

CURRICULUM VITAE

Sos Aгаian

The Peter T. Flawn Distinguished Professor

I. GENERAL INFORMATION

A. Personal Data:

147 Adalaide Oaks, San Antonio, TX 78249; Cell: (917) 330-1399.
(US citizen)

B. Education:

1985. Doctor of Engineering Sciences, US Equivalent- Doctor in Electrical and Computer Engineering.
(Russian diploma: Scientific Computing, Modeling and Architecture Arising from Communications and
Signal/Image Processing). Computer Center Academy of Sciences of the USSR (Moscow)

1979 .Senior Research Scientist of Computer Science. Diploma, (US Equivalent-PhD in Computer Science,
Supreme Attestation Board of the USSR (Moscow)),

1975. Ph.D., Mathematics and Physics, Steklov Institute of Mathematics, Academy of Sciences of the USSR,
(Moscow),

C. Academic Appointments (chronological with latest first):

5/2005 – present The Peter T. Flawn Distinguished Professor, Department Electrical Engineering, University of
Texas at San Antonio

Director Multimedia & Mobile Signal Processing Laboratory

Professor, (Graduate Faculty), The University of Texas Health Science Center at San Antonio.

5/2005 -2007 Director, PhD Electrical and Computer Engineering Program

9/2001-2005 Professor, (Tenured), Department Electrical Engineering, University of Texas at San Antonio,

9/1997 – 9/2001 Associate Professor, (Tenured), Department Electrical Engineering, University of Texas at San
Antonio,

D. Other Employment:

2001 to 2002 -during the Leav, Engineering Professor, The College of Staten Island and Graduate Center, The
City University of New York , NY, ().

September 1993-May 1996, Visiting Professor, Department of Electrical and Computer Engineering, Tufts
University, MA.

May 1996 - September 1997, Senior Scientist, AWARE, INC. Bedford, MA

1999-2001, 1992 – 1993 (Summers) Visiting Professor, Tampere International Center for Signal Processing,
Finland,

May 1979- September 1993 Professor, Yerevan State University, Yerevan Polytechnic Institute; Chairman,
Department of Computation and Digital Signal Processing, National Academy of Sciences of Armenia.

1975 – 1979. Deputy Director and Director of graduate studies, Institute of Problems of Communication
Technology and Automation, Yerevan University and National Academy of Sciences of Armenia. Development
manager for a multi-platform image processing software environment,

.1975 – 1981 Associate /Assistant Professor; Department of Computer Science, Yerevan State University, and
Yerevan Polytechnic Institute, Armenia

D. Consulting:

- Consultant, E-Spectrum Technologies (Intelligent Instrumentation), San Antonio, TX. 2000.
- Consultant, Orbis Consultants, INC. Brighton, MA, 1995 –1995\.

- Consultant, ATN. Microwave, INC. Billerica, MA, 1993 –1994.
- Consultant, Conceptual Mind Works, Inc. San Antonio, Texas, 1993.
- President and Founder; ARMINIM/Information Technology, INC. Armenia, 1990 – 1993.
- *Chairman*, of the international research Working Group, “Machine Vision and Image Processing,” organized by the Academy of Sciences of the East European Countries (Poland), 1986 – 1987.
- *Consultant*; Scientific Council on Cybernetics, Russian Academy of Sciences, Moscow, 1992 – 1993.
- *Consultant, Institute* of the Cybernetics Academy of Sciences of the Ukraine, 1985 – 1985. .

G. Honors and Awards

- Member, National Academy of Sciences of the Republic of Armenia, 2008
- SPIE Fellow , 2006
- Certificate of Appreciation from the IEEE Educational Society Central New England Council for Recognition of “ Orthogonal transform” Outstanding Presentation, 2006
- The Peter T. Flawn Distinguished Professor, 2005
- MAESTro Educator of the Year Award, From Society of Mexican American Engineers and Scientists, Inc. 30th Anniversary International Symposium and Career Fair, November 5, 2004 Austin, TX
- Nominated for Outstanding Research Award, ECE Department (The University of Texas at San Antonio) 2002 2003 and 2004.
- Annual Special Research Award, The College of Staten Island (The City University of New York). 2001
- A collaborating work with Prof. Karen Lentz (Tufts University) was awarded Best Research and Presentation Diploma (NASA Annual conference, FL),1998.
- Best Annual Research Awards, Armenian National Academy of Sciences 1977, 1983, and 1988.
- Nominated by Russian Academy of Sciences and by the Moscow Airspace Institute for the highest USSR Engineering Science Prize (former USSR Lenin Prize), Finalist for USSR Lenin Prize, 1987
- Annual Scientific Awards, Youth Organization of Armenia, 1985.
- Annual Research Awards, Academy of Sciences of the USSR (Moscow) , 1985.
- Best Annual Scientific Awards, Central Committee of Youth Organization of the USSR (Moscow), 1978.
- Annual Research Awards, Academy of Sciences of the USSR (Moscow), 1979.
- *Merit Scholarship*, Steklov Institute of Mathematics, Academy of Sciences of the USSR (Moscow).
- *Merit Scholarship*, Yerevan University (Armenia).
- Nominated by Russian Academy of Sciences and by the Moscow Airspace Institute for the highest USSR Engineering Science Prize (Former USSR Lenin Prize), 1985.

Special Recognition

- Listed in 2000 Outstanding Scholars of the 21ST Century, First Edition, Cambridge, England (Invitation).
- Listed in Marquis Who’s Who in Science and Engineering, 6th Edition.
- Listed in Marquis Who’s Who in Science and Engineering, 5th Edition.

II. TEACHING

A. Classroom/Laboratory:

<u>Date</u>	<u>Course</u>	<u>Level</u>
2008	Signal and Systems 1	<u>U</u>
2007	<i>Multimedia Security</i>	<u>G</u>
2005	<i>Wavelets, Watermarking, and Steganography,</i>	<u>(G)</u>
2003	<i>Digital Filtering</i>	<u>U</u>
2001 (CUNY)	<i>Introduction to Quantum Computation & Quantum Communications,</i>	<u>U</u>
2002 (CUNY)	<i>Computer Communications</i>	<u>U</u>
1999	<i>Orthogonal Transforms, Wavelets, and Fractals and Applications</i>	<u>G</u>
1995	<i>Real -Time Signal Processing</i>	<u>U</u>

TUFTS 2003	<i>Quantum Computation</i>	
TUFTS Summer 1995	<i>Image and Video Processing in Multimedia Systems</i>	<u>U</u>
TUFTS 1994	<i>Parallel Algorithms</i>	<u>U</u>
TUFTS	Level: Undergraduate (U), Graduate (G)	

