

CURRICULUM VITAE

Artyom M. Grigoryan
Associate Professor

I. GENERAL INFORMATION

A. Personal Data:

Mathematician and engineer; Armenian, born in Germany Sept. 3, 1956, son of Mkrtichi Aruti Grigoryan and Raisa Gazari Babayan; came to U.S in 1996.

B. Education:

Ph.D. Physics and Mathematics	Yerevan State University, Armenia (USSR)	1990
M.S. Electrical Engineering	Texas A&M University, USA	1999
M.S. Imaging Science	Moscow Institute of Physics and Technology	1980
M.S. Mathematics	Yerevan State University, Armenia (USSR)	1978

C. Academic Appointments (chronological with latest first):

September 2007, Associate Professor, Electrical Engineering Program, UTSA

December 2000, Assistant Professor, Electrical Engineering Program, UTSA

D. Other Employment:

- Full-time Research Engineer. Department of Electrical Engineering, Texas A&M University, May - November 2000.
- Postdoctoral Research Associate, Department of Electrical Engineering, Texas A&M University, May 1999 – April 2000.
- Visiting Scientist. Signal Processing Laboratory, Tampere University of Technology, Finland, 1993-1995.
- Senior Researcher (Fellow). Department of Computation and Digital Signal Processing, Computer Center of National Academy Sciences of Republic of Armenia, 1993-1996.

E. Consulting:

- Senior Member of the International Institute of Electrical and Electronic Engineering, IEEE, (from 1998)
- Member of American Mathematical Society, AMS, (from 2004).
- Member of The International Society for Optical Engineering, SPIE, (1995-2002)

F. Certification and Licensure:

- Grigoryan Artyom M: “[A FAST PAIRED METHOD OF A 1-D CYCLIC CONVOLUTION REALIZATION](#)” (“U.S. Patent No. 7,346,498 on March 18, 2008”).
- Budendorf Lukas; Kononen Juha; Dougherty Edward R; Grigoryan Artyom M; Kallioniemi Olli P: “[SIGNAL COUNTING FOR IN SITU HYBRIDIZATION](#)” (Patent Number WO0120044, Publication date: 2001-03-22)
- A.M. Grigoryan, M. Duval, E.R. Dougherty, T.L. Thomas, ClonePath 1.0 (Invention No.1692TAMU01).

G. Honors and Awards:

2008	Who's Who in Science and Engineering, • 2008-2009 Edition
2008	International WHO'S WHO of Professionals, 2008-2009 Edition
2009	Who's Who in America, 2009 Edition

2008	2000 Outstanding Scientists 2008/2009
2007	Who's Who in Science and Engineering, • 2007-2008 (10 th Edition)
2006	Who's Who in Science and Engineering, • 2006-2007 (9 th Edition)
2006	International WHO'S WHO of Professionals, • 2005-2006 Edition
2005	Who's Who in America, 60th Diamond Edition • October 2005, USA
2005	Who's Who in America, 59 th Edition • 2005, USA
2004	Contemporary Who's Who of Professionals, 2004 th Edition, American Biographical Institute.
2002	2000 Outstanding Scientists of the 21 st Century, Int. Bio. Centre, Cambridge England
2001	International Scientist of the Year for 2001, Int. Bio. Centre, Cambridge England
2001	Who's Who in Science and Engineering, 56 th Edition • 2002, USA.
1999-2001	Human Genome Research Institute, National Institutes of Health
1999	Who in Science and Engineering, 5 th Edition • 2000-2001, USA.
1999	<i>The second Research Award for the work "Tissue microarray FISH and digital imaging: towards automated analysis of thousands of tumors with thousands of probes" at the 49th Annual Meeting of the American Society of Human Genetics, October 19 - 23, California.</i>
1997-1999	National Science Foundation, USA (two years)
1993-1994	Committee of Armenian Professional Society, USA (one and half year) PI
1993	International Science Foundation, USA (one year, PI)

II. TEACHING

A. Classroom/Laboratory:

Semester	Discipline	Class #	Course Title	Level
F 2008	EE	3523	Signals and Systems II	U
	EE	4663	Digital Image Processing	U
Su 2008	EE	3523	Signals and Systems II	U
	EE	2423	Network Theory	U
S 2008	EE	2423	Network Theory	U
	EE	6363	Advanced Topics in Signal Processing	G
F 2007	EE	3423	Signals and Systems I	
	EE	3523	Signals and Systems II	
	EE	5263	Topics in DSP: Digital Image Processing	
Su 2007	EE	3423	Signals and Systems I	U
	EE	3523	Signals and Systems II	U
S 2007	EE	5163	Digital Signal Processing	G
F 2006	EE	3423	Signals and Systems I	U
	EE	3523	Signals and Systems II	U
	EE	5263	Topics in DSP: DIP	G
	BME	6703	Biomedical Image Processing	G
Su 2006	EE	3423	Signals and Systems I	U
	EE	3523	Signals and Systems I	U

