Stephen M. Pizer
Curriculum Vitae

PERSONAL

Born 4 October 1941, Boston, Massachusetts
U.S. citizen, married, two children

EDUCATION

Ph.D.	Harvard University, Computer Science, 1967	
A.M.	Harvard University Computer Science, 1964	
A.B., Sc.B.	Brown University, Applied Mathematics, 1963	

TEACHING AND RESEARCH EXPERIENCE

University of North Carolina at Chapel Hill

Department of Computer Science
Kenan Professor, 1992 –
Professor, 1982- 1991
Associate Professor, 1971-81
Assistant Professor, 1967-71
Assistant Chairman, 1979-81

Biomedical Engineering
Faculty Member, Curriculum, 1975- 1991
Adjunct Professor, Department, 1991 -

Department of Radiology, School of Medicine
Adjunct Professor, 1982-
Adjunct Associate Professor, 1975-1982

Department of Radiation Oncology, School of Medicine
Adjunct Professor, 1988-

UNC Medical Image Display & Analysis Group, from 11 UNC Depts.
Head, 1974-

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UNC Imaging Task Force Committee

Chair, 2002-

UNC Lineberger Comprehensive Cancer Center

Center Member, 1993-

Rijksuniversiteit Utrecht, Netherlands
Visiting Professor of Medical and Physiological Physics, 1983-1984, 1992

Massachusetts Institute of Technology
Visiting Guest Lecturer, July 1970, July 1971, July 1972, July 1973 July 1975, July 1976

Institute for Graphic Communication
Course on Three-Dimensional Display Techniques, May 1982

American Association of Physicists in Medicine
Summer School on Physics of Nuclear Medicine, July 1983

Leaves

August 1973 - August 1974   University College London, topic: medical image display and restoration
August 1983 - August 1984   University of Utrecht, topic: human vision research
January 1992 - August 1992   University of Utrecht, topic: object shape
January 2000 - May 2000   Harvard, Yale, Johns Hopkins, topic: medial modeling of objects

NATO ASI, Faculty

Pictorial Information Systems in Medicine, 1984
The Formation, Handling and Evaluation of Medical Images, 1988

Faculty, 3D Neuroimaging: Theory and Clinical Applications, Johns Hopkins Medical Institutions,
October 1990

Conference tutorials

Visualization in Biomedical Computing, *Cores*, 1994; *Scale Space* (with B. ter Haar Romeny), 1996

Medical Image Computing and Computer Aided Interventions, *Object Shape* (with C. Taylor, T. Cootes), 1998

EMPLOYMENT (non-teaching)

Department of Medical Physics, University College Hospital Medical School, London, England
Visiting Research Fellow 1973-74

Physics Research Laboratory, Massachusetts General Hospital
Research Fellow in Radiology, 1973-1975

Research Fellow in Medicine, 1967-73
Applied Mathematician and Computer Science Researcher, Summers 1962-67

John Hancock Life Insurance Company
Actuarial Trainee, Summers 1959-61

CONFERENCE BOARD AND PROGRAM COMMITTEE MEMBERSHIPS

Banff International Research Station Workshop on Geometry for Anatomy, Co-organizer, 28 August- 2 September 2011

Medical Image Computing and Computer-Assisted Intervention, Board 1992-2004

CVPR - Program Committee Biomedical Image Analysis Workshop, Technical Committee, 1994

Conference on Visualization in Biomedical Computing, Atlanta, Technical Committee, 1990, 1994, 1996; Conference Chairman, 1992, Board, 1994, 1996

IEEE EMBS Conference, Workshop on Advanced Medical Image Processing, Rennes, France, 1992

NATO Advanced Research Workshop on 3D Imaging in Medicine, Travemünde, Germany, Co-chairman, 1990

Chapel Hill Workshop on Volume Visualization. Program Committee, 1989

SPIE Symposium on Medical Imaging, 1987-1989; Subconference on Image Capture & Display; 1990-???; Subconference of Image Processing, 1990-

ACM Workshop on Interactive 3-D Graphics, Program Co-chairman, 1986

Computer Assisted Radiology International Symposium and Exhibition, Program Committee, biyearly 1987-

IEEE Int. Joint Alpine Symp. on Med. Comp. Graphics and Image Commun.and Clin. Adv. in Neuro CT/NMR, Feb. 1984

Society of Nuclear Medicine Annual Meeting, Chicago, Illinois, 1977, also session chairman

Third International Conference on Data Handling and Image Processing in Scintigraphy, Cambridge, Mass., 1973, Program Chairman

International Conference on Information Processing in Medical Imaging (previously entitled Information Processing in Scintigraphy), Chairman, 1971, Chairman, U.S. Subcommittee 1975, Board and Program Comitttee and session chairman, biyearly 1973-

GRANT REVIEWING AT THE REVIEW PANEL LEVEL (partial list)

Various NIH special study sections

NIH Diagnostic Radiology Study Section, member, 1980-1986

NIH Ad Hoc reviewer, a few per year, 1987-

NSF Ad Hoc reviewer, intermittently, 1990-

Advisory Screening Committee in Computer Science, Council for International Exchange of Scholars, 1980 - 1982.

NSF National Needs Postdoctoral Fellowships, Mathematical Sciences Panel Reviewer of Applications, December 1978, 1979, 1989

NIH Site Visitor, November 1977, June 1980, July 1981, October 1982, March 1983, February 1985, April 1985, June 1986, July 1986, February 1987, October 1987, June 1988, December 1988

NSF Site Visitor, December 1988, June 1989.

