

## Curriculum Vitae

*Victor Patrangenaru*

*January 9, 2012*

### Professional Preparation

- 1992-1998      Doctoral Degree(1998): Department of Mathematics, Indiana University, Bloomington.  
Specialization: Statistics.  
Dissertation: *Asymptotic Statistics on Manifolds*.  
Dissertation supervisor: Professor Rabindra Nath Bhattacharya.
- 1990-1992      Doctoral Degree(1994): Department of Mathematics, Haifa University, Haifa, Israel.  
Specialization: Mathematics (Differential Geometry).  
Dissertation: *Locally Homogeneous Riemannian and Pseudo-Riemannian Manifolds*.  
Dissertation supervisor: Professor Izu Vaisman.

### Professional Experience

- 2010 - future    Professor - Department of Statistics, Florida State University.
- 2006 - 2010    Associate Professor - Department of Statistics, Florida State University.
- 2003 - 2006    Associate Professor - Department of Mathematics and Statistics, Texas Tech University.
- 1998 - 2003    Assistant Professor - Department of Mathematics and Statistics, Georgia State University.

### Visiting Positions

- Fall 2010      Research Fellow - Statistical and Applied Mathematical Sciences Institute, Research Triangle, North Carolina - Program : Analysis of Object Data.
- 9/2007        Visiting Professor- Institute of Mathematical Stochastics, Georgia Augusta University, Göttingen, Germany. Host: Dr. Stephan Huckemann.
- 7/2002        Visiting Scholar- School of Mathematics and Statistics, University of Nottingham, Nottingham, United Kingdom. Professor Ian Dryden.
- 1997 - 1998    Visiting Assistant Professor-Department of Mathematics, Indiana University-Purdue University, Ft. Wayne.

### Honors and Awards

- *David Rothrock* Teaching Award, Indiana University, 1997.
- *Morris Pulver* ( Canada ) Dissertation Award, Haifa University, Israel, 1992.

### **Membership in Professional Organizations**

- American Statistical Association ( 2006 - present )
- Institute of Mathematical Statistics ( 1998 - present )
- American Mathematical Society ( 1992 - 2006 )
- Balkan Society of Geometers ( 1999 - present )

## **TEACHING**

### **Courses Taught at Florida State University**

STA8985 *Dissertation Defense*: Spring 2012, Summer 2011, Spring 2010

STA6980 *Dissertation*: Spring 2012, Spring 2011, Fall 2011, Spring 2009, Spring 2010, Summer 2010, Fall 2010, Summer 2009, Fall 2009.

STA6906/5906 *Direction of Individual Study*: Spring 2010, Spring 2009, Fall 2008, Summer 2008, Fall 2007, Summer 2007

STA6448 *Analysis of Object Data*: Spring 2011

STA6246 *Advanced Topics in Statistics - Nonparametric Statistics on Manifolds and Applications*: Spring 2008

STA5910 *Supervised Research*, Summer 2008

STA5208 *Linear Statistical Models*: Spring 2009, Spring 2010

STA5746 *Multivariate Analysis*: Fall 2006

STA5334 *Limit Theory of Statistics*: Spring 2010, Fall 2008

STA5326 *Distribution Theory and Inference*: Fall 2011

STA5327 *Statistical Inference*: Spring 2012

STA4702/5707 *Applied Multivariate Analysis*: Spring 2012, Spring 2011, Fall 2009, Fall 2008, Spring 2007, Fall 2007

STA4321/5323 *Introduction to Mathematical Statistics*: Summer 2008 , Fall 2007, Fall 2006

STA3032 *Probability and Statistics for Science and Engineering*: Summer 2007

STA2171 *Statistics for Biology*: Spring 2011

**Chair of Doctoral Dissertation Supervisory Committees**

Student Name	Dissertation Title	School	Date
Daniel E. Osborne	<i>Nonparam. Data Analysis on Manifolds and Appl. Med. Imag.</i>	F S U	Exp 2012
Leif A. Ellingson	<i>Shape Analysis of Planar Contours and Structural Proteomics</i>	F S U	5/26/2011
Michael A. Crane	<i>Nonparam. Estim. of 3D Proj. Shapes and Medical Imaging</i>	F S U	5/3/2010
S. M. Sugathadasa	<i>Affine and Projective Shape Analysis with Applications</i>	T T U	2/27/2006
A. W. Bandulasiri	<i>Statistical Shape Analysis in Medical Imaging</i>	T T U	6/28/2006

**Member of Doctoral Dissertation Supervisory Committees**

- Rafael Martinez Vega, Department of Mathematics, FSU ( chair Washington Mio )
- Jonathan Bates, Department of Mathematics, FSU ( chair Washington Mio)
- Arturo Donate, Department of Computer Science, FSU (chair Xiuwen Liu ), defended 6/24/2011.
- Yuhua Zhu, Department of Computer Science, FSU (chair Xiuwen Liu ), defended 4/5/2010
- Nikolay Balov, Department of Statistics, FSU, defended 3/25/2009
- Margarita Velandia Parra, Department of Agricultural Economics, Texas Tech University (chair Roderick Rejesus), defended 3/11/2007
- Harshini Fitipange, Department of Mathematics and Statistics, Texas Tech University (chair Rob Paige), defended 5/10/2006
- Ali Khoujmane, Department of Mathematics and Statistics, Texas Tech University (chair Frits Ruymgaart), defended 6/8/2005
- Ji Fei, Department of Animal and Food Sciences, Texas Tech University (chair Sung W. Kim), defended 10/13/2004