S 2006	EE	4663	Digital Image Processing	U
	EE	6263	Biomedical Image Processing	G
F 2005	EE	2423	Network Theory	U
	EE	3523	Signals and Systems II	U
Su 2005	EE	3423	Signals and Systems I	U
	EE	3523	Signals and Systems II	U
S 2005	EE	3523	Signals and Systems II	U
	EE	6363	Advanced Digital Signal Processing	G
F 2004	EE	3423	Signals and Systems I	U
	EE	5263	Topics DSP: Biomedical Image Pro	G
Su 2004	EE	3423	Signals and Systems I	U
	EE	3523	Signals and Systems II	U
S 2004	EE	3523	Signals and Systems II	U
	EE	4663	Digital Image Processing	U
F 2003	EE	3423	Signals and Systems I	U
	EE	5263	Digital Image Processing	G
Su 2003	EE	3523	Signals and Systems II	U
S 2003	EE	3423	Signals and Systems I	U
	EE	4663	Digital Image Processing	U
F 2002	EE	3423	Signals and Systems I	U
	EE	5613	Digital Signal Processing	G
Su 2002	EE	3423	Signals and Systems I	U
S 2002	EE	3423	Signals and Systems I	U
	EE	4663	Digital Image Processing	U
S 2001	EE	3423	Signals and Systems I	U
F 2001	EE	3423	Signals and Systems I	U

Level: Undergraduate (U), Graduate (G)

(Independent classes, MS and PhD research and dissertation classes are not included)

B. Instructional Development:

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

EE	3423, 3523	Signals and Systems I Signals and Systems II	Fall 2006-Fall 2008
EE	4663	Digital Image Processing	Spring 2002, Fall 2008
EE	4643	Digital Signal Processing	Spring 2009
EE	5263	Digital Image Processing	Fall 2003
EE	6363	Advanced Topics in DSP	Fall 2004, Spring 2008
BME	6263	Biomedical Image Processing	Fall 2006
EE	5163	Digital Signal Processing	Spring 2007
EE	2423	Network Theory	Fall 2005, Spring 2008.

2. Media and Software Developed

Software for processing FISH images for NIH 2000-2002.

C. Masters' Theses and Ph.D. Dissertations Directed

1. Masters

Supervision of eight MS students:

1. Elias Gonzalez, "*Novel Methods of Integer Fourier Transform*," (starting summer 2006, is working on new integer Fourier transforms).
2. MS in EE, Julian, Anugom, "*Multiresolution Signal Processing by Fourier Transform Time-Frequency Correlation Analysis*," May 2006.
3. MS in EE, Alla Srikrishna, "*Novel Method of Image Reconstruction Using Tensor Representation - Its Applications in Positron Emission Tomography*," December 2005.
4. MS in EE, Shih-Chia Liu "*Method of Tensor Representation for Reconstruction of Image from Projections*," May 2005.
5. MS in EE, Jung-Hua Liao, "*New Methods of Filtering for 1-D Signals by the Paired Transform*," May 2005.
6. MS in EE, Veerabhadrasam S. Bhamidipati, "*New Methods of Calculation of Reversible Integer Discrete Cosine Transform*," December 2004.
7. MS in EE, Larry Stephen Lamoureux, "*Image De-noising via Local Information Based Fuzzy Filters*," May 2002. MS in EE,
8. MS in EE, Ashish Dinanath, May 2002 (Not Thesis option).

2. Ph.D. Dissertation

1. PhD in EE, Fatma Arslan, "*Image Enhancement and Directional Denoising by Paired Transform*," Graduated in March 2007.
2. PhD in EE, Serkan Dursun, "*Peak-to-Average Power Ratio Reduction in Multi-carrier Communication Systems*," (Expected graduation is May 2010).
3. PhD in EE, Khalil Naghdali, "*Fourier Analysis and Multiresolution in Imaging*" (Expected graduation is 2011-12).
4. PhD in EE, Nan Du, "Method of Paired Representation in Image Reconstruction by Projections," (Expected graduation is 2010-11).
5. PhD in EE, Sree Phani Kishore Devineni, "Methylome Analysis" (started on October 2008).

D. Membership on Graduate Committees

1. Masters

- MS in EE, Eric C Neleigh, "The implementation of the FFT and splitting signal generation with a FPGA." December 2008.
- MS in EE, Swati Goyal, "*Software Receiver Algorithms for Assisted GPS*," December 2005.
- MS in EE, Ranganadh Narayanam, "*Implementation and Performance Evaluation of The Discrete Fourier Transform Using Radix-2 and Paired Transform Algorithms*," May 2004.
- MS in EE, Khanh Vu, "*Outliers Filtering Using The Gini's Mean Difference*," May 2004.
- MS in EE, Zhangji Hu, "*MIMO and Space-Time Coding: System Analysis and Simulations*", August 2004.

2. Ph.D. Dissertation

- PhD in Biomedical Engineering, Kihak Lee, "*A positron-probe system for arterial input function quantification for positron emission tomography*," August 2008.
- PhD in EE, Phanikrishna Sagiraju, "*A Software GPS Receiver Design for Indoor Environments*."
- PhD in EE, Tao Wei, "*Expectation Propagation Algorithm for Bayesian Inference in Dynamic Systems*."

E. Postdoctoral Fellows Supervised

F. Undergraduate Students (Research) Supervised

- Ranjith Nath Raghunath
- Joann M. Moreno

Faculty Mentor for NSF CSEMS Scholar

- Russell S. Stavinoha (2004)
- Stephen M. Escobedo (2003)
- Henry C. Zuniga (2003)
- Gonzales, Shannon R (2002)
- Clarence O. Gaeg (2002)
- James Evangelista (2003)
- Cesar A. Rivas (2001)

Mentor for Senior Projects

My assistance was given to all students whose projects were related or used the methods of digital signal and image processing. The last and current senior projects are the following:

- "Photo Trace" (Daniel Perez, Javier Salvatierra, and Arturo Zavala, Spring 2006)
- "Fast implementation of the 32-point DFT" (R.N. Raghunath, C. Gerhard, A. Fowler, J. Manzanalez, Fall 2007)
- "Calculation of 1-D Voice-Target Signal Coordinates" (May 2008)