OTHER PROFESSIONAL ACTIVITIES

Fellow of American Institute for Medical and Biological Engineering, 2007

Co-founder of Morphormics, Inc., 2001

Editorial Board, *Computer Aided Surgery*, 1995-

Editorial Board, *J. of Mathematical Imaging and Vision*, 1994-2014

International Advisory Board, *Computational Imaging Series*, Kluwer Academic Publishers, 1993-

Associate Editor, *IEEE Transactions on Medical Imaging* , 1988-2010

Editorial Board, *Journal of Digital Imaging*, 1988-2001

Committee on Computers, American College of Radiology, member, 1982-1989

Advisory Editor, *Nuclear Medicine Communications*, 1979-1981

Co-chairman, Sessions of Society of Nuclear Medicine Computer Council at IEEE 1979 Nuclear Science Symposium, San Francisco, 1979

World Federation of Nuclear Medicine and Biology, Washington, D.C., 1978, Chairman, Poster Session

Society of Nuclear Medicine Computer Council, Task Group Coordinator, 1976-1980

Graphics Committee, N.C. Board of Science and Technology, 1990 -1992

NIH PLANNING PANELS

DHSS:OWH & NCI Workshop on 3D Image Processing and Computer Aided Diagnosis for Cancer Imaging in Women, Co-organizer, 1998

NCRR Workshop on Biomedical Computing, Session convenor, April, 1991

DIRB/NCI Workshop on Imaging-Guided Stereotactic Tumor Diagnosis and Treatment, May, 1991

NCI Workshop on 3D Display and Analysis for Cancer Treatment Planning, June, 1990

NIH Imaging Planning Panel, May, 1990

National Library of Medicine Workshop on Electronic Imaging, 1989

NCI Workshop on Directions in Research in Diagnostic Imaging, Winston-Salem, N.C., October 1988

NIMH Workshop on Problems in Functional Image Analysis, November, 1984

PROFESSIONAL SOCIETIES

American Association of University Professors
Association for Computing Machinery
IEEE, Senior Member
Society of Nuclear Medicine (including Computer Council), 1974-84
Association of University Radiologists
The Association for Research in Vision and Ophthalmology, 1994-7

HONORS

Conference room in Sitterson Hall, UNC named for me, 2015

Fellow of the MICCAI Society, 2010

IEEE Outstanding Educator Award, Central North Carolina Section, l987

Fogarty Senior International Fellowship (NIH), 1984

Netherlands Organization for Pure Scientific Research (ZWO), Visiting Fellowship, 1983-1984, 1992

Kenan Leave: August 1983 - August 1984, January 1992 - August 1992.

Fulbright-Hays Award, 1973-74

National Science Foundation Fellow, 1963-67

Danforth Fellow, 1963-67

Sigma Xi

Phi Beta Kappa

RESEARCH GRANTS (Principal Investigator)

NIH R01: Integration of Endoscopic and CT Data for Radiation Therapy Treatment Planning, 2013-2018, co-principal investigator; Julian Rosenman: PI

Morphormics: to Support Graduate Research in Medical Image Segmentation, 2008-2009, principal investigator

NIH Small Business Grant for Morphormics: Thorax Autosegmentation for Radiotherapy, 2011- 2012, principal investigator (PI position later transferred to Richard Holloway).

R21 NIH: Deformable mapping of MRI and MRSI data to TRUS images to guide prostate biopsy, 2008-2011, principal investigator

NIH Supplement Grant: Respiratory Motion-Reduced Cone-Beam CT Guidance of Radiotherapy in Lung and Liver, 2009-2013, principal investigator of supplement, Gikas Mageras: PI of the covering R01

R21 NIH Grant: Automation of Head and Neck Radiation Treatment Planning, 2007-2010, co-principal investigator, Julian Rosenman: PI

NIH Program Project Grant: Medical Image Presentation, July 1, 1988 -2007 , program director.

NIH Grant: 3D Cerebral Vessel Location for Surgical Planning, 1997-, co-principal investigator

National Center for Research Resources and National Cancer Institute Grant: UNC Research Platform for Radiotherapy Stimulation, August 2003 – June 2008, co-principal investigator.

NIH Grant: Automation of Head and Neck Radiation Treatment Planning, July 2007 – June 2009, co-principal investigator.

NIH Grant: Optimization and Standardization in Medical Image Display, July 1, 1985 - June 30, 1988, principal investigator.

Philips Medical Systems, Inc., Travel Grant, Collaboration with Univ. of Utrecht, 1990 - 1993

NATO Grant: Human and Computer Discrimination From Images, April 1985 - April 1990, principal investigator.

NIH Grant: Three-Dimensional Medical Image Display, December 1984 - December 1987, principal investigator jointly with Henry Fuchs.

NIH Grant: 3-D Visualization of the Carotid Arteries, December 1980 - December 1983, principal investigator jointly with E. Ralph Heinz, Henry Fuchs.