Short Course Notes

- S. Aгаian “*Compression and Enhancement via Orthogonal Transforms, Wavelets, Fractals and Logical Systems*” IS&T/SPIE’s Symposium on Electronic Imaging Science & Technology, San Jose. CA. February 1998, 270 pages.
- Second International Conference on Information, Communications & Signal Processing, ICICS’99, Singapore. December, 15 -16, 1999.
- S. Aгаian, “*Compression via Orthogonal Transforms, Wavelets, Fractals, and Logical Systems*”, IS&T /SPIE’s Symposium on Electronic Imaging Science & Technology, San Jose. CA. 1997, 268 pages.
- S. Aгаian and E. Dougherty “*Overview of Orthogonal Transforms, Wavelets, Fractals, and Logical Systems*” : IS&T/SPIE’s Symposium on Electronic Imaging Science & Technology, San Jose. CA. February 1996, 256 pages. The 10th Annual International AeroSense Symposium, Orlando, Florida, 8-12 April 1996, 266p. And Denver 96 Conference, SPIE, 4-12, August 1996.
- S. Aгаian “*Introduction Image Compression*”; All-union Conference on Image Analysis and Pattern Recognition, ASIP-92, Belarus, 1992;
- S. Aгаian “*Non-Traditional Fast Orthogonal Transforms*”, Information Technologies for Image Analysis and Pattern Recognition (ITIAPR-88) Novgorod, Russia;
- S. Aгаian “*Super-Fast Compression Algorithms* ”,All-Union Conference Image Analysis and Pattern Recognition, ASIP-88, Ukraine, Riga

B. Instructional Development:

1. Courses Developed (Course number, title, date)

Adv Topics In Signal Processg - 15707 - EE 6363 - 001 Digital Filtering
Adv Topics In Signal Processg - 15707 - EE 6363 - 001 Multimedia Security

2. Media and Software Developed

PhD Thesis defense, Okan Caglayan, “**DIGITAL MULTIMEDIA SYSTEM SECURITY APPLICATIONS BASED ON TRANSFORM DOMAIN TECHNIQUES**” November 24, 2008

Doctoral Research - 12337 - EE 7953 - 008 3-students
Doctoral Dissertation - 12740 - EE 7993 - 006 2-students

C. Membership on Graduate Committees

Ph.D and MS thesis defense committee member:

1. Tufts University (4 students)

MS thesis defense Committee Member:

Pradeep Kashyap, December 8
 Paul Ybarra, “Optimization of wavelet transforms,” May 2008

MS Project Chair (Graduate Project - 16664 - EE 6963 - 005)

1. [Harsha V. Jasti](#), “ Boolean function based encryption Algorithms” , December 2008
2. [Atluri, Chinni V.](#) “ DAN data hiding methods” December 2008

MS Project Chair Committee Member:

3. Sandesh Reddy Nerallapally "Implementation of FFT Convolution Algorithms Using DSP fixed-point Processor", Aug 2008
4. Mythreyee Doma, "Floating Point Implementation of FFT Convolution on TMS320C67xx Processor", Aug 2008

D. Postdoctoral Fellows Supervised

E. Undergraduate Students (Research) Supervised

III. RESEARCH

A. Bibliography:

400 scientific publications, 6 books, over **350 articles** (102 refereed journal papers, 297 refereed conference papers), **8 Chapter Books, and 14 Inventions/Patents, 3-Edited Book, 7-Short Course Notes, 9-Technical Reports and others**

1. Books/Book Chapters

1a. Books

- Yicong Zhou, Karen A. Panetta, and Sos S. Aгаian, “ Multimedia Encryption Using Recursive Sequences Büchertisch , ISBN 978-3-639-08523-5, 2008
- H.Sarukhanyan, S.Aгаian, K.Egiazarian and J.Astolla. “*Hadamard Transforms*”. TICSP Series No. 23, Finland, April 2004, 274p.
- A.M. Grigoryan, and S.S.Aгаian, “*Multidimensional Discrete Unitary Transformations: Representation, Partitioning, and Algorithms*”, Marcel Dekker INC, New York, 2003 521 pages.
- S.Aгаian, J. Astola and K.Egiazarian, “*Binary Polynomial Transforms and Nonlinear Digital Filters*,” Marcel Dekker INC, New York, 1995, 308 pages.
- S.Aгаian, J.Astola and K.Egiazarian, “*Polynomial Transforms and Applications (Combinatorics, Digital Logic, Nonlinear Signal Processing)*”, Tampere University, 1993, 468 pages.
- S.Aгаian, “*Hadamard Matrices and Their Applications*”, Lecture Notes of Mathematics. No 1168, Springer-Verlag (Berlin, New York, Tokyo), 1985, 227 pages.

Edited:

- A. S.Aгаian and S.A.Jassim, “Mobile Multimedia/Image Processing for Military and Security Applications” SPIE Press, Volume 7119, 2008
- B. S.Aгаian and S.A.Jassim, “Mobile Multimedia/Image Processing for Military and Security Applications” SPIE Press, Volume 6250, 2006
- C. S.Aгаian and S.A.Jassim, “Mobile Multimedia/Image Processing for Military and Security Applications” SPIE Press, Volume 6579, 2007

1b. Book Chapters

- Chris Smith, Sos Aгаian “Steganalysis and Clean Image Estimation”, Multimedia Forensics and Security, IGI Global, 2007
- Chris Smith, Sos Aгаian “Noise, Steganography and Active Warden”, Multimedia Forensics and Security, IGI Global, 2007
- S.Aгаian, and B.Rodriguez, “*Basic Steganalysis Techniques for the Digital Media Forensics Examiner*”, Digital Crime and Forensic Science in Cyberspace, pp.175-215 , 2006

- K.Egiazarian, J.Astola, S.Agaian; “Binary Polynomial Transforms and Logical Correlation”, book, Nonlinear Filters for Image Processing, *SPIE/IEEE Series on Imaging Science & Engineering*, IEEE Press, New York, pp. 299-355, 1999, pp. 299-355, 1999.
- K.Egiazarian, J.Astola, S.Agaian, R.Oktem; “*Applications of Binary Polynomial Transforms*” ,book Nonlinear Filters for Image Processing, *SPIE/IEEE Series on Imaging Science & Engineering*, IEEE Press, New York, pp. 299-355, 1999, pp. 355- 419, 1999.
- S. Agaian, “*Advances and Problems of the Fast Orthogonal Transforms for Signal-Images Processing Applications (part 1)*,” Pattern Recognition, Classification, Forecasting. Yearbook, The Russian Academy of Sciences, Nauka, Moscow, Issue 3, pp. 146-215, 1990, (in Russian).
- S. Agaian, “*Advances and Problems of the Fast Orthogonal Transforms for Signal-Images Processing Applications (part 2)*,” Pattern Recognition, Classification, Forecasting. Yearbook, The Russian Academy of Sciences, Nauka, Moscow, Issue 4, pp. 156-246, 1991, (in Russian).
- S. Agaian, “*Optimal Algorithms for Fast Orthogonal Transforms and Their Realization*”, Cybernetics and Computer Technology, Yearbook, Nauka, Moscow, Issue 2, pp. 231-319, 1986.

