wei Xing Zheng (for attending TCAS Transactions I Editorial Committee meeting), W. S. Lu (for attending ISCAS 2004 Committee meeting). Prof. Rashid Ansari has resigned as a member of the DSP TC. We would like to thank Prof. Ansari for his past services to our DSP TC.

(2) After the ISCAS 2002, our Secretary, Prof. H. K. Kwan, administered an election of new members through emails. Each of the following seven researchers had obtained a majority vote and was elected as a new member of the DSP TC:

   (a) Dr. U. B. Desai, Professor, Dept. of Electrical Eng., ITT-Bombay. Email: ubdesai@tenet.res.in.
   (b) Dr. Say-Wei Foo, Associate Professor, School of Electrical & Electronic Eng., Nanyang Technological University, Singapore. Email: ESWFoo@ntu.edu.sg.
   (c) Dr. Dominic K. C. Ho, Assistant Professor, Dept. of Electrical & Computer Eng., University of Missouri-Columbia. Email: hod@missouri.edu.
   (d) Dr. Yong Lian, Associate Professor, Dept. of Electrical & Computer Eng., National University of Singapore. Email: eleliany@nus.edu.sg.
   (e) Dr. Yuan-Pei Lin, Associate Professor, Dept. of Electrical & Control Eng., National Chiao Tung University. Email: ypl@cc.nctu.edu.tw.
   (f) Dr. Soontorn Oraintara, Assistant Professor, Dept. of Electrical Eng., University of Texas at Arlington. Email: oraintar@uta.edu.
   (g) Dr. Ravi P. Ramachandran, Associate Professor, Dept. of Electrical & Computer Eng., Rowan University. Email: ravi@rowan.edu.
   (h) Prof. Rashid Ansari resigned from the DSP TC due to his many other commitments.

(3) Conferences or workshops where the DSP TC or members of the TC was/were actively involved in 2002 include the followings:

   (a) Prof. K. Egiazarian gave an invited talk entitled "Codes generated from Hadamard matrices" at the International Workshop "Trends and Recent Achievements in Information Technology", 16-18 May 2002, Cluj Napoca, Romania.
   (b) Prof. Lina Karam was the member of the Technical Committee at the IEEE International Conference on Image Processing, 2002.
   (c) Prof. Lina Karam was the Organizer and Chair of a Special Session on "Filter Design and Structures" at the Thirty-Sixth Asilomar Conference on Signals, Systems, and Computers, Monterrey, CA, Nov., 2002.

(d)   Prof. Lina Karam was the Session Chair of "Implementations of DSP Systems" oral session at the IEEE International Symposium on Circuits and Systems, Scottsdale, AZ, 2002.

(e)   Prof H. K. Kwan was the Chair of the Technical Session on "Digital Signal Processing Applications" at the IEEE International Symposium on Circuits and Systems, Scottsdale, Arizona, May 26-29, 2002.

(f)   Prof H. K. Kwan and Prof. Masayuki Kawamata were the Co-Chairs of the Technical Session on "IIR Digital Filters" at the IEEE International Symposium on Circuits and Systems, Scottsdale, Arizona, May 26-29, 2002.

(g)   Prof H. K. Kwan was Co-Chair (with Prof. Mona E. Zaghloul, George Washington University), of the Technical Session on "Neural Network Hardware Architecture and Implementation" at the IEEE International Symposium on Circuits and Systems, Scottsdale, Arizona, May 26-29, 2002.

(h)   Prof. Y. Miyanaga was a member of the Steering Committee of the 2002 International Symposium on Communications and Information Technology (ISCIT 2002) to be held in Central Hotels & Resorts, Pattaya, Thailand, October 23-25, 2002. ISCIT 2002 was organized jointly by IEEE Communication Society, IEEE Thailand Section, and IEICE.