Siemens, Inc. Grant, Display Linearization, 1983 - 1984

PATENTS

Chaney, EL, S Pizer, L Kwock, E Wallen, W Hyslop, R Broadhurst, Methods, systems and computer readable media for mapping regions in a model of an object comprising an anatomical structure from one image data set to images used in a diagnostic or therapeutic intervention. 2015

Methods, Systems, and Computer Readable Media for Mapping Regions in a Model of an Object Comprising an Anatomical Structure from One Image Data Set to Images Used in a Diagnostic or Therapeutic Intervention, U.S. Patent No. 8,666,128 dated March 4, 2014.

M-rep based hexahedral meshes for deformable modeling, U.S. Patent pending, filed July 14, 2004.

Systems and Methods for Tubular Object Processing, U.S. Patent No. 6,690,816, dated Feb 10, 2004. Stephen Aylward is main inventor.

Methods and Systems for Modeling Objects and Object Image Data using Medial Atoms, U.S. patent application No. 60/326,623 filed 9/28/01. Sarang Joshi is main inventor.

Image Object Matching Using Core Analysis and Deformable Shape Loci, Claims submitted, U.S. Patent No. 5,926,568, July 20, 1999. Main inventor among many.

A 3-D Display Based on Conventional 2-D Graphics Equipment, co-inventor with H. Fuchs, 4,607,255, August 19, 1986.

BIBLIOGRAPHY

* = principal author or co-principal author of book, chapter, article, or review. Articles with numbers followed by "=" or "< " are essentially equivalent to (=) or subsets of (<) other articles indicated.

BOOKS

Medial Representations: Mathematics, Algorithms and Applications, with Kaleem Siddiqi, Springer Publishers, 2008.

3D Imaging in Medicine: Algorithms, Systems, Applications, Proceedings of NATO Advanced Research Workshop, co-editor with Karl Heinz Höhne, Henry Fuchs. Springer-Verlag, Berlin, 1990.

Proceedings 1986 Workshop on Interactive 3D Graphics , co-editor with Frank Crow. Association for Computing Machinery, 1987.

* *To Compute Numerically: Concepts and Strategies,* with Victor L. Wallace, Little, Brown and Company, Boston, 1983.

* *Numerical Computing and Mathematical Analysis,* S.R.A., Palo Alto, 1975

Information Processing in Scintigraphy, (Proceedings of Third International Conference on Data Handling and Image Processing in Scintigraphy, Cambridge, Mass., 1973), co-editor with C.E. Metz   G.L. Brownell. Doc. CONF-730687, U.S.E.R.D.A. Technical Information Center, Oak Ridge, 1975.

CHAPTERS

(15) Chaney, E. and Pizer, S. Deformable Shape Models for Image Segmentation. In *Image Processing in Radiotherapy Applications,* Chapter 13, ed. Kristy Brock, 2010.

(12-14) K. Siddiqi and S. Pizer, Chapters 1, 8, 9 of Medial Book, Springer, 2007.

(11) Siddiqi, K., and Pizer, S. Medial models for vision. In Dickinson, S., Leonardis, A., Schiele, B., and Tarr, M. J., editors, *Object Categorization: Computer and Human Vision Perspectives*, Chapter 25. Cambridge University Press, 2009.

(10) PT Fletcher, SM Pizer, S Joshi (2005). Shape Variation of Medial Axis Representations via Principal Geodesic Analysis on Symmetric Spaces. To appear in Statistics and Analysis of Shapes, eds. H. Krim and A. Yezzi, Springer-Verlag.

(9) *SM Pizer, BM Hemminger, RE Johnston (1998). Display, Including Enhancement, of Two-Dimensional Images. *Image-Processing Techniques for Tumor Detection,* Chapter 5, pp. 101-130, RN Strickland, ed., Marcel Dekker, Inc, 2002.

(8) Object Shape in Medical Images, Chapter 6. **Biomedical Imaging IV** 4th IEEE EMBS International Summer School on Biomedical Imaging. Berder Island, France, June 17-24, 2000 Eds. C Roux and Jean-Louis Coatrieux.

(7) *V. Interrante, W. Oliver, S. M. Pizer and Henry Fuchs. Display Methods for Grey-Scale Voxel-Based Data Sets, Chapter 6 in *3D Confocal Microscopy: Volume Investigation of Biological Specimens,*   John Stevens, Linda Mills and Judy Trogadis, eds., pp. 132-160, Academic Press, 1994.

(6) LM Lifshitz, SM Pizer (1991). A Multiresolution Hierarchical Approach to Image Segmentation Based on Intensity Extrema. *IEEE Trans. PAMI*, Vol. 12, No. 6, pp. 529-540, June 1990. Reprinted in *Computer Vision: Advances and Applications*, Rangachar Kasturi, Ramesh C. Jain, pp. 606-617, IEEE Computer Society Press, Los Alamitos, CA.

(5) *S.M. Pizer, G.L. Brownell, D.A. Chesler (1974). Scintigraphic Data Processing, *Instrumentation in Nuclear Medicine,* Vol. II. G.J. Hine, J.A. Sorenson, eds, pp. 229-262. Academic Press, New York.

(4) * SM Pizer (1971). Resolution Recovery in Radioisotope Scans", *Advances in Medical Physics*, pp. 297-303. J.S. Laughlin   E.W. Webster, editors. Second International Conference on Medical Physics, Inc., Boston.

(3)* SM Pizer, A.B. Ashare, A.B. Callahan,   G.L. Brownell (1970). Fourier Transform Analysis of Tracer Data. *Concepts and Models of Biomathematics: Simulation Techniques and Methods*, Chapter 3, pp. 105-129. F. Heinmets L.D. Cady, editors. Marcel Dekker, Inc., New York.

