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Department of Statistics
Florida State University
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Education:

Doctor of Science in Electrical Engineering (1996)

Washington University, St. Louis, MO

Thesis title: Inferences on Transformation Groups Generating Patterns on Rigid Motions

Thesis advisor: Prof. Michael I. Miller

Master of Science in Electrical Engineering (1993)

Washington University, St. Louis, MO

Thesis title: Automated Target Tracking-Recognition Using Jump-Diffusion Processes

Thesis advisor: Prof. Michael I. Miller

Bachelor of Technology in Electronics Engineering (1990)

Institute of Technology, Banaras Hindu University (IT-BHU), India

Senior Project: Phoneme Synthesis Using Simulated Orthogonal functions

Experience:

Professor (2007 – present)

Department of Statistics
Florida State University, Tallahassee, FL

Associate Professor (2003 – 2007)

Department of Statistics
Florida State University, Tallahassee, FL

Assistant Professor (1997 – 2003)

Department of Statistics
Florida State University, Tallahassee, FL

Postdoctoral Research Associate (1996 -- 1997)

Division of Applied Mathematics
Brown University, Providence, RI

Consultant (1996 -- 1997)

Scientific Systems Company, Inc., Woburn, MA

Research Assistant

Center for Imaging Sciences (1995 -- 1996)

Electronic Systems and Signals Research Laboratory (1990 -- 1996)
Washington University, St. Louis, MO

Summer Trainee (1989 -- 1989)

Signal Processing Division, Vikram Sarabhai Space Research Center, India

Visiting Positions: **Visiting Professor** (June - December, 2007)
University of Lille (Summer, 2008, 2009, 2011)
Lille, France

Visiting Professor (May, 2007)
CESAME
Catholic University of Louvain (UCL)
Louvain-la-Neuve, Belgium

Visiting Professor (May - August, 2006)
Institut National de Recherche en Informatique et en Automatique (INRIA)
Sophia Antipolis, France.

Visiting Assistant Professor (Fall, 2001)
Brown University, Providence, RI

Affiliations: Senior Member, IEEE
Member, ASA

Recognitions:

- University Grants Commission (India) Merit Scholarship (1986-90)
- Director's Award at IT-BHU, Electronics Department First Rank, India (1987 & 1989)
- Electrical Engineering Doctoral Fellowship, Washington University (1990-91)
- National Interest Waiver for Permanent Residency (1997)
- Highest ranked paper in Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), held at Lisbon, Portugal (2003).
- Developing Scholar Award, Florida State University (2005)
- Dean's 90% Teaching List, Florida State University (Spring 2006, Spring 2008, Spring 2010, Spring 2011)
- Research Innovation Alliance Award, The Northrop Grumman Company (2007)
- Graduate Faculty Mentor Award, Florida State University (2008)
- Senior Member, IEEE (2009)
- Outstanding Reviewer Award, CVPR Conference (2010)
- Nominated for FSU Teaching Award (2010)
- Keynote Speaker, International Workshop on 3D Object Retrieval (in conjunction with ACM-MM conference), Florence, Italy (2010).

Recognitions of My Students for Joint Research

- Chafik Samir: Best paper prize for a doctoral student at CORESA, France (2006).
 - Shantanu Joshi: FSU Graduate Student Research Creativity Award (2007), given to best dissertations in FSU, only two given every year in Science Areas.
 - Shantanu Joshi: Selected for Feature Profile on FSU Website (2007)
 - Sebastian Kurtek: Runner-up for Erbsmann prize at IPMI (2011); also received a travel bursary to attend the conference.
 - Conference Travel Awards: Wei Liu (ACM-BCB 2010), Sebastian Kurtek (IPMI 2011), Jose Laborde (IEEE BIBM 2011).
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SERVICE TO THE COMMUNITY

Conference Technical Committee, Reviewer:

Statistical Signal Processing Workshop (2003,2012), ICPR (2004,2010), Biometrics Symposium (2004), CVPR (2004-now), ECCV (2006-now), EMMCVPR (2005, 2007), ICASSP (2007), ICCV (2007, 2009), MICCAI (2008), ICB (2011), MFCA (2011).

Organization of Special Sessions at Conferences:

1. Invited session on Target Recognition (with K. Simonson), Spring Research Conference on Statistics in Industry and Technology, Santa Fe, NM, June 1998.
2. Two-session mini-symposium on *Bayesian Hierarchical Models for Image Analysis* (with H. Krim), First SIAM Conference on Imaging Science, Boston, MA, March 2002.
3. A session on Image Analysis Applications (with H. Krim), at Asilomar Conference on Signals, Systems, and Computers, November 2002.
4. An invited Session on *Differential Geometric Methods in Signal and Image Processing* at 12th IEEE Workshop on Statistical Signal Processing, St. Louis, August 2003.
5. An invited Session on *Shape Analysis* at EURASIP, 2004, Vienna, Austria.
6. A special session on *Statistical Inference on Nonlinear Manifolds* at International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toulouse, France, May 2006.

Organization of Workshops:

1. An AIM (American Institute of Mathematics) workshop titled *Statistical Inferences on Shape Manifolds* (with Washington Mio and David Mumford), Palo Alto, May 2005. (Approx. 40 attendees)
2. An ARO Sponsored Workshop on *Challenges and Opportunities in Image Understanding*, Washington DC, January 2007. (Approx. 30 attendees)
3. A Workshop on *Statistics of Time Warpings and Phase Variations* (with Jim Ramsay, Steve Marron, and Laura Sangalli) at Mathematical Biosciences Institute (MBI) at The Ohio State University, Columbus, OH, November 2012.

Reviewership:

IEEE Trans. on Signal Processing; IEEE Trans. on Systems, Man & Cybernetics; IEEE Trans. on Pattern Analysis & Machine Intelligence, IEEE Trans. on Information Theory; NSF; International Journal of Adaptive Control and Signal Processing; Journal of Statistical Planning and Inference; International Journal of Robotics and Automation; Swedish Research Council for Engineering Sciences; International Journal of Computer Vision; IEEE Transactions on Bio-Medical Engineering; Journal of Computer Vision and Image Understanding; Communications in Statistics, ONR; IEEE Aerospace and Electronic Systems, ARO, IEEE Transactions on Image Processing; Canadian National Science Foundation; FNRS (Belgian National Science Foundation).

Editorship:

Associate Editor, Journal of Statistical Planning and Inference (2001-06)
Associate Editor, IEEE Transactions on Signal Processing (2004-06)
Associate Editor, IEEE Transactions on Pattern Analysis and Machine Intelligence (2006-2008)
Section Editor, Image Processing, Elsevier's Signal Processing References (current)

Guest editor, Special Issue of IEEE Transactions on Pattern Analysis and Machine Intelligence on Shape Modeling (2009-2010)

TEACHING & FSU SERVICE

Courses Taught:

Fall 1997-2000, 2002-09: Computational Statistics I

Spring 1998, Fall 1998, Spring 1999: Fundamental Business Statistics
Fall 1999, Spring 2011, Fall 2011: Introduction to Probability
Spring 2000-2010: Computational Statistics II
Fall 2000: Intermediate Level Statistics
Spring 2002: Special Topics (Information Theory)
Spring 2007: Special Topics (General Pattern Theory)
Spring 2009, Spring 2011: Special Topics (Statistical Shape Analysis)
Fall 2011: Special Topics (Monte Carlo Methods in Finance)

Administrative Responsibility: Chair, Computer Acquisition & Maintenance Committee (1997-2004)
Chair, Colloquium Committee (1998-2000)
Member, FSU CSIT Curriculum Committee (2000)
Coordinator, Laboratory for Computational Vision (2000-2004)
Faculty Senator (2000-01)
Chair, Academic Affairs Committee (2003-04)
Member, Department Faculty Recruitment Committee (2003-2008)
Member, Department Executive Committee (2004-2009)
Member, Department Chair Search Committee (2004-05, 2007-08, 2010-11)

RESEARCH FUNDING SUPPORT

Past and Current Funding:

1. **ARO** DURIP Equipment Award: (as Co-PI) : 1998-2000, \$86K
PI: J. Sethuraman
Title: Research on Algorithms and Performance in Bayesian ATR
2. **FSU** First Year Asst Professor Award (as PI): 1998, \$10K
Title: Bayesian Techniques for Image Understanding
3. **NSF** MRI Research Instrumentation Award (as Co-PI): 1998-2000, \$189K
PI: J. Sethuraman, other Co-PI: D. Sumners
Title: Acquisition of Equipment for Research in Image Understanding
4. **ARO** Single Investigator Award (as PI): 1999-2002, \$156K
Title: Research on Applications of Bayesian Automated Target Recognition System
5. **FSU** Research Equipment Support: 2000, \$100K
6. **AMCOM/Dynatech** (as PI): 2000-01, \$16K
Title: Nonlinear Regression Techniques for Prediction of Infrared Images
7. **NIMA** University Research Initiative (as Co-PI): 2001-04, \$287K
PI : X. Liu
Title : Computational Models and Algorithms for Automated Terrain and Target Recognition
8. **NSF** Focused Research Group Program (as PI) : 2001-05, \$522K
Co-PIs : G. Erlebacher, E. Klassen, D. Banks
Title: Development of Geometrical and Statistical Models for Visual Scene Processing
9. **FSU** Cornerstone PEG Grant (as Co-PI) : 2002-04, \$100K

PI: David Banks

Title: Multi-Dimensional Brain Imaging and Analysis

10. **NSF Information and Intelligent Systems (as Co-PI) : 2003-06, \$342K**
PI : Xiuwen Liu
Title : Seeking Optimal Representations, Classifiers and Generalizations for Image Based Recognition
11. **NSF DMS and Intelligence Community (as Co-PI) : 2003-04, \$100K**
PI : W. Mio
Title : SGER ACT : Stochastic Shape Analysis for Recognizing and Tracking Objects in Images and Videos
12. **ARO Single Investigator Program (as PI) : 2004-07, \$323K**
Co-PIs : X. Liu and W. Mio
Title : Research on Statistical Shape Theory with Applications in Image Understanding.
13. **ARO Defense University Research Instrumentation Program (as PI) : 2004-06, \$347K**
Co-PIs : X. Liu, W. Mio, and T. Baker
Title : A Laboratory for Real-Time Systems in Computer Vision Applications.
14. **AIM (American Institute of Mathematics) Workshop : 2005**
Co-Organizers : W. Mio and D. Mumford.
Title : Statistical Inferences on Shape Manifolds
15. **NSF Computing and Communicating Foundations (as Co-PI) : 2005- 2008, \$470K**
PI : W. Mio, other Co-PI : X. Liu
Title : Algorithmic Riemannian Geometry for a Statistical Analysis of Images
16. **FSU Developing Scholar Award : 2005-06, \$10K**
17. **FSU Equipment and Infrastructure Enhancement Grant (EIEG) (as PI): 2005, \$35K**
Co-PI: X. Liu
Title: Acquisition of a Hyperspectral Camera for Image Analysis
18. **AFOSR FA9550-06-1-0324 (PI for FSU, Co-PI of the project) : 2006- 2011, \$500K**
Title : Integrated Fusion, Performance Prediction and Sensor Management for Automatic Target Exploitation.
Other Universities : Ohio State (lead), MIT, Boston Univ., and Univ. Of Michigan.
19. **INRIA, Sophia Antipolis, France : Visiting Professor Salary for four months, from May – August, 2006.**
20. **CNRS, France Grant : Visiting Professor Salary for four months during 2007-2008, to visit ENIC, University of Lille, Lille, France.**
21. **ARO Workshop Grant (as PI) : 2006 - 2007, \$21K**
Title: ARO Workshop on Challenges and Opportunities in Mathematical Image Analysis and Understanding
22. **Northrop-Grumman Innovation Alliance Grant (as PI) : 2006 - 2007, \$25K**
Title: Shape-Based Exploitation Tools for ATR.
23. **ARO Single Investigator Program (as PI) : 2008-09, \$50K, One-year Add-on**

Title : Research on Statistical Shape Theory with Applications in Image Understanding.

24. **ONR** N00014-09-1-0664 (PI for FSU): 2009 – 2012, \$450K
(Collaborative Grant with UMD)
Co-PI: Adrian Barbu
Title : Statistical and Semantic Approaches for Object, Activity, and Intent Recognition
25. **NSF** DMS-0915003 (PI): 2009 – 2012, \$400K
Co-PI: Adrian Barbu and Eric Klassen
Title : Research on Shape Detection and Classification in Cluttered Point Clouds

Grant Proposals Under Consideration:

1. **NIH** R21 Proposal (Co-PI): 2014-2014, \$381K
PI: Jinfeng Zhang
Title: Elastic Shape Analysis for Protein Structure Alignment
2. **NSF** CISE (PI for FSU): 2012-2016, \$320K
Project PI: Pavan Turaga (Arizona State University)
Title: Multi-modal Models for Understanding Human Activities

GRADUATE STUDENT MENTORSHIP

Current PhD Students:

1. Sebastian Kurtek (Expected Graduation May 2012)
2. Jinyong Su (Expected Graduation 2013)
3. Qian Xie (3rd year student)
4. Michael Rosenthal (3rd year student)
5. Darshan Bryner (Expected Graduation 2014)
6. Jose Laborde (3rd year student)
7. Zhengwu Zhu: (2nd year student)
8. Derek Tucker: (1st year student)

Graduated PhD Students:

1. Mick Smith (PhD Statistics, 2003), Thesis Title: *Bayesian Sensor Fusion for Multi-Modal Sensing in Battleground Scenarios*
2. Rob Neher (PhD Statistics, 2004), Thesis Title: *Bayesian Markov Random Field Framework for Terrain Labeling Using Hyperspectral Imaging*
3. Dave Kaziska (PhD Statistics, 2005), Thesis Title: *Statistical Models on Shape Spaces with Applications to Human Gait Recognition.*
4. Evgenia Rubenshtein (PhD Statistics, 2006), Thesis Title: *Optimal Linear Representations of Images Under Diverse Criteria.*
5. Shantanu Joshi (PhD EcE, 2007), Thesis Title: *Inferences in Shapes Spaces with Applications to Computer Vision.*
6. Chafik Samir (PhD CS, 2007, Univ. of Lille, France), Co-supervised with Prof. Mohamed Daoudi), Thesis Title: *Analyse des Deformations des Visage 3D Utilisant les Chemins Geodesiques dans L'Espace des Surface Faciales.*
7. Nikolay Balov (PhD Statistics, 2009), Thesis Title: *Covariance on Manifolds.*
8. Moeti Ncube (PhD Statistics, 2009), Co-supervised with Prof. James Doran of FSU. Thesis Title: *Stochastic Models and Inferences for Commodity Pricing.*

9. Muffasir Badshah (PhD Statistics, 2010), Co-supervised with Prof. Paul Beaumont of FSU. Thesis Title: *Computation of the Wealth Distribution in a Heterogeneous Agent Economy*.
10. Sentibaleng Ncube (PhD Statistics, 2011), Thesis Title: *A Novel Riemannian Metric for Analyzing Spherical Functions with Applications to HARDI Data*.
11. Wei Liu (PhD Statistics, 2011), Co-supervised with Jinfeng Zheng, Thesis Title: *A Riemannian Framework for Annotated Curve Analysis*.

Served or Serving on Thesis Committees of Students Other Than Those I Directed:

MS Students: Donghu Sun (MS, Computer Science, 2003); Chris Baker (MS, Computer Science, 2004).

PhD Students:

Marc Loizeaux (Statistics, 2001); Adnan Bashir (Industrial Engineering, 2002); Feiming Chen (Statistics, 2003); Wankang Zhao (Computer Science, 2003), Marcus Perry (Industrial Engineering, 2004); Huicheng Zhang (University of Lille, EE, France, 2004); Ana-Maria Croicu (Mathematics, 2005); Wayne Wesley (Industrial Engineering, 2006); Guillaume Perrin (Electrical Engineering, INRIA, France, 2006); Amal Aafif (Mathematics, Drexel University 2007); Florent Lafarge (CS, Ecoles des Mines de Paris/INRIA, France, 2007); Camille Izard (Mathematics, USTL, France, 2008); Chris Baker (SCS, 2008); A. Veeraraghavan (ECE, University of Maryland, 2008); Julien Tierny (CS, USTL, France, 2008); Edwin Jimenez (Mathematics, 2009); Maria Kulikova (CS, University of Nice in Sophia Antipolis, France 2009); Donald Mattison (Art Therapy, ongoing); Motoi Namihira (Mathematics, ongoing); Hieu Thai (Electrical Engineering, ongoing); Cesar Costa (Applied Mathematics, ongoing); Onyekachi Achole (Electrical Engineering, 2010); Vernon Lawhern (Statistics, 2011); Kerem Bingol (Chemistry, ongoing); Meena Mani (Signal Processing, IRISA, Rennes, France, 2011); Guifeng Liu (Electrical Engineering, June 2011); Hassen Drira (CS, University of Lille, France, July 2011); Rommel Bain (Statistics, ongoing).

