

## Contact Information

Address: ECE dept, Iowa State University, Ames, IA

Email: [namrata.vaswani@gmail.com](mailto:namrata.vaswani@gmail.com)

Phone: 301-467-8593

Web: <http://www.ece.iastate.edu/~namrata>

## I. Personal History and Professional Experience

### A. Educational Background

- Ph.D. (Electrical and Computer Engineering), 2004  
**University of Maryland, College Park, MD**
- B.Tech. (Electrical Engineering), 1999  
**Indian Institute of Technology (IIT), Delhi, India**

### B. Current Position

- Associate Professor, Dept. of Electrical and Computer Engineering  
**Iowa State University, Ames, IA (August 2011 – Present)**

### C. Previous Positions

- Assistant Professor, Dept. of Electrical and Computer Engineering  
**Iowa State University, Ames, IA (August 2005 – July 2011)**
- Research scientist & Postdoctoral fellow, School of Electrical and Computer Engineering  
**Georgia Institute of Technology, Atlanta, GA (August 2004 – July 2005)**
- Research Intern, Signal and Image Processing  
**HRL (formerly Hughes Research Labs), Malibu, CA (June – October 2001)**
- Graduate Research Assistant, Dept. of Electrical and Computer Engineering  
**Univ. of Maryland, College Park, MD (August 1999 – July 2004)**

### D. Honors, Recognitions, and Outstanding Achievements

- Associate Editor for *IEEE Transactions on Signal Processing*, since October 2009
- Harpole-Pentair Assistant Professor, Iowa State University, 2008-09
- Invited participant in year-long program on Sequential Monte Carlo at SAMSI, 2008-09
- Invited talks at SAMSI, IPAM, and IMA workshops
- ICASSP 2004 paper on *Bound on Errors in Particle Filtering with Incorrect Model Assumptions and its Implication for Change Detection* designated as an outstanding paper in the Signal Processing Theory & Methods category
- Nominated for Best B.Tech. Project in Electrical Engineering at IIT-Delhi, India, 1999
- Summer Undergraduate Research Award (SURA) at IIT-Delhi, India, 1997
- Gold Medal in Delhi Regional Mathematics Olympiad, India, 1995
- National Talent Search Exam (NTSE) Scholarship, India, 1993-99

### E. Research Area

- Statistical Signal Processing, Sparse Recovery and Compressive Sensing
- Biomedical Imaging and Computer Vision

## ***F. Key Recent Research Contributions (Please refer to my research statement for details)***

- **Recursive reconstruction of sparse signal sequences with time-varying sparsity patterns and applications in fast dynamic MRI:** Was the *first* to introduce this problem and to develop two classes of approaches that require significantly fewer measurements compared to simple compressive sensing (CS) done for each signal separately, and are significantly faster than batch CS approaches. Key contributions are summarized below.
  - *LS-CS and Modified-CS:* Introduced and empirically verified the slow sparsity pattern change assumption and used it to reformulate the above problem as one of *sparse reconstruction with partially known support*.
    - Introduced two classes of approaches which just use this assumption: least squares CS-residual (LS-CS) and Modified-CS.
    - Modified-CS can achieve accurate reconstruction of *real medical image sequences using significantly fewer MRI measurements* than existing work – simple-CS or CS-diff (CS for difference signal). For MRI, this directly translates into significantly reduced scan times per frame.
  - *Exact Reconstruction:* Obtained exact reconstruction conditions for Modified-CS.
    - Under slow sparsity change, these are much weaker than those for CS.
  - *Stability:* Showed that LS-CS and Modified-CS for noisy measurements are stable over time, i.e. their error can be bounded by a time-invariant value.
    - Under slow support change, the support error bound is significantly smaller compared to the support size.
    - The result needs much fewer measurements than what CS needs for the same error bound to hold.
  - *Improved algorithms:* Developed *Kalman filtered CS (KF-CS)* and KF-modified-CS (regularized modified-CS) which also exploit slow signal value change.
- **Large dimensional tracking and computer vision applications**
  - Developed practically implementable particle filtering algorithms for tracking on large dimensional state spaces, with frequently multimodal likelihoods.
- **Applications in two key computer vision problems – *deformable contour tracking and landmark shape tracking*** – were developed in detail.
- **Recursive Robust PCA or Sparse Recovery in Large but Correlated Noise**
  - This work studies the recursive robust principal components' analysis (PCA) problem. Here, ``robust'' refers to robustness to both independent and correlated sparse outliers, although we focus on the latter. A key application where this problem occurs is in video surveillance where the goal is to separate a slowly changing background from moving foreground objects on-the-fly. The background sequence is well modeled as lying in a low dimensional subspace, that can gradually change over time, while the moving foreground objects constitute the correlated sparse outliers. In this and many other applications, the foreground is an outlier for PCA but is actually the ``signal of interest'' for the application; whereas the background is the corruption or noise. Thus our problem can also be interpreted as one of recursively recovering a time sequence of sparse signals in the presence of large but correlated noise.