2. Selected **Journal Papers (refereed full length)**

2a. **Published or In Press**

- Karen Panetta, Eric Wharton, and Sos Agaian, “Parameterization of Logarithmic Image Processing Models”, IEEE Transactions on Systems, Man and Cybernetics - Part: Systems and Humans, submitted 2008.
- Okan Caglayan, and Sos S. Agaian, Design of an Innovative Multi-Stage Multimedia Cryptosystem, IEEE transactions on Multimedia, 2008 Accepted.
- Chris Smith, Sos Agaian, David Akopian, " New Polynomial Threshold Operators in Wavelet-Denoising Applications," IEEE signal Processing Letters, Dec. 2008.
- (*Invited Paper*) S.Agaian, “Steganography& Steganalysis, “*An Overview of Research & Challenges*”, Aspects of Network Security and Information Security, NATO Science for Peace and security Series D, Information and Communication Security- Vol. 17, pp. 179-210, 2008
- Eric J. Wharton, Karen Panetta, and Sos S. Agaian, “Logarithmic Edge Detection with Applications” JOURNAL OF COMPUTERS, VOL. 3, NO. 9, SEPTEMBER, Pages 11-19, 2008
- Karen Panetta, Eric Wharton, and Sos Agaian, “Human visual System Based Image Enhancement and Measure of Image Enhancement,” IEEE transactions on Systems, Man and Cybernetics- Part A: Systems and Humans, vol. 38, no.1, pp.174-188, February 2008.
- David Akopian, Sos Agaian, "A Fast Time-Recursive Matched Filter for DS-SS Communications," IEEE signal Processing Letters, Volume 15, Dec. 2008 Page(s):589 - 592
- Sos S. Agaian, Ethan E. Danahy, and Karen A. Panetta, "Logical System Representation of Images and Removal of Impulse Noise," IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans, Volume 38, Issue 6, Nov. Page(s):1349 – 1362, 2008
- Panetta, K.A.; Wharton E.J, B.; Agaian, S.S; Human Visual System Based Image Enhancement and Logarithmic Contrast Measure, [IEEE Transactions on](#) Systems, Man, and Cybernetics-Part B: Cybernetics, Vol. 38 No 1 February 2008
- Agaian, S.S.; Silver, B.; Panetta, K.A.; Transform Coefficient Histogram-Based Image Enhancement Algorithms Using Contrast Entropy, [Image Processing, IEEE Transactions](#) Volume 16, [Issue 3](#), March 2007 Page(s):741 – 758

- H. Sarukhanyan, S. Aгаian, K. Egiазarian, and J. Astola, "Reversible Hadamard Transforms" FACTA UNIVERSITATIS (NIŠ) SER.: ELEC. ENERG. vol. 20, no. 3, December 2007, 309-330
- (Invited Paper) S.Aгаian, "Steganography & Steganalysis, "An Overview of Research & Challenges", *Network Security and Intrusion Detection*, NATO Proceedings, 30 pages, 2006
- Cai H, Aгаian S, Sanchez M, Wang Y, "Extracting Temporal Specific Features From Microarray Expressional Profiles", WSEAS TRANSACTIONS ON MATHEMATICS and COMPUTERS in BIOLOGY AND BIOMEDICINE. Issue 2, Vol. 3, February 2006, pp. 104-110
- P. Sagiraju, S. Aгаian, D. Akopian, "A Reduced Complexity Acquisition of GPS Signals for Software Embedded Applications", IEE Proc. Radar, Sonar & Navigation vol. 153, February 2006, pp. 69-78
- Hakob Sarukhanyan, S.Aгаian, J.Astola, K.Egiазarian, "Decomposition of Binary Matrices and Fast Hadamard Transforms," *Circuits Systems and Signal Processing*, vol. 24, No. 4, 2005, pp. 385-401.
- S.Aгаian, I. Gurevich, A. Metliski, and R. C. Cherukuri, "Two New M-sequence Based Data Hiding Algorithms", *Pattern Recognition and Image Analysis*, Vol. 15, N 2, 2005, pp. 399-483
- Sos S. Aгаian and Ravindranath Cherukuri, "Run Length Based Steganography for Binary Images," *Pattern Recognitions and Machine Intelligence*, Lecture Notes in Computer Science, Publisher: Springer-Verlag GmbH, N 3776, ISBN: 3-540-30506-8, 2005, pp. 481 - 485
- (Invited Paper) A.Grigoyan, and S. Aгаian, "Image Enhancement," *Advances in Imaging and Electron Physic*, Academic Press. May 2004, pp. 165-243.
- S. Aгаian, K. Tourshan, J. Noonan, "Generalized Parametric Slant_Hadamard Transforms," *Signal Processing*, 84, pp.1299-1307, 2004.
- S.Aгаian, H.Sarukhanyan, and J. Astola, "Skew Williamson-Hadamard Transforms," *Multiple Valued Logic and Soft Computing Journal*, Old City Publishing, Inc. 2004, 15p.
- P. Dolan; S. Aгаian, and J. Noonan, "An Examination of Decomposition Sparsity," *Journal of Signal Processing*, pp. 2004.
- (Invited Paper) B. Rodriguez, S. Aгаian and J.Collins, "An Improved Raw Quick Pairs," DFRWS 2003, URL: <http://www.dfrws.org/>
- S. Aгаian, K. Tourshan, and J. P. Noonan, "Parameterization of Slant-Haar Transforms," *IEE Proceeding-Vision, Image and Signal Processing*, Vol, 150. No5, pp. 306-312, October 2003.
- S. Aгаian, K. Tourshan, and J. Noonan, "Partially Signal Dependent Slant Transforms for Multispectral Classification," *Journal of Integrated-Computer Aided Engineering (ICAE)*, vol. 10, no. 1, January 2003.
- S. Aгаian, K. Tourshan, J. Noonan, "Performance of Parametric Slant-Haar Transforms," *Journal of Electronic Imaging*, July, Vol. 12, N3, pp. 539-551. 2003.
- S. Aгаian, K. Tourshan, J. Noonan, "Parametric Slant-Hadamard Transforms With Applications," *IEEE Transactions Signal Processing Letter*, vol. 9, no. 11, November, Pages: pp. 375 – 377, 2002.
- A.M. Grigoryan and S. Aгаian, "Shifted Fourier transform Based Tensor Algorithms for 2-D DCT," *IEEE Transaction on Signal Processing*, September 2001, Volume 48, No.9, pp. 2113-2126.
- A.M. Grigoryan and S. Aгаian, "Method of Fast 1-D Paired Transforms for Computing the 2-D Discrete Hadamard Transform," *IEEE Transactions on Circuits and Systems II, Analog and Digital Signal Processing*, January 2001, Volume 48, No.1.pp.1399-1404.