(i)   Prof. Y. Miyanaga was the General Co-Chair of ISPACS 2002 (The 2002 IEEE International Symposium on Intelligent Signal Processing and communication Systems) to be held in Ambassador Hotel, Kaohsiung, Taiwan, R.O.C., November 21-24, 2002. IEEE Communications Society and IEEE SP Society were technical co-sponsors for ISPCAS 2002.

(j)   Profs. T. Saramäki and K. Egiazarian were Co-Chairmen together with Prof. Jaakko Astola of the 2002 International Workshop on Spectral Methods and Multirate Signal Processing (SMMSP 2002) held in Toulouse, France, September 16-18, 2002. The main purpose of the workshop was to bring together some of the leading experts working on transforms, filter banks, and multirate filtering in general and to create a friendly and relaxed atmosphere to talk about the most important issues in these fields. We managed very well and ended up with the proceedings of 40 articles. See http://sigwww.dmi.tut.fi/TICSP/ for details.

(k)   Prof. T. Saramäki was a member of the Technical Program Committee of IEEE Norway Section supported 5th Nordig Signal Processing Conference–held in October 4–7, 2002 on boat Hurtigruten M/S Trolljord, Norway.

(l)   Profs. T. Saramäki and Y. C. Lim co-organized a Special Session entitled "Multiplierless Digital Filters" at the 9th IEEE International Conference of Electronics, Circuits, and Systems (ICECS 2002), Dubrovnik, Croatia, September 15–18, 2002.

(m)   Prof. T. Saramäki was a member of the International Technical Program Committee of the 5th International Conference and Exhibition on Digital Signal Processing and its Applications, March 12–14, 2003, Moscow, Russia.

(n)   Prof. T. Stouraitis was a member of the Technical Program Committee and Steering Committee of IEEE CASS-supported ICECS 2002 - held in Dubrovnik, Croatia, Sept., 2002.

(4)   On going Conferences or workshops where the DSP TC or members of the TC is/are actively involved in include the followings:

(a)   Prof. H. K. Kwan is the Co-Organizer and Co-Chair of the Invited Session on "New Advances in Recurrent Neural Networks" (with Prof. Derong Liu, University of Illinois at Chicago) at the 2003 IEEE International Symposium on Circuits and Systems, Bangkok, Thailand, May 25-28, 2003.

(b)   Prof. H. K. Kwan is the Program Committee Member at the 2003 IEEE International Symposium on Circuits and Systems, Bangkok, Thailand, May 25-28, 2003.

(c)   Prof. Yong Lian and Prof. Hakan Johansson are the Co-Chairs and Co-Organizers of the Invited Session on "Frequency Response Masking Technique" at the 2003 IEEE International Symposium on Circuits and Systems, Bangkok, Thailand, May 25-28, 2003.

(d)   Prof. Yong Lian is the Chair and Organizer of the Special Session on "RF IC Design" at the 5th International Conference on ASIC, Beijing, Oct. 21–24, 2003.

(e)   Prof. Yong Lian is the Technical Program Committee Member at the 5th International Conference on ASIC, Beijing, Oct. 21-24, 2003.

(f)   Prof. Zhiping Lin and Dr Sankar Basu (with Profs. K. Galkowski and H. Reddy) are the Co-Chairs and Co-Organizers of the Invited Session on "Multidimensional Circuits, Systems and Signal

Processing" at the 2003 IEEE International Symposium on Circuits and Systems, Bangkok, Thailand, May 25-28, 2003.

(g) Prof. Y. Miyanaga is a member of the Steering Committee of the 2003 International Symposium on Communications and Information Technology (ISCIT 2003) to be held in BP Samila Beach Hotel and Resort, Songkhla, Thailand, 3-5 September 2003. ISCIT 2003 is organized jointly by IEEE Communication Society, IEEE Thailand Section, and IEICE.

(h) Prof. Y. Miyanaga is the General Chair of ISPACS 2003 (The 2003 IEEE International Symposium on Intelligent Signal Processing and Communication Systems) to be held in Awaji Yumebutai International Conference Center, Awaji Island, Japan, December 7-10, 2003. IEEE Communications Society and IEEE Signal Processing Society are Technical Co-sponsors for ISPCAS 2003.