**Chair of Master's Thesis Supervisory Committees**

Student Name	Thesis or Report Title	School	Date
Jing Su	<i>MS in Applied Statistics</i>	F S U	12/13/2008
Akashdeep Singh	<i>Simulations of Distributions in SAS</i>	TTU	5/11/2006
Gordana Derado	<i>Statistical Methods in Image Analysis</i>	GSU	11/27/2000
Ray Pruett	<i>Nonparametric Image Analysis in 2D Scene Identification</i>	GSU	11/14/1999

## PUBLICATIONS

### Papers in Work

1. L. Ellingson, F. H. Ruymgaart and V. Patrangenaru (2012). Nonparametric Estimation for Extrinsic Mean Shapes of Planar Contours. Resubmission in preparation for *Annals of Statistics*.
2. Stephan Huckemann, Huiling Le, J. S. Marron, Jonathan Mattingly, Ezra Miller, James Nolen, Vic Patrangenaru (2012). Sticky Central Limit Theorems on Open Books *Work in progress*.
3. L. Ellingson, D. Groisser, D. Osborne, V. Patrangenaru and A. Schwartzman. (2012). Nonparametric Distributions of Sample Means on Spaces of Positive Definite Matrices with an Application to Diffusion Tensor Imaging Data Analysis. *In progress*.
4. Thomas Hotz, Stephan Huchemann, Huiling Le and Vic Patrangenaru. (2012). Hyperbolic Data Analysis. *In progress*
5. Stephan Huckemann, Huiling Le, Jonathan Mattingly, Ezra Miller, James Nolen, Vic Patrangenaru (2012) Central limit theorems in codimension 1 on nonpositively curved stratified spaces. *Work in progress*.

### Refereed Articles under Revision

1. D. Osborne and V. Patrangenaru(2011). Nonparametric Two-Sample Tests on Homogeneous Riemannian Manifolds, Cholesky Decompositions and Dyslexia Detection from Diffusion Tensor Imaging Outputs. *submitted at Journal of Multivariate Analysis*.
2. V. Balan, M. Crane, X. Liu, G. Derado, X. Descombes, W. Liu, V. Patrangenaru, V. P. Patrangenaru and H. W. Thompson (2011). Methodology for 3D Scene Reconstruction from Digital Camera Images. *Submitted at BJGA Proceedings*.

### Refereed Journal Articles Published

1. R. N. Bhattacharya, L. Ellingson, X. Liu and V. Patrangenaru and M. Crane (2011). Extrinsic Analysis on Manifolds is Computationally Faster than Intrinsic Analysis, with Applications to Quality Control by Machine Vision. Early view in *Applied Stochastic Models in Business and Industry*.
2. M. Crane and V. Patrangenaru. (2011). Random Change on a Lie Group and Mean Glaucomatous Projective Shape Change Detection From Stereo Pair Images. *Journal of Multivariate Analysis*. **102**, 225-237.
3. G. J. A. Amaral, I. L. Dryden, V. Patrangenaru and A.T.A. Wood (2010). Bootstrap confidence regions for the planar mean shape. *Journal of Statistical Planning and Inference*. **140**, 3026-3034
4. V. Patrangenaru (2010) DISCUSSION: "Intrinsic Shape Analysis: Geodesic PCA For Riemannian Manifolds Modulo Isometric Lie Group Actions" by Huckemann, Munk and Hotz. *Statistica Sinica*. **20**, 79-83.