III. RESEARCH

A. Bibliography:

1. Books/Book Chapters

1a. Books

- A.M. Grigoryan and S.S. Agaian, Multidimensional Discrete Unitary Transforms: Representation, Partitioning, and Algorithms, *Marcel Dekker, Inc., August 2003*.
- A.M. Grigoryan and M.M. Grigoryan, Brief Notes in Advanced DSP: Fourier Analysis with MATLAB, text-book (350 pages), *CRC Press Taylor and Francis Group (to be published February 12, 2009)*.
- A.M. Grigoryan and M.M. Grigoryan, "Solution Manual - Brief Notes in Advanced DSP: Fourier Analysis with MATLAB," (160 pages), *CRC Press Taylor and Francis Group*, (to be published by February 2009).
- Coauthor of the book, *Theory and methods of Signal Induced Transforms*, (to be submitted for publication in 2009).
- Coauthor of the book, "*Hadamard Matrices*," (200 pages) is prepared for publication in 2009.
- Artyom Grigoryan, "*Brief Notes in Digital Image Processing*," text-book (is prepared for publication in 2009-2010).

1b. Book Chapters

1. A.M. Grigoryan and S.S. Agaian, "*Transform-Based Image Enhancement Algorithms With Performance Measure*," in *Advances in Imaging and Electron Physics*, *Academic Press*, vol. 130, pp. 165-242, May 2004.
2. A.M. Grigoryan, "*Multi-Dimensional Discrete Unitary Transforms*," invited book-chapter (103 pages), submitted for the 3rd edition on *The Transforms and Applications Handbook in the series Electrical Engineering and Signal Processing (Editor in Chief, Prof. Alexander Poularikas)*, Taylor and Francis-CRC Press, February 2009 (scheduled release).

2. Journal Papers (refereed full length)

2a. Published or In Press

Journal papers (2000 and 2008):

- A.M. Grigoryan, and M.M. Grigoryan, "Discrete signal induced unitary transforms," selected paper in the book [Computer and Simulation in Modern Science](#) (Editor-in-Chief: Prof. Nikos Mastorakis), vol. 1, pp. 26-31, Mathematics and Computers in Science and Engineering, A series of Reference Books and Textbooks, WSEAS Press, 2008.
- A.M. Grigoryan, "Novel Reversible Integer Fourier Transform With Control Bits," *IEEE Transaction on Signal Processing*, vol. 55, no. 11, Nov. 2007.
- A.M. Grigoryan, "Representation of the Fourier Transform by Fourier Series," [Journal of Mathematical Imaging and Vision](#), March 2006.
- F.T. Arslan and A.M. Grigoryan, "Fast Splitting alpha-rooting Method of Image Enhancement: Tensor Representation," (to appear in [IEEE Trans. on Image Processing](#), November 2006).
- A.M. Grigoryan, "Fourier transform representation by frequency-time wavelets," [IEEE Trans. On Signal Processing](#), vol. 53, no. 1, pp. 2489-2497, July 2005.
- A.M. Grigoryan and V.S. Bhamidipati, "Method of flow graph simplification for the 16-point discrete Fourier transform," [IEEE Transaction on Signal Processing](#) vol. 53, no. 1, pp. 384-389, January 2005.
- A.M. Grigoryan, "An Algorithm for Calculation of the Discrete Cosine Transform by Paired Transform," [IEEE Transaction on Signal Processing](#), vol. 53, no. 1, pp. 265-273, January 2005.
- A.M. Grigoryan, "A novel algorithm for computing the 1-D discrete Hartley transform," [IEEE Signal Processing Letters](#), vol. 2, pp. 156-159, Feb. 2004.
- A.M. Grigoryan, "Efficient algorithms for computing the 2-D hexagonal Fourier transforms," [IEEE Transaction on Signal Processing](#), June 2002, vol. 50, no. 6, pp. 1438-1448.
- A.M. Grigoryan and E.R. Dougherty, "Optimization of Linear Filters under Power-Spectral-Density Stabilization," [IEEE Transaction on Signal Processing](#), vol. 49, no. 10, pp. 2292-2300, October 2001.
- A.M. Grigoryan and S.S. Agaian, "Shifted Fourier Transform Based Tensor Algorithms for 2-D DCT," [IEEE Transaction on Signal Processing](#), Sep. 2001, vol. 49, no. 9, pp. 2113-2126.
- M. Grigoryan, "2-D and 1-D Multi-Paired Transforms: Frequency-Time Type Wavelets," [IEEE Transaction on Signal Processing](#), February 2001, vol. 49, no. 2, pp. 344-353.
- S.S. Agaian, K.P. Lentz, and A.M. Grigoryan, "Transform-Based Image Enhancement Algorithms," [IEEE Transaction on Image Processing](#), vol. 10, no. 3, pp. 367-382, March 2001.
- A.M. Grigoryan and S.S. Agaian, "Method of fast 1-D Paired Transforms for Computing the 2-D Discrete Hadamard Transform," [IEEE Transactions on Circuits and Systems II](#), vol. 48, no. 1, January 2001.
- A.M. Grigoryan and E.R. Dougherty, "Bayesian Robust Optimal Linear Filters," [Signal Processing](#), 81, pp. 2503-2521, 2001.
- A.M. Grigoryan and S.S. Agaian, "Efficient Algorithm For Computing the 2-D Discrete Hadamard Transform," [IEEE Transactions on Circuits and Systems II](#), vol. 47, no. 10, pp. 1098-1111, October 2000.
- A.M. Grigoryan and S.S. Agaian, "Split Manageable Efficient Algorithm for Fourier and Hadamard Transforms," [IEEE Transaction on Signal Processing](#), January 2000, vol. 72, no. 1, pp. 172-183.