## G. Grants and Contracts Received

- **CIF: Small: Recursive Robust Principal Components Analysis (PCA)**, Sept 2011 – Aug 2014, NSF (CCF – CIF), amount - \$396,659.
  - Role: PI. Co-PI: Fritz Keinert (Math dept, ISU)
- **RI: Small: Exploiting Correlated Sparsity Pattern Change in Dynamic Vision Problems**, Sept 2011 – Aug 2014, NSF (IIS – RI), amount - \$204,395.
  - Role: PI. Co-PI: none
- **CCF (CIF): Small: Recursive Reconstruction of Sparse Signal Sequences**, July'09 – June'12, NSF (CCF – CIF), amount - \$279,279 + \$12,000 (REU supplement)
  - Role: PI. Co-PI: none
- **Change Detection in Nonlinear Systems and Applications in Shape Analysis**, Aug'07 – July'11, NSF (ECCS), amount - \$265,529 + \$12,000 (REU supplement),
  - Role: PI. Co-PI: none
- New Faculty Grant Development Award, June – August 2006, Iowa State's Vice Provost for Research Office, amount – \$12,000

## H. Invited Workshop and Conference Presentations, Other Talks

- **Invited Workshop Talks**
  - “PF-EIS and PF-MT: Particle Filtering with Efficient Importance Sampling and with Mode Tracking and Applications in Deformable Contour Tracking” at the *Statistical and Applied Mathematical Sciences Institute (SAMSI) Sequential Monte Carlo Mid-Program Workshop*, Raleigh, NC, February 2009 (organizers: Arnaud Doucet, Simon Godsill and Mike West).
  - “Particle Filters for Large Dimensional State Spaces with Multimodal Observation Likelihoods” at the *SAMSI Sequential Monte Carlo Opening Workshop*, Raleigh, NC, September 2008 (organizers: Arnaud Doucet, Simon Godsill and Mike West).
  - “Deformable Contour Tracking” at the *SAMSI Workshop on Geometry and Statistics of Shape Spaces*, Raleigh, NC, July 2007.
  - “Deformable Contour Tracking” at the *Institute for Pure and Applied Mathematics (IPAM) Workshop on Image Processing for Random Shapes*, Los Angeles, CA, May 2007.
  - “Causal and Recursive Reconstruction of Sparse Signal Sequences” at the *Institute for Operations Research and Management Sciences (INFORMS) Annual Meeting, Compressed Sensing Special Session*, San Diego, CA, October 2009 (organizers: Rahul Garg and Rohit Khandekar).
  - “Change Detection in Nonlinear Systems and Applications in Abnormal Activity Detection” *ARO-MURI Workshop Adaptive Sensing & Waveform Design*, Georgia Tech, Atlanta, August 2005.
- **Invited Conference Papers (and Talks)**
  - N. Vaswani, “Stability (over time) of Modified-CS for Recursive Causal Sparse Reconstruction,” *Allerton Conf. on Communications, Control and Computing*, 2010 (organizer: Olgica Milenkovic).
  - S. Das and N. Vaswani, “Particle Filtered Modified Compressive Sensing (PF-mod-CS) for tracking signal sequences,” *Asilomar Conf. Signals, Systems and Computers*, 2010 (organizer: Monica Bugallo).

