

ANTONIO H. COSTA

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EDUCATION

Ph.D., University of Rhode Island, August 1994

Major Field: Electrical Engineering

Dissertation: *Multiform, Tilttable Time-Frequency Representations and Masked Auto Wigner Distribution Synthesis*

M.S., University of Massachusetts Dartmouth, June 1985

Major Field: Electrical Engineering

Thesis: *Maximum Entropy Spectral Analysis on an IBM Personal Computer*

B.S. (*summa cum laude*), University of Massachusetts Dartmouth, June 1983

Major Fields: Computer Engineering, Computer Science, Electrical Engineering, Mathematics

Engineering Transfer Program, Bristol Community College, 1978-1980

EXPERIENCE

Chairperson, Department of Electrical and Computer Engineering, University of Massachusetts Dartmouth, North Dartmouth, Massachusetts, July 2014-

Administering a department composed of approximately 15 faculty, two technicians and one administrative assistant and offering two B.S. degrees, two M.S. degrees, and a Ph.D. degree.

- Treasurer, Faculty Federation
- Member, Faculty Federation Executive Board
- Member, University Budget Review Board
- Co-Chairperson, Faculty Federation Negotiating Team

Interim Dean, College of Engineering, University of Massachusetts Dartmouth, North Dartmouth, Massachusetts, September 2005-August 2007

Administered a six-department College that offers undergraduate and graduate degrees in all of its disciplines including the only stand-alone Ph.D. degree within the university; managed a division with three administrators, 70 faculty and 22 support staff with an overall budget near \$10M, an operating budget of approximately \$1.5M and annual expenditures on externally funded grants/contracts of around \$3.1M.

College

- Bachelor of Science degree in Bioengineering (multi-disciplinary proposal)
- Master's in Engineering Management (joint proposal with the Charlton College of Business)

- Accreditation Board for Engineering and Technology (ABET, two interim reports)
- Research Seed Initiative Fund (revamped process; introduced accountability)
- Member, Operating Board, National Textiles Center
- Open communication lines between faculty/staff and the Office of Research Administration
- Strategic Planning Task Force (Goal: to develop an all-inclusive business plan for the College)
- Transfer articulation agreements (Bristol Community College)
- Online curriculum flowcharts for all undergraduate programs
- Establishment of pathways program
- Student ratings of teaching effectiveness (common form; tightened process)
- Major re-structuring of the Cooperative Education and Internship Program
- Revamping of Freshmen Summer Institute
- Publication of first ever annual reports (2005-2006 & 2006-2007)
- Admissions (recruitment; brochure; poster; open houses and discovery days)
- First Annual College of Engineering Convocation (scholarship awards)
- College's commencement ceremony

Stewardship

- Successful administration of budget (equitable distribution of resources among departments)
- Synergies (computer engineering and computer science; civil engineering and mechanical engineering; electrical engineering and mechanical engineering; electrical engineering and physics; civil engineering, electrical engineering, materials and mechanical engineering)
- College-wide online surveys (Current Student, Senior Exit, Graduate Student Exit)
- Review and reassignment of space (Textiles building)

Outreach Activities

- Community (Newsletter, e-News, web site, holiday cards, recruitment video)
- Students (support meetings and events with graduate students; opportunities for selected senior groups to present their design projects at national competitions and to local industry; visits to several high schools to disseminate and market college's programs)
- Industry (meetings with industrial advisory boards; visits to companies; Massachusetts Business Connect, Defense Workforce Project)
- Partnership Agreement between the Naval Undersea Warfare Center Division and the University of Massachusetts Dartmouth (Partnership Program Manager for UMass Dartmouth)
- Alumni (feature articles in newsletter; dedicated web page)
- International exchange programs with Germany, Italy and Peru

University Service

Management

- Yardley Research Group (review of graduate programs)
- Human Resources Consulting Company
- Shared Governance meetings
- Chancellor's Colloquia
- Strategic Plan update

Search and Screens

- Director, Human Resources
- Provost
- Assistant Vice Chancellor for Institutional Research, Planning and Assessment
- Vice Chancellor for Student Affairs

Personnel Hiring

- Tenure-track faculty (joint appointment in computer engineering and computer science)
- Tenure-track faculty (electrical engineering)
- Associate Dean
- Assistant Dean
- Writer/Editor
- Administrative Assistant (Cooperative Education and Internship Program)
- Clerk IV (electrical and computer engineering)
- Clerk IV (physics)
- Part-time lecturers (several departments)