Journal papers in Medical and Biomedical Areas:

- A.M. Grigoryan, "Method of Paired Transforms for Reconstruction of Images from Projections: Discrete Model," [IEEE Transaction on Image Processing](#), vol. 12, no. 9, pp. 985-994, Sept. 2003.
- A.M. Grigoryan, E.R. Dougherty, J. Kononen, L. Bubendorf, G. Hostetter, and O.P. Kallioniemi, "Morphological Spot Counting from Stacked Images for Automated Analysis of Gene Copy Numbers by Fluorescence In Situ Hybridization," [Biomedical Optics](#), vol. 7, no. 1, pp. 109-122, Jan. 2002.
- A.M. Grigoryan, G. Hostetter, O.P. Kallioniemi, and E.R. Dougherty, "Simulation Toolbox for 3D-FISH Spot Counting Algorithms," [Real Time Imaging](#), vol. 8, no 3, pp. 203-212, June 2002.
- G.H. Hostetter, C.L. Andersen, L. Bubendorf, J. Kononen, E.R. Dougherty, A.M. Grigoryan, O. Kallioniemi, "Design of an Automated Spot Counting Program for Interphase FISH on the

Tissue Microarray," [American Journal of Human Genetics](#), vol. 67(4), 318, October 2000.

2b. Submitted/Under Preparation.

- [A.M. Grigoryan](#) and K. Naghdali "On a method of paired representation: Enhancement and decomposition by series direction images," revision is submitted to [Journal of Mathematical Imaging and Vision](#).
- [A.M. Grigoryan](#) "Method of Paired Representation: Decomposition by Series Direction Images and Enhancement," submitted to *IEEE Transaction on Image Processing*.
- [A.M. Grigoryan](#), "On 8-point reversible integer discrete Fourier transform with control bits," in process of submitting to *IEEE Signal Processing Letters*.
- Elias Gonzalez and [Artyom Grigoryan](#), "16-point reversible integer discrete Fourier transform with control bits," in process of resubmitting to journal *IEEE Trans. on Signal Processing*.

3. Conference Papers

3a. Published or Accepted

Papers (2000 and 2008):

1. [A.M. Grigoryan](#), "Decomposition by series direction images: Image reconstruction and enhancement," accepted and to be published in Proceedings of the *SPIE Conference, Electronic Imaging*, San Jose, January 18-21, 2009.
2. [A.M. Grigoryan](#) and Merughan M Grigoryan, "Discrete integer Fourier transform in real space: elliptic Fourier transform," accepted and to be published in Proceedings of the *SPIE Conference, Electronic Imaging*, San Jose, January 18-21, 2009.
3. Elias Gonzalez and [Artyom M. Grigoryan](#), "Reversible integer 2D Fourier transform," accepted and to be published in Proceedings of the *SPIE Conference, Electronic Imaging*, San Jose, January 18-21, 2009.
4. [A.M. Grigoryan](#) and M.M. Grigoryan, "Discrete signal induced unitary transforms,"(paper number: 577-827), in ISI Book (Thomson), published by [American Conference on Applied Mathematics, WSEAS 2008](#), Cambridge, MA, March 24-26, 2008.
5. Serkan Dursun and [Artyom Grigoryan](#), "Nonlinear sliding norm transforms for peak-to-average power ratio reduction (PAPR) in Orthogonal Frequency Division Multiplexing (OFDM) Communication System," revision is submitted for publication in journal [Computers & Electrical Engineering](#).
6. F.T. Arslan and [A.M. Grigoryan](#), "Enhancement of medical images by the paired transform," Proceedings of the 14th IEEE International Conference on Image Processing (ICIP 2007), September 16-19, 2007, San Antonio, TX.
7. [A.M. Grigoryan](#) and M.M. Grigoryan, "Discrete unitary transforms generated by moving waves," *Proceedings of the SPIE Symposium on Optical Engineering & Applications, August 26-30, 2007, San Diego, CA*.
8. [A.M. Grigoryan](#) and M.M. Grigoryan, "New discrete unitary Haar-type heap transforms," *Proceedings of the SPIE Symposium on Optical Engineering & Applications, August 26-30, 2007, San Diego, CA*.
9. [A.M. Grigoryan](#) and M.M. Grigoryan, "Nonlinear approach of construction of fast unitary transforms," in the Proceedings of the *40th Annual Conference on Information Sciences and Systems (CISS 2006)*, Princeton University, pp. 1073-1078, March 22-24, 2006, Princeton.
10. J.U. Anugom and [A.M. Grigoryan](#), "Method of splitting signals by the paired transform," [2006 IEEE International Symposium on Industrial Electronics ISIE'06](#), June 9-13, Montreal, Canada.
11. M. Grigoryan and Serkan Dursun, "Method of sliding norm transforms for peak-to-average power reduction in OFDM systems," [2006 IEEE International Symposium on Industrial Electronics ISIE'06](#), June 9-13, Montreal, Canada.
12. F.T. Arslan and [A.M. Grigoryan](#), "Alpha-rooting image enhancement by paired splitting-signals," in the Proceedings of the [3rd IEEE International Symposium on Biomedical Imaging: from Macro to Nano](#), (ISBI 2006), pp. 968-971, April 6-9, 2006, Arlington, VA.

