

## CURRICULUM VITAE

January 1, 2012

### Personal Data

Gagan Mirchandani, Professor  
School of Engineering  
Electrical & Computer Engineering  
Secondary Appointment: Department of Computer Science  
University of Vermont, Burlington, VT 05405  
Telephone: (802) 656-4587; Fax: (802) 656-0696  
email: mirchand@cems.uvm.edu  
web page: <http://www.emba.uvm.edu/~mirchand>

### Educational Background

B.Sc.(Electrical Engineering), Worcester Polytechnic Institute, 1956-58  
M.Sc.(Electrical Engineering), Syracuse University, 1958-60  
*Thesis: Active RC-Network Synthesis*  
Ph.D. (Electrical Engineering), Cornell University, 1963-68  
*Dissertation: Spectral Analysis & Linear Time-Varying Systems*

### Awards and Honors

2011 Kroepsch-Maurice Excellence in Teaching Award, May 2011  
NASA-Jove Fellow, Goddard Space Flight Center July 1,1996-August 30,1996  
Professeur Invite, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland (*Sabbatical*)  
March 1, 1996 - June 30, 1996  
Visiting Scholar, Dartmouth College, Department of Mathematics (*Sabbatical*)  
August 1,1995 - February 29,1996  
General Electric (CRD) Fellowship - (*Sabbatical*) June 1985 - August 1986  
IBM, Fishkill, NY. IBM Fellowship - (*Sabbatical*) June 1975 - August 1976  
Best Paper Award - *IEEE Trans.on Education* 1977

### Journal Articles

1. G. Mirchandani and M. Elfataoui, "A Uniformly Convergent Approximation for Ideal Complex Half-Band Filters" *ISAST Transactions on Electronics and Signal Processing*, No.1, Vol.1, 2007 pp.24-29.
2. M. Elfataoui and G. Mirchandani, "A Frequency Domain Method for Generation of Discrete-Time Analytic Signals" *IEEE Trans. Signal Processing*, Sept. 2006, pp.3343-3352.
3. R. Foote, G. Mirchandani and D. Rockmore , "Two-Dimensional Finite Group-Based Signal Processing," *J. Symbolic Computation, Special Issue on Computer Algebra and Signal Processing*, Vol.37, Issue 2, February 2004, pp.187-207.
4. R. Foote, G. Mirchandani G, D. Rockmore D, D. Healy , and T. Olson , "A Wreath Product Group Approach to Signal Processing: Part I - Multiresolution Analysis, *IEEE Transactions on Signal Processing*, Jan. 2000, vol.48, No. 1, pp.102-132, (*31 pages.*)
5. G. Mirchandani , R. Foote, D. Rockmore , D. Healy and T. Olson, "A Wreath Product Group Approach to Signal Processing: Part II - Convolution, Correlation and Applications," *IEEE Transactions on Signal Processing*, March, 2000, vol.48, No.3, pp.749-767, (*19 pages.*)
6. G.Mirchandani, R.L.Zinser and J.Evans, "A New Adaptive Noise Cancellation Scheme in the Presence of Crosstalk," *IEEE Transactions on Circuits & Systems*, Vol.39, No.10, October 1992, pp.681-694.
7. G.Mirchandani and W.Cao, "On Hidden Nodes for Neural Nets". *IEEE Transactions on Circuits & Systems - Special Issue on Neural Networks*, Vol. 36, No.5, May, 1989, pp.661-664.

8. G. Mirchandani, and J.J. Coleman, "Computer-Flavored Circuit Theory-Revisited," *IEEE Transactions on Education*, Vol. E-20, pp. 40-44, February 1977.