Professional Meetings/Memberships

- Bristol Community College's Engineering and Technology Advisory Board
- ABET Annual Meeting, Arlington, VA
- Regional Conference on Race Relations, Boston, MA
- Science, Technology, Engineering and Mathematics (STEM) Meeting, Sturbridge, MA
- Fact-Finding Investigation (seminars on termination, performance evaluations, progressive discipline)
- Lecture Presentation: Objects of Transformation, Martin Hall (Deputy Vice Chancellor and Professor, University of Cape Town, South Africa), Boston, MA

Program Overview

- Center for Rehabilitation Engineering
- Cooperative Education and Internship Program
- IMPULSE Program

Renovations

- Dean's office, foyer, and entrance
- Computer science labs (lab furniture and computers; lab section size increased from 16 to 24)
- Freshmen IMPULSE labs (carpeting, furniture, computers, dual projection systems)
- Textiles building basement (re-modeling of space into classrooms and laboratories)

Communication

- Weekly meetings held with department chairpersons
- Semi-annual meetings held with support staff, technical staff and graduate program directors
- Semi-annual meetings of faculty/staff

Chairperson, Department of Electrical and Computer Engineering, University of Massachusetts Dartmouth, North Dartmouth, Massachusetts, June 2002-August 2005

Administered a department composed of approximately 20 faculty, three technicians and two secretaries and offering two B.S. degrees, two M.S. degrees and a Ph.D. degree; led major overhaul and renovation of all department laboratories as well as major activities aimed at recruiting and retaining students (visits to high schools, development of informational brochures on each academic program); opened up communication channels with department's alumni (fully re-designed web site, published first newsletter) and created a vibrant industrial advisory board; developed online surveys (senior exit, employer, alumni) whose results were a key component used in the re-accreditation effort in October 2004. Both the computer engineering and electrical engineering programs were re-accredited by ABET.

- Treasurer, Faculty Federation
- Member, Faculty Federation Executive Board
- Member, University Budget Review Board

- Member, Executive Board, Center for Portuguese Studies and Culture
- Member, Search and Screen Committee for new Associate Dean (College of Engineering)
- Member, Faculty Federation Negotiating Team
- Participant, American Federation of Teachers 2002 Special Leadership Conference, Washington, DC

OTHER EXPERIENCE

UNIVERSITY OF MASSACHUSETTS DARTMOUTH, NORTH DARTMOUTH, MASSACHUSETTS

Professor, Electrical and Computer Engineering, September 1997-present

- Chairperson and Member, Graduate Committee
- Chairperson and Member, Electrical Engineering Curriculum Committee
- Chairperson, University Sabbatical Leave Committee
- ABET Coordinator, electrical engineering program
- Member, Faculty Federation Negotiating Team
- Member, Executive Board, Center for Portuguese Studies and Culture
- Member, Laboratory Committee
- Member, Search and Screen Committee for new faculty
- Member, College of Engineering Academic Council
- Member, Faculty Senate
- Member, Search and Screen Committee for new Chancellor
- Member of UMass Dartmouth's Graduate Biomedical Engineering/Biotechnology Committee

Graduate Courses

- Adaptive Filtering
- Advanced Topics in Digital Signal Processing
- Digital Spectral Estimation
- Discrete-Time Signal Processing
- Mathematics for Computing
- Random Signals and Systems
- Time-Frequency Signal Processing
- Wavelets

Undergraduate Courses

- Advanced Engineering Mathematics
- Circuit Theory
- Communications Theory
- Computer Programming in C
- Data Structures and Algorithms in C
- Digital Signal Processing
- Discrete Mathematics
- Mathematics for Computing
- MATLAB
- Random Signals and Noise
- Signals and Systems
- Software Engineering

Graduate Students

- Sreekar Javvadi (2006)
Thesis: *An Autoregressive Technique for Range Alignment in Inverse Synthetic Aperture Radar Images*
- Mr. Vincent Benfeito (2005)
- Masiar Makkinejad (2005)
Thesis: *A Constant Modulus Algorithm Based Frequency-Domain Approach to Blind Equalization for Frequency Selective Multipath Channels*
- Paul Costa (2004)
- Rama Malladi (2003)
Thesis: *Speckle Filtering of SAR Images Using Hölder Regularity Analysis of the Sparse Code*