13. S. Alla, M.J. Moreno, and A.M. Grigoryan, "Novel method of tensor representation for reconstruction of 3D PET images from projections," in Proceedings of SPIE - Volume 6246, Visual Information Processing XV, April 18-19, 2006 .
14. F.T. Arslan, J.M. Moreno, and A.M. Grigoryan, "Paired directional transform-based methods of image enhancement," in Proceedings of SPIE - Volume 6246, Visual Information Processing XV, April 18-19, 2006.
15. A.M. Grigoryan and S. Dursun, "Multiresolution of the Fourier Transform," in the Proceedings of the [IEEE International Conference on Acoustics, Speech, and Signal Processing](#), 2005 (ICASSP '05), vol. 4, pp. 577–580, March 18-23, 2005, Philadelphia, PA.
 - F.T. Arslan and A.M. Grigoryan, "Method of Image Enhancement By Splitting-Signals," in the Proceedings of the [IEEE International Conference on Acoustics, Speech, and Signal Processing](#), 2005 (ICASSP '05), vol. 4, pp. 177–180, March 18-23, 2005.
 - F.T. Arslan, J.M. Moreno and A.M. Grigoryan, "New Methods of Image Enhancement," Quantum Information and Computation III. Edited by Donkor, Eric J.; Pirich, Andrew R.; Brandt, Howard E. Proceedings of the SPIE, Volume 5817, pp. 225-236, the International Conference of SPIE Defense and Security Symposium, Orlando, FL, March 29-31, 2005.
 - A.M. Grigoryan, V.S. Bhamidipati, S. Alla, "New method of calculation of reversible integer 1D DCTs" [5672-24], the International Conference: Image Processing: Algorithm and Systems IV, *IS & T/SPIE Annual Symposium, Electronic Imaging*, San Jose, CA, 16-20 January, 2005.
 - F.T. Arslan, A.M. Grigoryan, and A.K. Chan, "Method of Tensor Transform for Directional Clutter Removal of Aerial Digital Images," in Proceedings of *DCDIS 4th International Conference on Engineering Applications and Computational Algorithms Guelph*, Ontario, Canada, July 27-29, 2005.
 - A.M. Grigoryan, S. Dursun, and E.E. Regentova, "Statistics Transfer Method of Lossless Encoding," Proceedings of [IEEE International Conference on Information Technology: Coding and Computing](#), *ITCC-2004*, vol. 2, pp. 620-624, Las Vegas, Nevada, USA.
 - V. S. Bhamidipati and A.M. Grigoryan, "Parameterized reversible integer discrete cosine transforms," (in Processing of the conference on Image Processing: Algorithms and Systems III, part of the IS&T/SPIE International Symposium, Electronic Imaging 2004, 18-22 January 2004 in San Jose, CA USA).
 - F.T. Arslan, J.G. Vital, and A.M. Grigoryan "Method of arithmetical thresholding of images," (in Processing of the conference on Image Processing: Algorithms and Systems III, part of the IS&T/SPIE International Symposium, Electronic Imaging 2004, 18-22 January 2004 in San Jose, CA USA).
 - A.M. Grigoryan, "Nontraditional Cross Sections and Morphological Operations," Processing of the IS&T/SPIE 13 International Symposium, Electronic Imaging 2003: Science & Technology, pp. 157-168, Santa Clara, CA.
 - A.M. Grigoryan and S.S. Agaian, "Tensor Form of Image Representation: Enhancement by Image-Signals," Processing of the IS&T/SPIE 13 International Symposium, Electronic Imaging 2003: Science & Technology, pp. 221-231, Santa Clara, CA.
 - A.M. Grigoryan, "Paired algorithm of the 1-D discrete Hartley transform," Processing of the ISPC & GSPx, Dallas, March 31-April 3, 2003.
 - A.M. Grigoryan and S.S. Agaian, "Reconstruction of Images from Projections by the Tensor Transform," Processing of the ISPC & GSPx, Dallas, March 31-April 3, 2003.
 - A.M. Grigoryan, P.A. Patel, and N. Ranganadh, "Novel algorithm of the Haar transform," Processing of the ISPC & GSPx, Dallas, March 31-April 3, 2003.
 - A.M. Grigoryan, S. Agaian, A.R. Manukyan, "A novel method of splitting the 3-D discrete Hartley transform," in Proceedings of the [IEEE International Conference on Image Processing, ICIP-2003](#), vol. 1, pp. 1009-1012, Sept. 14-17, 2003.
 - A.M. Grigoryan and E.E. Regentova, "A new method of optimal coding," [The Third IEEE Conference on Information Technology ITCC-2002](#), pp. 378-382, Las Vegas, Nevada, USA, April 8-10 2002.
 - A.M. Grigoryan and E.R. Dougherty, "Automatic counting of illuminated spheres in a random Boolean model," [4667-21] Processing of SPIE, "Image Processing: Algorithms and Systems" Conference, Electronic Imaging 2002, IS&T/SPIE 13 International Symposium, San Jose, January 21-23 2002.

- A.M. Grigoryan, S.S. Agaian, and E.R. Dougherty, "Splitting of the 2-D Hexagonal DFT," Processing of the conference *Pattern Recognition and Information Processing – PRIP'2001*, Belarus, 2001.
- A.M. Grigoryan, S.S. Agaian, and K. Panetta, "A new measure of Image Enhancement," Processing of the conference *ACIVS 2001, IEEE Signal Processing*, in Baden-Baden, Germany, 2001.
- A.M. Grigoryan, S.S. Agaian, and E.R. Dougherty, "Fibonacci thresholding, signal representation, and morphological filters," EUSIPCO-2000, X European Signal Processing Conference, Tampere, Finland, Sept. 2000.
- A.M. Grigoryan and S.S. Agaian, "Three algorithms for computing the 2-D discrete Hartley transform," *IEEE International Conference on Image Processing, ICIP 2000*, Canada, 2000.