### Refereed Conference Articles

1. J.Evans, R.Snapp, G. Mirchandani, R.Foote, "Using Wavelets for Fast Monte Carlo Simulation of Ising Systems with Distribution Matching", *IEEE Workshop on Statistical Signal Processing*, Nice, France, 28-30 June, 2011.
2. G. Mirchandani, S.Sharma, "Determining Dominant Fequency with Data-Adaptive Windows", *2010 International Conference on Image and Signal Processing*, Trois-Rivires, Quebec, CA, June 2010.
3. G. Mirchandani, J. Evans, R. Snapp, R. Foote, "Looking through Wavelets to View the Ising Problem" *2009 IEEE Workshop on Statistical Signal Processing*, Cardiff, Wales, August 2009.
4. G. Mirchandani, J. Evans "Multiresolution in Multiscale: A New Role for Wavelets" *2009 Digital Signal Processing Education Workshop*, Marco Island, FL. January 2009.
5. M. Elfataoui, G. Mirchandani, "Analytic Functions, Singularities and Edges: A New Formalism" *Proceedings, ICASSP 2006 (Lecture Session)*, Toulouse, FR. pp.II-165 - II-68, June 2006.
6. M. Elfataoui, G. Mirchandani, "A Novel Method for Generating Complex Half-Band Filters" *Proceedings, ICASSP 2005*, Philadelphia, USA, pp. IV-381 - IV 384, March 2005.
7. M. Elfataoui, G. Mirchandani, "Discrete-Time Analytic Signals With Improved Shiftability" *Proceedings, ICASSP 2004 (Lecture Session)* Montreal, CA. pp. II-477 - II-480, May 2004.
8. Jun Ge and G. Mirchandani, "Softening the Multiscale Product Method for Adaptive Noise Reduction" *Proceedings, 2003 37th Annual Asilomar Conference on Signals, Systems and Computers*, pp.2124-2128, vol.2, November 2003.
9. G. Mirchandani, Jun Ge and Richard Foote, "On Discrete Multiresolution Analytic Signals" *Proceedings, ISSPA 2003*, Paris, France. pp.455-458, vol. 2, July 2003.
10. J. Ge and G. Mirchandani, "A Simple and Efficient Wavelet- Based Denoising Algorithm Using Joint Inter-and Intrascale Statistics" *Proceedings, ISSPA 2003*, Paris, France. pp. 429-432 vol.1, July 2003.
11. Jun Ge and G. Mirchandani, "A New Block-Matching Motion Estimation Algorithm" *Proceedings, ICASSP 2002*, Orlando, FL.
12. G. Mirchandani and X.Luo, "Multiresolution MRF-Based Texture Segmentation Using the Wreath Product Transform Phase" *Proceedings, ICASSP 2001*, Salt Lake City, Utah.pp.977-980, vol.2, May 2001.
13. X. Luo and G. Mirchandani, "Multiresolution Texture Segmentation with the DFT-based Complex Lapped Transform Phase", *Proceedings, 2001 IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing*, Baltimore, MD, June 2001.
14. X. Luo, and G. Mirchandani, "An Integrated Framework for Image Classification," *Proceedings, ICASSP 2000*, Istanbul, Turkey, pp.620-623, vol.1, June 2000.
15. G. Mirchandani, R. Foote, D. Rockmore, D. Healy, T. Olson, "Wreath Product Cyclic Group-Based Convolution: A New Class of Noncommutative Filters," *Proceedings, ICASSP 2000*, Istanbul, Turkey. pp. 356-359, vol.1, June 2000.
16. V.Chickanosky and G.Mirchandani, "Wreath Products for Edge Detection," *Proceedings, ICASSP 1998*, Seattle, WA. pp. 2953-56, vol. 5, May 1998.
17. A.Palau and G.Mirchandani, "A Fast Symbol Coding Scheme with Specific Application in Bulk Compression," *Proceedings, 1998 Data Compression Conference*, Snowbird, Utah, March 29, 1998.
18. Valerie Chickanosky and G. Mirchandani, "Wreath Products for Edge Detection," *Proceedings of the Ninth Annual NASA-JOVE Retreat*, July 7-10, 1998. Outstanding Poster Award
19. G. Mirchandani and V. Chickanosky, "Representation Theory of Finite Groups and Directional Filtering of Images," *Proceedings of the Eighth Annual NASA-JOVE Retreat*, July 1-5, 1997.
20. H.Cai and G.Mirchandani, "A New Embedded Image Codec Based On The Wavelet Transform and Binary Position Coding," *Proceedings, ICIP 1996*, pp. 537-540, vol.2, September 1996.