- S. Aгаian, K.P. Panetta, and A.M. Grigoryan, “*Transform Based Image Enhancement Algorithms with Performance Measure*”, IEEE Transaction on Image Processing, Volume 10, No.3.March, 2001, pp. 367-380.
- A.M. Grigoryan and S. Aгаian, “*Method of Fast 1-D Paired Transforms for Computing the 2-D Discrete Hadamard Transform*,” IEEE Transactions on Circuits and Systems II, Analog and Digital Signal Processing, October 2000, Volume 47, No.10, pp. 1098-1104.
- A. Grigoryan and S. Aгаian, “*Split Manageable Efficient Algorithm for Fourier and Hadamard Transforms*,” IEEE Transaction on Signal Processing, vol. 48, No.1, January 2000, pp.172-183.
- J. Astola, D.Akopian, O. Vailno, and S.Aгаian, “*Digit-Serial Architecture for Stack Filters*”, Signal Processing, June 1997. 61, N2, pp.111-127.
- J. Astola, D. Akopian, and S. Aгаian, “*SBNR Processor for Stack Filters*”, IEEE Trans. on Circuits and Systems II. Vol. 44.N4, pp. 197-208, March 1997.
- J. Astola, D. Akopian, O. Vainio, and S. Aгаian, *New digit-serial implementation of stack Filters*, Discrete Applied Mathematics, 61 (1997), pp. 181-197.
- S. Aгаian, J. Astola, K.Egiazarian, and P. Kuosmanen, “*Decompositional Algorithm for Stack Filtering Using Fibonacci p-Codes*,” IEEE Trans. on Signal Processing, vol. 41, no 1, Jan. 1995, pp. 101-110.
- D.Gevorkian, J.Astola, K.Egiazarian, S.Aгаian, and O.Vainio, “*Parallel Algorithms and VLSI Architecture for Stack Filtering Using Fibonacci p-Codes*,” IEEE Trans. on Signal Processing, January, vol. 43, pp. 286-296, 1995.
- Akopian, J. Astola, S. Aгаian, and O. Vailno, “*Processor for Generalized Stack Filters*”, IEEE Trans. on Signal Processing, June, vol. 43, no. 6, pp.1541-1547, 1995.
- S. Aгаian, J. Astola, and P. Kuosmanen, “*On Rank Selection Probabilities*,” IEEE Trans. on Signal Processing, Nov., vol.42. no. 11, pp. 3255-3259, 1994.
- S. Aгаian and A. Grigorian, “*Discrete Unitary Transforms and Their Relation to Coverings of Fundamental Periods. Part 1*,” Pattern Recognition and Image Analysis, USA, No 1, pp. 16-24,1994.
- S. Aгаian and A. Grigorian, “*Discrete Unitary Transforms and Their Relation to Coverings of Fundamental Periods. Part-2*,” Pattern Recognition and Image Analysis, USA, Vol. 4. No 1, pp.25-31,1994.
- S. Aгаian, K. Egiazarian, and N. Babaian, “*Parallel Processor for Human Visual Systems Based Orthogonal Transform*”. Armenian National Academy, p 26, 1993 (in Russian).
- S. Aгаian and D. Gevorkian, “*Synthesis of a Class of Orthogonal Transforms, Parallel SIMD Algorithms and Specialized Processors*,” Pattern Recognition and Image Analysis, USA, vol.2 No.4, pp.396-408, 1992.
- S. Aгаian, K. Egiazarian, and N. Babaian, “*Orthogonal Transforms Reflecting some Properties of Human Vision*”. Pattern Recognition and Image Analysis, USA, vol.2 No 1, pp.1-9, 1992.
- S. Aгаian and D. Akopian, “*Systolic Coder and Decoder for a Message Source Using Trigonometric Transforms*,” Pattern Recognition and Image Analysis, USA, vol. 2, No.3, pp.319-329, 1992.
- S. Aгаian, R Bagdasarian, and R. Gyulbudagian, “*Dynamic Models for Biological Rhythm Description Modeling, Measurement, Control C*, vol. 31, No 2, Pp. 37-42, 1992.
- S.Aгаian, D.Gevorkian, and H.Bajadian, “*Stability of Orthogonal Series*”, Kibernetica i VT (Cybernetics and Computer Technology), issue 5, pp. 132-170, 1991 .
- S. Aгаian and V. Duvalyan, “*On Slant Transforms*,” Pattern Recognition and Image Analysis, USA, vol. 1, No.3, pp. 317-326, 1991.
- S. Aгаian and R. Gyulbudagian, “*Dynamical Models for Nonlinear LC Network With Two-port Devices*,” Note of Armenian National Academy of Sciences,” No 5, pp. 240-244, 1991,Yerevan.
- S.Aгаian, R Bagdasarian, and R.Gyulbudagian, “*New Models for Biological Rhythm Investigation*,” Problem of Chronobiology, Vol. 2 No.1, pp.79-83. 1991, Yerevan.
- S. Aгаian and A. Petrosian, “*Relationship Between Compression Coefficient Precision of Reconstruction and Complexity of Calculations*,” J. Inform. Process. Cybernetic, EIK 7, Germany, pp. 335-345, 1991.

- S. Aгаian and A. Sarkisian, “Correlation of the Characteristic Curve of the Photographic Image via Histogram”, Preprint Armenian National Academy p. 16. , 1990 (in Russian).
- S. Aгаian and D. Gevorkian, “Complexity and Parallel Algorithms of the Discrete Orthogonal Transforms,” Kibernetika i VT (Cybernetics and Computer Technology) issue 5, pp.124-171, 1990.
- S. Aгаian and A. Sarukhanian, “Iterative Method for Image Reconstruction,” p.20, Yerevan, 1990 (in Russian).
- S. Aгаian and R. Gyulbudagian, “A Dynamic Model ...”, *Informatics*, N2, 1990, pp 79-83, Moscow.
- S. Aгаian and R. Armenakian, “Expert Evaluation Based System for Diagnosis Peripheral Devices”, R.Trappf. (Ed.), Cybernetics and Systems’88, Kluwer Academic Publisher, pp.1177-1181, 1989.
- S. Aгаian and S. Vartanov, “Representation of Image Processing Algorithms in Systems of Cellular Transforms,” Math. Voprosi Kibernet. Vychisl Tekn., No 15, pp. 3-26, 1988.
- S. Aгаian and A. Petrosian, “Optimal Zonal Compression Method Using Orthogonal Transforms”, Armenian National Academy Publisher, pp. 3-27, 1989.
- S.Aгаian and H. Bajadian, “Stable Summation of Fourier-Haar Series With Approximate Coefficients,” Mat. Zametky (Math. Note), 39, No 1, pp. 136-146, 1986.
- S. Aгаian, “Adaptive Images Compression via Orthogonal Transforms,” Proceedings of the Collegium on Coding Theory between Armenian Academy of Sciences and Osaka University, Yerevan, pp. 3-9, 1986.
- S. Aгаian and D. Gevorkian, " Parallel Algorithms for Orthogonal Transforms," Collogium Math. Soc. Janos Bolyai, 44, Theory of Algorithms (Hungary), pp. 15-26), 1984.
- S. Aгаian and A. Arakelyan, “Algorithms for Spectral Analysis of Biological Signals,” Cybernetics and Systems Research, 2, R.Truppl (ed.), Elsevier Science Publishers, B.V. (North-Holland, pp. 273-275), 1984.
- S. Aгаian, “Construction of Higher Dimensional Hadamard Block Matrices“ Mathematical Problems of Cybernetics and Computer Technology, (Armenia), Issue 13, pp. 3-62, 1984.
- S. Aгаian and K. Egiazarian, “Generalized Hadamard Matrices“, Mathematical Problems of Cybernetics and Computer Technology, Armenia, Issue 13pp. 63-98, 1984 .
- S. Aгаian and S. Alaverdian, “Digital Image Processing Systems“, Mathematical Problems of Cybernetics and Computer Technology, (Armenia), Issue 14 pp. 66-74, 1984 .
- S. Aгаian and A. Sarukhanian, “An Example Which Confirms that Plotkin’s Conjectures Are Not Correct ,” Kibernetika, National Academy of Sciences of Ukraine, 14 p , 1984
- S. Aгаian, S. Ispirian, and A. Matevosian, “Asymptotic Distributions of Bounded Orthogonal Transforms and Fast Algorithm for Calculating Higher Order Moments”, Mathematical Problems of Cybernetics and Computer Technology, Issue 12, pp. 130-156, 1984 (in Russian).
- S. Aгаian, A. Matevosian, and A. Muradian, “Digital Filters with Respect to a Family of Haar Systems,” Akad. Nauk. Arm. SSR. Dokl. 77, pp. 117-121, 1983.
- S. Aгаian, “A Unified Construction Method for Fast Orthogonal Transforms” Progress Cybernetics. System. Research. 8, USA, pp. 301-307, 1982.
- S. Aгаian and A. Matevosian, “Fast Hadamard Transform,” Mathematical Problems of Cybernetics and Computer Technology. Issue 10, pp.73-90, 1982 .
- S. Aгаian and A. Matevosian, “Haar Transforms and Automatic Quality Test of Printed Circuit Boards,” Acta Cybernetica, vol. 5, Fasc. 3, Szeged (Hungary), pp.315-362, 1981.
- S. Aгаian and A. Sarukhanian, “Recursion Relations for the Construction of Williamson Type Matrices ” Math. Note 3-4, vol. 30, 1981, pp. 796-804, 1981.
- **S. Aгаian and A. Sarukhanian, “Generalized δ -codes and Hadamard Matrices”, *Problems Inform. Transmission*, 16, 3, pp.203-211, 1980.**