Referred conference papers in Medical and Biomedical Area

- A.M. Grigoryan and S.-C. Liu, "New method of image reconstruction from projections," in *Proceedings of the IEEE International Symposium on Biomedical Imaging: from Macro to Nano, ISBI 2004*, pp. 776-779, April 2004, Arlington, VA.
- A.M. Grigoryan and F.T. Arslan, "Image enhancement by the tensor transform," in *Proceedings of the IEEE International Symposium on Biomedical Imaging: from Macro to Nano, ISBI 2004*, pp. 816-819, April 2004, Arlington, VA.
- G.H. Hostetter, A.M. Grigoryan, C.L. Andersen, L. Bubendorf, J. Kononen, E.R. Dougherty, and O.P. Kallioniemi, "Towards Automated Spot Counting of Interphase FISH Experiments on Tissue Microarray," [2849] *2001 Annual Meeting of American Association for Cancer Research*, New Orleans, March 24-29, 2001.
- A.M. Grigoryan and E.R. Dougherty, "Morphological counting of illuminated 3D bodies," [4304-06] *Processing of SPIE, "Nonlinear Image Processing and Pattern Analysis XII" Conference, Electronic Imaging 2001, IS&T/SPIE 13 International Symposium*, San Jose, January 22-23 2001.
- L. Bubendorf, A.M. Grigoryan, J. Kononen, M. Barlund, O. Monni, A. Kallioniemi, G. Sauter, E.R. Dougherty, and O. Kallioniemi, "FISH on tissue microarrays: Towards automated analysis of genetic alterations in thousands of tumors with multiple probes," *The Eighth International Workshop on Chromosomes in Solid Tumors*, Tucson, AZ, January 30 - February 1, 2000.
- G.H. Hostetter, C.L. Andersen, L. Bubendorf, J. Kononen, E.R. Dougherty, A.M. Grigoryan, O. Kallioniemi, "Design of an Automated Spot Counting Program for Interphase FISH on the Tissue Microarray," *American Journal of Human Genetics*, vol. 67, no. 4, 318, October 2000.
- A. M. Grigoryan, E.R. Dougherty, L. Bubendorf, J. Kononen, and O. Kallioniemi, "Rapid analysis of gene copy numbers by FISH and automatic spot counting from stacked confocal images" [3924-21] *BIOS 2000, International Biomedical Optics Symposium, Conference Molecular Imaging: Reporters, Dyes, Markers, Instrumentation II*, San Jose, California, January 2000.
- G.H. Hostetter, A.M. Grigoryan, C.L. Andersen, L. Bubendorf, J. Kononen, E.R. Dougherty, and O. Kallioniemi, "Design of an Automated Spot Counting Program for Interphase FISH on the Tissue Microarray" [318] *50th Annual Meeting of the American Society of Human Genetics*, Philadelphia, October 3 - 7, 2000.
- L. Bubendorf, J. Kononen, M. Barlund, A. Kallioniemi, A. Grigoryan, G. Sauter, E. R. Dougherty, and O.-P. Kallioniemi, "Tissue microarray FISH and digital imaging: towards automated analysis of thousands of tumors with thousands of probes" [316] *Cancer Genetics, 49th Annual Meeting of the American Society of Human Genetics*, Moscone Center in San Francisco, California, October 19 - 23, 1999, (received **Postdoctoral Translation Research Award at ASHG**)

3b. Submitted/Under Preparation

- A.M. Grigoryan and K. Naghdali, "Fast Heap Transforms and their Application in Cryptography," Visual Information Processing XVII Defense and Security Symposium, SPIE 2008.

- There are 4 more papers that are preparing for publication.

4. **Book Reviews**

1. Textbook, *Digital Signal Processing using MATLAB*, by Ingle/Proakis, Thomson Engineering (2005)
2. Textbook, *Introduction to Signals and Systems Analysis*, by Gopalan, Thomson Engineering (2004).
3. Textbook, *Signals and Systems*, by M.J. Roberts, McGraw-Hill Publishing (2004)
4. Textbook, *Digital Signal Processing using MATLAB*, 3rd edition by Ingle/Proakis, Thomson Engineering (2007)
5. *Fundamentals of Wavelets: Theory, Algorithms, and Applications*, Second Edition by Jaideva C. Goswami and Andrew K. Chan (2008)
6. Text book, *Digital Image Processing* by Jayaraman, McGraw Hill, Higher Education (2008)

5. **Other Articles**

B. **Lectures, Seminars**

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

1. **Scientific Lectures, Seminars**

2. **Other Lectures, Seminars, Briefings, Short courses**

C. **Areas of Research Interest**

- Fast multi-dimensional unitary transforms
- Integer Fourier transforms
- Design of robust linear and nonlinear filters
- Image reconstruction and enhancement
- Processing biomedical images
- 3-D PET image reconstruction

D. **Research Support**

1. **National/International**

Agency: National Human Genome Research Institute of the NIH
 Title: **Fish Spot Counting for 3-D Tissue Microarray Stacks**
 Peer Reviewed (Y/N): Y
 Date (start-end): 2001-2002
 Total amount: \$37,530
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF
 Title: **"CRI: Experimental Research in High-Performance Computing and Wireless Networking,**
 Peer Reviewed (Y/N): Y
 Date (start-end): 2006-2010
 Total amount: \$500,000
 Role ([Principal Investigator](#)/Co-investigator): Co-PI