(2) * SM Pizer, HG Vetter (1970). Processing Quantum Limited Images. *Picture Processing and Psychopictorics,* pp. 165-176. Academic Press, New York.

(1)   * AB Callahan, SM Pizer (1966). The Applicability of Fourier Transform Analysis to Biological Compartmental Models. *Natural Automata and Useful Simulations*, pp. 149-177. H.H. Pattee, E.A. Edelsack, L. Fein, A.B. Callahan, editors. Spartan Books, Washington.

PUBLISHED ARTICLES

(339) Zhao, Q, T Price, S Pizer, M Niethammer, R Alterovitz, J Rosenman.   The Endoscopogram: a 3D Model Reconstructed from Endoscopic Video Frames, To appear: Proceedings of MICCAI 2016

(338) Tu, L; M Styner; J Vicory, S Elhabian; B Paniagua; JC Prieto;Dan Yang; R Whitaker; SM Pizer. Skeletal Shape Correspondence through Entropy. To appear, *IEEE Trans. Med. Img.*

(337) Tu, L, J Vicory, S Elhabian; B Paniagua; JC Prieto; JN Damon; R Whitaker; M Styner; SM Pizer. Entropy-based Correspondence Improvement of Interpolated Skeletal Models. To appear, *Comp. Vis. And Image Understanding (2015)*

(336) Pizer, SM, . Statistics of Shape on Manifolds: Methods and Comparison Methods. Proc. Shape 2015 conference

 (335) Tu, L, D Yang, J Vicory, X Zhang, SM Pizer, M Styner. Fitting Skeletal Object Models Using Spherical Harmonics Based Template Warping. *Signal Processing Letters*, *IEEE*, vol. 22, no. 12, pp. 2269-2273, 2015.

(334) Zhao, Q, T Price, S Pizer, M Niethammer, R Alterovitz and J Rosenman. Surface Registration in the Presence of Missing Patches and Topology Change. In Proceedings of *Medical Image Understanding and Analysis* , pp 8-13. 2015

(333)   Vicory, J., Foskey, M., Fenster, A., Ward, A., & Pizer, S.M. Prostate Segmentation From 3DUS Using Regional Texture Classification and Shape Differences. Proceedings of Shape 2014 - Symposium on Statistical Shape Models & Applications, June 2014, Delémont, Switzerland.

(332)   Vicory, J., Foskey, M., Fenster, A., Ward, A., & Pizer, S.M. Segmentation of the Prostate from 3D TRUS via Regional Texture Classification and Skeletal Model Deformations. Submitted for publication.

(331)   Hong, J., J Vicory, J,Schulz, M Styner, JS Marron, SM Pizer, Non-Euclidean Classification of Medically Imaged Objects via S-rep Statistics. *Medical Image Analysis*. To appear.

(330)   Pizer, S.M., Hong, J., Jung, S., Marron, J.S., Schulz, J., & Vicory, J. Relative Statistical Performance of S-reps with Principal Nested Spheres vs. PDMs. Proceedings of Shape 2014 – Symposium on Statistical Shape Models & Applications, June 2014, Delémont, Switzerland.

(329)   Qingyu Zhao, Stephen Pizer, Chen-Rui Chou, and Gig Mageras, "Local Metric Learning in 2D/3D Deformable Registration With Application in the Abdomen," *IEEE Transactions on Medical Imaging*, Volume 33, Issue 8, pp 1592 – 1600. 2014

(328)   Qingyu Zhao, Stephen Pizer, Marc Niethammer, and Julian Rosenman, "Geometric-Feature-Based Spectral Graph Matching in Pharyngeal Surface Registration," Proc of MICCAI 2014 ,Vol. 8673, pp 259-266
.
(331)   Pizer, S.M., Jung, S., Goswami, D., Vicory, J., Zhao, X., Chaudhuri, R., Damon J.N., Huckemann, S., & Marron, J.S. (2013). Nested sphere statistics of skeletal models. In Innovations for Shape Analysis: Models and Algorithms, (M. Breuss, A. Bruckstein, and P. Maragos, eds.), (pp. 93-115). Springer Berlin Heidelberg.

(330)   Schulz,J, S. Jung, S Huckemann, M Pierrynowski, J.S.Marron, and Stephen M. Pizer, "Analysis of Rotational Deformations from Directional Data," Journal of Computational and Graphical Statistics, volume 24, Issue 2: 539-560.2015.

(329)   Joern Schulz, Stephen M. Pizer, J.S. Marron, and Fred Godtliebsen, "Nonlinear Hypothesis Testing of Geometrical Object Properties of Shapes Applied to Hippocampi," *J Math. Imag. & Vision*, June 2015

(328)   Chen-Rui Chou, Brandon Frederick, Gig Mageras, Sha Chang, and Stephen Pizer, "2D/3D Image Registration Using Regression Learning," *Computer Vision and Image Understanding*, (A.C. Kak, ed.), vol. 117, no. 9, pp. 1095-1106, Elsevier, Sep. 2013.

(326)   Jared Vicory, Mark Foskey, and Stephen Pizer, "Prostate Segmentation from 3DUS Using Regional Texture Classification and Shape Differences -- Late Draft," May 2013.

