

## CURRICULUM VITAE

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### Education:

2006 Ph.D. Department of Electrical Engineering and Computer Science (EECS),  
Minor in Brain and Cognitive Sciences, MIT, Cambridge, MA.

1997 S.M. Department of EECS, MIT, Cambridge, MA.

1994 B.S. Department of Electrical Engineering, Cornell University, Ithaca, NY.

**Research Interests:** Control Theory, Computational Neuroscience, Large-Scale Optimization

### Postdoctoral Training:

2007- Research Associate, Statistical Neural Data Analysis, Computational Neuroscience  
Laboratory, Brain and Cognitive Science Dept, MIT

2006- Research Associate, Statistical Neural Data Analysis, Neuroscience Statistics  
Research Laboratory, Massachusetts General Hospital and Harvard Medical School

### Other Professional Positions:

#### Massachusetts Institute of Technology

2006 Lecturer, *Introduction to Probability*, Department of EECS

2005 Lecturer, *Scientific Marketing*, MIT Professional Institute

2000-2001 Teaching Assistant, *Dynamic Systems and Control*, Department of EECS

1998 Teaching Assistant, *Introduction to Communication, Control, and Signal Processing*, Department of EECS

1995-1997 Teaching Assistant, *Introduction to Probability*, Department of EECS

1994 Teaching Assistant, *Signal & Systems*, Department of EECS

#### Cornell University

1994 Teaching Assistant, *Signal & Systems*, Department of EE

1993-1994 Research Assistant, *Control Design* for hydraulic servo-valve system at Moog Inc (Buffalo, NY)

1992-1994 Workshop Facilitator, *Academic Excellence Workshop for Women and Minorities*

#### InfoLenz Corporation

2000- Took a 3-year full leave of absence from M.I.T. to co-find, with Prof. Dahleh from M.I.T., a data-analytics start-up company based on innovative optimization technology to maximize ROI for retail companies.

- **Research and Development**- developed intellectual property based on large-scale optimization algorithms for Matching problems with high complexity.
- **Fund Raising**- raised \$1.5M from angel investors, and \$200K from 2 National Science Foundation Small Business Innovative Research (SBIR) awards; Principle Investigator for SBIR project involving promotion design and strategic pricing in the presence of competition.
- **Business Development**- made sales calls and presentations to Senior Executive Management at Borders Books, Express Fashion, Barnes & Noble, and other Fortune 500 retailers. Closed 4 pilot project deals totaling over \$100K in revenue.
- **Client Engagements**- managed implementation of InfoLenz solutions for 3 large retail clients; results brought positive ROIs to all clients.
- **Operations and Legal**- managed financials of company and legal matters.

#### **Awards and Honors:**

- 2008** *Burrough's Wellcome Fund Career Awards at the Scientific Interface Recipient*  
 2000 Best Session Paper Award-Automatic Control Conference  
 1995 National Science Foundation Research Fellow  
 1992 GE Faculty for the Future Research Fellow  
 1991-1994 Member of Eta Kappa Nu National Honor Society  
 1991-1994 Member of Tau Beta Pi National Honor Society

#### **Professional Societies:**

- 2007- Institute of Electrical and Electronics Engineers  
 2007- Women in the Institute of Electrical and Electronics Engineers

#### **Report of Teaching**

##### **a. Undergraduate Courses/Graduate School Courses**

- 2006 Lecturer, 6.041, "Introduction to Probability," Department of Electrical Engineering and Computer Science, M.I.T., Cambridge, MA. Responsibilities included preparing and recitations and exams, and grading exams for a class of approximately 100 undergraduates.
- 2005 Lecturer, 6.66s, "Scientific Marketing and Offer Design: Pricing, Bundling, and Customer Targeting," MIT Professional Institute, Cambridge, MA. Co-created and co-taught (with a Full Professor at M.I.T. and a Senior level Executive from SAP) a short course for 12 professionals from around the world.
- 1999-2000 Teaching Assistant, 6.241, "Dynamic Systems & Control," Department of Electrical Engineering and Computer Science, M.I.T., Cambridge, MA. Responsibilities included preparing and teaching recitations, grading exams for a class of approximately 50 graduate students.
- 1998 Teaching Assistant, 6.011, "Introduction to Communication, Control, and Signal Processing," Mathematics Department of Electrical Engineering and Computer Science, M.I.T.,] Cambridge, MA. Responsibilities included preparing and teaching tutorials, grading homework and exams for a class of approximately 100 undergraduate students.
- 1995-1997 Teaching Assistant, 6.041, "Introduction to Probability," Department of Electrical Engineering and Computer Science, M.I.T., Cambridge, MA. Responsibilities included preparing and teaching recitations, tutorials, grading homework and exams for a class of approximately 100 undergraduate students.

##### **b. Teaching Presentations/Seminars**

- 2006 "Finite-Rate Control: Stability and Performance," Department of Mechanical and Aerospace Engineering, UCLA, Los Angeles, Ca. 1 hour lecture to approximately 50 participants including faculty and graduate students.

- 2005 “Stability Under Finite-Rate Feedback,” Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI. 1 hour lecture to approximately 30 participants.
- 2001 “From data to dollars,” Invited Speaker, Cyberposium 2001, Harvard Business School’s high technology conference, Cambridge, MA.
- 2000 “Reduction of a Wave-Variable Arm Control Model,” Department of Electrical Engineering, Cornell University, Ithaca, NY. 1 hour lecture to approximately 100 participants including faculty, graduate and undergraduate students.