- S. Das and N. Vaswani, “Efficient importance sampling techniques for large dimensional and multimodal posterior computations,” *DSP Workshop, 2009* (organizer: Petar Djuric).
- N. Vaswani and S. Das, “Particle Filter with Efficient Importance Sampling and Mode Tracking (PF-EIS-MT) and its Application to Landmark Shape Tracking,” *Asilomar Conf. Signals, Systems and Computers, 2007* (organizer: Pramod Varshney).
- **Talks at Universities and Research Labs**
  - “Causal and Recursive Reconstruction of Sparse Signal Sequences” at
    - Brown University, Providence, RI, February 2011
    - University of Maryland, College Park, MD, March 2011
    - Johns Hopkins University, Baltimore, MD, March 2011
    - University of California, Santa Barbara (UCSB), May 2010
    - California Institute of Technology (Caltech), May 2010
    - University of California, Los Angeles (UCLA), May 2010
    - Northwestern University, May 2010
    - Princeton University, May 2010
    - University of California, San Diego (UCSD), October 2009
  - “Particle Filters for Large Dimensional State Spaces with Multimodal Observation Likelihoods” at UCLA, May 2007
  - “Deformable Contour Tracking” at
    - University of Iowa, Iowa City, Mar. 2007;
    - Siemens Corporate Research, Princeton, Feb. 2007
  - “Change Detection in Nonlinear Systems and Applications in Abnormal Activity Detection” at
    - HP Labs, Palo Alto, Mar. 2006
    - UC-Berkeley Computer Vision Seminar Series, Nov. 2005
    - Honda Research Institute, Mountain View, CA, Nov. 2005

## II. Publications and Citation Information

Notes: \* denotes my graduate student

### A. *Doctoral thesis title*

*Change Detection in Stochastic Shape Dynamical Models with Applications in Activity Modeling and Abnormal Activity Detection*, ECE Department, Univ. of Maryland, College Park, Aug. 2004.

### B. *Book Chapters*

**N. Vaswani**, A.K. Agrawal, Q. Zheng, R. Chellappa, “Moving Object Detection and Compression in IR Sequences,” in *Computer Vision Beyond the Visible Spectrum*, B. Bhanu and I. Pavlidis, Eds. New York: Springer, 2004, ch. 5, pp. 141-165.

## C. Preprints and Journal articles under submission

1. C. Qiu\* and **N. Vaswani**, “ReProCS: A Missing Link between Recursive Robust PCA and Recursive Sparse Recovery in Large but Correlated Noise”, arXiv:1106.3286[cs.IT]
2. **N. Vaswani**, Stability of Modified-CS and LS-CS for Recursive Reconstruction of Sparse Signal Sequences, arXiv:1104.2108[cs.IT]

## D. Journal Articles

1. W. Lu\* and **N. Vaswani**, “Exact Reconstruction Conditions for Regularized Modified Basis Pursuit (reg-mod-BP)”, *IEEE Trans. Signal Processing*, to appear, 2012.
2. W. Lu\* and **N. Vaswani**, “Regularized Modified BPDN for Noisy Sparse Reconstruction with Partial Erroneous Support and Signal Value Knowledge”, *IEEE Trans. Signal Processing*, to appear, 2012.
3. S. Das\* and **N. Vaswani**, “Particle Filter with Mode Tracker (PF-MT) for Visual Tracking across Illumination Changes”, *IEEE Trans. Image Processing*, to appear, 2012.
4. **N. Vaswani**, “LS-CS-residual (LS-CS): Compressive Sensing on the Least Squares Residual,” *IEEE Trans. Signal Processing*, vol. 58(8), pp. 4108-4120, Aug. 2010.
5. **N. Vaswani** and W. Lu\*, “Modified-CS: Modifying Compressive Sensing for Problems with Partially Known Support,” *IEEE Trans. Signal Processing*, vol. 58(9), pp. 4595-4607, Sep. 2010.
6. S. Das\* and **N. Vaswani**, “Nonstationary Shape Activities: Dynamic Models for Landmark Shape Change and Applications,” *IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI)*, vol. 32(4), pp. 579-592, Apr. 2010.
7. **N. Vaswani**, Y. Rathi, A. Yezzi, A. Tannenbaum, “Deform PF-MT: Particle Filter with Mode Tracker for Tracking Non-Affine Contour Deformations,” *IEEE Trans. Image Processing*, vol. 19(4), pp. 841-857, Apr. 2010.
8. **N. Vaswani**, “Particle Filtering Algorithms for Multimodal Observation Likelihoods and Large Dimensional State Spaces,” *IEEE Trans. Signal Proc.*, vol. 56(10-1), pp. 4583-4597, Oct. 2008.
9. Y. Rathi, **N. Vaswani**, A. Tannenbaum, A. Yezzi, “Tracking Deforming Objects using Particle Filtering for Geometric Active Contours,” *IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI)*, vol. 29(8), pp. 1470-1475, Aug. 2007.
10. Y. Rathi, **N. Vaswani**, A. Tannenbaum, “A Generic Framework for Tracking using Particle Filter with Dynamic Shape Prior,” *IEEE Trans. Image Processing*, vol. 16(5), pp. 1370-1382, May 2007.
11. **N. Vaswani**, “Additive Change Detection in Nonlinear Systems with Unknown Change Parameters,” *IEEE Trans. Signal Processing*, vol. 55(3), pp. 859-872, Mar. 2007.