(i) Prof. Y. Miyanaga is the General Co-Chair of ITC-CSCC 2003 (The 2003 International Technical Conference on Circuits/Systems, Computer and Communications) to be held in Phoenix Park in Kangwon-Do, Korea, July 7-9, 2003. IEICE is a sponsor and IEEE CAS Society is a technical co-sponsor for ITC-CSCC 2003.

(j) Prof. Y. Miyanaga is the tutorial chair of ISCAS 2005 (IEEE International Symposium on Circuits and Systems 2005) to be held in Kobe International Convention Center, Kobe, Japan, May 23-26, 2005.

(k) Prof. Ravi Prakash Ramachandran and Prof. H. K. Kwan are the Co-Organizers and Co-Chairs of the Invited Session on "Speech and Language Processing" at the 2003 IEEE International Symposium on Circuits and Systems, Bangkok, Thailand, May 25-28, 2003.

(l) Prof. T. Saramäki is the DSP track chair for ISCAS 2003 and he will be again the track chair for ISCAS 2004.

(m) Profs. T. Saramäki and K. Egiazarian are Co-Chairmen together with Prof. Jaakko Astola of the Third International Workshop on Spectral Methods and Multirate Signal Processing (SMMSP 2003), September 13-14, 2003, Barcelona, Spain. For details, see http://sigwww.dmi.tut.fi/TICSP/. The main purpose of the workshop is again to bring together some of the leading experts working on transforms, filter banks, and multirate filtering in general and to create a friendly and relaxed atmosphere to talk about the most important issues in these fields.

(n) Profs. T. Saramäki and K. Egiazarian are co-organizing two Special Sessions entitled "Transforms and Filter Banks" and "Spectral Methods and Multirate Signal Processing" at the 3rd International Symposium on Image and Signal Processing and Analysis (ISPA'03), September 18–20, 2003, Rome, Italy.

(o) Prof. T. Saramäki is a member of the International Steering Committee of the International Symposium of Signal Processing, Information and Communication Systems (ISSPICS 2003), September 8–10, Grand Regency Hotel, Nairobi, Kenya.

(5) Some other activities of the TC's members are listed below:

(a) Books and book chapters:

(i) P. S. R. Diniz, E. A. B. da Silva, and S. L. Netto, "Digital Signal Processing: System Analysis and Design," Cambridge University Press, New York, NY, 2002 (620 pages).

(ii) P. S. R. Diniz, "Adaptive Filtering: Algorithms and Practical Implementation," Kluwer Academic Publishers, Boston, MA, Second edition, 2002 (570 pages).

(iii) Prof. J. B. Evans, "Implementation of Digital Filters", invited section in Circuit and Filter Handbook, 2nd Edition, W. K. Chen, editor-in-chief, CRC Press, 2002.

(iv) H. Johansson and L. Wanhammar, "Design and implementation of multirate digital filters," in Multirate Systems: Design and Applications, G. Jovanovic-Dolecek, Ed., Idea Group Publ., 2002, ch. 9, pp. 257-292.

(v) H. K. Kwan, 'Chapter 2 - Fuzzy Filters for Noise Reduction in Images' in '*Fuzzy Filters for Image Processing*', edited by M. Nachtegael, D. Van der Weken, D. Van De Ville, and E.E. Kerre, under the Series in Studies in Fuzziness and Soft Computing, Vol. 122, Springer Verlag, pages 25-53, March 2003, ISBN 3-540-00465-3.

(vi) H. K. Kwan, 'Chapter 13 - Multiplierless Designs for Artificial Neural Networks' in '*Neural Networks and Systolic Array Design*' edited by David Zhang and Sankar K. Pal,

under the Series in Machine Perception and Artificial Intelligence, Vol. 49, World Scientific Publishing Company Pte Ltd., pages 301-325, June 2002, ISBN 981-02-4840-7.