(325)   Kabul, I., Pizer, S. M., Rosenman, J. and Niethammer, M. (2011), An Optimal Control Approach for Texture Metamorphosis. Computer Graphics Forum, 30: 2341–2353. doi: 10.1111/j.1467-8659.2011.02067.x

(324)   Chen-Rui Chou, Sha Chang, and Stephen Pizer, "WE-E-BRC-02: Real-Time Deformable Registration Using Multi-Pixel X-Ray Technology for Image-Guided Lung Radiotherapy," in *Medical Physics* AAPM Conference 38:6, 3818, 2011.

(323)   Chen-Rui Chou and Stephen Pizer, "Real-time 2D/3D Deformable Registration Using Metric Learning," published in Proc. MICCAI workshop on Medical Computer Vision, Oct. 2012.

(322)   Chen-Rui Chou, Brandon Frederick, Xiaoxiao Liu, Gig Mageras, Sha Chang, and Stephen Pizer, "CLARET: A Fast Deformable Registration Method Applied to Lung Radiation Therapy," in *Fourth International (MICCAI) Workshop on Pulmonary Image Analysis*, Sep. 2011.

(321)   Chen-Rui Chou, Brandon Frederick, Gig Mageras, Sha Chang, and Stephen Pizer, "2D/3D Image Registration using Regression Learning," Computer Vision and Image Understanding , vol. 117, no. 9, pp. 1095-1106, September, 2013.

(320)   Pizer, Stephen M.; S Jung, J Vicory, D Goswami, X Zhao, R Chaudhuri, JN Damon, S Huckemann, JS Marron, "Nested Sphere Statistics of Skeletal Models," Proc. Dagstuhl Workshop on Innovations for Shape Analysis: Models and Algorithms. Springer Lecture Notes in Computer Science, 2012.

(319)   Sungkyu Jung, J.S. Marron, and Stephen M. Pizer, "A Backward Generalization of PCA for Image Analysis," in *Proceedings of an International Symposium on the Occasion of the 25th Anniversary of McGill University Centre for Intelligent Machines*, (Angeles, J.; Boulet, B.; Clark, J.J.; Kovecses, J.; Siddiqi, K. (Eds.): 111-124, 2010.

(318)   Chen-Rui Chou, C. Brandon Frederick, Sha Chang, and Stephen M. Pizer, "A learning-based patient repositioning method from limited-angle projections," in *Proceedings of an International Symposium on the Occasion of the 25th Anniversary of McGill University Centre for Intelligent Machines*, (Angeles, J.; Boulet, B.; Clark, J.J.; Kovecses, J.; Siddiqi, K. (Eds): 83-94, 2010.

 (317)   Liu, Xiaoxiao, Bradley C. Davis, Marc Niethammer, Stephen M. Pizer, Gig S. Mageras, "Prediction-driven Respiratory Motion Atlas Formation for 4D Image-guided Radiation Therapy in Lung," MICCAI'10 workshop on Pulmonary Image Analysis, Beijing, China, pp. 71-82, Sep. 2010.

(316)   Ilknur Kabul, Derek Merck, Julian Rosenman, Stephen M. Pizer, Model-based Solid Texture Synthesis for Anatomic Volume Illustration, in proceedings of the Eurographics Workshop on Visual Computing for Biology and Medicine (VCBM), Leipzig, Germany, Jul. 1-2, 2010.

(315)   Liu, Xiaoxiao, Ipek Oguz, Stephen M. Pizer, and Gig S. Mageras, "Shape-correlated Deformation Statistics for Respiratory Motion Prediction in 4D Lung," *Proceedings of SPIE*, vol. 7625, pp. 76252D-76252D-10 (2010).

(314)   Gorczowski, K, M. Styner, J-Y Jeong, JS Marron, J Piven, H Cody Hazlett, SM Pizer, G Gerig (2010). "Multi-object analysis of volume, pose, and shape using statistical discrimination," IEEE Trans. PAMI 32(4): 652-661.

(313)   Sungkyu Jung, Xiaoxiao Liu, J. S. Marron, and Stephen M. Pizer, "Generalized PCA via the backward stepwise approach in image analysis," in Proceedings of an International Symposium on the Occasion of the 25th Anniversary of McGill University Centre for Intelligent Machines , (J.; Boulet Angeles, ed.), 2010.

(312) xx

 (311)   Saboo, Rohit, Joshua Levy, Edward Chaney, and Stephen Pizer, "Medial Models of Populations of Nearly Tubular Objects," *Proceedings of Probabilistic Models for Medical Image Analysis*, 2009.

(310)   X. Liu, Rohit Saboo, Stephen M. Pizer, and Gig S. Mageras, "A Shape-Navigated Image Deformation Model for 4D Lung Respiratory Motion Estimation," in Proceedings of the Sixth IEEE International Conference on Symposium on Biomedical Imaging: From Nano to Macro, (Boston, Massachusetts, USA), pp. 875-878, 2009.

(309)   Merck, D., Tracton, G., Saboo, R., Levy, J., Chaney, E., Pizer, S.M., and Joshi, S. (2008). "Training Models of Anatomic Shape Variability*," Medical Physics* 35(8):3584-96, August 2008.

(308)   Jeong, J.-Y., Stough, J.V., Marron, J.S., Pizer, S.M. (2008). "Conditional-Mean Initialization Using Neighboring Objects in Deformable Model Segmentation," *SPIE Medical Imaging*, February 2008.