21. D.Healy, G.Mirchandani, T.Olson and D.Rockmore, "Wreath Products For Image Processing," *Proceedings, ICASSP 1996*, pp.3582-3585, vol.6, May 1996.
22. H.Cai and G.Mirchandani, "Wavelet Transform and Bit-Plane Encoding, *Proceedings, ICIP 1995*, pp. 578-581, vol.1, October 1995.
23. A.Palau and G.Mirchandani "Image Coding with Discrete Transforms using efficient energy-based adaptive zonal filtering," *Proceedings, ICASSP 1994* Adelaide, Australia, April 1994.
24. Z.Wang and G.Mirchandani, "Automatic Transfer from C to Flow graph for Multiprocessor DSP Implementation," *Proceedings, ICASSP 1993* pp.III-49 to III-52, April 1993.
25. G.Mirchandani, P.Twombly, R.B.Pegram and J.Michel, "Generation and Implementation of DSP Parallel Programs from a Signal Processing Design Environment," *Proceedings, ICASSP 1992*, San Francisco, CA. pp. 577-580, March 1992.
26. R.B.Pegram, G.Mirchandani and J. Stuart, "Deterministic Time Programming and Parallelism with C40s," *Proceedings, TI Educators Conference*. Houston, TX. August 4-6, 1992.
27. J.Michel, G.Mirchandani, and S.Wald, "Prognosis with Neural Nets Using Statistically Based Feature Sets," *Proceedings of the Fifth Annual IEEE Symposium on Computer Based Medical Systems*," Durham, N.C. pp. 695-702, June, 1992.
28. G.Mirchandani, P.Twombly, R.B.Pegram and F.L.Stone, "Scheduling and Simulation of Neural Nets on a DSP Accelerator," *Proceedings, ICASSP 1990*, Albuquerque, N.M. pp. 1771-1774, April 1990.
29. G.Mirchandani, W.Cao. and B.Bosworth, "Efficient Implementation of Neural Nets Using an Optimal Relationship between Number of Patterns, Input Dimension and Hidden Units," *Proceedings, ICASSP 1989*, Glasgow, Scotland, pp. 2521-2553, May 1989.
30. G.Mirchandani, P.Twombly, "A Software Development Tool for Scheduling Signal Processing Algorithms on Multiprocessors with Arbitrary Interconnectivity," *Proceedings, ICASSP 1989*, Glasgow, Scotland, pp. 1146-1149, May, 1989.
31. G.Mirchandani and D.Ogden, "Experiments in Partitioning and Scheduling Signal Processing Algorithms for Parallel Processing," *Proceedings, ICASSP 1988*, New York, NY, pp. 1690-1693, April 1988.
32. G.Mirchandani and G.McGuire, "Performance Characteristics and Speed-Up Rates of the NEC mPD7281 Data Flow Processor in Parallel Processing," *Proceedings, ICASSP 1987*, Dallas, TX., pp. 1015-1018, April 1987.
33. G.Mirchandani, R.C.Gaus and K.Bechtel, "Performance Characteristics of a Hardware Implementation of the Crosstalk Resistance Adaptive Noise Canceller," *Proceedings, ICASSP 1986*, Tokyo, Japan, pp.93-96, April 1986.
34. R.L.Zinser, G.Mirchandani and J.B.Evans, "Some Experimental and Theoretical Results Using A New Adaptive Filter Structure for Noise Cancellation in the Presence of Crosstalk," *Proceedings, ICASSP 1985*, Tampa, FL, pp. 1253-56, March 1985.
35. G.Mirchandani, "Adaptive Noise Cancelling in the Presence of Cross talk," *Proceedings, 1985 GOSAM Symposium*, Syracuse, NY. May 1985.
36. G.Mirchandani and L.Dunlop, "Piece-Wise Time-Invariant Approximation of Linear Time-Varying Systems," *Proceedings, 14th Midwest Symposium on Circuit Theory*, Denver, CO.,6.4.1 - 6.4.15, May 1971.
37. G.Mirchandani and W. Abadeer, "On the Determination of Eigen-Values of A Symmetric Network Using Bartlett's Theorem," *Proceedings, 14th Midwest Symp. on Circuit Theory*, Denver, CO. pp. 7.2.1 - 7.2.9, May, 1971.
38. G. Mirchandani, (*Invited Paper*) "Spectral Theory and Linear Time- Varying Systems", *Proceedings, 14th Midwest Symposium on Circuit Theory*, pp. 9.4.1 - 9.4.9, May 1971.
39. G.Mirchandani, "Application of Integral Transforms to the Design of A Linear Time-Varying Matched Filter," *Proceedings, Fifth Annual Princeton Conf. on Information Sciences & Systems*, pp. 428-429, March 1971.
40. G.Mirchandani, "A Generalized Characterization of Linear Time-Varying Systems," *Proceedings, Fourth Annual Princeton Conference on Information Sciences & Systems*, pp. 94-97, March 1970.