(vii) T. Saramäki and R. Bregovic, "Multirate Systems and Filter Banks," Chapter II in *Multirate Systems: Design & Applications*, edited by Gordana Jovanovic-Dolecek, Ideal Group Publishing, 2002.

(viii) T. Saramäki, "Design of Computationally Efficient FIR Filters Using Periodic Subfilters as Building Blocks" in *The Circuits and Filters Handbook, Second Edition*, edited by W.-K. Chen, CRC Press, Inc., 2003.

(ix) V. Paliouras, T. Stouraitis , "Computer Arithmetic Techniques for Low-Power Systems", in *Designing CMOS Circuits for Low Power*, edited by Dimitrios Soudris, Christian Piguet, and Costas Goutis, Kluwer Academic Publishers, pp. 97-115, 2002.

(x) G. Synevriotis, T. Stouraitis, "Low-Energy Software Optimization for the ARM7 Processor: The Software Scheduling Approach", in *System-Level Power Optimization for Wireless Multimedia Communication (Power-aware computing)*, edited by Ramesh Karri, and David Goodman, Kluwer Academic Publishers, pp. 87-96, 2002.

(b) Short courses:

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(i) Prof. Saramäki has been since 1995 the main lecturer and organizer of four intensive DSP courses to the industrial people through EDUTECH, the Institute of Tampere University of Technology taking care of educating people outside the university.

(b) Plenary sessions, keynote speakers, invited lectures:

(i) Prof. P. S. R. Diniz gave an invited talk entitled "Data-Selective and Data-Reusing Normalized LMS Algorithm" at the Michigan State University, East Lansing, Michigan, USA, April 18, 2002.

(ii) Prof. P. S. R. Diniz gave an invited talk entitled "Filter-Bank Based Multicarrier Techniques" at the University of Notre Dame, Notre Dame, Indiana, USA, April 30, 2002.

(iii) Prof. P. S. R. Diniz gave an invited talk entitled "Data-Selective and Data-Reusing Normalized LMS Algorithm" at the Concordia University, Montreal, Canada, May 2, 2002.

(iv) Prof. P. S. R. Diniz gave an invited talk entitled "Data-Selective and Data-Reusing Normalized LMS Algorithm" at the Texas A\M University, College Station, Texas, USA, May 23, 2002.

(v) Prof. Y. Lian gave an invited talk at Tsinghua University, Beijing, Oct. 2002.

(vi) Prof. Y. Lian gave an invited talk at Shanghai Jiao Tong University, Shanghai, Nov. 2002.

(vii) Prof. Y. C. Lim gave an invited talk at California Institute of Technology, California, 22 May 2002.

(viii) Prof Y. C. Lim gave an invited talk at Linkoping University, Linkoping, 4 June 2002.

(ix) Prof Y. C. Lim gave an invited talk at Helsinki University of Technology, Helsinki, 6 June 2002.

(x) Prof Y. C. Lim gave an invited talk Tempere University of Technology, Tempere, 11 June 2002.

(xi) Prof Y. C. Lim gave an invited talk at Nanyang Technological University, Singapore, 2 Dec. 2002.

(xii) Prof Y. C. Lim gave an invited talk at Philips, Eindhoven, the Netherlands, 4 Dec. 2002.

(xiii) Prof Y. C. Lim gave an invited talk at Technical University of Eindhoven, 6 Dec. 2002.

(xiv) Prof Y. C. Lim gave an invited talk at Peking University, Beijing, 25Dec. 2002.

(xv) Prof Y. C. Lim gave an invited talk at Tsinghua University, Beijing, 26 Dec., 2002.

(xvi) Prof Y. C. Lim gave an invited talk at South East University, Nanjing, 29 Dec. 2002.

(xvii) Prof Y. C. Lim gave an invited talk at Fudan University, Shanghai, 2 Jan. 2003.