RESEARCH PUBLICATIONS

(Citation Count for Selected Papers Using Google Scholar as of October, 2011)

Books or Monographs

1. **A. Srivastava** and E. Klassen, *Statistical Modeling of Shapes of Curves and Surfaces*, Springer Series in Statistics, in preparation (six chapters reviewed), 2011.

Published in Peer-Reviewed Journals

1. **A. Srivastava**, M. I. Miller and U. Grenander, *Multiple Target Direction of Arrival Tracking*, IEEE Transactions on Signal Processing, vol. 43, no. 5, pages 1282-85, May 1995. **[30 citations]**
2. M. I. Miller, **A. Srivastava** and U. Grenander, *Conditional-Expectation Estimation via Jump Diffusion Processes in Multiple Target Tracking/Recognition*, IEEE Transactions on Signal Processing, vol. 43, no. 11, pages 2678-90, November 1995. **[113 citations]**

3. U. Grenander, M. I. Miller and **A. Srivastava**, *Hilbert-Schmidt Bounds on Matrix Lie Groups for ATR*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 20, no. 8, pages 790-800, August 1998. **[99 citations]**
4. **A. Srivastava**, *A Bayesian Approach to Geometric Subspace Estimation*, IEEE Transactions on Signal Processing, vol. 48, no. 5, pages 1390-1400, May 2000. **[34 citations]**
5. U. Grenander, **A. Srivastava** and M. I. Miller, *Asymptotic Performance Analysis of Bayesian Object Recognition*, IEEE Transactions on Information Theory, vol. 46, no. 4, pages 1658-66, July 2000. **[36 citations]**
6. U. Grenander and **A. Srivastava**, *Probability Models for Clutter in Natural Images*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 23, no. 4, pages 424-29, April 2001. **[105 citations]**
7. **A. Srivastava** and E. Klassen, *Monte Carlo Extrinsic Estimators for Manifold-Valued Parameters*, IEEE Transactions on Signal Processing, vol. 50, no. 2, pages 299-308, February 2002. **[47 citations]**
8. **A. Srivastava**, U. Grenander, G. Jensen and M. I. Miller, *Jump-Diffusion Markov Processes on Orthogonal Groups for Object Recognition*, Journal of Statistical Planning and Inference, vol. 103, no. 1-2, pages 15-37, April 2002.
9. **A. Srivastava**, X. Liu, and U. Grenander, *Universal Analytic Forms for Modeling Image Probabilities*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 24, no. 9, pages 1200-14, September 2002. **[86 citations]**
10. **A. Srivastava**, *Stochastic Models for Capturing Image Variability*, IEEE Signal Processing Magazine, vol. 19, issue 5, pages 63-76, September 2002. **[25 citations]**
11. **A. Srivastava**, A. B. Lee, E. P. Simoncelli, and S-C. Zhu, *On Advances in Statistical Modeling of Natural Images*, Journal of Mathematical Imaging and Vision, vol. 18, pages 17-33, January 2003. **[249 citations]**
12. X. Liu, **A. Srivastava**, and D. Wang, *On Intrinsic Generalization of Low Dimensional Representations of Images for Recognition*, Neural Networks, vol.16, no. 5 and 6, pages 537-45, June 2003.
13. **A. Srivastava** and X. Liu, *Statistical Hypothesis Pruning for Recognition of Faces in Infrared Images*, Journal of Image and Vision Computing, vol. 21, no. 7, pages 651-60, July 2003.
14. **A. Srivastava** and E. Klassen, *Bayesian and Geometric Subspace Tracking*, Journal of Advances in Applied Probability, vol. 36, no. 1, pages 43-56, March 2004. **[32 citations]**
15. E. Klassen, **A. Srivastava**, W. Mio and S. Joshi, *Analysis of Planar Shapes using Geodesic Paths on Shape Spaces*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol.26, no. 3, pages 372-83, March 2004. **[260 citations]**
16. X. Liu, **A. Srivastava** and K. Gallivan, *Optimal Linear Representations of Images for Object Recognition*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 25, no. 5, pages 662-66, May 2004. **[77 citations]**
17. W. Mio, **A. Srivastava**, and E. Klassen, *Interpolations with Elasticae in Euclidean Spaces*, Quarterly of Applied Mathematics, vol. LXII, no. 2, pages 359-78, June 2004.

18. **A. Srivastava**, S. Joshi, W. Mio, and X. Liu, *Statistical Shape Analysis: Clustering, Learning, and Testing*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 27, no. 4, pages 590-602, April 2005. [**116 citations**]
19. R. Neher and **A. Srivastava**, *A Bayesian MRF Framework for Labeling Terrain Using Hyperspectral Images*, IEEE Transactions on Geosciences and Remote Sensing, vol. 43, no. 2, pages 1363-1375, June 2005. [**27 citations**]
20. **A. Srivastava** and X. Liu, *Tools for Application-Driven Dimension Reduction*, Journal of Neurocomputing, vol. 67, pages 136-160, 2005.
21. **A. Srivastava**, X. Liu, and C. Heshner, *Face Recognition Using Optimal Linear Components of Range Images*, Journal of Image and Vision Computing, vol. 24, no. 3, pages 291-299, March 2006. [**28 citations**]
22. W. Mio, **A. Srivastava**, and X. Liu, *Contour Inferences for Image Understanding*, International Journal of Computer Vision, vol. 69, no. 1, pages 137-144, August 2006.
23. C. Samir, **A. Srivastava**, and M. Daoudi, *Automatic 3D Face Recognition Using Shapes of Facial Curves*, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 28, no. 11, pages 1858-1863, November 2006. [**92 citations**]
24. W. Mio, **A. Srivastava**, and S. Joshi, *On Shape of Plane Elastic Curves*, International Journal of Computer Vision, vol. 73, no. 3, pages 307-324, July 2007. [**58 citations**]
25. U. Grenander, **A. Srivastava** and S. Saini, *A Pattern-Theoretic Characterization of Biological Growth*, IEEE Transactions on Medical Imaging, vol. 26, no. 5, pages 648-659, November 2007. [**14 citations**]
26. D. Kaziska and **A. Srivastava**, *Classification of Cyclostationary Processes on Nonlinear Shape Manifolds for Gait-Based Human Recognition*, Journal of American Statistical Association, vol. 102, no. 480, pages 1114-1124, December 2007. Comments by K. Mardia, R. Chellappa and A. Veeraghavan. Published with a rejoinder page:1127, same issue.
27. D. Kaziska and **A. Srivastava**, *The Karcher Mean of a Class of Symmetric Distributions on a Unit Circle*, Statistics and Probability Letters, vol. 78, pages 1314-1316, 2008.
28. **A. Srivastava**, C. Samir, S. H. Joshi, and M. Daoudi, *Elastic Shape Models for Face Analysis Using Curvilinear Coordinates*, Journal of Mathematical Imaging and Vision, vol. 33, no. 2, pages 253-265, February 2009.
29. M.-C. Chiang, M. Barysheva, D. Shattuck, A. Lee, S. K. Madsen, C. Avedissian, A. D. Klunder, A. Toga, K. McMahon, G. De Zubicaray, M. Wright, **A. Srivastava**, N. Balov, and P. Thompson, *Genetics of Brain Fiber Architecture and Intellectual Performance*, Journal of Neuroscience, vol. 29, no. 7, 2212-2224, February 2009. [**92 citations**]
30. S. Joshi and **A. Srivastava**, *Intrinsic Bayesian Active Contours for Extraction of Object Contours in Images*, International Journal of Computer Vision, vol. 81, no. 3, pages 331-355, March 2009.
31. C. Samir, **A. Srivastava**, M. Daoudi, and E. Klassen, *An Intrinsic Framework for Analysis of Facial Surfaces*, International Journal of Computer Vision, vol. 82, no. 1, pages 80-95, April 2009. [**27 citations**]
32. A. Veeraghavan, **A. Srivastava**, A. K. Roy-Chowdhury and R. Chellappa, *Rate-invariant recognition of humans and their activities*, IEEE Transactions on Image Processing, vol. 8, issue 6, pages 1326-1339, June 2009. [**16 citations**]