41. G.Mirchandani, "Spectral Filtration of Signals Using Time-Varying Networks," *Conference Record, Third Asilomar Conference on Circuits & Systems*, pp. 285-288, December 1969.

**Courses Taught (Last 10 AYrs)**

AY	Fall	Spring
AY10-11	<i>Signals&amp;Systems, StochasticProcesses</i>	<i>DSP, DSPLab</i>
AY09-10	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>Feedback&amp;OptimalControl</i>
AY08-09	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>ImageProcessing</i>
AY07-08	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>Wavelets</i>
AY06-07	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>ImageProcessing</i>
AY05-06	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>ImageProcessing, AdvancedDSP</i>
AY04-05	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>Wavelets</i>
AY03-04	<i>Signals&amp;Sytems, ComputerVision</i>	<i>Wavelets, AdvancedDSP</i>
AY02-03	<i>Sabbatical</i>	<i>Sabbatical</i>
AY01-02	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>Wavelets, Comm.Systems</i>
AY99-01	<i>Signals&amp;Sytems, DSP, DSPLab.</i>	<i>AdvancedDSP, Comm.Systems</i>

**Seminars**

1. *Wavelets & Denoising*, Jun Ge & Gagan Mirchandani Department of Computer Science, UVM October 10, 2003
2. *Wavelets with a Difference*, Department of Computer Science, UVM October 18, 2002,
3. *Application of Finite Group Theory to Signal Processing*, AFOSR Program Review, The University of Vermont, Burlington, VT. June 6, 2002
4. *Wavelets with Invariance: Non-Abelian Groups and Signal Processing*, Department of Mathematics and Statistics, UVM, November 19, 1998 & December 3, 1998,
5. *Some Problems in Adaptive Filtering and Image Coding*, Indian Institute of Science, Bangalore, India, August 14, 1992
6. *Signal Processing and Multiprocessing: From block diagram to parallel code to hardware implementation*, CS-EE Department, UVM, March 13, 1992
7. *Analysis of a New Adaptive Filtering Structure for Removing Signal from Noise*, CS-EE Department, UVM, December 7, 1990
8. *Signal Processing with the ADSP-2100 in a Multiprocessor Configuration*, Analog Devices, Norwood, MA, May 17, 1991
9. *Neural Networks*, Department of Psychology, The University of Vermont, October 13, 1988
10. *Neural Networks*, Department of Anatomy and Neurobiology, The University of Vermont, September 22, 1988
11. *Decomposing DSP Algorithms for Parallel Processing*, General Electric Co., Corporate Research and Development, Schenectady, N.Y. June 2, 1987
12. *(Invited Talk) Fast Implementation of Signal Processing Algorithms*, General Motors Research, Warren, MI., May 20, 1987
13. *A Technique for the Decomposition of Signal Processing Algorithms*, CSEE Department, UVM, October 2, 1986

14. *Noise Cancellation with Application to Array Processing*, Underwater Systems Div., General Electric Co., Syracuse, N.Y., Feb. 15, 1985
15. *Removing Signal from Noise: A New Method with Application to Image Restoration*, Image and Signal Processing Group, General Electric, CRD, Schenectady, N.Y., April 23, 1985