(xviii)   Prof Y. C. Lim gave an invited talk at Shanghai Jiao Tong University, Shanghai, 3 Jan. 2003.

(xix)   B. Nowrouzian, "A Novel class of higher-Order Highly-Stable Oversampled Sigma-Delta A/D Converter Configurations", Department of Electrical and Computer Engineering, Concordia University, Montreal, Quebec, Canada, Nov. 1, 2002, 2 hours.

(xx)   Prof. T. Saramäki gave an invited lecture entitled "Efficient DSP Algorithms and Their Optimization for Signal Processor and VLSI Implementations" at Technical University of Sofia, Bulgaria, June 17, 2002, and a plenary talk, June 20, with the same title at the International Conference on Computer Systems and Technologies (e-Learning) (CompSysTech 2002), June 20–21, Sofia, Bulgaria (IEEE Distinguished Lecturer Program).

(xxi)   Prof. T. Saramäki gave an invited lecture entitled "Efficient DSP Algorithms and Their Optimization for Signal Processor and VLSI Implementations" at University of Nis, Serbia, November 25, 2002; plenary talks, November 27, entitled "Polynomial-Based Interpolation for Signal Processing and Telecommunication Applications" and "Design of Digital Filters and Filter Banks by Optimizations: Applications" at the X Telecommunications Forum (TELFOR 2002), November 26–28, Belgrade, Serbia (IEEE Distinguished Lecturer Program).

(c)   Editorial and IEEE services:

(i)   Prof. P. S. R. Diniz - Member of the Editorial Board of the IEEE Circuits and Systems Magazine.

(ii)   Prof. P. S. R. Diniz - Member of the Editorial Board of the Circuits, Systems and Signal Processing, Birkhauser, starting 2002.

(iii)   Prof. J. B. Evans - Associate Editor, IEEE Communications Letters.

(iv)   Prof. J. B. Evans - Chair, IEEE Communications Society Technical Committee on Gigabit Networking.

(v)   Prof. J. B. Evans - Technical Activities Committee, Secretary, IEEE Communications Society.

(vi)   Prof. Moncef Gabbouj (with Profs. Faouzi Alaya-Cheikh, Bogdan Cramariuc, and Geoff Morrison) - Editorial, Journal of Applied Signal Processing, Special issue on Image Analysis for Multimedia Interactive Services - Part I, Vol. 2002, No. 4, pp. 341-342, April 2002.

(vii)   Prof. Moncef Gabbouj (with Profs. Faouzi Alaya-Cheikh, Bogdan Cramariuc, and Geoff Morrison) - Editorial, Journal of Applied Signal Processing, Special issue on Image Analysis for Multimedia Interactive Services - Part II, Vol. 2002, No. 6, pp. 553-554, June 2002.

(viii)   Prof. Moncef Gabbouj (with Profs. Faouzi Alaya-Cheikh, Bogdan Cramariuc and Geoff Morrison) – Guest Editor, Journal of Applied Signal Processing, Special issue on Image Analysis for Multimedia Interactive Services - Part I, Vol. 2002, No. 4, April 2002.

(ix)   Prof. Moncef Gabbouj (with Profs. Faouzi Alaya-Cheikh, Bogdan Cramariuc and Geoff Morrison) – Guest Editor, Journal of Applied Signal Processing, Special issue on Image Analysis for Multimedia Interactive Services - Part II, Vol. 2002, No. 4, June 2002.

(x)   Prof. Moncef Gabbouj - Chairman of the COST 211 quat AG.

(xi)   Prof. Moncef Gabbouj - Elected member of EURASIP AdCom, European Liaison.

(xii)   Prof. Lina Karam - Associate Editor of the IEEE Transactions on Image Processing.

(xiii)   Prof. H. K. Kwan, Chair-Elect (2001-2003), Neural Systems and Applications Technical Committee, IEEE Circuits and Systems Society.

(xiv)   Prof. Yong Lian – Associate Editor, IEEE Trans. on Circuits and Systems II.