3b. Submitted/Under Preparation

- Sos S. Aгаian, Ethan E. Danahy, and Karen A. Panetta, "Logical System Representation of Images and Removal of Impulse Noise," IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans, Submitted: July 2006.
- David Akopian and Sos Aгаian, "Fast and Parallel Matched Filters," submitted to IEEE Transactions on Circuits and Systems II, September 2007.
- Chris Smith, Sos Aгаian, David Akopian, "A Training Framework for New Polynomial Threshold Operators in Wavelet-Denoising Applications," submitted to IEEE Transactions on Image Processing, October 2007.
- David Akopian, Sos Aгаian, "A Fast Time-Recursive Matched Filter for DS-SS Communications" submitted to IEEE Communication Letters, November 2007.
- Sos S. Aгаian and Benjamin M. Rodriguez, "*Steganographic Capacity used for Steganalysis Cluster Classification*", Will be submitted to the IEEE Transaction on Image Processing.
- Benjamin M. Rodriguez, Sos S. Aгаian and June Rodriguez, "*Co-Occurrence Matrix Feature Vectors and Cluster Classification Based Steganalysis*", Will be submitted to the IEEE Transaction on Signal Processing,
- Smith, C.B., Akopian, D., Aгаian, S.S., "*Least squares optimization of a polynomial threshold for wavelet domain denoising,*" Will be submitted to the IEEE Transaction on Image Processing.
- Sos Aгаian, Thomas A. Baran, and Karen A. Panetta, "*De-noising of images using logical (binary) transforms*", Will be submitted to the IEEE Transaction on Image Processing.
- Smith, C.B., Aгаian, S.S., "*Class of Fibonacci-Daubechies-4-Haar wavelets with application to ECG de-noising,*" Will be submitted to the IEEE Transaction on Signal Processing.
- (Invited Paper) S.Aгаian, and A. Klappenecker, "*Quantum Computing and Unified Approach to Fast Unitary Transforms*", will be submitted to the Electronic Imaging in 2003 (in progress).
- E. Fera and S. Aгаian, "*Optimum Predictive-Transform Acceleration*", (will be submitted to the IEEE on Image Processing).
- S. Aгаian, "*Visual Morphology, A New Tool for Image Processing*", (will be submitted to the IEEE on Image Processing).
- Sos S. Aгаian and Ronnie R. Sifuentes. "*New Generation of Steganographic Systems.*" Will be submitted to the SPIE on Electronic Imaging.
- Atma Kanojia, Sos S. Aгаian, and Karen Panetta, "*Image Enhancement Using Transform Contrast Enhancement,*" Applied Signal Processing, The EURASIP Journal, (will be submitted to the IEEE on Image Processing).

2b. Submitted/Under Preparation.

3. Selected Conference Papers

3a. Published or Accepted

Jiong Xie, Sos Aгаian, and Joseph Noonan, "Digital watermarking in parametric slant transform domain" Proc. SPIE 6821, 68210C (2008)

Sos S. Aгаian and Johanna M. Susmilch, "Fractal steganography using artificially generated images" Proc. SPIE Vol. 6982, 69820B (2008)

Ravindranath C. Cherukuri and Sos S. Aгаian, "Logical subband decomposition based secured multimedia system" Proc. SPIE Vol. 6982, 69820X (2008)

Sos Aгаian Mei-Ching Chen, and C. L. Philip Chen , “NOISE REDUCTION ALGORITHMS USING FIBONACCI FOURIER TRANSFORMS ”, IEEE System, Man and Cybernetics Conference, Singapore, 2008.

Jiong Xie, Sos Aгаian, and Joseph Noonan, “ Secure information hiding algorithm using parametric slant-Hadamard transforms Proc. SPIE 6982, 69820E (2008)

Aaron Greenblatt, Karen Panetta and Sos Aгаian, “Border Crossing Detection and Tracking through Localized Image Processing”, Proceedings 2008 IEEE Homeland Security Technologies Conference, 2008.

Yicong Zhou, Karen Panetta and Sos Aгаian, “Partial Multimedia Encryption with Different Security Levels”, Proceedings 2008 IEEE Conference for Homeland Security Waltham, MA, May, 2008.

Sos Aгаian, Mei-Ching Chen, and C. L. Philip Chen , “GENERALIZED COLLAGE STEGANOGRAPHY ON IMAGES”, IEEE System, Man and Cybernetics Conference, Singapore, 2008.

Roanaak Kabir, Aaron Greenblatt, Karen Panetta and Sos Aгаian, “Enhancement of alaryngeal Speech Utilizing Spectral Subtraction and Minimum Statistics”, IEEE International Conference on Machine Learning and Cybernetics 2008, Kunming, China, July 2008.

Shahan Nercessian, Karen Panetta and Sos Aгаian, “Automatic Detection of Potential Threat Objects in X-ray Luggage Scan Images”, IEEE Homeland Security Conference, 2008.

Shahan Nercessian, Karen Panetta and Sos Aгаian, “A Parametric Method for Edge Detection Based on Recursive Mean Separate Image Decomposition”, IEEE International Conference on Machine Learning and Cybernetics 2008, Kunming, China, July 2008.

Yesna O. Yidiz, Doublas Q. Abraham, Karen A. Panetta and Sos S. Aгаian, “A new concept of Airport Security screening”, IEEE International Conference on Technologies for Homeland Security, Waltham, MA, May 2008,

Yicong Zhou, Karen Panetta and Sos Aгаian, “An Image scrambling algorithm using parameter based M-sequences”, Proceedings 2008 IEEE International Conference on Machine Learning and Cybernetics, Kunming, China, 2008.

Yicong Zhou, Karen Panetta and Sos Aгаian, “Comparison of recursive sequence based image scrambling algorithms”, IEEE International Conference on Systems, Man and Cybernetics, 2008, Singapore, 2008

Eric Wharton, Karen Panetta and Sos Aгаian, “Human Visual System Based Similarity Metrics”, IEEE System, Man and Cybernetics Conference, Singapore, 2008.

Barghavi Govindarajan, Karen Panetta and Sos Aгаian, “Image Reconstruction for Quality Assessment of Edge Detectors”, IEEE System, Man and Cybernetics Conference, Singapore, 2008.

Sadaf Qazi, Karen Panetta and Sos Aгаian, “Detection and Comparison of Color Edges via Median based PCA”, IEEE System, Man and Cybernetics Conference, Singapore, 2008.