(307)   Dam, E.B., Fletcher, P.T., Pizer, S. M. (2008). "Automatic Shape Model Building Based on Principal Geodesic Analysis Bootstrapping," *ScienceDirect*, pp. 136-151.

(306)   Liu, X., Jeong, J.-Y., Levy, J., Saboo, R., Chaney, E.L., and Pizer, S.M. (2008). "A Large-to-Fine Scale Shape Prior for Probabilistic Segmentations Using a Deformable M-rep," *Proceedings of CVPR*, pp.1-8, 2008.

(305)   Levy, J., Pizer, S. M., and Foskey, M. (2008). "Rotational Flows for Interpolation Between Sampled Surfaces," *Proceedings of MMBIA Workshop*.

(304)   Xiaoxiao Liu, Ja-Yeon Jeong, Joshua H. Levy, Rohit R. Saboo, Edward L. Chaney, and Stephen M. Pizer, "A Coarse-to-fine Shape Prior for Probabilistic Segmentations Using A Deformable M-rep," published as *Proceedings MMBIA Workshop*, 2008.

(303)   Ja-Yeon Jeong, Surajit Ray, Qiong Han, Xiaoxiao Liu, Keith E. Muller, and Stephen M. Pizer, "Goodness of Prediction for Principal Components of Shape: A Correlation Measure," *International Journal of Computer Vision,* 2008.

(302)   Lu, C., Pizer, S. M., Joshi, S., and Jeong, J-Y (2007). "Statistical Multi-object Shape Models," *International Journal of Computer Vision*, vol. 75, no. 3, pp. 387-404.

(301)   Gorczowski, K., Styner, M., Jeong, J-Y, Marron, J. S., Piven, J., Hazlett, H. C., Pizer, S. M., and Gerig G. (2007). "Discrimination Analysis using Multi-object Statistics of Shape and Pose," *Processing SPIE*, vol. 6512, pp. 1-8.

(300)   Han, Q. , Merck, D., Levy, J., Villarruel, C., Chaney, E., and Pizer, S. M. (2007). "Geometrically Proper Models in Statistical Training," *Processing of Information Processing in Medical Imaging*, (Nico Karssemeijer and Boudewijn Lelieveldt, eds.), vol. 4584, pp. 751-762.

(299)   Crouch J., Pizer, S. M., Chaney, E. L., Hu, Y., Mageras, G. S., and Zaider, M. (2007). "Automated Finite Element Analysis for Deformable Registration of Prostate Images," *IEEE Transactions on Medical Imaging*, vol. 26, no. 10, pp. 1379-1390.

(298)   Joshua Stough, Robert E. Broadhurst, Stephen M. Pizer, and Edward L. Chaney (2007). "Clustering on Local Appearance for Deformable Model Segmentation," in *Biomedical Imaging: From Nano to Macro 2007, ISBI 2007.*

(297)   Levy, J. H., Broadhurst, R. E., Ray, S., Chaney, E. L., and Pizer, S. M. (2007). "Signaling Local Non-credibility in an Automatic Segmentation Pipeline," in *Medical Imaging 2007: Image Processing*, (Josien P. W. Pluim and Joseph M. Reinhardt, eds.), published as *Procedures of SPIE*, vol. 6512, 2007.

(296)   Levy J. H., Gorczowski K., Liu X., Pizer S.M., and Styner M (2007). "Caudate Segmentation using Deformable M-reps," in *MICCAI Workshop: 3D Segmentation in the Clinic: A grand challenge*, Oct. 2007.

(295)   J. H. Levy, R. E. Broadhurst, J. Jeong, X. Liu, J. Stough, G. S. Tracton, S. M. Pizer, and E. L. Chaney, "Prostate and Bladder Segmentation Using a Statistically Trainable Model," published as Abstract and poster at conference of the American Society for Therapeutic Radiology and Oncology, Oct. 2007.

(294)   DiMaio, S., Kapur, T., Cleary, K., Aylward, S., Kazanzides, P., Vosburgh, K., Ellis, R., Duncan, J., Farahani, K., Lemke, H., Peters, T., Lorensen, B., Gobbi, D., Haller, J., Clarke, L., Pizer, S., Taylor, R., Galloway, B., Fichtinger, G., Hata, N., Lawson, K., Tempany, C., Kikinis, R., and Jolesz, F (2007). "Challenges in Image-Guided Therapy System Design," *NeuroImage* 37 Suppl 1:S144-51, 2007.

(293)   Gorczowski, K., Styner M., Jeong, J-Y., Marron, J.S, Piven J., Hazlett, H. C., Pizer, S. M., and Gerig, G., "Statistical Shape Analysis of Multi-Object Complexes," *CVPR*, pp. 1-8, Jun. 2007.

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(291)   Han, Q, D. Merek, J. Levy, C. Villarruel, E. Chaney, and S. M. Pizer (2007). Proper Training. *To appear in Information Processing in Medical Imaging*, N. Karssemeijer, B. Lelieveldt, editors, Springer.

(290)   Derek Merck, Stephen Pizer, and Julian Rosenman, "Visualizing Anatomic Changes over Multi-Day Radiotherapy," techreport , 2007.

(289)   Stephen M. Pizer, Robert E. Broadhurst, Joshua Levy, Xiaoxiao Liu, Ja-Yeon Jeong, Joshua Stough, Gregg Tracton, and Edward L. Chaney, "Segmentation by Posterior Optimization of M-reps: Strategy and Results," 2007.