(xv)   Prof. Yong Lian – Associate Editor, Circuits, Systems and Signal Processing.

(xvi)   Prof. Yong Lian – Elected Chair of CAS Chapter, Singapore.

(xvii)   Prof. Yuan-Pei Lin - Associate Editor, IEEE Trans. on Signal Processing.

(xviii)   Prof. Zhiping Lin - Associate Editor, Circuits, Systems and Signal Processing.

(xix)   Prof. Zhiping Lin - Editorial Board Member, Multidimensional Systems and Signal Processing;

(xx) Prof. Truong Nguyen - Associate Editors for IEEE Trans. on Image Processing, IEEE Trans. on Circuits & Systems II and Signal Processing Letters.
(xxi) Prof. See-May Phoong - Associate Editor, IEEE Trans. Circuits and Systems II
(xxii) Prof. See-May Phoong - Associate Editor, IEEE Signal Processing Letters
(xxiii) Prof. Ravi Prakash Ramachandran, Associate Editor for the IEEE Circuits and Systems Magazine, IEEE Transactions on Speech and Audio Processing and Pattern Recognition.
(xxiv) Prof. T. Stouraitis - Associate Editor, IEEE Transactions on Circuits and Systems II.
(xxv) Prof. T. Saramäki and Dr. Yong Lian, Guest Editors, Circuits, Systems and Signal Processing, Special Issue on Frequency Response Masking Technique and Its Applications, Vol. 22, No.2, March 2003.
(xxvi) Prof. T. Stouraitis - Regional Editor-Europe, Journal of Circuits, Systems, and Computers.
(xxvii) Prof. T. Stouraitis - Associate Editor, IEEE Transactions on VLSI.
(xxviii) Prof. M.N.S. Swamy served as the Vice-President, CAS Society for the years 2001 and 2002. He has been elected as the President-Elect of the CAS Society for 2003.
(xxix) Prof. W. X. Zheng - Associate Editor, IEEE Transactions on Circuits and Systems-I.

(d) Tampere International Center for Signal Processing (TICSP), Tampere University of Technology: The Center has acquired the status of Center of Excellence given by the Academy of Finland 2000-2005. The Director for TICSP is Prof. Jaakko Astola. Three of the DSP TC members, Profs. K. Egiazarian, M. Gabbouj, and T. Saramäki, are heavily involved in arranging the activities of TICSP. Profs. K. Egiazarian, M. Gabbouj, and T. Saramäki are the Team Leaders in SPAG (Signal Processing Algorithm Group). Several TC members (Profs. Pitas, Bellanger, Gabbouj and Nguyen) are members of the Advisory Board of TICSP. TICSP is an institute created to provide a proper environment for a rapid transfer of the latest ideas between first-class researchers in industry and academia. Its purpose is to provide a proper logistic, financial and human resource environment to adequately host exchanges of highly competent researchers. TICSP invites for periods of 2 to 12 months researchers at all levels: visiting professors, post-doctorate, and Ph.D. students, to engage research at the Institute of Signal Processing in cooperation with the researchers of the neighboring academic and industrial research institutes. The main purpose is to generate fruitful cooperation between scientists all around the world. Part of the activities of TICSP is organizing workshops. It has also its own publication series to appear twice a year. For more information, visit the homepage at URL: http://sigwww.cs.tut.fi/TICSP/.

(7) Some news from the TC members are listed below:

(a) Prof. Moncef Gabbouj appointed as the Head of the Institute of Signal Processing, Tampere University of Technology, starting January 2003.
(b) Prof. Thanos Stouraitis directs the newly established International multidisciplinary Graduate Program on "Signal and Image Processing," based at the University of Patras, Greece.

(8) Our DSP TC 2003 Annual Meeting is scheduled to take place on May 26, 2003 (Monday), 12.30 p.m. in the ISCAS 2003 conference hotel.

Prepared by Prof. H. K. Kwan, Secretary, DSP TC.
Date: April 15, 2003.