5. V. Patrangenaru, X. Liu and S. Sugathadasa (2010). Nonparametric 3D Projective Shape Estimation from Pairs of 2D Images - I, In Memory of W.P. Dayawansa. *Journal of Multivariate Analysis*. **101**, 11-31.
6. A. Bandulasiri, A. Gunathilaka, V. Patrangenaru, and F. Ruymgaart and H. W. Thompson (2009). Non-parametric Shape Analysis Methods in Glaucoma Detection. *International Journal of Statistical Sciences*, **9** (Special Issue) 135-149.
7. A. Bandulasiri, R.N. Bhattacharya and V. Patrangenaru (2009). Nonparametric Inference for Extrinsic Means on Size-and-(Reflection)-Shape Manifolds with Applications in Medical Imaging. *Journal of Multivariate Analysis*. **100** 1867-1882.
8. V. Balan, M. Crane, V. Patrangenaru and X. Liu (2009). Projective shape manifolds and coplanarity of landmark configurations. A nonparametric approach. *Balkan Journal of Geometry and Its Applications*, **14**, no. 1, 1-10.
9. D. Kobelo, V. Patrangenaru and R. Mussa (2008). Safety Analysis of Florida Urban Limited Access Highways with Special Focus on the Influence of Truck Lane Restriction Policy. *Transportation Engineering*. **134**, 297–306.
10. A. Munk, R. Paige, J. Pang, V. Patrangenaru and F. H. Ruymgaart (2008). The One and Multisample Problem for Functional Data with Applications to Projective Shape Analysis. *Journal of Multivariate Analysis*. **99**, 815-833.
11. K. V. Mardia and V. Patrangenaru (2005). Directions and Projective Shapes. *Annals of Statistics* **33**, 1666–1699.
12. R. N. Bhattacharya and V. Patrangenaru (2005). Large Sample Theory of Intrinsic and Extrinsic Sample Means on Manifolds- Part II, *Annals of Statistics*. **33**, 1211– 1245.
13. G. Derado, K.V. Mardia, V. Patrangenaru and H. W. Thompson (2004). A Shape Based Glaucoma Index for Tomographic Images. *Journal of Applied Statistics*. **31**, 1241– 1248.
14. V. Patrangenaru (2003). Lorentz Manifolds with the Three Largest Degrees of Symmetry, *Geometriae Dedicata*. **102** 25–33.
15. R. N. Bhattacharya and V. Patrangenaru (2003). Large Sample Theory of Intrinsic and Extrinsic Sample Means on Manifolds-Part I. *Annals of Statistics* **31** 1–29.
16. V. Patrangenaru (2002). On the 3D Riemannian Homogeneous Spaces of Positive Curvature, *Algebra Geometry and Applications Seminar Proceedings* **2**, 4-11.
17. R. N. Bhattacharya and V. Patrangenaru (2002). Nonparametric Estimation of Location and Dispersion

- on Riemannian Manifolds. *Journal of Statistical Planning and Inference* **108**, 23–35.
18. V. Patrangenaru (2002). Five Dimensional Strictly Locally Homogeneous Riemannian Manifolds. *Periodica Mathematica Hungarica* **45**, 123-129.
19. V. Patrangenaru and K.V. Mardia (2002). A Bootstrap Approach to Pluto's Origin. *Journal of Applied Statistics* **29**, 935– 943.
20. V. Patrangenaru (2001). New Large Sample and Bootstrap Methods on Shape Spaces in High Level Analysis of Natural Images. *Communications in Statistics Theory and Methods* **30**, 1675–1695.
21. V. Patrangenaru (1998). Constant Gravitational Fields and Redshift of Light. (1998) *Journal of Geometry and Physics*. **26**, 227–246.
22. V. Patrangenaru (1998) Three-dimensional Metrics with a Spherical Homogeneous Model. *Journal of Mathematical Physics*. **39**, 1189-1198.
23. V. Patrangenaru (1997). Geometry, Statistics and Decision Making in Gene Therapy. *Balkan Journal of Geometry and Its Applications*. **2**, 83–100.
24. V. Patrangenaru (1996). Classifying 3 and 4 dimensional Homogeneous Riemannian Manifolds by Cartan Triples. *Pacific Journal of Mathematics*. **173**. 511 - 532.
25. V. Patrangenaru (1995). Locally Homogeneous Pseudo-Riemannian Manifolds. *Journal of Geometry and Physics*. **17**, 59-72.
26. V. Patrangenaru (1994). Locally Homogeneous Riemannian Manifolds and Cartan Triples. *Geometriae Dedicata*. **50**, 143 – 164.
27. V. Patrangenaru (1985). Projective Methods in Euclidean Geometry ( Romanian ), *Gazeta Matematica A*, **3-4** , p. 128-135.
28. V. Patrangenaru (1984). S-manifolds as Hypersurfaces in Euclidean Spaces, *Revue Roumaine de Mathematiques Pures et Appliques*. **29**, 341 – 348.
29. V. Patrangenaru (1982). On the Homotopy Groups of  $M(n; p, q)$ . *Revue Roumaine de Mathematiques Pures et Appliques*, **27**. 77– 79.
30. V. Patrangenaru (1981). A Theorem of Lefschetz Type in a Complete Riemannian Manifold. *Studii si Cercetari Matematice*. **33**. 535– 539. *In Romanian. Abstract in English*

### **Proceedings papers published or accepted**

31. M. Buibas, M. Crane, L. Ellingson and V. Patrangenaru (2011). A Projective Frame Based Shape Analysis of a Rigid Scene from Noncalibrated Digital Camera Imaging Outputs. To appear in *Proceedings of*