33. B. Ben Amor, H. Drira, L. Ballihi, **A. Srivastava**, and M. Daoudi, *An Experimental Illustration of 3D Facial Shape Analysis Under Facial Expressions*, *Annals of Telecommunications*, vol. 64, no. 5, pages 369-379, June 2009.
34. **A. Srivastava** and I. H. Jermyn, *Looking for Shapes in Two-Dimensional, Cluttered Point Cloud*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 31, no. 9, pages 1616-1629, September 2009.
35. E. Rubenshtein and **A. Srivastava**, *Optimal Linear Projections for Enhancing Desired Data Statistics*, *Journal of Statistics and Computing*, vol. 20, no. 3, pages 267-282, July 2010.
36. D. Kaziska and **A. Srivastava**, *Joint Gait-Cadence Analysis for Human Identification Using An Elastic Shape Framework*, *Communications in Statistics – Theory and Methods*, vol. 39, no. 19, pages 1817-1831, May 2010.
37. W. Wu and **A. Srivastava**, *Towards Statistical Summaries of Spike Train Data*, *Journal of Neuroscience Methods*, vol. 195, issue 1, pages: 107-110, January 2011.
38. W. Liu, **A. Srivastava**, and J. Zheng, *A Mathematical Framework for Protein Structure Comparison*, *PLOS Computational Biology*, vol. 7, issue 2, pages: 1-10, February 2011.
39. S. Kurtek, E. Klassen, Z. Ding, S. Jacobson, J. L. Jacobson, M. J. Avison, and **A. Srivastava**, *Parameterization-Invariant Shape Comparisons of Anatomical Surfaces*, *IEEE Transactions on Medical Imaging*, vol. 30, issue 3, pages: 849-858, March 2011.
40. M. F. Abdelkader, W. Abd-Elmageed, **A. Srivastava**, and R. Chellappa, *Gesture and Action Recognition via Modeling Trajectories on Shape Manifolds*, *Computer Vision and Image Understanding Journal*, vol. 115, issue 3, pages 439-455, March 2011.
41. **A. Srivastava**, E. Klassen, S. Joshi, and I. Jermyn, *Shape Analysis of Elastic Curves in Euclidean Spaces*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 33, issue 7, pages 1415-1428, July 2011.
42. A. Maalej, B. Ben Amor, M. Daoudi, **A. Srivastava**, and S. Berretti, *Shape Analysis of Local Patches for 3D Facial Expression Recognition*, *Pattern Recognition*, vol. 44, issue 8, pages 1581-1589, August 2011.
43. P. Turaga, A. Veeraraghavan, **A. Srivastava**, and R. Chellappa, *Statistical Computations on Special Manifolds for Image and Video-Based Recognition*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 33, issue 11, pages 2273- 2286, November 2011.

In Press

44. C. Samir, P.-A. Absil, **A. Srivastava** and E. Klassen, *A Gradient-Descent Method for Curve Fitting on Riemannian Manifolds*, accepted for publication, *Foundations of Computational Mathematics*, January 2011.
45. W. Wu and **A. Srivastava**, *An Information-Geometric Framework for Statistical Inferences in the Neural Spike Train Space*, *Journal of Computational Neuroscience*, accepted for publication, April 2011.
46. J. Su, I. L. Dryden, E. Klassen, H. Le and **A. Srivastava**, *Fitting Optimal Curves to Time-Indexed, Noisy Observations of Stochastic Processes on Nonlinear Manifolds*, accepted for publication, *Journal of Image and Vision Computing*, September 2011.

47. S. Kurtek, E. Klassen, J. Gore, Z. Ding, and **A. Srivastava**, *Elastic Geodesic Paths in Shape Spaces of Parameterized Surfaces*, IEEE Transactions on Pattern Analysis and Machine Intelligence, accepted for publication, October 2011.

In Review

48. H. Sun and **A. Srivastava**, *Shape Detection in Over-Segmented Images*, submitted for review to IEEE Transactions on Pattern Analysis and Machine Intelligence, August 2010.
49. **A. Srivastava**, W. Wu, S. Kurtek, E. Klassen, and J. S. Marron, *Statistical Analysis and Modeling of Elastic Functions*, submitted to the Journal of Royal Statistical Society B, September 2011.
50. H. Drira, B. Ben Amor, M. Daoudi, **A. Srivastava**, *Pose and Expression-Robust 3D Face Recognition Using Elastic Radial Curves*, submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence, June 2011.
51. **A. Srivastava** and P. Turaga, *On Advances in Geometric Approaches for Shape Analysis and Activity Recognition*, invited paper submitted to the Journal of Image and Vision Computing, February 2011.
52. S. Kurtek, **A. Srivastava**, E. Klassen, and Z. Ding, *Statistical Modeling of Curves Using Shapes and Related Features*, in review at Journal of American Statistical Association after a major revision, September 2011.
53. W. Wu, J. D. Tucker, and **A. Srivastava**, *Classification of Underwater Object Targets Using Warped Spectral Responses*, in review at IEEE Transactions on Signal Processing, October 2011.

Unpublished Manuscripts:

1. U. Grenander, **A. Srivastava**, and C. Heshner, *Models for Statistical Analysis of Range Images*, May 2001.
2. M. Smith and **A. Srivastava**, *A Model Based Approach to Statistical, Multi-Modal Sensor Fusion*, February 2005.
3. E. Klassen and **A. Srivastava**, *A Path-Straightening Approach for Finding Geodesics on Shape Spaces of Closed Curves in R^3* , March 2006.
4. M. Ncube, J. Doran, and **A. Srivastava**, *Calibration of Reduced Form Models; Implementation of a Kalman Smoother Expectation Minimization Procedure*, January 2010.
5. M. Ncube and **A. Srivastava**, *A Calibration Technique for Time Series Models with Mixture Densities and Nonlinear Observations*, January 2010.

Book Chapters in Edited Volumes

1. **A. Srivastava**, M. I. Miller and U. Grenander, *Ergodic Algorithms on Special Euclidean Groups for ATR*, chapter in *Systems and Control in the Twenty-First Century*, pages 327-50, Birkhauser, Boston, 1997.

2. **A. Srivastava**, M. I. Miller and U. Grenander, *Bayesian Automated Target Recognition*, Handbook of Video and Image Processing, Editor: A. Bovik, pages 869-81, 2000, Academic Press.
3. **A. Srivastava**, A. D. Lanterman, U. Grenander, M. Loizeaux, and M. I. Miller, *Monte-Carlo Techniques for Automated Target Recognition*, Sequential Monte Carlo Methods: Theory and Applications, Editors: N. Gordon, A. Doucet and N. DeFreitas, pages 533-53, Springer, 2001.
4. **A. Srivastava**, M. I. Miller and U. Grenander, *Statistical Models of Targets and Clutter for Use in Bayesian Object Recognition*, Handbook of Video and Image Processing, Editor: A. Bovik, pages 1341-1353, 2005, Elsevier Academic Press, 2005.
5. **A. Srivastava**, S. Joshi, D. Kaziska, and D. C. Wilson, *Planar Shape Analysis and Its Applications in Image-Based Inferences*, Mathematical Models of Computer Vision: The Handbook, Editor: N. Paragios, Y. Chen and O. Faugeras, pages 191-207, Springer, October 2005.
6. S. Joshi and **A. Srivastava**, *Applications of Shape-Distance metric to Clustering Shape-Databases*, chapter in Multiscale Optimization: Methods and Applications, Springer, pages 299–304, 2005, Editors: W. Hager, S. Huang, P. Pardalos, and O. Prokopyev.
7. S. Joshi, D. Kaziska, **A. Srivastava**, and W. Mio, *Riemannian Structures on Shape Spaces: A Framework for Statistical Inferences*, Edited volume on Statistics and Analysis of Shapes, Editor: H. Krim and A. Yezzi, pages 313- 333, Birkhauser, 2006.
8. P. Turaga, A. Veeraraghavan, **A. Srivastava** and R. Chellappa, *Statistical Analysis on Manifolds and Its Applications to Video Analysis*, Handbook on Video Search and Mining, Springer Verlag, 2009.
9. **A. Srivastava**, S. Kurttek, and E. Klassen, *Statistical Shape Analysis*, Encyclopedia of Computer Vision, publisher: Springer Verlag, Berlin, 2011.

Tutorials/Special Courses:

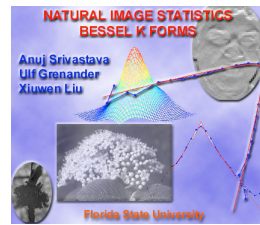
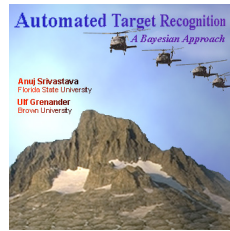
1. A four-hour tutorial on *Nonlinear Manifolds in Computer Vision and Pattern Recognition*, with W. Mio and X. Liu, at IEEE Conferences on Computer Vision and Pattern Recognition (CVPR), Washington DC, June 2004.
2. A two-hour tutorial on *Nonlinear Manifolds in Pattern Recognition* with X. Liu, at International Joint Conference on Neural Networks (IJCNN), Montreal, Canada, July 2005.
3. A 15-hour course, spread over three weeks, on Markov Chain Monte Carlo Methods offered to students attending Graduate School in Optimization, Control, and Networks at the Catholic University of Louvain, Louvain, Belgium, May 2007.