(287)   Rohit R Saboo, Christina Villarruel, Edward M Chaney, Julian G Rosenman, and Stephen M Pizer, "Segmentation of Tubular Objects by Posterior Optimization of M-reps," 2007.

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"A Hybrid Display System for Computer Processed Scintigrams", co-author with S. Wilensky, G.L. Brownell, R. Humes, H. Littleboy. *Abstracts of Second International Conference on Medical Physics.* Boston, August 1969.

"A Computer System for Radioisotope Scanning", co-author with S. Wilensky G.L. Brownell. *Proc. Twelfth International Congress of Radiology.* Tokyo, October 1969.

"Computer Processing and Display of Radioisotope Scans", *Abstracts of Sixth Annual Symposium on Biomathematics and Computer Science in Life Sciences.* Houston, March 1968.

"Interfacing of Scanner and Computer", co-author with S. Wilensky, A.B. Ashare, S. Aronow, H. Littleboy, L. Boynton, G.L. Brownell. *Abstracts of Sixth Annual Symposium on Biomathematics and Computer Science in Life Sciences*. Houston, March 1968.

"Fourier Analysis of Tracer Data", co-author with A.B. Ashare & G.L. Brownell. *Abstracts of Sixth Annual Symposium on Biomathematics and Computer Science in Life Sciences*. Houston, March 1968.

"Processing and Display of Radioisotope Data", co-author with S. Wilensky, A.B. Ashare, C.A. Burnham, S. Aronow, G.L. Brownell. *Journal of Nuclear Medicine*, and talk given by Dr. Wilensky at 15th Annual Meeting of Society of Nuclear Medicine. Saint Louis, June 1968.

"Transform Analysis of Compartmental Models", co-author with A.B. Ashare G.L. Brownell. *Journal of Nuclear Medicine* 9(6), p. 365. 1968.

WRITTEN SUMMARIES OF CONFERENCE SESSIONS CHAIRED

Session on Systems, *Traitement Des Informations en Imagerie Medicale*
(Information Processing in Medical Imaging), R. DiPaola and E. Kahn, eds., Editions INSERM, Paris, 1980, pp. 499, 512, 533-534, 546, 558.

IAEA Image Processing Intercomparison (a discussion) *Information Processing in Medical Imaging*, (Proc. IPMI5, Nashville, Tennessee, June 1977), p. 279, ORNL/BCTIC-2, U.S. Department of Commerce, Springfield, VA, 1978.

Session on Command Languages (a discussion), *Information Processing in Medical Imaging*, (Proc. IPMI5, Nashville, Tennessee, June 1977), p. 468, ORNL/BCTIC-2, U.S. Department of Commerce, Springfield, VA, 1978.

Session on Systems, p. 243, *Information Processing in Scintigraphy*, Orsay, France, July 1975, Commissariat a l'Energie Atomique, Dept. de Biologie, Service Hospitalier Frederic Joliot, Orsay, France, March 1976.

Session V. Speed Improvement in Image Processing, pp. 189-190, *Information Processing in Scintigraphy*. Doc. CONF-730687, U.S.E.R.D.A. Technical Information Center, Oak Ridge, 1973.

INVITED PRESENTATIONS (very partial list, unpublished)

Report of the Working Group on Digital Mammography: Computer-Aided Diagnosis and 3D Image Analysis and Display, October 8-9, 1998 Cambridge, MA. Sponsored by the US. Public Health Service's Office of Women's Health and National Cancer Institute.

Johns Hopkins University, Dept. of Computer Science, Distinguished Speaker talk, 1998.

Brigham & Womens Hospital, Dept. of Radiology, Grand Rounds, 1998.

Georgia Tech, GVU Center, Distinguished Speaker talk

Yale University, 2 talks

"Imaging Science and Technology of the Future", Radiology Centennial Commemorative Conference, May 4-5, 1995, National Library of Medicine Auditorium, National Institutes of Health, Bethesda, MD. Sponsors: Food and Drug Administration, National Cancer Institute, Society of Breast Imaging, Society of Chairmen of Academic Radiology Departments.

"3D Image-Guided Surgery via Registration of Intraoperative and Preoperative Images", S.M. Pizer, E. Bullitt, A. Liu. Keynote speaker at International State of the Art Course, Conference and Workshop, *Interactive Technology in Surgery and Medicine*, March 9-11, 1995, Bodington Hall, Leeds, UK. Co-sponsored by: Royal College of Physicians, Royal College of Surgeons of England, British Computer Society, Virtual Reality Society, CGS, SMIT.

"If the Object's Your Objective", Banquet talk at SPIE Mathematical Methods in Medical Imaging II, San Diego, California, July 1993.

"Human Perception and Computer Image Analysis of Objects in Images", S. M. Pizer, C. A. Burbeck, D. S. Fritch. *Proc. Conference of the Australia Pattern Recognition Society (DICTA)*, 1993.

"A Vision of Vision: Integrations Between Human and Computer Vision", Dedication of Utrecht Biophysics Institiute, Utrecht, The Netherlands, October 23, 1990.

Multiscale, Geometric Image Descriptions for Interactive Object Definition", Symposium of the German Association for Pattern Recognition, DAGM - Symposium Mustererkennung '89, October 1989.