- Stephan Hengstler (2001)
Thesis: *A Novel Chirp Modulation Spread Spectrum Technique for Multiple Access*
- Stephan Sand (2001)
Project: A Novel Interactive Approach for Designing 2-D Filters
- Walter Gomes (1999)
- Yibin Yang (1998)
Project: *The Development of Software for Interactive Spectrum and Time-Frequency Analysis in MatLab™ and its Application in Speech Phoneme Processing*
- Helmut Ketterer (1997)
Thesis: *A Modified Smoothed Wigner Distribution Signal Synthesis Algorithm and Short-Time and Orthogonal Approaches for Time-Frequency Analysis*

Reviewer

- IEEE Signal Processing Letters
- IEEE Transactions on Signal Processing
- Signal Processing (Journal of the European Association for Signal Processing)
- European Signal Processing Conference

Associate Professor, Electrical and Computer Engineering, January 1995-August 1997

- ABET Coordinator, electrical engineering program

Associate Professor, Electrical Engineering Technology, September 1993-December 1994

Assistant Professor, Electrical Engineering Technology, September 1989-August 1993

- Awarded tenure, September 1991

Full-Time Lecturer, Electrical Engineering Technology, September 1988-August 1989

Full-Time Lecturer, Electrical and Computer Engineering, September 1986-August 1988

Full-Time Lecturer, Electrical and Computer Engineering & Computer and Information Science, September 1985-August 1986

Consulting

- Mitili, Inc., North Dartmouth, MA (1987-1991)
Consultant on software development techniques for signal processing
- Naval Undersea Warfare Center, Newport, RI (1987-1989)
Consultant on high resolution spectral estimation using in-water torpedo array data
- Information Research Laboratory, Inc., North Dartmouth, MA (1986-1987)
Consultant on multichannel spectral analysis for nondestructive evaluation of materials
- U. S. Windpower, Inc., Burlington, MA (1985)
Consultant on a Kalman filtering prediction technique
- University of Massachusetts Dartmouth, North Dartmouth, MA (1984-1985)
Taught computer programming courses in the division of Professional and Continuing Education

HONORARY AND PROFESSIONAL MEMBERSHIPS

- [Eta Kappa Nu Association](#) (Electrical and Computer Engineering Honor Society)
- [Tau Alpha Pi](#)
- [American Society for Engineering Education](#) (ASEE)
- [Institute of Electrical and Electronics Engineers](#) (IEEE)
- [Golden Key International Honour Society](#)

HONORS/INTERVIEWS

- Honored by the regional Portuguese-American community (November 26, 2006)
- The Portuguese Times
- O Jornal
- Summer Faculty Fellow of U.S. Navy - ASEE Summer Faculty Research Program

LANGUAGES

- Portuguese
- French
- Spanish

PUBLICATIONS

Peer-Reviewed Journal Papers

- A. H. Costa, R. Enríquez-Caldera, M. Tello-Bello, C. R. Bermúdez-Gómez, "High resolution time-frequency representation for chirp signals using an adaptive system based on duffing oscillators," *Digital Signal Processing*, vol. 55, pp. 32-43, August 2016. (Google Scholar: Cited by 1)
- A. H. Costa and S. Hengstler, "Adaptive time-frequency analysis based on autoregressive modeling," *Signal Processing*, vol. 91, no. 4, pp. 740-749, April 2011. (Google Scholar: Cited by 16)
- U. Qidwai, A. H. Costa, and C. H. Chen, "Detection of ultrasonic NDE signals using time-frequency analysis," *Insight*, vol. 41, no. 11, pp.700-703, November 1999. (Google Scholar: Cited by 13)
- A. H. Costa and G. F. Boudreaux-Bartels, "An overview of aliasing errors in discrete-time formulations of time-frequency representations," *IEEE Transactions on Signal Processing*, vol. 47, pp. 1463-1474, May 1999. (Google Scholar: Cited by 40)
- A. H. Costa and G. F. Boudreaux-Bartels, "Design of time-frequency representations using a multiform, tiltable exponential kernel," *IEEE Transactions on Signal Processing*, vol. 43, pp. 2283-2301, October 1995. (Google Scholar: Cited by 49)
- F. Hlawatsch, A. H. Costa, and W. Krattenthaler, "Time-frequency signal synthesis with time-frequency extrapolation and don't-care regions," *IEEE Transactions on Signal Processing*, vol. 42, pp. 2513-2520, September 1994. (Google Scholar: Cited by 24)