Publicity/Press:

1. *Comparing (Images of) Apples and Oranges*, Article in SIAM News, volume 35, number 4, pages 7-8, May 2002.
2. Interviewed on radio in “FSU Headlines”, local NPR station, September 2003.

CDROM Publications

1. **A. Srivastava** and U. Grenander, *Bayesian Automated Target Recognition*, a 35-minute multimedia presentation on statistical techniques in target recognition, 1500 copies distributed free of charge on request through our website, 1997.



2. **A. Srivastava**, U. Grenander, and X. Liu, *Natural Image Statistics: Bessel K Forms*, a 15-minute presentation, provided at request for free through our website, 2002.

Papers in Conference Proceedings

1997 and Earlier:

1. *Gradient Flows on Projection Matrices for Subspace Tracking*, in Proceedings of 31st Annual Asilomar Conference on Signals, Systems and Computers, Asilomar, CA, November 1997. (with D. Fuhrmann).
2. *Accommodating Geometric and Thermal Variability in Forward Looking Infrared Sensors*, in Proceedings of SPIE, volume 3070, pages 162-72, Algorithms for Synthetic Aperture Radar Imagery IV, Edmund Zelnio (Ed.), Orlando, FL, April 1997 (with M. Cooper, U. Grenander and M. I. Miller). [**21 citations**]
3. *Performance Bounds for Automated Target Recognition*, Third Workshop on Conventional Weapon ATR, Huntsville, AL, November 1996 (with M. Cooper, U. Grenander and M. I. Miller).
4. *Subspace Tracking via Rigid Body Dynamics*, in Proceedings of 8th IEEE Workshop on Statistical Signal and Array Processing (SSAP), Corfu, Greece, June 1996 (with D. Fuhrmann and H. J. Moon).
5. *Detection of Multiple Airborne Targets from Multi-Sensor Data*, in Proceedings of SPIE Conference, San Diego, CA, March 1995 (with M. Foltz, M. I. Miller and U. Grenander).
6. *Lie Group Parameterization for Dynamics Based Prior in ATR*, in Proceedings of IEEE 6th Digital Signal Processing (DSP) Workshop, Yosemite, CA, October 1994 (with M. I. Miller and U. Grenander).
7. *Jump-Diffusion Based Sampling Algorithm for Target Tracking and Recognition*, in Proceedings of 27th Annual Asilomar Conference on Signals, Systems & Computers, Pacific Grove, CA, November, 1993 (with R. Teichman, M. I. Miller and U. Grenander).
8. *Jump-Diffusion Processes for Automated Tracking-Target Recognition*, in Proceedings of 1993 Conference on Information Sciences and Systems (CISS), Johns Hopkins University, Baltimore, MD, March 1993 (with M. I. Miller, R. Teichmann, J. A. O'Sullivan and D. Snyder).
9. *Multi-Target Narrowband Direction Finding and Tracking Using Motion Dynamics*, in Proceedings of 30th Annual Allerton Conference on Communication, Control and Computing, Urbana, IL, October 1992 (with N. Cutaia, M. I. Miller and J. A. O'Sullivan).
10. *Jump-Diffusion Processes for Object Tracking and Direction Finding*, in Proceedings of 29th Annual Allerton Conference on Communication, Control and Computing, Urbana, IL, October 1991 (with M. I. Miller and U. Grenander).

1998:

11. *Performance Bounds for Subspace Estimation in Array Signal Processing*, in Proceedings of 9th IEEE SP Workshop on Statistical Signal and Array Processing (SSAP), Portland, OR, September, 1998.
12. *Multi-Sensor Fusion and Performance Analysis of ATR*, International Conference on Multisource-Multisensor Information Fusion, Las Vegas, NV, July, 1998. (with M. Cooper, M. I. Miller and U. Grenander).
13. *Performance Analysis of ATR from SAR Imaging*, ATR Theory Session, Aerosense, Orlando, FL, April, 98 (with J. A. O'Sullivan and V. Kedia).

14. *MSTAR Target Classification using Bayesian Pattern Theory*, in Proceedings of SPIE, volume 3370, pages 675-84, Algorithms for Synthetic Aperture Radar Imagery V, Edmund Zelnio (Ed.), Orlando, FL, April 98 (with R. Mehra and R. Krishnan).
15. *Metrics for Target Recognition*, in Proceedings of SPIE, volume 3307, pages 29-37, Applications of Artificial Neural Networks in Image Processing III, Nasser Nasrabadi (Ed.), San Jose, CA, January 1998 (with U. Grenander).

1999:

16. Invited session: *Jump-Diffusion Processes on Matrix Lie Groups for Bayesian Inference*, IEEE signal processing workshop on higher-order statistics (HOS), Caesarea, Israel, June 1999. (with M. I. Miller and U. Grenander).
17. *Automatic Battle Damage Assessment based on Laser Radar Imagery*, in Proceedings of SPIE, volume 3707, pages 210-21, Laser Radar Technology and Applications, Gary W. Kamerman (Ed.), Orlando, FL, April 1999 (with S. Yu, R. Mehra and S. Lam).
18. *Estimation of Pose and Location of Ground Targets for ATR*, in Proceedings of SPIE, volume 3720, pages 140-51, Signal Processing, Sensor Fusion, and Target Recognition VIII, Ivan Kadar (Ed.), Orlando, FL, April 1999 (with M. Loizeaux and M. I. Miller).
19. *Quadratic Analysis of Information Measures for Object Recognition*, in Proceedings of SPIE, volume 3271, pages 819-27, Algorithms for Synthetic Aperture Radar Imagery VI, Edmund Zelnio (Ed.), Orlando, April 1999 (with M. Cooper and M. I. Miller).

2000:

20. *Bayesian Filtering for Tracking Pose and Location of Rigid Targets*, in Proceedings SPIE, volume 4052, pages 160-71, Signal Processing, Sensor Fusion, and Target Recognition IX, Ivan Kadar (Ed), Orlando, FL, April 2000.
21. *A nonlinear Filtering Method for Geometric Subspace Tracking*, in Proceedings of IEEE Sensor Array and Multichannel Processing (SAM) workshop, Cambridge, MA, March 2000.

2001:

22. *Principal Component Analysis of Range Images for Facial Recognition*, Proceedings of CISST, in press, Las Vegas, June 2002. (with C. Heshner and G. Erlebacher). **[37 citations]**
23. Invited session: *A Compact Probability Model for Natural Clutter*, IEEE International Conference on Image Processing (ICIP), Thessaloniki, Greece, October 2001.
24. *Image Segmentation using Local Histograms*, in Proceedings of IEEE International Conference on Image Processing (ICIP), volume 1, pages 70-3, Thessaloniki, Greece, October 2001. (with X. Liu and D. Wang).
25. *Spectral Probability Models of IR Images with Applications to IR Face Recognition*, CVPR workshop on Computer Vision Beyond Visual Spectrum, Hawaii, December 2001. (with X. Liu, B. Thomasson and C. Heshner).
26. *3D Object Recognition using Mixture of Perceptual Components*, in Proceedings of International Joint Conference on Neural Networks (IJCNN), volume 1, pages 553-58, Washington, July 2001. (with X. Liu).
27. *A Regression Model for Prediction of IR Images*, in Proceedings Aerosense, volume 4379, pages 176-86, Automatic Target Recognition XI, Firooz A. Sadjadi (Ed), Orlando, FL, April 2001. (with B. Thomasson and S. R. F. Sims).

2002:

28. Invited session *Geometric Analysis of Planar Shapes Using Geodesic Paths*, in Proceedings of 35th Annual Asilomar Conference on Signals, Systems, and Computing, Asilomar, CA, November 2002. (with E. Klassen).
29. *Spaces and Subspaces of Images for Recognition*, in Proceedings of the International Conference on Image Processing (ICIP), Rochester, 2002. (with X. Liu).
30. *Analytical Image Models and Their Applications*, in Proceedings of Seventh European Conference on Computer Vision (ECCV), pages 37-51, Copenhagen, May 2002. (with X. Liu and U. Grenander).