"Three-Dimensional Display of Medical and Other Volume Images", Half-day tutorial, SPIE/EPS/Europtica International Congress on Optical Science and Engineering, April 1989.

"The Radiology Display Station as a Computer/Human Interface", Frontiers of Radiology, Dedication of Radiological Sciences Building, Univ. of Arizona, February 1988.

"Display Approaches for Nuclear Medicine," Fourth Northeast Regional Scientific Meeting: Society of Nuclear Medicine, November 1988.

"Medical Image Workstations: State of Science and Technology," co-author with D.V. Beard.   ACR Workshop on Visualization Science in Engineering and Computing, April 1988.

Stephen M. Pizer
Curriculum Vitae

"Image Description via Annihilation of Essential Structures," Fourth Copenhagen Workshop in Computational Vision Multi-Resolution Representation of Images, Copenhagen, November 23-26, 1987.

"Effective Presentation of Medical Images," AAAS Annual Meeting, Chicago, February 1987.

"Three-dimensional Image Display Presentation", Problems in Functional Image Analysis: Workshop I, November l984.

"Varifocal Mirror Display Method", First Annual Meeting, Society of Magnetic Resonance in Medicine, August 1982.

"Varifocal Mirror Display of Organ Surfaces from CT Scans", Institute for Graphics Communication, Third Annual Conference on 3-D Display Techniques, Carmel, May 1982.

"Perception, Presentation and Contrast Control in Nuclear Medicine Image Displays", Symposium on the Principles of Perception, 1981 Conjoint Winter Conference, Society of Nuclear Medicine, New Orleans, February 1981.

"The State of the Art of Digital Image Display Technology for Nuclear Medicine", Symposium on Image Production and Perception, Society of Nuclear Medicine Instrumentation Council, Arlington, Va., May 1980.

"Interactive Display Processing: Directions and Needs for Nuclear Medicine Tasks", Society of Nuclear Medicine Computer Council Workshop on Computers in Nuclear Medicine, IEEE 79 Nuclear Science Symposium, San Francisco, October 1979.

"Intensity Representation and Mapping for Medical Displays", Conference on Visual Psychophysics and Medical Imaging, New Haven, September 1979.

"Methods and Limitations of Edge Detection for Noisy Images", co-author with Lee R. Nackman, Society of Nuclear Medicine Annual Meeting, Atlanta, June 1979.

"Heated Object Spectrum Color Display", co-author with F.H. Chan, poster paper, World Federation of Nuclear Medicine and Biology, Washington, D.C., September 1978.

"Digital Image Display", in session entitled `Is there a computer in your future?',

Federation of American Societies in Experimental Biology, Atlantic City, New Jersey, April 10, 1978.

"Noise Character in Processed Scintigrams", in session on Noise and Its Relation to Image Quality, 23rd Annual Meeting of the Society of Nuclear Medicine, Dallas, June 1976.

"Usefulness of Computer Processing of Scintigrams", Hospital Physicists Association Annual Conference, Aberdeen, Scotland, 10 September 1973.

DISSERTATIONS SUPERVISED AS PRINCIPAL OR CO-PRINCIPAL ADVISOR

Completed	**Progress made, but not completed**
PhDs	**MS, some PhD research**
David McAllister, 1972	
Truman Jolley, 1972	
Lee Nackman, 1982	
Francis Chan, BME, 1982	
George Konstantinow BME, 1983	
John Zimmerman, 1985	Sandra Bloomberg
J. Michael Fitzpatrick	
Larry Lifshitz, 1987	
Cheng-Hong Hsieh, 1989	
Marc Levoy 1989	
John Gauch, 1989	William Oliver
Wei-Jyh Lin, 1991	
R. Eric Fredericksen, 1993	
Ross Whitaker, 1993	
Johnny Rhoades, 1993	
David Banks, 1993	
Daniel Fritsch, BME, 1993	
David Eberly, 1994	
Derek Puff BME, 1995	
Bryan Morse, 1995	Eliza Graves
Robert Cromartie, 1995	
Terry Yoo, 1996	Chenwei Gu
Victoria Interrante, 1996	
Alan Liu, 1998	Kah-Chan Low
David Chen, 1998	
Jacob Furst, 1999	
George Stetten, BME 1999	
Bradley Hemminger, 2001	Leslie Levine Willis, stopped at MS, 2002
Robert Katz, 2002	
Peter Brown, 2002 (chairman and assistant supervisor)	Zhi (James) Chen
Paul Yushkevich, 2003	
Gregory Clary, 2003	
Jessica Crouch, 2003	
Erik Dam (co-supervised), 2003	
Andrew Thall, 2004	
Yonatan Fridman, 2004	
Tom Fletcher, 2004	
Qiong Han, 2008	
Joshua Stough, 2008	
Ja Yeon Jeong, 2008	
Robert Broadhurst, 2008	
Joshua Levy, 2008	

Derek Merck, 2009
Xiaoxiao Liu, 2010
Rohit Saboo, 2011
Ilknur Kaynar-Kabul, 2012   Xiaojie Zhao, MS 2012
Chen-Rui Chou, 2013
C. Brandon Frederick, BME, 2013   Hina Shah, MS
Jörn Schulz, U of Tromsø, 2013
Juan Carlos Prieto, INSA-Lyon, 2014

In progress

Jared Vicory

Qingyu Zhao

True Price
Junpyo Hong
Mahmoud Mostapha
Rui Wang