2. **State**

Agency:
 Title:
 Peer Reviewed (Y/N):
 Date (start-end):
 Total amount:
 Role ([Principal Investigator](#)/Co-investigator):

(Repeat for each grant)

3. **Companies**

Agency:
Title:
Peer Reviewed (Y/N):
Date (start-end):
Total amount:
Role ([Principal Investigator](#)/Co-investigator):

(Repeat for each grant)

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

Agency: Center for Infrastructure Assurance and Security, UTSA
Title: **Development of Super Fast Steganography Detection Tools**
Peer Reviewed (Y/N): Y
Date (start-end): 2002-2003.
Total amount: \$165,000
Role ([Principal Investigator](#)/Co-investigator): Co-PI

Agency: Faculty Research Award from UTSA
Title: **Method of Image Reconstruction from Projections in X-Tomography**
Peer Reviewed (Y/N):
Date (start-end): 2004
Total amount: \$5,000
Role ([Principal Investigator](#)/Co-investigator): PI

Agency: Whitaker Foundation grant
Title: **Processing medical images**
Peer Reviewed (Y/N):
Date (start-end): 2002
Total amount: \$4,000
Role ([Principal Investigator](#)/Co-investigator): PI

(Repeat for each grant)

5. **Pending with funding agency**

Agency: NSF CBET - EXPLOSIVES & RLTD THREATS EXP-SA
Title: **Surveillance and Early Detection of IEDs using a Network of Autonomous Aerial and Ground Vehicles**
Peer Reviewed (Y/N): Y
Date (start-end):
Total amount:
Role ([Principal Investigator](#)/Co-investigator): Co-PI

6. **Proposals Rejected**

Agency: NSF Applied Mathematics
Title: **Paired Transform-based Time-Frequency Resolution: Direction Images and Applications in Image Processing**
Peer Reviewed (Y/N): Y

Date (start-end): 2008-2010
 Total amount: 195,731
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: Faculty Research Award 07-08, UTSA
 Title: **Novel Fast Convolution in Linear Systems of DSP and Communication**
 Peer Reviewed (Y/N):
 Date (start-end): 2008
 Total amount: \$5,000
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF CAREER
 Title: Splitting-Signals in Image Processing: Theory and Applications
 Peer Reviewed (Y/N): Y
 Date (start-end): 01/01/06
 Total amount: \$399,995
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF
 Title: "Bridging Engineering Science and Technology (BEST) by Identification of Innovative Education Approaches"
 Peer Reviewed (Y/N): Y
 Date (start-end): 06/01/07
 Total amount: 728,635
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: DHHS (SCORE)
 Title: "New methods of Image Reconstruction in PET,"
 Peer Reviewed (Y/N): Y
 Date (start-end): 01/01/08
 Total amount: 205,171
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF
 Title: "Application of Paired Transforms in Signal and Images Processing,"
 Peer Reviewed (Y/N): Y
 Date (start-end): 2007
 Total amount:
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF, DMS - Applied Mathematics
 Title: Fourier Transform Time-Frequency Resolution and Applications in Signal and Image Processing
 Peer Reviewed (Y/N): Y
 Date (start-end): 06/01/06
 Total amount: 185,393
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF CAREER
 Title: "Splitting-Signals in Image Processing: Theory and Applications"
 Peer Reviewed (Y/N): Y
 Date (start-end): 06/01/05
 Total amount: 411,464
 Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF CAREER
 Title: "New Wavelet-Like Transforms and Applications in Signal and Image Processing"
 Peer Reviewed (Y/N): Y
 Date (start-end): 01/01/05
 Total amount: 399,950

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF

Title: "BPC-DP: Increasing Gender and Ethnic Diversity in CISE Fields"

Peer Reviewed (Y/N): Y

Date (start-end): 01/01/06

Total amount: 599,749

Role ([Principal Investigator](#)/Co-investigator): Co-PI

Agency: NSF MPS

Title: "Fourier Transform Time-Frequency Resolution and Applications in Signal and Image Processing

Peer Reviewed (Y/N): Y

Date (start-end): 2005

Total amount:

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: ONR - Mathematical, Computer, and Information Science Division

Title: "New Methods of Image Analysis and Enhancement"

Peer Reviewed (Y/N): Y

Date (start-end): 01/01/06

Total amount: 165,143

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF – CCF Formal & Mathematical Foundation

Title: "New Methods of Image Processing: Theory and Applications"

Peer Reviewed (Y/N): Y

Date (start-end): 01/01/05

Total amount: 700,156

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: NSF, DMS - Applied Mathematics (Mathematical Biology)

Title: "Automated Analysis of Gene Copy Numbers by Fluorescence In Situ Hybridization"

Peer Reviewed (Y/N): Y

Date (start-end): 09/01/05

Total amount: 325,701

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: UTSA Faculty Research Award

Title: "Novel Reversible Integer DCT"

Peer Reviewed (Y/N): N

Date (start-end): 2003-2004

Total amount: 5,000

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: UTSA Faculty Research Award

Title: "New Method of Optimal Encoding"

Peer Reviewed (Y/N): N

Date (start-end): 2003-2004

Total amount: 5,000

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: UTSA Faculty Research Award

Title: "Analysis of Gene Copy Numbers by Fluorescence In Situ Hybridization"