2003:

31. *A Computational Geometric Approach to Shape Analysis in Images*, in Proceedings of Advances in Neural Information Processing Systems (NIPS), Vancouver and Whistler, British Columbia, December 2003. (with X. Liu, W. Mio, and E. Klassen).
32. Invited session: *Face Recognition Using Multi-Modal Imaging*, in Proceedings of 36th Annual Asilomar Conference on Signals, Systems, and Computing, Asilomar, CA, November 2003. (with X. Liu and C. Heshner).
33. *Geometric Analysis of Constrained Curves for Image Understanding*, in Proceedings of 2nd IEEE Workshop on Variational, Geometric, and Level Set Methods (VLSM) in Vision, Nice, France, October 2003. (with W. Mio, E. Klassen, and X. Liu).
34. Invited session: *A Geometric Approach to Shape Clustering and Learning*, in Proceedings of 12th IEEE Workshop on Statistical Signal Processing (SSP), St. Louis, September 2003. (with S. Joshi).
35. Invited session: *Efficient Algorithms for Inferences on Grassmann Manifolds*, in Proceedings of 12th IEEE Workshop on Statistical Signal Processing (SSP), pages 301-304, St. Louis, September 2003. (with X. Liu, K. Gallivan, and P. Van Dooren).
36. *A Novel Technique for Face Recognition Using Range Imaging*, in Proceedings of Seventh International Symposium on Signal Processing and Applications (ISSPA), Paris, France, July 2003. (with C. Heshner and G. Erlebacher). **[149 citations]**
37. *Learning Optimal Representations for Image Retrieval Applications*, in Proceedings of 2nd International Conferences on Image and Video Retrieval (CIVR), pages 50-60, Urbana-Champaign, IL, July 2003. (with X. Liu and D. Sun).
38. *Integrated Learning of Linear Representations for Recognition*, in Proceedings of CVPR Workshop on Learning in Computer Vision and Pattern Recognition, Madison, WI, June 2003. (with X. Liu).
39. *Hierarchical Learning of Optimal Linear Representations*, in Proceedings of CVPR Workshop on Statistical Analysis in Computer Vision, Madison, WI, June 2003. (with Q. Zhang and X. Liu).
40. *Optimal Linear Representations of Images for Object Recognition*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), pages 229-34, Madison, WI, June 2003. (with X. Liu and K. Gallivan).
41. *Integrated Learning of Linear Representations*, in Proceedings of 2003 International Joint Conference on Neural Networks (IJCNN), Portland, OR, July 2003. (with X. Liu and D. Wang).
42. *On Intrinsic Generalization of Low Dimensional Representations of Images for Recognition*, in Proceedings of 2003 International Joint Conference on Neural Networks, Portland, Oregon, July 2003. (with X. Liu)
43. *Geometric Analysis of Continuous Planar Shapes*, in Proceedings of Fourth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), pages 341-56, Lisbon, Portugal, July 2003. (with E. Klassen, W. Mio and S. Joshi).
44. *Stochastic Search for Optimal Linear Representations of Images on Spaces with Orthogonality Constraints*, in Proceedings of Fourth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), pages 3-20, Lisbon, Portugal, July 2003. (with X. Liu).

2004:

45. *A Bayesian Framework for Statistical Multi-Modal Sensor Fusion*, in Proceedings of US Army Conference on Applied Statistics, Atlanta, October 2004. (with M. Smith).
46. Special session: *Advances in Statistical Shape Analysis*, in Proceedings of 12th European Signal Processing Conference (EUSIPCO), Vienna, Austria, September 2004.
47. Special session: *Bayesian Estimation and Tracking of Dynamic Signal Subspaces*, in Proceedings of IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Lisbon, Portugal, July 2004.
48. *Elastic String Models for Representation and Analysis of Planar Shapes*, in Proceedings of IEEE Conferences on Computer Vision and Pattern Recognition (CVPR), pages 10-15 (Vol. 2), Washington DC, July 2004. (with W. Mio) **[49 citations]**

49. *Learning and Bayesian Shape Extraction for Object Recognition*, in Proceedings of European Conference on Computer Vision (ECCV), pages 62-73, Prague, Czech Republic, May 2004. (with W. Mio and X. Liu)
50. *Hierarchical Organization of Shapes for Efficient Retrieval*, in Proceedings of European Conference on Computer Vision (ECCV), pages 570-81, Prague, Czech Republic, May 2004. (with S. Joshi, W. Mio, and X. Liu)

2005:

51. Special session: *Planar Shape Analysis and Its Applications in Image-Based Inferences*, in Proceedings of International Conference on Acoustic, Speech, and Signal Processing (ICASSP), vol. V, pages 1037-40, Philadelphia, PA, March 2005. (with S. Joshi, D. Kaziska, and D. Wilson).
52. *Elastic Shape Models for Interpolations of Curves in Image Sequences*, in Proceedings of Information Processing in Medical Imaging (IPMI), Glenwood Springs, CO, July 2005. (with S. Joshi and W. Mio).
53. *Models for Representing Biological Growth*, in Proceedings of Fifth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), St. Augustine, FL, November 2005. (with S. Saini, Z. Ding, and U. Grenander).
54. *3D Curve Interpolation and Object Reconstruction*, in Proceedings of International Conference on Image Processing (ICIP), Genoa, Italy, September, 2005. (with S. Baloch, H. Krim, and W. Mio).

2006:

55. *Statistical Shape Models Using Elastic-String Representations*, in Proceedings of Asian Conference on Computer Vision (ACCV), pages 612-621, LNCS 3851, P. J. Narayanan et al. (Eds.), Hyderabad, India, January, 2006. (with A. Jain, S. Joshi, and D. Kaziska).
56. Special session: *Characterization of Biological Growth Using Iterated Diffeomorphisms*, In Proceedings of International Symposium on Biomedical Imaging (ISBI), Arlington, VA, April 2006. (with S. Saini and U. Grenander).
57. *Cyclostationary Processes on Shape Spaces for Gait-Based Recognition*, in Proceedings of European Conference on Computer Vision (ECCV), pages 442-453, LNCS 3952, A. Leonardis, H. Bishof, and A. Prince (eds), Gratz, Austria, May 2006 (with D. Kaziska).
58. *Geodesics Between 3D Closed Curves Using Path-Straightening*, in Proceedings of European Conference on Computer Vision (ECCV), pages, LNCS 3952, A. Leonardis, H. Bishof, and A. Prince (eds), Gratz, Austria, May 2006 (with E. Klassen). **[30 citations]**
59. Special session: *3D Face Recognition Using Shapes of Facial Curves*, in Proceedings of International Conferences on Acoustics, Speech, and Signal Processing (ICASSP), Toulouse, France, May 2006. (with C. Samir and M. Daoudi).
60. Special session: *Shape Estimation and Object Classification in Images Using Geometric Priors*, to appear in Proceedings of 39th Annual Asilomar Conference on Signals, Systems, and Computing, Asilomar, CA, November 2006. (with S. Joshi).
61. Invited session: *Shape Analysis of Curves and Surfaces*, in Proceedings of Conference on Stochastic Processes and Their Applications (SPA), Paris, France, July 2006.
62. *Reconnaissance de Visages 3D Utilisant l'Analyse de Formes des Courbes Faciales*, Proceedings of CORESA 2006, Caen, France, November 2006. (with C. Samir and M. Daoudi).

2007:

63. *A Novel Representation for Computing Geodesics Between n-Dimensional Elastic Curves*, IEEE Conference on computer Vision and Pattern Recognition (CVPR), Minneapolis, MN, June 2007. (with S. Joshi, E. Klassen and I. Jermyn). **[27 citations]**
64. *Riemannian Analysis of Probability Density Functions with Applications in Vision*, IEEE Conference on computer Vision and Pattern Recognition (CVPR), Minneapolis, MN, June 2007. (with I. Jermyn and S. Joshi). **[34 citations]**
65. *Tree Species Classification Using Radiometry, Texture and Shape Based Features*, European Conference on Signal Processing (EUSIPCO), Poland, 2007. (with M. Kulikova, M. Mani, and X. Descombes).
66. *Shape Analysis of Open Curves in R^3 with Applications to Study of Fiber Tracts in DT-MRI Data*, in Proceedings of Sixth International Workshop on Energy Minimization Methods in Computer Vision and

Pattern Recognition (EMMCVPR), pages 399-413, Hubei, China, August 2007. (with N. Balov, C. Li, and Z. Ding).

67. Removing Shape-Preserving Transformations in Square-Root Elastic (SRE) Framework for Shape Analysis of Curves. in Proceedings of Sixth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), pages 387-398, Hubei, China, August 2007. (with S.H. Joshi, E. Klassen, and I.H. Jermyn). [25 citations]
68. *Human identification using facial curves with extensions to joint shape-texture analysis*. Proceedings of the Second International Conference on Computer Vision Theory and Applications (VISAPP), Barcelona, Spain, pages 253-256, March 2007. (with C. Samir and M. Daoudi).