### Original Reports:

1. **Sarma S.V.**; Dahleh, M.A. Remote Control Over Noisy Channels: A First-Order Example. *IEEE Transactions on Automatic Control*. February 2007.
2. **Sarma, S.V.**; Dahleh, M.A.; Salapaka, S. On Time-Varying Bit-Allocation Maintaining Input-Output Stability and Performance: A Convex Parameterization. *IEEE Transactions on Automatic Control*. (to appear June 2008)
3. **Sarma, S.V.**; Dahleh, M.A. Real-Time Finite-Rate Feedforward Control. *IEEE Transactions on Automatic Control*. (submitted)
4. **Sarma, S.V.**; Cheng M.; Williams Z.; Hu R.; Brown E.N.; Eskandar E., A Comparison of Neural Spiking Activity in the Sub-Thalamic Nucleus of Parkinson's Patients to that of Healthy Primates. *Journal of Neuroscience*. (submitted)
5. **Sarma, S.V.**; Czanner G.; Nguyen DP.; Wirth S.; Wilson M.A.; Suzuki W.; Brown E.N. Bootstrap Methods for Point Process Models of Neural Spiking Activity. *Journal of Neurophysiology*. (submitted)
6. Coleman T.P.; **Sarma S.V.** A Computationally Efficient Method for Modeling Neural Spiking Activity with Point Processes Nonparametrically. *IEEE Transactions on Biomedical Engineering*. (submitted)

### Selected Proceedings of Meetings:

1. **Sarma, S.V.**; Dahleh, M.A. Real-Time Finite-Rate Tracking: Performance Limitations. *Proceedings of American Control Conference*. June 2007.
2. T. P. Coleman and **S. Sarma**. Using Convex Optimization for Nonparametric Statistical Analysis of Point Processes. *IEEE International Symposium on Information Theory (ISIT)*, Nice, France June 24-29, 2007.
3. **Sarma, S.V.**; Dahleh, M.A. Real-Time Finite-Rate Tracking. *IEEE Conference on Decision and Control*. December 2006.
4. **Sarma, S.V.**; Dahleh, M.A. Real-Time Finite-Rate Navigation. *Allerton Conference in Communication, Control, and Computing*. September 2006.
5. **Sarma, S.V.**, Dahleh, M.A. Synthesis of Simple Feedforward Networks: A First-Order Example. *IEEE Conference on Decision and Control*. December 2005.
6. **Sarma, S.V.**, Martins, N.C., Dahleh, M.A. Control with Communication Constraints: Stability and Performance Issues. *Allerton Conference in Communication, Control, and Computing*. September 2005.
7. **Sarma, S.V.**; Dahleh M.A.; Salapaka, S., On Time-Varying Bit-Allocation Maintaining Input-Output Stability: A Convex Parameterization. *IEEE Conference on Decision and Control*, 2004.
8. **Sarma, S.V.**; Dahleh M.A.; Salapaka, S., Synthesis of Efficient time-Varying Bit-Allocation Strategies Maintaining Input-Output Stability. *Allerton Conference in Communication, Control and Computing*, 2004.
9. **Sarma, S.V.**; Salapaka, S.; Dahleh M.A., A Convex Parameterization of Limited-Rate Time Varying Quantizers Maintaining Closed-Loop Stability. *Mediterranean Conference on Control and Automation*, 2004.
10. **Sarma, S.V.**; Massaquoi S.; Dahleh M.A., Reduction of a Wave-Variable Biological Arm Control Model. *Proceedings of American Control Conference*, Chicago, 2000.

### Patent:

**Sarma, S.V.**; Warnick, S.; Dahleh, M.A. System and method for association object sets. *USPTO* (#20020161561)

## LIST OF REFERENCES

<p><b><i>Munther Dahleh, Ph.D.</i></b> (<a href="mailto:dahleh@mit.edu">dahleh@mit.edu</a>)          Laboratory for Information and Decision Systems          Massachusetts Institute of Technology          77 Massachusetts Avenue          Building 32-D732          Cambridge MA 02139          Phone: 617-253-3892</p>	<p><b><i>Emery Brown, M.D., Ph.D.</i></b> (<a href="mailto:enbrown1@mit.edu">enbrown1@mit.edu</a>)          Computational Neuroscience Laboratory, Brain and Cognitive Science Dept          Harvard/MIT HST Division          Massachusetts Institute of Technology          77 Massachusetts Avenue          Building 46-6079          Cambridge MA 02139          Phone: 617-324-1880</p>
<p><b><i>Jeff Shamma, Ph.D.</i></b> (<a href="mailto:shamma@gatech.edu">shamma@gatech.edu</a>)          Julian T. Hightower Chair in Systems &amp; Controls          School of Electrical and Computer Engineering          Georgia Institute of Technology          777 Atlantic Dr NW          Atlanta, GA 30332-0250          Phone: 404-894-3148</p>	<p><b><i>Emad N. Eskandar, M.D.</i></b> (<a href="mailto:eeskandar@partners.org">eeskandar@partners.org</a>)          Director of Stereotactic &amp; Functional Neurosurgery          Massachusetts General Hospital (MGH)          Assistant Professor          Harvard Medical School          Wang Ambulatory Care Center - 331          Neurosurgical Service, MGH          Fruit Street          Boston, MA, 02114          Phone: 617-724-6590</p>
<p><b><i>Srinivasa Salapaka, Ph.D.</i></b> (<a href="mailto:salapaka@uiuc.edu">salapaka@uiuc.edu</a>)          Department of Mechanical and Industrial Engineering          University of Illinois at Urbana-Champaign          362c Mechanical Engineering Building          1206 West Green Street          Urbana, IL 61801          Phone: 217-244-4172</p>	<p><b><i>Ming Cheng, M.D.</i></b> (<a href="mailto:mlcheng@partners.org">mlcheng@partners.org</a>)          Massachusetts General Hospital          EDR 410          50 Blossom Street          Boston, MA 02114          Phone: 617-726-3958</p>