*the Joint Statistical Meetings, 2011, Miami, FL.*

32. D. Osborne, V. Patrangenaru, X. Liu and H. W. Thompson (2011). 3D Size-and-Reflection Shape Analysis for Planning Reconstructive Surgery of the Skull. To appear in *Proceedings of the Joint Statistical Meetings, 2011, Miami, FL.*
33. A. Bandulasiri, V. Patrangenaru, J. Su, J. Zhang (2009) Applications of Nonparametric Statistics on Reflection Shape Manifolds and Reflection Size-and-Shape Manifolds. *Proceedings of the Joint Statistical Meetings 2008, Denver, CO.* 2769 - 2776.
34. V. Balan and V. Patrangenaru (2006). Geometry of Shape Spaces. In *Proceedings of the 5th conference of the Balkan Society of Geometers.* (Balan, Vladimir (ed.)). Bucharest, Geometry Balkan Press. 28-33.
35. R. Paige, V. Patrangenaru, F. H. Ruymgaart and W. Wang (2005). Analysis of Projective Shapes of Curves using Projective Frames. In *Quantitative Biology, Shape Analysis, and Wavelets* (S. Barber, P.D. Baxter, K.V.Mardia, & R.E. Walls (Eds.)) 71-74, Leeds, Leeds University Press.
36. K. V. Mardia, V. Patrangenaru and S. Sugathadasa (2005). Protein Gels Matching. In *Quantitative Biology, Shape Analysis, and Wavelets.* (S. Barber, P.D. Baxter, K.V.Mardia, & R.E. Walls (Eds.)). 163-165. Leeds, Leeds University Press.
37. V. Patrangenaru and S. Sugathadasa (2005). A Covariance Formula for Shape Statistics on Grassmannians. *Proceedings of ICIA05 Conference, Colombo, Sri Lanka.* 441 - 445.
38. J. M. Lee, R. Paige, V. Patrangenaru and F. H. Ruymgaart (2004). Nonparametric Density Estimation on Homogeneous Spaces in High Level Image Analysis. In *Bioinformatics, Images, and Wavelets,* (R.G. Aykroyd, S. Barber, & K.V. Mardia (Eds.)) 37-40. Leeds, Leeds University Press.
39. V. Patrangenaru and V. P. Patrangenaru (2004). Mean Shapes, Image Fusion and Scene Reconstruction. In *Proceedings of The Conference of Applied Differential Geometry - Aristotle University of Thessaloniki, Greece* (Editor Gr.Tsagas ) 230-242.
40. A. Bandulasiri and V. Patrangenaru (2005). Algorithms for Nonparametric Inference on Shape Manifolds, *Proceedings of the Joint Statistical Meetings 2005, Minneapolis, MN,* 1617-1622.
41. K.V.Mardia, V. Patrangenaru, G. Derado and V. P. Patrangenaru (2003). Reconstruction of Planar Scenes from Multiple Views Using Affine and Projective Shape. In *Proceedings of the 2003 Workshop on Statistical Signal Processing* 285-288.
42. V. Balan and V. Patrangenaru (2002). Equiharmonic Tori into Strictly Locally Homogeneous Spaces. In *Proceedings of "Bolyai 200" International Conference on Geometry and Topology* 39-46.

43. V. Patrangenaru and K. V. Mardia (2003). Affine Shape Analysis and Image Analysis, *Proceedings of the Leeds Annual Statistics Research Workshop 2003* pp. 57-62.
44. V. Patrangenaru, S. O. Belkasim and G. Derado (2002). Estimation of evolution curves in spaces of images. In *Functional and image data, bioinformatics and data mining* ( Edited by R. G. Aykroyd, K. V. Mardia and P. McDonnell) 55–58. Leeds, Leeds University Press.
45. K. V. Mardia and V. Patrangenaru (2001). On Affine and Projective Shape Data Analysis, in *Functional and Spatial Data Analysis, Proceedings of the 20th Leeds Annual Statistics Research Workshop*, ( edited by K.V. Mardia& R.G. Aykroyd) 39-45. Leeds, Leeds University Press.
46. K. V. Mardia, V. Patrangenaru, G. J. Davis and G. Derado (2001). Averaging Side View Images of Almost Flat Spatial Scenes. In *Functional and Spatial Data Analysis. Proceedings of the 19th Leeds Annual Statistics Research Workshop*, (Edited by K.V. Mardia & R.G. Aykroyd ) 46– 54. Leeds University Press, Leeds.
47. V. Patrangenaru (1999). Moving Projective Frames and Spatial Scene Identification. In *Proceedings of the 18th LASR Workshop*. Edited by K.V.Mardia, R.G.Aykroyd and I.L. Dryden. 53– 56, Leeds University Press, Leeds
48. V. Patrangenaru (1988). On E. Cartan’s Method on Riemannian Homogeneous Spaces. In *Proceedings of the National Conference on Geometry and Topology (Tîrgoviste, 1986)* (Romanian) 219-222. Univ. Bucureşti, Bucharest

### **Refereed reviews published**

49. V. Patrangenaru (2008). Review of : Statistics and analysis of shapes. Edited by Hamid Krim and Anthony Yezzi, Jr., Birkhauser Boston, Inc., Boston, MA, 2006. *J. Amer. Statist. Assoc.* **103**, no. 484, 1727 - 1728.

### **Additional publications published.**

50. G. Amaral, I. L. Dryden, V. Patrangenaru and A.T.A. Wood (2004). Coverage Accuracy for Bootstrap Confidence Regions for Mean Shapes, *Technical Report. Division of Statistics*, Univ. of Nottingham, U.K.
51. V. Patrangenaru, H.W. Thompson and G. Derado, Large Sample and Bootstrap Methods on for 3D Shape Change with Applications to Detection of Glaucomatous Change in Images of the Optic Nerve Head, in *Abstracts of the Leeds Annual Statistics Research Workshop in honor of the 65th birthday of Professor K.V.Mardia*, p.30-33, 2000. <http://www.maths.leeds.ac.uk/Statistics/workshop/leeds2000>
52. V. Patrangenaru, Asymptotic Statistics on Manifolds, *Ph.D. Dissertation* , Indiana University, 1998.