Barghavi Govindarajan, Karen Panetta and Sos Aгаian, “Progressive Edge Detection on Mult-bit Images Using Polynomial based Binarizations”, IEEE International Conference on Machine Learning and Cybernetics 2008, Kunming, China, July 2008

Aaron Greenblatt, Karen Panetta and Sos. Aгаian, “Restoration of Semi-Transparent Blotches in Damaged Texts, Manuscripts, and Images Through Localize, Logarithmic Image Enhancement”, The 3rd IEEE International Symposium on Communications, Control and Signal Processing (ISCCSP 2008) Malta, March 2008.

Yesna O. Yildiz, Douglas Q. Abraham, Sos Aгаian, Karen A. Panetta, ‘ *Projection image enhancement for luggage explosive detection systems (EDS) utilizing computed tomography (CT)*. IS&T/SPIE’s Symposium on Electronic Imaging Science &Technology, Conf. Image Processing: Algorithms and Systems VII, San Jose, 22-23, January, CA. 2008

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- S.Agaian and K Matevosian, "Signal Representation via AT Systems". International Symposium on Complex Analysis, Halle, Germany 1978.
- S.Agaian, "Williamson Family and Hadamard Matrices," Proceedings, Fifth All-Union Conf. On Problems of Cybernetics, (in Russian), 1977.

4. Book Reviews

5. Other Articles

B. Lectures, Seminars

(Chronologically, NOT INCLUDING presentations given at conferences as shown in 3a)

1. Scientific Lectures, Seminars Invited Speaker - Conferences (During the UTSA Career)

1. **Invited Paper** : National Committee of the Russian Academy of Sciences for Pattern Recognition and Image Analysis (IAPR member) conducts the 9th International Conference "Pattern Recognition and Image Analysis: New Information Technologies" (PRIA-9-2008). We invite you to present an invited paper on "Secure image processing, detection, and recognition- An Overview of Research & Challenges," with 40 minutes presentation, at PRIA-9-2008.
2. Invited Lecture (IEEE Computer Society): Practical Digital Multimedia Security Systems, Trinity University, San Antonio, November 13, 2006
3. NATO *Network Security and Intrusion Detection* Workshop, Nork, (October)2005
4. Workshop on Spectral Transform and logic Design for Future Digital Systems', " *Steganography*", Riga, Latvia, June 2005.
5. *New Pixel Sorting Method for Palette Steganography and Steganographic Capacity Measure*", Pacific Rim Workshop on Digital Steganography, November 2004, p.12, Fukuoka, Japan.
6. *Skew Williamson-Hadamard Transforms*", International Conference, Rumania, 2003.
7. General Theory of Information Transfer and Combinatorics", Data coding using Logical representation methods. (November4-9,2002, Germany).

2. Other Lectures, Seminars, Briefings, Short courses

C. Areas of Research Interest

Fundamentals: *Information Processing and Systems, Signal/Image Processing, Recognition, and Segmentation*

(**Special interest** in the development of scientific systems and architectures applicable to the theory and practice of engineering science (emphasizing the usage of complex digital signal/image processing, information sciences and systems technologies to solve the engineering challenges currently facing the military and industrial information processing centers)

Applications

- Image/Signal Analysis (Enhancement, Representation, Transmission, Modeling and Compression)
- Information Assurance, Multimedia Security and Privacy System (Digital Multimedia Encryption & Forensics, Steganography, Watermarking, and Authentication)
- Data Mining
- Sensor/Mobile Multimedia Processing
- Biometric Systems
- Real-Time Image/Signal Processing Systems
- Pattern Recognition and Machine Vision
- System Health Management (Monitoring, Diagnosis, and Forecasting)
- Bio-informatics (Medical Imaging, Genomic Signal Processing)

D. Research Support

Cooperative Research and Development Agreement, Air Force Institute of Technology, 2006-2009

1. National/International

Agency: **Grant from the Center for Infrastructure Assurance and Security (CIAS)**

Title: *“Development of Super Fast Steganographical Tools”*

Peer Reviewed (Y)

Date (start-end) 2005 – 2006

Total amount: \$168,572.42

Role PI (Principal Investigator)

Agency: **Contract from the Air Force Information Warfare Center**

Title: *Blind Detection of the Localization Stego Data on Digital Images*

Peer Reviewed (Y)

Date (start-end) 2005 – 2006

Total amount: \$171,342

Role : PI (Principal Investigator)

Agency: **Grant from the Center for Infrastructure Assurance and Security (CIAS)**

Title: *Development of Mobile security system*

Peer Reviewed (Y)

Date (start-end) 2004 – 2005

Total amount: \$176,342.42

Role PI (Principal Investigator)

Agency: **Contract from the Air Force Information Warfare Center**

Title: *Wavelet Based Blind Detection of the Localization Stego Data on Digital Images*

Peer Reviewed (Y)

Date (start-end) 2004 – 2005
Total amount: \$49,000
Role : PI (Principal Investigator)

Agency: **Grant from the Center for Infrastructure Assurance and Security (CIAS)**
Title: *Development of Mobile security system*
Peer Reviewed (Y)
Date (start-end) 2004 – 2005
Total amount: \$176,342.42
Role PI (Principal Investigator)

Agency: **Grant from the Center for Infrastructure Assurance and Security (CIAS)**
Title: *Development Fast Steganography Detection Tools*
Peer Reviewed (Y)
Date (start-end) 2003 – 2004
Total amount: \$342,342.42
Role PI (Principal Investigator)

Agency: **Grant from the Center for Infrastructure Assurance and Security (CIAS)**
Title: *Development of Super Fast Steganography Detection Tools*
Peer Reviewed (Y)
Date (start-end) 2002 – 2003
Total amount: \$161,567
Role PI (Principal Investigator)

Agency: GFE hardware **from the Air Force Information Warfare Center**
Title: *Blind Detection of the Localization on LSB on Digital Images*
Date (start-end) 2003
Total amount: \$25,000
Role : PI (Principal Investigator)

Agency: **The CITY UNIVERSITY OF NEW YORK**
Title: Slant Transform
Peer Reviewed (Y)
Date (start-end) 2002 – 2003
Total amount: \$5,567
Role PI (Principal Investigator)

Agency: **The CITY UNIVERSITY OF NEW YORK**
Title: Parallel Implementation of Flowgraph-Based Discrete Wavelet Transforms
Peer Reviewed (Y)
Date (start-end) 2001 – 2002
Total amount: \$5,000
Role PI (Principal Investigator)

Agency: **US Department of Energy, Nevada Operations Office**
Title: Research into Boolean Algorithms
Peer Reviewed (Y)
Date (start-end) 1997-1998
Total amount: \$45K.
Role PI (Principal Investigator)

2. Other including sub-contracts, internal UTSA funding through earmarks, institutional grants etc.

Agency: **Grant from Defense Advanced Research Projects Agency (DARPA):**
Title: A Predictive Transform (PT) Compression Architecture and Methodology for Knowledge Aided Sensor

Signal Processing and Expert System

Peer Reviewed (Y)

Date (start-end) 2004 – 2005

Total amount: \$289,000

Role : Co-Investigator PI (PI. Dr. Erlan Feria, The City University of New York, The College of Staten Island, Sos Agaian (Contractor) UTSA

Agency: **Department of the Army** (Contract N DAAH01-95-C-R106, with S. Del. Marco, Aware, Inc. Title: Research into Boolean Algorithms

Peer Reviewed (Y)

Date (start-end) 1996-1997

Total amount: \$ 1,5M

Role Co-PI (Co-Principal Investigator)

5. Pending with funding agency**Submitted Grant Proposals****Co-PI -CREST PROPOSAL**, “ Real-Time Computation and Model-Based Optimal Control with Biological and Biomedical Applications”, April 1, 2008

Department of Mechanical Engineering and Department of Electrical Engineering, The University of Texas at San Antonio in collaboration with The University of Texas Health Science Center San Antonio, Texas

We request approximately \$1 million per year for next five years to create and establish the RTCM center.