#### Ph.D. Dissertations Supervised

1. *"Analytic Signals from Analytic Functions: A New Concept in Signal Processing"*, Mohamed Elfataoui, Ph.D. dissertation, UVM, May, 2007.  
Employed: Ascension Technology, Burlington, VT.
2. *"Practical Denoising With Sub-optimal Solutions"*, Jun Ge, Ph.D dissertation, UVM, May 2004. (Partially Supported on DEPSCoR Grant)  
URL: [http://sitemaker.umich.edu/jun.ge/my\\_cv](http://sitemaker.umich.edu/jun.ge/my_cv)  
Employed: Post Doc. Department of Radiology, University of Michigan, Ann Arbor, MI.
3. *"Edge Detection and Image Registration with the Wreath Product Transform "* (expected title,) Valerie Chikanosky, Ph.D dissertation, UVM, (expected completion: May 2009.) (Partially Supported on NASA Grant)  
Employed: IBM, Essex Junction, VT
4. *"Phase and the Wreath Product Transform: Some Applications and an Extension"*, Xuling Luo, Ph.D dissertation, UVM, April 2000. (Partially Supported on DEPSCoR Grant)
5. *"Image Compression Using The Wavelet Transform"*, H.Cai, Ph.D dissertation, UVM, October 1996.  
Employed: Bose Radio
6. *"A Development System for the Parallel Implementation of Digital Signal Processing Algorithms"*, Peter A.Twombly, Ph.D. Dissertation, UVM, May 1991.  
Employed: IBM, Essex Junction, VT
7. *"The Reliability of Random Linear Systems"* Lawrence J. Dunlop, Ph.D. Dissertation, May 1973.  
Employed: IBM, Essex Junction, VT

#### M.Sc. Thesis Supervised

1. *"A Wavelet-Based Accelerated Monte Carlo Algorithm For Multiscale Simulation of The Ising model"*, John T. Evans III, UVM, (January 2011)
2. *Spectral Analysis of Atrial Fibrillation Electrograms*, Shruti Sharma, UVM, (January, 2010)
3. *"Discrete-time Analytic Signals With Improved Shiftability."*, Mohamed Elfataoui, M.Sc. Thesis, UVM, Feb. 2004.
4. *"Fast Signal Processing Using Multiple Programmable Signal Processors: Algorithm Decomposition and Multiprocessor Configurations"*, Gerald A. McGuire, M.Sc. Thesis, October 1987.
5. *"Image Compression on Parallel DSPs Using a New Hybrid Coding Method "*, P. Y-Rao, M.Sc Thesis,, UVM, May 1993.
6. *"Two-Dimensional Invariant Pattern Classification Using a Neural Network"*, Frederic L. Stone, M.Sc. Thesis, UVM, May 1991.

#### Current M.Sc. Students

1. *Xi Ouyang*, General Topic: Wavelets in Multiscale Systems. Expected completion date: May 2010.
2. *Ben Schilling*, General Topic: Wavelets in Multiscale Systems. Expected completion date: May 2011.
3. *Katie Gallo*, General Topic: Source Identification in 3D Trackers. Expected completion date: May 2011.

#### Senior Projects

1. *Real-Time Implementation Using the Speedy C33 DSP Kit*, Spring Semester, 2004.