53. V. Patrangenaru, On the Metric Classification of 3D Pseudoriemannian Geometries and the Homaloidal Conic Test, Sixth International Conference on Geometry, *Journal of Geometry*, **44** No 1/2 ( 1992 ), p. 16.
54. V. Patrangenaru, Locally Homogeneous Riemannian Manifolds and Pseudo-Riemannian Manifolds, *Ph.D. Dissertation , Haifa University*, 1992.
55. V. Patrangenaru, Invariants of Locally Homogeneous Pseudoriemannian Spaces, *Preprint Series in Mathematics no. 6, INCREST- Bucharest*, 1986.

### **Recent preprints.**

1. D. Osborne and V. Patrangenaru(2011). Nonparametric Two-Sample Tests on Homogeneous Riemannian Manifolds, Cholesky Decompositions and Dyslexia Detection from Diffusion Tensor Imaging Outputs. *Florida State University-Department of Statistics, Technical Report M1001*.
2. T. Hotz, S. Huckemann, Huiling Le and V. Patrangenaru (2011) Hyperbolic data analysis. Preprint, SAMSI-AOD Program. 2010-2011. Working Group: Data Analysis on Sample Spaces with a Manifold Stratification. (currently available to group members only)
3. K. Bharath, T. Hotz, S. Huckemann, Huiling Le, S. Marron, E. Miller, J. Moriarty, M. Owen, V. Patrangenaru and S. Skwerer. (2010). Stickyness and CLT on the Spider Product. Preprint, SAMSI-AOD Program. 2010-2011. Working Group: Data Analysis on Sample Spaces with a Manifold Stratification. (currently available to group members only)
4. T. Hotz, S. Marron, J. Moriarty, V. Patrangenaru, Sean Skwerer, S. Huckemann and K. Bharat. (2010). Asymptotic Behaviour of Intrinsic Means on Stratified Spaces. Preprint, SAMSI-AOD Program. 2010-2011.(currently available to group members only)
5. L. Ellingson, F. Ruymgaart and Vic Patrangenaru Nonparametric Estimation for Extrinsic Mean Shapes of Planar Contours, *Florida State University-Department of Statistics, Technical Report M998*.
6. V. Patrangenaru (2009). On Chapter Xii in Cartan's "Leçons sur la Géométrie des Espaces de Riemann". <http://arxiv.org/abs/0904.1256v1>
7. V. Patrangenaru, X. Liu and S. Sugathadasa. (2008) Nonparametric 3D Projective Shape Estimation from Pairs of 2D Images - I, In Memory of W.P. Dayawansa. <http://arxiv.org/abs/0806.0899>
8. X. Liu, V. Patrangenaru and S. Sugathadasa (2007) Projective Shape Analysis for Noncalibrated Pin-hole Camera Views. To the Memory of W.P. Dayawansa, *Florida State University-Department of Statistics, Technical Report M983*.

### **Invited books and monographs in preparation**

1. R. N. Bhattacharya and V. Patrangenaru (Contract year-2003). *A Course in Mathematical Statistics and Large Sample Theory*, Springer, Statistics Series. New York, USA. Expected to appear in 2012.
2. V. Patrangenaru (Contract year-2009). *Nonparametric Statistics on Manifolds and Their Applications*. Chapman&Hall/CRC, Monographs on Statistics and Applied Probability. Expected to appear in 2012.

### **Presentations**

#### **Invited Papers Presented at Conferences, Symposia, Colloquia :2005-present.**

1. V. Patrangenaru. *Object Data Analysis*, Colloquium, Florida State University, Department of Statistics, September 2, 2011.
2. V. Patrangenaru. *Data Analysis on Sample Spaces with a Manifold Stratification*, Nonparametrics and Geometry, Charles University, Prague, The Czech Republic, August 15 - 19, 2011 ( opening 35 min talk, international).
3. V. Patrangenaru, L. Ellingson and D. Osborne. *Analysis of Object Data is Data Analysis on Sample Spaces with a Manifold Stratification*, CRM, Bucharest, Romania, June 29 - July 5, 2011 (50 min, international).
4. V. Patrangenaru and L. Ellingson. *Analysis of Object Data is Data Analysis on Sample Spaces with a Manifold Stratification*, SAMSI, RTP, NC, June 10. At SAMSI AOD Transition Workshop, June, 9-11, 2011 (30 min international).
5. V. Patrangenaru *Statistical Analysis of Object Data*, University of South Carolina, Columbia, SC, February 3, 2011.
6. V. Patrangenaru *Working Group Extrinsic Data Analysis on Spaces that admit a Manifold Stratification* SAMSI AOOD Opening Workshop, Sept 14, 2010 (international).
7. V. Patrangenaru et. al. *Methodology for 3D Scene Reconstruction from Digital Camera Images* for "Image Analysis" International Society for Business and Industrial Statistics Conference, Portoroz, Slovenia, July 7, 2010 (international).
8. V. Patrangenaru et. al. *Extrinsic Analysis on Manifolds is Computationally Faster than Intrinsic Analysis, with Examples from Shape and Image Analysis* for "Methodologies for Post-Euclidean Statistics" International Society for Business and Industrial Statistics Conference, Portoroz, Slovenia, July 6, 2010 (international).
9. V. Patrangenaru *Statistics on Manifolds, key to Modern Data Analysis* - keynote presentation, SRCOS 2010, Summer Research Conference, Virginia Beach, VA, June 7, 2010 (international).