2008:

69. *Three-Dimensional Face Recognition Using Elastic Deformations of Facial Surfaces*, International Conference on Multimedia and Expo (ICME), Hanover, Germany, June 2008. (with M. Daoudi, C. Samir, and L. Ballihi).
70. *Modeling Spatial Patterns of Shapes*, International Conference on Image Processing (ICIP), San Diego, CA, October 2008. (with W. Liu and S. H. Joshi).
71. *Mapping Genetic Influences on Brain Fiber Architecture with High Angular Resolution Diffusion Tensor Imaging*, Proceedings of International Symposium on Biomedical Imaging (ISBI), Paris, France, May 2008. (with M.-C. Chiang, P. M. Thompson and several others).
72. *Brain Fiber Architecture, Genetics, and Intelligence: A High Angular Resolution Diffusion Imaging (HARDI) Study*, Proceedings of 11th International Conferences on Medical Image Computing and Computer Assisted Intervention (MICCAI), New York, September 2008. (with M.-C. Chiang, P. M. Thompson and several others).
73. *The Labeling of Cortical Sulci Using Multidimensional Scaling*, In Proceedings of MICCAI Workshop on Manifolds in Medical Imaging, New York, September 2008. (with M. Mani and C. Barillot).
74. *Joint Shape and Texture Analysis of Objects' Boundaries in Images Using a Riemannian Approach*, Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, October 2008. (with W. Liu).

2009:

75. *Bayesian Classification of Shapes Hidden in Point Clouds*, Proceedings of 13th Digital Signal Processing Workshop, Marco Island, FL, January 2009. (with I. H. Jermyn)
76. *Nasal Region Contribution in 3D Face Biometrics Using Shape Analysis Framework*, In Proceedings of 3rd IAPR/IEEE International Conference on Biometrics, Sassari, Italy, June 2009. (with H. Drira, B. Ben Amor and M. Daoudi).
77. *On Analyzing Symmetry of Objects Using Elastic Deformations*, In Proceedings of International Conference on Computer Vision Theory and Applications (VISAPP), February 2009, Lisboa, Portugal. (with C. Samir, M. Daoudi, and S. Kurtek).
78. *Comparison of Group Average and Individual Differences in Brain Morphometry in Williams Syndrome*, in International Society for Magnetic Resonance in Medicine (ISMRM) annual meeting, 2009. (with Z. Han, T. Thornton-Wells, E. Dykens, Z. Ding, J. C. Gore, and B. Dawant).
79. *Fitting Curves on Riemannian Manifolds Using Energy Minimization*, IAPR Conference on Machine Vision Applications, Keio University, Japan, 2009. (with C. Samir, P.-A. Absil, and E. Klassen).
80. *A Riemannian Analysis of 3D Nose Shapes for Partial Human Biometrics*, International Conference of Computer Vision (ICCV), Kyoto, Japan, October 2009. (with H. Drira, B. Ben-Amor, and M. Daoudi).

2010:

81. *An Efficient Particle Filtering Technique on the Grassmann Manifold*, International Conference on Audio, Speech and Signal Processing (ICASSP), Dallas, TX, March 2010. (with Q. Rentmeesters, P.-A. Absil, P. Van Dooren, and K. Gallivan).
82. *A Comprehensive Riemannian Framework for Analysis of White Matter Fiber Tracts*, International Symposium on Biomedical Imaging (ISBI), Rotterdam, The Netherlands, April 2010 (with M. Mani, S.

- Kurtek, and C. Barillot).
83. *A Novel Parameterization-Invariant Riemannian Framework for Comparing Shapes of 3D Anatomical Structures*, in International Society for Magnetic Resonance in Medicine (ISMRM) annual meeting, 2010. (with S. Kurtek, E. Klassen, Z. Ding, etc.)
 84. *A Novel Riemannian Framework for Shape Analysis of 3D Objects*, IEEE Conference on computer Vision and Pattern Recognition (CVPR), San Francisco, CA, June 2010. (with S. Kurtek, E. Klassen and Z. Ding).
 85. *Detecting Shapes in 2D Point Clouds Generated from Images*, International Conference on Pattern Recognition (ICPR), Istanbul, Turkey, August 2010. (with J. Su, Z. Zhu and F. Huffer).
 86. *3D Face Analysis for Facial Expression Recognition*, International Conference on Pattern Recognition (ICPR), Istanbul, Turkey, August 2010. (with A. Malej, B. Ben Amor, M. Daoudi, and S. Berretti)
 87. *A Fully Statistical Framework for Detection of Shapes in Image Primitives*, Seventh IEEE Workshop on Perceptual Organization in Computer Vision (POCV), in conjunction with CVPR, San Francisco, CA, June 2010. (with J. Su, Z. Zhu and F. Huffer).
 88. *Statistical Shape Detection Over-Segmented Images*, Workshop on Applications of Digital Geometry and Mathematical Morphology, associated with ICPR, Istanbul, Turkey, August 2010. (with H. Sun and J. Su).
 89. *Elastic Radial Curves to Model Facial Deformations*, British Machine Vision Conference (BMVC), Aberystwth, UK, September 2010. (with H. Drira, B. Ben-Amor, and M. Daoudi).
 90. *Protein Structure Alignment Using Elastic Shape Analysis*, ACM Conference on Bioinformatics and Computational Biology (ACM-BCB), Niagara Falls, NY, USA, August 2010. (with W. Liu and J. Zheng).

2011:

91. *Classification of mathematics deficiency using shape and scale analysis of 3D brain structures*, SPIE Medical Imaging Conference on Image Processing, Orlando, FL, February 2011. (with S. Kurtek, Z. Ding, E. Klassen, and J. Gore).
92. *A Joint Model for Boundaries of Multiple Anatomical Parts*, SPIE Medical Imaging Conference on Image Processing, Orlando, FL, February 2011. (with G. Kerr and S. Kurtek).
93. *A Novel Riemannian Metric for Analyzing HARDI Data*, SPIE Medical Imaging Conference on Image Processing, Orlando, FL, February 2011. (with S. Ncube).
94. *Parameterization-Invariant Shape Statistics and Probabilistic Classification of Anatomical Surfaces*, Information Processing in Medical Imaging (IPMI), Monastree Irsay, Germany, July 2011. (with S. Kurtek, Z. Ding, and E. Klassen).
95. *Blurring-Invariant Riemannian Metrics for Comparing Images and Signals*, International Conference on Computer Vision (ICCV), Barcelona, Spain, November 2011. (with Z. Zhang, E. Klassen, R. Chellappa and P. Turaga).
96. *A GRID-based Parametric Representation of Large Diffeomorphic Deformations*, 3rd Workshop on Mathematical Foundations of Computational Anatomy (MFCA), September 2011. (with Q. Xie).
97. *Signal Estimation Under Random Time Warpings and Its Applications in Nonlinear Signal Alignment*, Neural Information Processing Systems (NIPS), Grenada, Spain, December 2011. (with W. Wu).
98. *Structure-Based RNA Function Prediction Using Elastic Shape Analysis*, IEEE Conference on Bioinformatics and Biomedicine (BIBM), Atlanta, GA, November 2011. (with J. Laborde and J. Zhang).

Papers presented at Conferences with Abstracts Only

1. *Asymptotic Probabilities in Bayesian Target Recognition*, IEEE International Symposium on Information Theory, Cambridge, MA, August 1998. (with U. Grenander).
2. *Asymptotic Analysis of Pattern Theoretic Object Recognition*, SPIE Aerosense, Orlando, FL, April 2000 (with M. Cooper).
3. *Rendering Stochastic Vector Fields*, Dagstuhl Seminar on Stochastic Methods in Rendering, Dagstuhl, Germany, June 2001. (with D. Banks).