12. **N. Vaswani**, R. Chellappa, "Principal Component Null Space Analysis for Image and Video Classification," *IEEE Trans. Image Processing*, vol. 15(7), pp. 1816-1830, Jul. 2006.
13. **N. Vaswani**, A. Roy Chowdhury, R. Chellappa, "Shape Activity: A Continuous State HMM for Moving/Deforming Shapes with Application to Abnormal Activity Detection," *IEEE Trans. Image Processing*, vol. 14(10), pp. 1603-1616, Oct. 2005.
14. A. Ramamoorthy, **N. Vaswani**, S. Chaudhury, S. Bannerjee, "Recognition of Dynamic Hand Gestures," *Pattern Recognition*, vol. 36(9), pp. 2069-2081, Sep. 2003.

## **E. Highly-Selective Conference Proceedings**

15. B. Song, **N. Vaswani**, A. Roy-Chowdhury, "Closed-loop Tracking and Change Detection in Multi-Activity Sequences," in *Proc. IEEE Intl. Conf. Computer Vision and Pattern Recognition (CVPR)*, 2007. **Acceptance: 25%**.
16. Y. Rathi, **N. Vaswani**, A. Tannenbaum, A. Yezzi, "Particle Filtering for Geometric Active Contours and Application to Tracking Deforming Objects," in *Proc. IEEE Intl. Conf. Computer Vision and Pattern Recognition (CVPR)*, 2005, **Oral. Acceptance: 6%**.
17. **N. Vaswani**, "Bound on Errors in Particle Filtering with Incorrect Model Assumptions and its Implication for Change Detection," in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2004. **Acceptance: 40-50%, Paper selected as an outstanding paper (top 15% papers) in Signal Processing Theory and Methods category of ICASSP papers. Net acceptance: 6-7.5%**
18. **N. Vaswani**, A. Roy-Chowdhury, R. Chellappa, "Activity Recognition Using the Dynamics of the Configuration of Interacting Objects," in *Proc. IEEE Conf. Computer Vision and Pattern Recognition (CVPR)*, 2003. **Acceptance: 25%**.

## **F. Regular Conference Proceedings**

19. C. Qiu\* and **N. Vaswani**, Recursive Sparse Recovery in Large but Correlated Noise," *Proc. Allerton Conf. Communication, Control and Computing*, 2011
20. C. Qiu\* and **N. Vaswani**, Support Predicted Modified-CS for Recursive Robust Principal Components' Pursuit, *Proc. IEEE Intl. Symp. Info. Theory (ISIT)*, 2011
21. W. Lu\*, T. Li\*, I. Atkinson, **N. Vaswani**, Modified-CS-Residual for Recursive Reconstruction of Highly Undersampled Functional MRI Sequences, *Proc. IEEE Intl. Conf. Image Proc. (ICIP)*, 2011
22. F. Raisali\* and **N. Vaswani**, Stability (over time) of Regularized Modified-CS (noisy) for Recursive Causal Sparse Reconstruction, *Proc. Conf. Info. Sciences and Systems (CISS)*, 2011
23. **N. Vaswani**, "Stability (over time) of Modified-CS for Recursive Causal Sparse Reconstruction," *Proc. Allerton Conf. Communication, Control and Computing*, 2010 (**invited**).
24. C. Qiu\* and **N. Vaswani**, "Real-time Robust Principal Components' Pursuit", *Proc. Allerton Conf. Communication, Control and Computing*, 2010.
25. W. Lu\* and **N. Vaswani**, "Exact Reconstruction Conditions and Error Bounds for Regularized Modified Basis Pursuit," *Proc. Asilomar Conf. Signals, Systems and Computers*, 2010.