10. V. Patrangenaru *Nonparametric Statistical Analysis on Manifolds* University of California Davis, October 30, 2009 .
11. V. Patrangenaru *Asymptotic Statistics on Manifolds and Applications* Symposium on “New Directions in Asymptotic Statistics”, May 15-16, 2009 University of Georgia, Athens, GA.
12. V. Patrangenaru *Asymptotic Statistics, Nonparametric Bootstrap on Manifolds and Applications*, University of Maryland Baltimore County, March 27, 2009.
13. V. Patrangenaru *Statistical Analysis on Manifolds with Applications in Bioinformatics and Medical Imaging* BIRS Workshop on “Data Analysis using Computational Topology and Geometric Statistics”, Banff, Canada , March 8-13, 2009.
14. V. Patrangenaru *Statistical Applications of Size-and-Shape to Proteomics and Medical Imaging* LSUHSC School of Public Health - Section of Biostatistics , New Orleans, October 27, 2008.
15. V. Patrangenaru *Nonparametric Analysis of Projective Shapes with Applications to Scene Recognition* , SRCOS 2008: “Modern Semiparametric Methods in Action”, Charleston, South Carolina, June 8-11, 2008.
16. V. Patrangenaru *Nonparametric Estimation of Projective Shapes of 3D Scenes from Bilateral Views* The 2008 Joint Meeting of the Statistical Society of Canada and the Société Française de Statistique (SFdS), Ottawa, May 27-29, 2008.
17. V. Patrangenaru *Central Limit Theorems on Manifolds with Applications to Image Analysis* , Colloquium, Department of Mathematics and Informatics, Transylvania University, Brasov, Romania, March 11, 2008.
18. V. Patrangenaru *Nonparametric Estimation of Projective Shapes of 3D Scenes from Bilateral Views* Institute of Mathematical Stochastics, Georgia Augusta University, Göttingen, Germany, September 13, 2007.
19. V. Patrangenaru *Nonparametric Estimation of 3D Scenes from Bilateral Views*. “Shape Day” Workshop. Florida State University, March 6, 2007.
20. V. Patrangenaru *Reconstruction of 3D Scenes and Projective Shape Analysis*. Annual Meeting of the Statistical Society of Canada (SSC) University of Western Ontario, London, Canada, May 28 – 31, 2006.
21. V. Patrangenaru *Image and Shape Analysis in Biology, Medical Imaging and Machine Vision* , Colloquium, Department of Mathematics, University of Arizona, Tucson, AZ, February 17, 2006.
22. V. Patrangenaru *Projective Geometry and Nonparametric Statistics in Machine Vision and Scene Recognition*, Colloquium, Department of Statistics, Florida State University, Tallahassee, February 13, 2006.
23. V. Patrangenaru *Central Limit Theorems on Manifolds: Theory and Applications* , Colloquium, Depart-

ment of Mathematics, Florida State University, Tallahassee, October 28, 2005.

24. V. Patrangenaru *A Statistical Analysis on Shape Manifolds*, Colloquium, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX, September 29, 2005.

25. V. Patrangenaru *Algorithms for Nonparametric Inference on Shape Manifolds*. Joint Statistical Meetings 2005, Minneapolis, Minnesota, August 7 – 9, 2005 .

26. V. Patrangenaru *Statistics on Planar Shape Manifolds* . Workshop “Statistical Inferences on Shape Manifolds”, American Institute of Mathematics, Research Conference Center, Palo Alto, California, May 6 – 9, 2005.

### **Contributed Papers (2005-present)**

1. Leif Ellingson ( and Vic Patrangenaru ) *Automatic Landmark Extraction for Planar Contours*. Two hour presentation - Working Group of Geometric Correspondence at SAMSI in the AOOD Program, Oct 7, 2010 (international).

2. Stephan Huckemann, Vic Patrangenaru et. al. *Hyperbolic Data Analysis*. One hour presentation - Working Group of Data Analysis on Spaces that admit a Manifold Stratification at SAMSI in the AOOD Program, Oct 6, 2010 (international).

3. Vic Patrangenaru *Data Analysis on Spaces with a Manifold Stratification and Applications*. Two - one hour presentations - Working Group of Data Analysis on Spaces that admit a Manifold Stratification at SAMSI in the AOOD Program, Sept 22 and Sept 29, 2010 (international).

4. Leif Ellingson and Vic Patrangenaru *Computational Advantages of Extrinsic Analysis on Manifolds over Intrinsic Analysis on Manifolds*. poster presented by Leif Ellingson at SAMSI AOOD Opening Workshop, Sept 13, 2010 (international).

5. Daniel Osborne, Victor Patrangenaru, Xiuwen Liu and Hillary W. Thompson *Virtual Skull Extraction from CT-Scans for Reconstructive Surgery*. poster presented by Daniel Osborne at SAMSI AOOD Opening Workshop, Sept 13, 2010 (international).