PI- Image processing section: Shape Adaptive Transforms for 3D Image Representations, Modeling, Processing and Pattern Recognition with Applications to Biological Sciences . I request approximately \$300,000 per year for next five years

CNS	0751143	CRI: IAD Computing Infrastructure for Integrative Positioning and Imaging Based Security Research in Networks	NSF	Pending	08/07/2007	\$504,794.00
CNS	0739180	BPC-DP: Broadening Participation in Computing at a Minority Institution through "Hands-on Computing Design Database" and Best Practices	NSF	Declined	06/04/2007	\$599,747.00
DRL	0723739	Research and Evaluation of Best Strategies in Education for Electrical and Computer Engineering Program at a Minority Institution: Transition to a Research Intensive Status	NSF	Declined	01/29/2007	\$788,197.00

IV. SERVICE**A. Professional Activities:****1. Current Professional and Scientific Organizations/Societies** If election/nomination required then mark with *

2005 SPIE Fellow, International Society for Optical Engineering (SPIE)

1997-present	<i>Senior Member</i> , Institute of Electrical and Electronics Engineers (IEEE).
2005 present	<i>Member</i> , Eta Kappa Nu (HKN- the honor society for electrical and computer engineering)
2006 present	<i>Member</i> , International Association for Pattern Recognition (IAPR).
2003 -2006	<i>Member</i> , American Society for Engineering Education (ASEE)
1988 - present	<i>Member</i> , Russian Association on Pattern Recognition.
1997 - 2002	<i>Member</i> , North American Fuzzy Information Processing Society.

2. Past and Current Positions and/or Offices Held in Professional Organizations

Years (from-to)	Name of Organization	Position held
2005—present	IEEE Systems, Men, and Cybernetics Society	Co-chair , Technical Committee
2007—present	IEEE Systems, Men, and Cybernetics Society	Chair Local Chapter
2006—present	IEEE Systems, Men, and Cybernetics Society	Consortium on System of Systems -member
2006—present	International Association for Pattern Recognition (IAPR)	Member, Technical Committee 16"Algebraic and Discrete Mathematical Techniques in Pattern Recognition and Image Analysis

3. Other Professional Activities (e.g., National and State Consultantships, Review Panels and Committees, Editorial Boards, Continuing Education Lectures Presented, etc.)

Editor/Editorial Board Member

Associate Editor of the Journals:

1. Real -Time Imaging.
2. Electronic Imaging.
3. Research Letters in Signal Processing
4. Recent Patents on Electrical Engineering

Advisory Committee and Editorial Board Member:

5. International Journal of Intelligent Computing in Medical Sciences and Image Processing
6. Pattern Recognition and Image Analysis, USA-Russia.
7. International Journal of Digital Multimedia Broadcasting , Hindawi Publishing Corporation
<http://www.hindawi.com/journals/ijdmb/>

Reviewer

- **Proposal reviewer**, including National Science Foundation proposal review panel member and a grant reviewer for the Hong Kong Government

Reviewer of technical papers,

1. IEEE Transactions on Image Processing.
2. IEEE Transactions on Circuits, Systems and Signal Processing.
3. Electronic Imaging.
4. Signal Processing, European Journal
5. IEEE Transactions on Fuzzy Sets & Systems.
6. Cybernetics and Computer Technology.
7. Pattern Recognition and Image Analysis.
8. Proposal reviewer, including National Science Foundation proposal review panel member
9. Mathematical Reviews

10. IEEE Transactions on Signal Processing,
 11. IEEE Signal Processing Letters
 12. IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing
 13. Journal of Mathematical Imaging and Vision
 14. Real Time Imaging, Academic Press
 15. Journal of Electronic Imaging
 16. Mathematical Reviews
 17. Several IEEE and SPIE Conferences *and Book Publishing companies*
 18. Reviewer for books (Kluwer Academic Publishers).
 19. Others
- IEEE Admission and Advancement Committee Member to review senior member

Conference Session Chair, Program committee member, session chair of several conferences and workshops in computer science, signal/image processing, information technology and applied mathematics. During the UTSA career (1998-2004) I was *program committee member* and conference session chair:

Founder and Conference Chairs: Mobile Multimedia/Image Processing for Military and Security Applications , 2006,2007, 2008

Program committee member –Section organization chair:

- IEEE International Conference, Data Hiding, 2007
- IEEE International Conference System of Systems and Invited Section Chair, 2007
- Special Section Organizer, IEEE, conf. Systems, Man, and Cybernetics , Canada, 2007
- Program Committee Member, The Fourth International Conference on Intelligent Information Hiding and Multimedia Signal Processing, IHHMSP-2008, China
- Program Committee Member, IEEE, conf. The Fired International Conference on Intelligent Information Hiding and Multimedia Signal Processing, IHHMSP-2007, Taiwan
- Program Committee member and Special Section Organizer, IEEE, conf. System of Systems Engineering, SoSE '07.n16-18 April, San Antonio, TX, 2007
- Consalter IEEE, international conf. on Portable Information Devices
- Program Committee Member, SPIE Symposium on Electronic Imaging Science & Technology, San Jose, 1997-2008
- Program Committee Member, International Symposium *The Issues of Calculation Optimization*, Ukraine , 2007
- Program Committee Member, International Program Committee for The International School-Seminar, " Optimization" (ISCOPT – XXXII) The National Academy of Science of Ukraine, Kyiv, Ukraine , 2007
- Program Committee Member, IS&T Archiving Conference, Canada , 2007
- Program Committee of the 2007 Information Resources Management Association (IRMA)
- Technical Committee Member, Communication Theory (CTTC)
- SPIE Symposium on Electronic Imaging Science & Technology, San Jose, CA. 1997, 1998, 1999, 2000, 2001,2002, 2003, 2004,2005, 2006, 2007 and 2008.
- IEEE ISM2006 (IEEE International Conference on System of Systems Engineering) , San Diego on December 11th to 13th, 2006
- Session chair: Security and Assurance in Information and Multimedia System, SMC2006 IEEE, conf. Systems, Man, and Cybernetics Taiwan , 2006
- IEEE ISM2006 (IEEE International Conference on System of Systems Engineering) , San Diego on December 11th to 13th, 2006
- International Program Committee for The International School-Seminar, " Optimization" (ISCOPT – XXXII) The National Academy of Science of Ukraine, Kyiv, Ukraine , 2006
- IS&T Archiving Conference, Ottawa-Canada 2006, 2007.
- Workshop on Unique Chips and Systems, March 20, 2005
- SPIE Symposium on Nonlinear Image Processing, San Dingo, CA. 2005.
- International Program Committee for The International School-Seminar, " Optimization" (ISCOPT – XXXII) The National Academy of Science of Ukraine, Kyiv, Ukraine , 2005