26. S. Das\* and **N. Vaswani**, “Particle Filtered Modified Compressive Sensing (PF-mod-CS) for tracking signal sequences,” *Proc. Asilomar Conf. Signals, Systems and Computers*, 2010 (**invited**).
27. W. Lu\* and **N. Vaswani**, “Modified Basis Pursuit Denoising (Modified-BPDN) for Noisy Compressive Sensing with Partially Known Support,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2010.
28. W. Lu\* and **N. Vaswani**, “Modified Compressive Sensing for Real-time Dynamic MR Imaging,” in *Proc. IEEE Intl. Conf. Image Processing (ICIP)*, 2009.
29. **N. Vaswani** and W. Lu\*, “Modified-CS: Modifying Compressive Sensing for Problems with Partially Known Support,” in *Proc. IEEE Intl. Symp. Information Theory (ISIT)*, 2009.
30. **N. Vaswani**, “Analyzing Least Squares and Kalman Filtered Compressed Sensing,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2009.
31. C. Qiu\*, W. Lu\* and **N. Vaswani**, “Real-time Dynamic MR Image Reconstruction using Kalman Filtered Compressed Sensing,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2009.
32. S. Das\* and **N. Vaswani**, “Efficient importance sampling techniques for large dimensional and multimodal posterior computations,” in *Proc. IEEE Digital Signal Processing/SPE Workshop*, Miami FL, Jan 2009 (**invited**).
33. **N. Vaswani**, “Kalman Filtered Compressed Sensing,” in *Proc. IEEE Intl. Conf. Image Processing (ICIP)*, 2008.
34. S. Das\* and **N. Vaswani**, “Model-based Compression of Nonstationary Landmark Shape Sequences,” in *Proc. IEEE Intl. Conf. Image Processing (ICIP)*, 2008.
35. A. Kale and **N. Vaswani**, “Generalized ELL for Detecting and Tracking Through Illumination Model Changes,” in *Proc. IEEE Intl. Conf. Image Processing (ICIP)*, 2008.
36. **N. Vaswani** and S. Das, “Particle Filter with Efficient Importance Sampling and Mode Tracking (PF-EIS-MT) and its Application to Landmark Shape Tracking,” in *Proc. Asilomar Conf. Signals, Systems and Computers*, 2007 (**invited**).
37. **N. Vaswani**, “PF-EIS and PF-MT: New Particle Filtering Algorithms for Multimodal Observation Likelihoods and Large Dimensional State Spaces,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2007.
38. A. Kale, **N. Vaswani**, C. Jaynes, “Particle Filter with Mode Tracker (PF-MT) for Visual Tracking across Illumination Change,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2007.
39. **N. Vaswani**, A. Yezzi, Y. Rathi, A. Tannenbaum, “Time-varying Finite Dimensional Basis for Tracking Contour Deformations,” in *Proc. IEEE Conf. Decision and Control (CDC)*, 2006.
40. B. Song, **N. Vaswani**, A.K. Roy-Chowdhury, “Summarization and Indexing of Human Activity Sequences,” in *Proc. IEEE Conf. Image Processing (ICIP)*, 2006.
41. **N. Vaswani**, A. Yezzi, Y. Rathi, A. Tannenbaum, “Particle Filters for Infinite (or Large) Dimensional State Spaces – Part 1,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2006.

42. **N. Vaswani**, “Particle Filters for Infinite (or Large) Dimensional State Spaces – Part 2,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2006.
43. **N. Vaswani**, R. Chellappa, “NonStationary ‘Shape Activities,’” in *Proc. IEEE Conf. Decision and Control (CDC)*, 2005.
44. **N. Vaswani**, “The Modified CUSUM Algorithm for Slow and Drastic Change Detection in General HMMs with Unknown Change Parameters,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2005.
45. **N. Vaswani**, “Change Detection in Partially Observed Nonlinear Dynamic Systems with Unknown Change Parameters,” in *Proc. American Control Conf. (ACC)*, 2004.
46. **N. Vaswani**, R. Chellappa, “Classification Probability Analysis of Principal Component Null Space Analysis,” in *Proc. Intl. Conf. Pattern Recognition (ICPR)*, 2004.
47. **N. Vaswani**, A. Roy-Chowdhury, R. Chellappa, “Statistical Shape Theory for Activity Modeling,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2003.
48. **N. Vaswani**, R. Chellappa, “A Particle Filtering Approach to Abnormality Detection in Nonlinear Systems and its Application to Abnormal Activity Detection,” in *Proc. 3rd Intl. Workshop on Statistical and Computational Theories of Vision*, held in conjunction with ICCV, 2003.
49. **N. Vaswani**, “A Linear Classifier for Gaussian Class Conditional Distributions with Unequal Covariance Matrices,” in *Proc. Intl. Conf. Pattern Recog. (ICPR)*, 2002.
50. **N. Vaswani**, R. Chellappa, “Best View Selection and Compression of Moving Objects in IR Sequences,” in *Proc. IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2001.