6. V. Patrangenaru *Applications of Nonparametric Statistics on Size-and-Shape Manifold*. Joint Statistical Meetings 2008, Denver, Colorado, August 4 – 7, 2008.

7. V. Patrangenaru *On the paper “Image Manifolds which are Isometric to Euclidean Space” by D. L. Donoho and C. Grimes* - *Journal Club Seminar*, Department of Statistics, Florida State University, February, 15, 2007.

8. V. Patrangenaru *On the paper “The MDS Model for shape: an alternative approach by I. L. Dryden,*

A. Kume, H. Le and A. Wood - *Journal Club Seminar*, Department of Statistics, Florida State University, November 8, 2006.

9. V. Patrangenaru *Analysis of Projective Shapes of Curves using Projective Frames* . 24th Leeds Annual Statistics Research Workshop: “Quantitative Biology, Shape Analysis, and Wavelets”, University of Leeds, United Kingdom, July, 5, 2005.

10. V. Patrangenaru *Metric classification of Geometries of Positive Ricci Curvature in 3D* - talk at Midwest Geometry Conference, Ohio State University, Columbus, OH, April 29-May 1, 2005.

11. V. Patrangenaru *Classification of Geometries of Positive Ricci Curvature in 3D* - AMS Regional Meeting, Lubbock, April 8 – 10, 2005 .

12. V. Patrangenaru *Affine Shape Analysis and Protein Gels Matching*. - poster presentation at “Workshop on Statistics on Shape Manifolds” - American Institute of Mathematics, Research Conference Center, Palo Alto, California, May 9, 2005.

### Grants

1. Victor Patrangenaru (PI) 7/1/2011 - 6/31/2014, DMS-1106935: *Collaborative Research: Nonparametric Theory on Manifolds of Shapes and Images, with Applications to Biology, Medical Imaging and Machine Vision*. Extension of funding by the National Science Foundation for up to 3 years.

2. Victor Patrangenaru (PI) 7/1/2008 - 6/31/2012, DMS-0805977: *Collaborative Research: Nonparametric Theory on Manifolds of Shapes and Images, with Applications to Biology, Medical Imaging and Machine Vision*. Funded by the National Science Foundation for 3 years.

3. Victor Patrangenaru (PI) 6/1/2008 - 5/31/2010, MSP- H98230-08-1-0058: *Statistical Analysis on Manifolds and 3D Surface Identification from Noncalibrated Digital Camera Images*. Funded by the National Security Agency.

4. Victor Patrangenaru (PI) 8/9/2006 - 8/31/2007, DMS-0652353: *Collaborative Research: Statistical Analysis on Manifolds: a Nonparametric Approach for Inference on Shapes and Images*. Funded by the National Science Foundation for one year.

5. Victor Patrangenaru (PI) Robert L. Paige (CoPI), 11/01/2005 - 10/30/2006: DMS-0541993: *Red Raider Mini-Symposium 2005: Geometry and Statistics and Image Analysis*. Funded by the National Science Foundation.

6. Victor Patrangenaru (PI) 9/1/2004 - 8/9/2006, DMS-0805977: *Collaborative Research: Statistical Analysis on Manifolds: a Nonparametric Approach for Inference on Shapes and Images*. Funded by the National

Science Foundation for two years. Total amount.

7. Victor Patrangenaru (PI) 6/1/2002 - 5/31/2004, MDA-904-02-1-0082: *Statistical Analysis on Manifolds with Applications in Image Analysis and in Pattern Recognition*. Funded by the National Security Agency.

8. Draga Vidakovic (PI), Guantao Chen (CoPI), Susmita Datta (CoPI) and Victor Patrangenaru (CoPI) 6/2003-5/2004. Technology Fee Grant: Campus wide mathematics and statistics software licenses purchasing. Funded by Georgia State University.

9. Victor Patrangenaru (PI), Saeid Belkasim (CoPI), George Davis (CoPI), LiFeng Ding (CoPI), Robert Harrison (CoPI) 6/2002 - 5/2003, *Team Grant: New Retrieval and Classification Techniques in High and Low Level Image Analysis*, Funded by Georgia State University Office of Research and Sponsored Programs.

*Note.* All Collaborative Research above is with Rabi N. Bhattacharya, University of Arizona. His awards numbers are not listed.

## **SERVICE**

### **Florida State University**

#### **University**

Peer-Reviewer, COFRS -FSU (2008-2009).

#### **Department of Statistics**

Chair, Student Awards Committee (9/2011- )

Committee Member, Graduate Committee, (9/2006-9/2008)

Committee Member, Academic Affairs Committee, (9/2008-9/2011)

### **Texas Tech University**

#### **University**

Judge for Texas Tech University - Graduate Student Research Competition, 2005.

#### **Department of Mathematics and Statistics**

Judge for Department of Mathematics and Statistics - Ph.D. Student Research Competition, 2004.

Judge for Contest at Emmy Noether High School Mathematics Day, 2004.

### **Georgia State University**

#### **Department of Mathematics and Statistics**

Committee Member, Graduate Committee, 1999-2003.