4. *Analytical Models for Spectral Analysis of Natural Images*, Annual meeting of the Royal Statistical Society, Glasgow, Scotland, UK, July 2001. (with X. Liu and U. Grenander).
 5. *Geometric Tracking on Quotient Manifolds*, Annual meeting of the Royal Statistical Society, Glasgow, Scotland, UK, July 2001. (with E. Klassen)
 6. *Probability Models for Image Understanding*, Topic contributed session at Joint Statistics Meeting, Atlanta, August 2001.
 7. *A Survey of Sensor Fusion Techniques for Army Applications*, SPIE Aerosense conference, April 2002. (with Mick Smith).
 8. *Sequential Image Understanding: From Spectral Analysis to Deformable Templates*, invited session, Joint Statistics Meeting, New York, August 2002.
 9. *Particle Filtering on Nonlinear Manifolds*, topic contributed session, Joint Statistics Meeting, San Francisco, August, 2003.
 10. *A Bayesian Markov Random Field for Labeling Terrain Using Hyperspectral Imaging*, invited session, Joint Statistics Meeting, Minneapolis, August 2005. (with Rob Neher).
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COLLOQUIA AND PRESENTATIONS

University Colloquia

1. Department of Mathematics, Iowa State University, Ames, IA, April 1996.
2. Division of Applied Mathematics, Brown University, RI, October 1996.
3. Department of Statistics, Florida State University, Tallahassee, FL, January 1997.
4. Department of Electrical Engineering, Massachusetts Institute of Technology (Stochastic Systems Group), February 1997.
5. Department of Electrical Engineering, University of Maryland at College Park, MD, April, 1997
6. Department of Electrical Engineering, North Carolina State University, October 1998.
7. Department of Statistics, University of Virginia, November 1998.
8. Joint FSU-UF Statistics Colloquium, at UF Gainesville, FL, March 2000.
9. Department of Electrical Engineering, Washington University, June 2000.
10. Department of Information and Management Sciences, Florida State University, March 2001.
11. Department of Statistics, University of Leeds, Manchester, UK, October 2001.
12. Department of Statistics, Yale University, New Haven, CT, October 2001.
13. Division of Applied Mathematics, Brown University, October 2001.
14. Department of Mathematics, Syracuse University, Syracuse, NY, November 2001.
15. INRIA Research Institute, Sophia-Antipolis, France, July 2002.
16. Harvard Robotics Lab, Division of Applied Sciences, Harvard University, March 2002.
17. Center of Imaging Sciences, Johns Hopkins University, Baltimore, MD, October 2003.
18. Department of Electrical and Computer Engineering, Michigan State University, MI, February 2004.
19. Stochastic Systems Group, Department of Electrical Engineering, MIT, Boston, March 2004.
20. ENIC, Univ. des Sciences et Technologies de Lille, Lille, France, May 2004.
21. Department of Mathematics, US Military Academy at West-point, NY, September 2004.
22. Department of Statistics, University of Georgia, Athens, GA, October 2004.
23. Department of Mathematics, Vanderbilt University, TN, February 2005.
24. Department of Statistics, University of Minnesota, Minneapolis, MN, April 2005.
25. Department of Statistics, University of California, Los Angeles, CA, October, 2005.
26. Department of Mathematics and Statistics, Air Force Institute of Technology, Dayton, OH, January 2006.
27. Statistical Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, February 2006.
28. Department of Biostatistics, Columbia University, New York, NY, March 2006.
29. INRIA Research Institute, Sophia-Antipolis, France, May 2006.
30. Department of Statistics, University of Chicago, Chicago, IL, November 2006.
31. Department of Electrical Engineering, North Carolina State University, Raleigh, NC, February 2007.

32. Department of Mathematics, University of Arizona, Tucson, AZ, February 2007.
33. CESAME (Applied Mathematics Group), Catholic University of Louvain, Louvain-la-Neuve, Belgium, May 2007.
34. Department of Computer Science (LIFL), University of Lille, France, June 2007.
35. Department of Statistics, The Ohio State University, Columbus, OH, September 2007.
36. The VISAGES group at IRISA, Rennes, France, December 2007.
37. Department of Statistics, FSU, January 2008.
38. Department of Electrical Engineering, University of Maryland, College Park, MD, September 2008.
39. Stochastic Systems Group, MIT, April 2009.
40. ARIANA Group, INRIA, Sophia Antipolis, France, June 2009.
41. Department of Computer Science and Engineering, Michigan State University, East Lansing, MI, March 2010.
42. Medical Image Display & Analysis Group (MIDAG), University of North Carolina, Chapel Hill, October 2010.
43. Department of Statistics, Duke University, Durham, North Carolina, October 2010.
44. Department of Mathematics and Statistics, Durham University, Durham, UK, June 2011.
45. Department of Statistics, University of South Carolina, Columbia, SC, November 2011.

Invited Talks at Research Workshops/Meetings

1. Air Force Rome Laboratory's 3rd Annual 1993 IEEE Dual Use Technologies & Applications Conference, Utica, NY, May 1993.
2. ARO's 11th Army Conference on Applied Mathematics and Computing, Carnegie Mellon University, Pittsburgh, PA, June 1993.
3. ONR/NAWC Workshop on Acquisition and Tracking of Maneuvering Targets from Image Sequence Data, China Lake, CA, May 1995.
4. Workshop on Mathematical Methods in Computer Vision, *A Pattern Theoretic Approach to Bayesian Detection, Tracking & Recognition*, University of Minnesota, MN, September 1995.
5. Kick-off meeting of Army Research Office supported Center of Imaging Sciences, *Inferences on Lie Groups for Target Recognition*, St. Louis, MO, November 1995.
6. ONR/NRaD Workshop on Target Tracking, San Diego, CA, February 1996.
7. DARPA/ISO ATR Performance Estimation Workshop, SAIC, Arlington, VA, July 1996.
8. DARPA Image Understanding Technology Program Review, University ATR Research Initiative, Fort Belvoir Officer's Club, VA, September 1996.
9. ATR Day, *Inferences on Parameter Spaces for ATR*, Brown University, Providence, RI, March 1996.
10. International Symposium on Mathematical Theory of Networks and Systems, *ATR: Representation, Inference and Performance Analysis on Lie Groups*, St. Louis, MO, June 1996.
11. Joint Summer Research Conference in Mathematical Sciences, *Random Sampling Methods in Rigid Motion Estimation*, Mt. Holyoke College, South Hadley, MA, June 1996.
12. Kick-off meeting of ARO MURI Project on ATR Performance Evaluation, *Error Bounds in ATR* (with Ulf Grenander), Brown University, November 1996.
13. ARO supported Center of Imaging Sciences Annual Review, *Bayesian Error Analysis for Target Detection & Recognition*, Washington University, St. Louis, MO, January 1997.
14. Spring Research Conference for Statistics in Industry and Technology, *Multiple Direction of Arrival Tracking*, New Brunswick, NJ, June 1997.
15. ONR/NSWC Workshop on Tracking, Dahlgreen, VA, May 1997.
16. ONR/GTRI Workshop on Target Tracking and Sensor Fusion, *ATR Performance Analysis and Sensor Fusion*, June 1998.
17. Army Missile Command/ARO workshop, *Metrics for Recognizing Ground Targets*, November 1998.
18. *ATR via Pose and Location Estimation*, ARO Center for Imaging Sciences Review, Johns Hopkins University, Baltimore, March 1999.
19. AFOSR/AFRL workshop on Nonlinear Filtering, *Nonlinear Filtering on Manifolds*, February 2001.

20. *Lockheed Martin/University workshop on DARPA BAA on Integrated Sensor Processing*, February 2001. Host: Teresa Olson.
 21. *Workshop on Imaging, Classification and Clustering*, UFL Statistics Annual Winter Workshop, Gainesville, FL, January 2002.
 22. *NSF Futures Workshop on Pattern Recognition*, University of Michigan and NSF, Ann Arbor, March 2002.
 23. *NSF Futures Workshop on Biometrics*, University of West Virginia, Morgantown, March 2003.
 24. *Workshop on Mathematical Methods in Imaging and Vision*, University of Florida, Gainesville, January 2004.
 25. *Brown University Workshop in Celebration of Ulf Grenander's 80th Birthday*, Brown University, Providence, May 2004.
 26. *AIM Workshop on Statistical Inferences on Shape Manifolds*, AIM Conference Center, Palo Alto, CA, May 2005.
 27. *ARO/AMCOM Workshop on Information Theoretic Imaging*, US Army Missile Command Center, Huntsville, AL, June 2005.
 28. *IMA Workshop on Shape Spaces*, Institute of Mathematics and its Applications, University of Minneapolis, Minneapolis, MN, April 2006.
 29. *ARO Workshop on Challenges and Opportunities in Image Understanding*, University of Maryland, College Park Conference Center, College Park, MD, January 2007.
 30. *SAMSI Workshop on Geometry and Statistics of Shape Space*, SAMSI Institute, Research Triangle Park, NC, July 2007.
 31. *ARO Workshop on Challenges in Information Evaluation and Extraction in Distributed Sensing*, MIT, Boston, MA, October 2009.
 32. *SAMSI Workshop on Object Oriented Data Analysis*, SAMSI Institute, Research Triangle Park, NC, September 2010.
 33. *ECCV Work on Shape Perception in Human and Computer Vision*, Invited Workshop with ECCV, Crete, Greece, September, 2010.
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