Peer Reviewed (Y/N): N

Date (start-end): 2005-2006

Total amount: 5,000

Role ([Principal Investigator](#)/Co-investigator): PI

Agency: THECB ARP UTSA

Title: "Image Reconstruction from Projections in 3-D Positron Emission Tomography"

Peer Reviewed (Y/N): Y

Date (start-end): 2005-2006

Total amount:

Role ([Principal Investigator](#)/Co-investigator): PI

IV. SERVICE

A. Professional Activities:

1. Current Professional and Scientific Organizations/Societies If election/nomination required then mark with *

Years (from-to)	Name of Organization
(from 1998)	Senior Member of the International Institute of Electrical and Electronic Engineering, IEEE,
(from 1998)	Member of Signal Processing Society
(from 2004)	Member of American Mathematical Society, AMS
(1995-2002)	Member of The International Society for Optical Engineering, SPIE
(2004-2006)	Member of American Society for Engineering Education, ASEE
(2004)	Member of Central Texas Section IEEE Admission and Advancement Panel

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

Years (from-to)	Name of Organization	Position held
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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

Medical Physics

International Journal on Computers and Electrical Engineering

International Conference/Meeting/Symposium Organizer/Chairmanship

Session Chair/Organizer

IEEE conference SMC2009

2008-2009

Member of Local Arrangements

IEEE International Conference on Image Processing (ICIP'07)

2007

Chair of Local Arrangements

IEEE Globecom 2006 Signal Processing for Communication

2006

Session Chair

IEEE Signal Processing Conferences

2005-2006

Session Chair

SPIE Image Processing Conferences,

1998- 2001
Session Chair

IEEE Region 5 Undergraduate Paper Competition
2006
Judge

Reviewer for Journals

IEEE Transactions on Signal Processing
IEEE Transactions on Image Processing
IEEE Signal Processing Letters
IEEE Transactions on Circuits and Systems for Video Technology
IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing
IEEE Transactions on Circuits and Systems I.
Signal Processing
Estuarine Coastal and Shelf Science
Real Time Imaging, Academic Press
Journal of Electronic Imaging
Journal of Mathematical Imaging and Vision

Review Panels (for grants)

1. "*Super-resolution of nonuniform sensor data through multiple renderings*" of the University of South Carolina.
2. "*Biometric Pattern Recognition and Information Measuring via System Modeling, Identification and Data Fusion,*" of the Southern University and A & M College, (submitted to EPSCoR-style grants program)

Continuing Education Seminars Given

None

4. Community Service

None

B. Committees:

1. Department (specify if Chair)

Year, Committee, Meeting frequency
(Repeat as necessary)

- Chairman of the Digital Signal Processing
- Chairman of Committee "TA Application Review"
- Chairman of the Committee "Scholarship and Awards"
- Member of ABET PO Committee
- Member of ECE Committee "Laboratories"
- Member of ECE DFRAC Committee
- Member of ECE PhD Admission
- Member of ECE MS-EE, CEG, & PhD Catalog Changes
- Chairman of the Committee "Undergraduate Course Transfer/Petition" [2007]
- Member of Committee "Commencement Fall 20007" and "Commencement Spring 20007"
- Member of EE Travel Committee [2003-2006]

2. College of Engineering (specify if Chair)

Year, Committee, Meeting frequency

- Member of College Faculty Development Leave Committee [2008-2010]
- Member of The College of Engineering's Intellectual Property Advisory Committee [2007]
- Member of College Faculty Development Leave Committee [2007-2008]
- Member of ECE Committees: Signal Processing, Awards, and Faculty Grievance [2006-07].
- Member of The College of Engineering's Intellectual Property Advisory Committee [2005-06]
- Core Faculty Member of the Graduate Program in Biomedical Engineering (UTSA-UTHSCSA) [from 2003]
- Member of Graduate Faculty for Biomedical Engineering [from 2003]
- Member of Biomedical Engineering Admissions Committee [from 2003]
- Member of BME Imaging Track Curriculum Committee [2008]

3. University (specify if Chair)

Year, Committee, Meeting frequency

(Repeat as necessary)

- Member of the Graduate Council [Spring 2007]
- Member of the Graduate Council [Fall 2006]
- Member of Faculty Development Leaves Committee [2003-2004]
- Member of Information Technology Research Advisory Committee [2004]
- Special Member of Graduate Council (2002)

4. Other

Year, Committee, Meeting frequency

(Repeat as necessary)

- Member of The Feasibility Study for an M.S. degree program in Physics in The Physics and Astronomy Department at UTSA [from 2002]

C. Administrative Responsibilities:

1. Department

Year, Title

(Repeat as necessary)

2. College

Year, Title

(Repeat as necessary)

3. University

Year, Title

(Repeat as necessary)

4. Staff Currently Supervised (not including students):

V. OTHER INFORMATION

A. Patents Pending/Issued:

Patents:

- *Grigoryan Artyom M: "A FAST PAIRED METHOD OF A 1-D CYCLIC CONVOLUTION REALIZATION" (U.S. Patent No. 7,346,498 on March 18, 2008).*
- *Budendorf Lukas; Kononen Juha; Dougherty Edward R; Grigoryan Artyom M; Kallioniemi Olli P: "SIGNAL COUNTING FOR IN SITU HYBRIDIZATION" (WO0120044, Publication date: 2001-03-22).*

Invention:

- *A.M. Grigoryan, M. Duval, E.R. Dougherty, T.L. Thomas, ClonePath 1.0" (No.1692TAMU01).*

B. Media Coverage

C. Other

A handwritten signature in blue ink, appearing to be 'Artyom M. Grigoryan', is written in a cursive style.