## Research Proposals (Awarded)

1. *Wavelet-Based Simulation of the Ising Model For Determining Critical Exponents*”, **Gagan Mirchandani**. Co-PIs: Robert Snapp & Richard Foote, VSGC, VT-NASA EPSCoR Amount: \$27,500. Budget Period: Sept.1, 2010 - August 31, 2011.
2. *Wavelets and the Ising Problem - A Gateway to Monte Carlo and Molecular Dynamic Simulations* **Gagan Mirchandani**. Co-PIs: Robert Snapp & Richard Foote, VSGC, VT-NASA EPSCoR Amount: \$28,000. Budget Period: Sept.1, 2009 - August 31, 2010.
3. *Towards a Multiscale Transform - Using Wavelet Solutions for Multiscale Modelling* Co-PIs: **Richard Foote, Gagan Mirchandani & Robert Snapp** Interdisciplinary Research Grant, UVM. Amount: \$30,000. Budget Period: December 1, 2008 - October 31, 2010.
4. *Wavelets in Complex Systems* PI: **Gagan Mirchandani**, NASA Space Grant and Development Program Amount: \$10,000. Budget Period: June 1, 2008 - August 31, 2008.
5. *Application of Finite Groups to Signal Processing* PI: **Richard Foote**, Co-PIs: Gagan Mirchandani, Dan Rockmore. DEPSCOR. Amount: \$265,000. Budget Period: June 1, 2000 - May 31, 2004.
6. *“Multiresolution Analysis Using Representation Theory of Finite Groups”*, NASA-JOVE, PI: **Gagan Mirchandani**, Amount: \$12,000, Period: June 1, 1999- Aug. 31, 1999.
7. *“Multiresolution Analysis Using Representation Theory of Finite Groups”*, NASA-JOVE, PI: **Gagan Mirchandani**, Amount: \$286,337, Period: Sept.1, 1996- May 31, 1999
8. *Multiresolution Analysis Using Representation Theory of Finite Groups,*” NASA-JOVE, **Gagan Mirchandani**, Phase I, Amount \$8,000, Period: May 1996-August 1996.
9. *“Development and Application of the SDS to Multiprocessing with the ADSP 21020 Processors.”*,**Gagan Mirchandani**, Analog Devices, Norwood, MA. Amount: \$92,950 Period: Sept. 1, 1992 - August 31, 1994
10. *Parallel Processing for Digital Signal Processing*, **Gagan Mirchandani**, Post-Doctoral Fellowship, Dynamic Engineers, Houston, TX., Amount \$13,000. Period: November 1, 1991 - December 30, 1992.
11. *“A Software Development System for the Parallel Implementation of Digital Signal Processing Algorithms.”*, **Gagan Mirchandani**, Analog Devices, Norwood, MA. Amount: \$79,170 Period: Sept. 1, 1990 - August 31, 1992
12. *“Fast Implementation of Signal Processing Algorithms.”*, **Gagan Mirchandani**, Analog Devices, Norwood, MA. Amount: \$105,000 Period: Sept. 1, 1987 - August 31, 1990
13. Principal Investigator, Analog Devices, Norwood, MA. *“Fast Implementation of Signal Processing Algorithms,”*, Amount: \$10,000. Period: June 1, 1987 - August 31, 1987
14. G.E. *Graduate Student Fellowship*, **Gagan Mirchandani**, General Electric Co. - CRD, Schenectady, NY. Amount: \$9,736. Period: Sept. 1, 1986 - May 31, 1987
15. *Image and Parallel Processing*, **Gagan Mirchandani**, General Electric Co., - CRD, Schenectady, NY. Amount: \$18,000 Period: June 1, 1986 - August 31, 1986.
16. *Image and Parallel Processing*, **Gagan Mirchandani**, General Electric Co. - CRD, Schenectady, NY. Amount: \$15,405. Period: Sept. 16, 1985 - May 31, 1986

## Research Proposals (Not Awarded)

1. *Wavelet-Based Distribution Matching For Engineering Complex Systems*, Submitted to NSF: January 18, 2010. Amount : \$363,037. Budget Period: July 1, 2010 to June 20, 2012. PI: Gagan Mirchandani. Co-PIs: Richard Foote, Robert Snapp. (*not awarded*)
2. *Algebraic Approaches to Multiresolution Analysis and Wavelets*. Submitted to NSA: Nov. 12, 1999. Amount : \$166,560. Budget Period: 11/1/00 to 10/30/02. PI: Richard Foote. Co-PI: Gagan Mirchandani. (*not awarded*)

3. *Collaborative Research: Algebraic Approaches to Multiresolution Analysis and Wavelets*. Submitted to NSF: Dec. 1, 1999. Amount: \$444,097. Budget Period: 07/01/00 to 06/30/03. PI: Richard Foote. Co-PIs: Gagan Mirchandani, Dan Rockmore. (*not awarded*)
4. *Multiresolution Analytic Functions With Applications to Multidimensional Image Processing* Richard Foote, Gagan Mirchandani (Both Co-PIs). DEPSCoR Grant. Submitted: Oct.20, 2004. Amount: \$546,548 Budget Period: 06/01/05 - 05/31/08 (*not awarded*)
5. *From a Graduate-Level Signal Processing Environment to an Undergraduate DSP and Multimedia Lab: Adaptation and Implementation*. Submitted NSF CCLI Program. November 13, 1998. Amount: \$19,838. (*not awarded*)