Committee Member, Statistics Committee, 1998 - 2003

## **The Profession**

### **Reviewer for Refereed Journals**

- (since 2011) *IEEE Transactions on Information Theory*
- (since 2009) *Journal of Computational and Graphical Statistics*
- (since 2009) *Electronic Journal of Statistics*
- (since 2008) *Journal of Royal Statistical Society*
- (since 2008) *Sankhya*
- (since 2007) *Statistica Sinica*
- (since 2006) *Test*
- (since 2006) *Journal of The American Statistical Association*
- (since 2006) *Biometrika*
- (since 2005) *Annals of Statistics*
- (since 2005) *IEEE Transactions on Signal Processing*
- (since 2004) *Journal of Statistical Planning and Inference*
- (since 2004) *Journal of Mathematical Imaging and Vision*
- (since 2004) *Classical Quantum Gravity*
- (since 2004) *IEEE Transactions on Pattern Analysis and Machine Intelligence*
- (since 2004) *Statistics and Probability Letters*
- (since 2003) *Journal of Multivariate Analysis*
- (since 2003) *Stochastic Environmental Research and Risk Assessment Journal*
- (since 2003) *Reviews in Mathematical Physics*
- (since 2002) *Algebra Geometry and Applications Seminar Proceedings*
- (since 1996) *Transactions of the American Mathematical Society*
- (since 1984) *Studii si Cercetari Matematice* ( in Romanian )
- (since 1983) *Gazeta Matematica A* ( in Romanian )

### **Editorial Board Memberships**

- Applied Sciences*, electronic journal. (since 2000)
- Differential Geometry - Dynamical Systems*, electronic journal. (since 2003)

### **Reviewer for Grant Applications**

- (2012) National Science Foundation

(2007, 2009, 2010, 2011) National Science Engineering Research Council of Canada

(2005) Israel Science Foundation

### **Other Reviewer Activities**

Reviewer for *Mathematical Reviews*, the main publication worldwide that posts reviews of published papers in Mathematical Sciences (including Statistics), since 1995. In that capacity he reviewed one monograph and 19 papers.

### **Service to Professional Associations**

1. Organizer of the session on *Nonparametric Statistics on Manifolds* at the First Conference of the International Society for Nonparametric Statistics, Chalkidiki, Greece, June 15-20, 2012.
2. Member of the Organizing Committee of the Workshop on Probability, Combinatorics and Geometry in Biology, Mathematics and Biology Institute, Columbus, OH, May 25-29, 2012.
3. Member of the International Scientific Committee of the Workshop on Nonparametrics and Geometry, Charles University, Prague, Czech Republic, August 15-19, 2011, and Session Chair, August 18, 2011.
4. Leader ( with Ezra Miller (Duke University)) of Working Group *Data Analysis on Spaces that Admit a Manifold Stratification* at SAMSI - AOD Program 2010-2011.
5. Chair of Session 1, The Florida Chapter of the American Statistical Association Annual Meeting, Tallahassee, Florida (2/19/2010 -2/20/2010).
6. Contributed Session Organizer: *Nonparametric Statistics on Manifolds and their Applications*, at *Section of Nonparametric Statistics*, Joint Statistical Meetings, Denver, Colorado (8/3/2008-8/7/2008).
7. Session Organizer and Session Chair: *Nonparametric Statistics on Manifolds and their Applications*, at “Current and Future Trends in Nonparametrics Conference 2007”, Univ. of South Carolina, Columbia, SC. (10/11/2007-10/13/2007).
8. Chair of *Session on Nonparametrics, Survival* at “Hollander Day Conference”, Florida State University, (4/21/2007).
9. Member on the Workshop Organizing Committee of: “Shape Day Workshop”, Florida State University, (3/6/2007).
10. Mini-Symposium Organizer (jointly with Robert Paige): “Redraider Mini-Symposium on Geometry, Statistics and Image Analysis, in honor of 65<sup>th</sup> birthday of Professor Frits Ruymgaart”, Texas Tech University, Department of Mathematics and Statistics November, (11/17/2005-11/19/2005).
11. Session Organizer and Session Chair of *Session on Statistical Analysis of Shapes and Images* at the

Institute of Mathematical Statistics Annual Meeting, Rio de Janeiro, Brazil, July, (7/30/2006-8/4/2006).

12. Session Organizer and Session Chair of *Special Session on Statistical Image Processing and Analysis and Applications* at the 2005 American Mathematical Society Spring Central Section Meeting, Lubbock, TX. (4/8/2005-4/10/2005).

13. Session Organizer and Session Chair of *Session on Statistics on Manifolds and Application* at the Institute of Mathematical Statistics Annual Meeting, Banff, Canada, (7/28/2002-7/31/2002).

14. Chair of *Session II* at the Leeds Annual Statistical Research Workshop-2003, University of Leeds, United Kingdom, (7/8/2003-7/10/2003).

**External Peer Reviewer for Promotion and Tenure**

(2005) External reviewer for promotion to Professor of tenured faculty member at Louisiana State University.

(2006) External reviewer for tenure and promotion to Associate Professor of faculty member at Texas Tech University.