Refereed Conference Papers

- R. K. Malladi, D. Kasilingam, and A. H. Costa, "Speckle filtering of SAR images using Hölder regularity analysis of the sparse code," in *Proceedings of the IEEE International Geoscience and Remote Sensing Symposium* (IGARSS 2003), Toulouse, France, pp. 3998-4000, July 21-25, 2003. (Google Scholar: Cited by 10)

- S. Hengstler, D. P. Kasilingam, A. H. Costa, "A novel chirp modulation spread spectrum technique for multiple access," in *Proceedings of the IEEE International Symposium on Spread Spectrum Techniques and Applications (ISSSTA 2002)*, Prague, Czech Republic, vol. 1, pp. 73-77, September 2-5, 2002. (Google Scholar: Cited by 59)
- S. Hengstler, S. Sand, and A. H. Costa, "Adaptive autoregressive modeling for time-frequency analysis," in *Proceedings of the Third International Conference on Information, Communications and Signal Processing (ICICS 2001)*, Singapore, October 15-18, 2001. (Google Scholar: Cited by 3)
- J. Wang, X. Yan, A. H. Costa, and D. Kasilingam, "A weighted decomposition of the Wigner distribution," in *Proceedings of the 11th IEEE Workshop on Statistical Signal Processing*, Singapore, August 6-8, 2001. (Google Scholar: Cited by 1)
- R. Suzuki, J. R. Buck, and A. H. Costa, "Analysis filterbank with arbitrary frequency and bandwidth using a multitaper technique," in *Proceedings of the 140th Meeting of the Acoustical Society of America, NOISE-CON 2000*, Newport Beach, California, USA, December 3-8, 2000.
- U. Qidwai, A. H. Costa, and C. H. Chen, "Detection and classification of defects in ultrasonic NDE signals using time-frequency representations," in *Proceedings of Review of Progress in Quantitative NDE*, (Montreal, Quebec, Canada), pp. 717-724, July 1999. (Google Scholar: Cited by 2)
- H. Ketterer, F. Jondral, and A. H. Costa, "Classification of modulation modes using time-frequency methods," in *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, (Phoenix, AZ), March 1999. (Google Scholar: Cited by 61)
- Ramasubramanian, K. Payton, and A. H. Costa, "A comparison between conventional and wavelet based amplitude compression schemes," in *Proceedings of the IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis*, (Pittsburgh, PA), pp. 161-164, October 1998. (Google Scholar: Cited by 2)
- A. H. Costa and G. F. Boudreaux-Bartels, "Time-frequency representations with multiform, tiltable Chebyshev kernels," in *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, (Detroit, MI), pp. 1001-1004, May 1995.
- G. F. Boudreaux-Bartels and A. H. Costa, "Design of zero-phase, multiform, tiltable two-dimensional filters," in *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, (Detroit, MI), pp. 2603-2606, May 1995.
- A. H. Costa and G. F. Boudreaux-Bartels, "Design of time-frequency representations using multiform, tiltable kernels," in *Proceedings of the IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis*, (Philadelphia, PA), pp. 205-208, October 1994. (Google Scholar: Cited by 5)
- A. H. Costa and G. F. Boudreaux-Bartels, "A comparative study of alias-free time-frequency representations," in *Proceedings of the IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis*, (Philadelphia, PA), pp. 76-79, October 1994. (Google Scholar: Cited by 21)
- C. H. Chen and A. H. Costa, "New results on data adaptive high resolution spectral analysis techniques," in *Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics*, (Shenyang, China), August 1988. (Google Scholar: Cited by 1)

- C. H. Chen and A. H. Costa, "An interactive and data adaptive spectrum analysis system," in *Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics*, (Atlanta, GA), October 1986. (Google Scholar: Cited by 1)

Technical Reports

- A. H. Costa, "A Digital Image Processing Package for the IBM Personal Computer," *Technical Report SMU-ECE-TR-6*, Department of Electrical and Computer Engineering, University of Massachusetts Dartmouth, North Dartmouth, MA, June 1985.
- C. H. Chen and A. H. Costa, "Implementation of an Improved Fougere's Method for Maximum Entropy Spectral Analysis on an IBM Personal Computer," in *Proceedings of the IEEE Digital Signal Processing Workshop*, (Chatham, MA), October 1984.

REFERENCES

Available upon request.