- IS&T Archiving Conference, Washington (DC) 2005.
- IS&T Archiving Conference, Ottawa -Canada 2006.
- SPIE Symposium on Nonlinear Image Processing, San Dingo, CA. 2005.
- Pacific Rim Workshop on Digital Steganography, 2004, Japan
- IS&T Archiving Conference, San Antonio 2004, Washington (DC) 2005.
- International Program Committee for The International School-Seminar, "The Issues of Calculation Optimization" (ISCOPT - XXXI) The National Academy of Science of Ukraine, The Ministry of Education and Science of Ukraine, V.M. Glushkov Cybernetic Institute of NASU, The Institute of the Problem of Synthetic Intellect, Kyiv, Ukraine , 2003
- International Program Committee (IPC) for the IASTED International Conference on Signal Processing and Communications, July 3-6, 2001 in Rhodes, Greece.
- The Fifth Multi-Conference on Systemic, Cybernetics and Informatics, Orlando, Florida, USA, from July 22 - 25, 2001.
- International Conference on "Image Processing and Image Recognition", Belarus, 2001.
- The third symposium (IEEE Signal Processing Chapter) on "Advanced Concepts for Intelligent Vision Systems" (ACIVS'2001), Germany, 2001.
- International Conference on Signal Processing and Communications, IASTED September 19-22, Marbella, Spain, 2000.

Session Chair/Organizer

Year, Meeting, Session Name

(Repeat for each session)

Reviewer for Journals

Name of Journal

Review Panels (for grants)

Year, Agency, Panel Name

(Repeat as necessary)

Continuing Education Seminars Given

Date, Seminar name

4. Community Service

Date, Service, Agency

B. Committees:

1. Department (specify if Chair)

Year, Committee

(Repeat as necessary)

- PhD ECE Program - Director , 2004-2007
- Chair of the Full Professor Promotion Committee, 2003
- Leave absent policy – Chair
- ECE Search Committees -chair
- Electrical Engineering Graduate Studies Committee -Chair.
- 1997-2007, DSP-concentration -Chair

- Course Coordinator (Digital Filters, DSP, Digital Image Processing, Signals and Systems Topics in Digital Signal Processing (Wavelet, Fractals with Applications Image Processing) Graduate Catalog Revision Committee.
- 1997-2008, Head of Nonlinear Digital Signal Processing and Laboratory.
- Electrical Engineering Student Advising (approximately 65-80 each year).
- Electrical Engineering graduate and undergraduate catalog revisions.

Other Committees

- Electrical Engineering Graduate Studies Committee -Chair.
- Review Merit Policy -Member
- 1997-2007, ECE Search Committees -Member
- Course Coordinator (Digital Filters, DSP, Digital Image Processing, Signals and Systems Topics in Digital Signal Processing (Wavelet, Fractals with Applications Image Processing) Graduate Catalog Revision Committee.
- 1997-2007, Undergraduate Catalog Revision Committee.
- Electrical Engineering graduate and undergraduate catalog revisions. Organizing lectures (mathLab tutoring)
- Electrical Engineering DFRAC Committee Member, 1999-2007
- Mechanical Engineering DFRAC Committee Member 2004
- Dept space distribution committee

2. College of Engineering (specify if Chair)

Year, Committee

(Repeat as necessary)

- 2005 College Faculty Development Leave Committee— Chair
- ECE Search Committees -Member
- Head of Nonlinear Digital Signal Processing and Laboratory.
- College Faculty Review Advisory Committee CFRAC – Chair
- Member of the Search Committees (Professor and Associate Professor); 1997, 1999-2004
- Member of the Faculty Senate Nominating and Elections Committee.
- ABBET Preparation Committee-Member
- Dept. Special Search Committees –Member
- Mechanical Dept Chair Search Committees -Member

Other Committees

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- Ph.D. Proposal Preparation.
- Mechanical Engineering Search Committees (Chair) -Member
 - Member of the Faculty Senate Executive Committee.
 - Member of the College Implementation Committee
 - College Faculty Review Advisory Committee
 - College-wide AdHoc Committee on PhD Student Support
 - Senior Faculty Review Advisory Committee Member
 - Business College Endowed Search Committees -Member
 - ECE Department Search Committees Member (Assistant, Full, and Distinguished- total four positions) -
 - Mechanical Engineering Search Committees (assistant -2 position) -Member
 - Mechanical Engineering Search Committees (Chair) -Member
 - Bioengineering Search Committee -Member
 - College Faculty Review Advisory Committee (CFRAC) – Member
 - Mechanical Dept Chair Search Committees -Member
 - Department of EE Periodic Performance Advisory Committee

- Department ABET Preparation Committee (nine months)
- Member Biomedical Engineering Admissions Committee

3. University (specify if Chair)

Year, Committee
(Repeat as necessary)

4. Other

Year, Committee
(Repeat as necessary)

- Member of the University Assembly (UTSA, CUNY).
- Member of the University Assembly Administrative and Agenda Committee.
- Member of the Graduate Council.
- Member of the Faculty Senate.
- Member of the Faculty Senate Nominating and Elections Committee.
- Member of the College Implementation Committee
- University Faculty Review Advisory Committee
- UTSA Scholarship Committee Member
- University Review Committee Member
- University Faculty Grievance Committee
- Business College Endowed Search Committees -Member
- Provost -Review New Faculty Hiring Committee -Member
- UTSA Standing Scholarship Committee –Member
- Presidential Dissertation Fellowships Committee-Member
- Member of the Grievance Committee

C. Administrative Responsibilities:

1. Department

Year, Title
(Repeat as necessary)

V. OTHER INFORMATION

A. Patents Pending/Issued:

Patent

- *US Patent*, E. Fera and S. Aghaian, “Accelerated Predictive-Transform,” *Nov. 2004*
- Patent, N 294095FI, Finland: *Parallel Algorithms and VLSI Architecture for Stack Filtering*, 1994 in cooperation with D. Akopian, J. Astola, O. Vailno.
- Patent, SU 1832303 A1 USSR: *Apparatus for Walsh-Hadamard Transform*, 1992; in cooperation with D. Gevorkian and A. Galanterian.
- Patent, SU 1667103 A1 USSR: *Parallel Haar Processor*, 1991; in cooperation with D. Gevorkian, A. Galanterian and A. Melkumian.
- Certificate of Authorship, 1098005 USSR: *Hadamard Processor for Signal Processing*, 1983;
- Certificate of Authorship, 1169866 USSR: *Haar Type Processor*, 1985; in cooperation with K. Abgarian.
- Certificate of Authorship, 1187176 USSR: *Haar Processor for Signal Processing*, 1985; in cooperation with A. Sukasian.
- Certificate of Authorship, 1116435 USSR: *Generalized Haar Processor for Signal Processing*, 1984; in cooperation with A. Matevosian and A. Melkumian.

Patent Applications

- Sos S. Aghaian Juan P. Perez and Benjamin M. Rodriguez and Ravindranath Cherukuri, “Method and Systems for Digital Image Security”, U.S Patent Applications No 11/740,742, 2007

- Karen Panetta and Sos Agaian, "METHODS AND APPARATUS FOR USING BOOLEAN DERIVATIVES TO PROCESS DATA", JULY,2007

B. Media Coverage

C. Other