### **G. Citation Information (taken from Google Scholar, 1/12/2012)**

- **H-index: 16**
- Recent Highly-Cited Papers
  1. N. Vaswani and W. Lu\*, “Modified-CS: Modifying Compressive Sensing for Problems with Partially Known Support,” *IEEE Trans. Signal Processing*, vol. 58(9), pp. 4595-4607, Sep. 2010  
**cited 59 times**
  2. N. Vaswani, “LS-CS-residual (LS-CS): Compressive Sensing on the Least Squares Residual,” *IEEE Trans. Signal Processing*, vol. 58(8), pp. 4108-4120, Aug. 2010.  
**cited 21 times**
  3. N. Vaswani, “Kalman Filtered Compressed Sensing,” in *Proc. IEEE Intl. Conf. Image Processing (ICIP)*, 2008.  
**cited 59 times**
  4. Y. Rathi, N. Vaswani, A. Tannenbaum, A. Yezzi, “Tracking Deforming Objects using Particle Filtering for Geometric Active Contours,” *IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI)*, vol. 29(8), pp. 1470-1475, Aug. 2007.  
**cited 89 times**

## ***H. Patents and Consulting Activities***

- N. Vaswani, “Recursive Sparse Reconstruction,” U.S. Serial Number 12/751,427, Patent Pending
- Consulted for Zenph Sound Innovations, August 2010

## **III. Instruction and Supervision**

### ***A. Instruction for ISU***

- **Graduate courses**
  - Special Topics in CSP: Compressive Sensing (EE 520): Spring 2009
  - Detection and Estimation Theory (EE 527): Spring 2008, Spring 2010
  - Digital Image Processing (EE 528): Spring 2007, Fall 2009
  - Digital Signal Processing (EE 524): Fall 2010
  - Special Topics in CSP: Computer Vision (EE 520): Fall 2005
- **Undergraduate courses**
  - Probabilistic Methods for Electrical Engineers (EE 322): Fall 2006, 2007, 2008; Spring 2009, 2011
  - Signals and Systems (EE 224, Recitations, Labs): Fall 2011, Spring 2010 and Fall 2006

### ***B. Curricular Development Activity***

- Special topics course on Compressive Sensing (EE 520)
  - <http://www.ece.iastate.edu/~namrata/CSclass>
- Digital Image Processing (EE 528)
  - <http://www.ece.iastate.edu/~namrata/EE528>

### ***C. Graduate Students***

- **Alumni**
  - Samarjit Das, Ph.D., Fall, 2010
  - Wei Lu, Ph.D., Fall 2011
  - Taoran Li, M.S. Summer 2011
- **Current students**
  - Chenlu Qiu, Ph.D., started in Spring 2008
  - Fardad Raisali, Ph.D., started in Spring 2009
  - Man Basnet Ph.D. (co-advised with Prof. Keinert from Math), started Fall 2010
  - Animesh Biswas, Ph.D., started Fall 2011
  - Jinchun Zhan, Ph.D., started Fall 2011

### ***D. Undergraduate Research Students***

- Matt Boyce, REU student, Summer 2011
- Jennifer Nixon, REU student, Summer 2010
- Matt Rich, REU student, Spring 2010
- Xiang Li, undergraduate research student, Spring and Summer 2008

## IV. Professional Service

- Associate Editor for *IEEE Transactions on Signal Processing*, Oct 2009 – present
- Technical Program Committee Member, IEEE Statistical Signal Processing (SSP) Workshop 2012
- NSF Panelist, 2008, 2010, 2011
- Organized Special Sessions at
  - Asilomar 2010: Recursive reconstruction of sparse signal sequences
  - ICIP 2008: Landmark shape sequence analysis
- Area Chair for interpolation for IEEE Intl. Conf. Image Processing (ICIP), 2009
- Tutorials Chair for IEEE Intl. Conf. Image Processing (ICIP), 2008
- Performed book proposal reviews for Cambridge University Press and others
- Program Committees: IEEE Intl. Conf. Comp. Vis. Pattern Recog. (CVPR), 2008, 2009; European Conf. Comp. Vis. (ECCV), 2008; IEEE Intl. Conf. Comp. Vis. (ICCV), 2007
- Journal Reviewing:
  - IEEE Trans. Signal Proc. (TSP), IEEE Trans. Image Processing (TIP), IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI), EURASIP Journal on Applied Signal Processing, IEEE Trans. Auto. Control and Automatica
- Conference Reviewing:
  - IEEE Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP), IEEE Intl. Conf. Image Processing (ICIP), IEEE Intl. Conf. Comp. Vision (ICCV), IEEE Conf. Dec. and Control (CDC), Globecom, Milcom