### Equipment Grants

1. TI DSP University Program, Equipment: 4 TMS3206713 DSK Boards, Code Composer Studio Software. \$20,000. Awarded June 2009.
2. Sonitech International, Inc., Wellesley, MA. 2 SPIRIT-40 AT/ISA Boards with dual C40s. Awarded September 1, 1992.
3. Texas Instruments, Inc., Houston, TX. "A Third Generation Digital Signal Processing Laboratory," \$29,971. Awarded June, 1991.
4. Comdisco, Inc. "Signal Processing WorkSystem" \$35,000. Awarded May 1990.
5. Texas Instruments, Inc., Houston, TX. "A Second Generation Digital Signal Processing Laboratory," \$59,984.00. Awarded July, 1988.

### Other Proposals Submitted

1. *Analytic Functions, Hilbert Transforms and Phase Retrieval*  
Submitted to: VT NASA EPSCoR Program. Amount:\$6,000 Activity: \$4,000 Graduate Student Wages. Budget Period: January, 2005 - August 31, 2005 (*Awarded*)
2. *Real-Time Digital Signal Processing - A Laboratory at Many Levels*  
Submitted to: UVM Instructional Incentive Grant Program. Amount:\$7,500 Submitted Date: April 5, 2004 Activity: Lab development. Summer salary for graduate student. Equipment purchase. Budget Period: Summer 2004 (*Awarded*)
3. *IBM Ph.D Fellowship Nomination*  
Date submitted: October 25, 2004. *not awarded*.
4. *Raytheon Integrated Defense Systems, Waltham, MA and C.S.Draper Labs, Cambridge, MA.*  
Project: Pre-GOALI Award (Grant Opportunities for Academic Liason with Industry).  
Date submitted: January 2004. (*not awarded*)
5. *TI DSP University Program Donation Request Equipment*  
4 6713 Boards. Code Composer Studio Software. Amount: 4 x 395 =1,580. CCS for C6xx = \$3,595. Total: \$ 5,175 Date: May 27, 2004 Application: For use in EE-289 DSP Lab (*awarded*).

### Patent Applications

*Title: Discrete-time Analytic Signal Generation Method And System*  
Inventors: Mohamed Elfataoui, Gagan Mirchandani  
Provisional Patent Application filed on July 28, 2004.  
Filed by: Downs Rachlin Martin. Attorney Docket No.:02962-00084

### Consultation

1. General Dynamics, Armament and Technical Products, April 2006.
2. General Electric, CRD, Schenectady, NY

3. IBM, Fishkill, NY

### **Service**

1. *Chair, ECE Search Committee*, October 2006 - March 2007.
2. *Graduate Studies Coordinator, ECE Program*, Sept. 2006-09.
3. *Member, CEMS, Faculty Standards Committee*, AYs 2003-04, 2004-05, 2005-06, 2006-08.
4. *Chair, ECE Search Committee*, October 2005 - March, 2006
5. *Chair, Department Graduate Studies Committee*, AY 2005-06.
6. *Delegate - CEMS, United Academics*, AYs 2003-04, 2004-05, 2005-06.
7. *Organizer (with R. Foote) Innovative Signal Processing for Military Digital Communication*, Yearly AFOSR Program Review, UVM, June 6-8, 2002.
8. *Member, Chairperson Review, Mathematics & Statistics, UVM*, March 1998
9. *Member, Chairperson Search Committee, Mathematics & Statistics*, July 1998.

### **Professional Society Membership & Activity**

1. International Program Committee, Circuits, Signals & Systems (CSS 2004) for IASTED International Conference on Signal Processing, Honolulu, Hawaii. August 23- 25, 2004. Duties: Help organize conference. Review all submitted papers (15).
2. Member IASTED Technical Committee on Signal Processing. Term 2002-2005
3. Reviewer for IEEE Transactions on Information Theory. IEEE Transactions on Circuits & Systems, IEEE Transactions on Image Processing, Journal of the Acoustic Society of America, KAIS (Knowledge & Information Systems).
4. Life Member IEEE  
Technical Societies: Signal Processing, Image Processing, Information Theory