CHANDRA KAMBHAMETTU

Overview: Dr. Chandra Kambhamettu is a Full Professor of Computer Science department at the University of Delaware, where he directs the Video/Image Modeling and Synthesis (VIMS) group. His research interests include computer vision, biomedical image analysis, big data visual analytics, remote sensing, bioinformatics and computer graphics. He is particularly interested in medical and other industrial applications of big data computer vision and graphics. Several of Dr. Kambhamettu's works are focused on problems that highly impact earth life, such as arctic sea ice observations with application towards mammal habitat quantification and climate change, hurricane image studies, and others. Dr. Kambhamettu has supervised twelve PhD students, several Masters and undergraduate theses and projects in these areas. Prior to joining UD, he was a research scientist at NASA-Goddard, where he received the "1995 Excellence in Research Award." He received NSF CAREER award in 2000. Dr. Kambhamettu was associate editor for the journals, IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Pattern Recognition Letters, Pattern recognition, and special issue guest editor of Image and Vision Computing journal. He organized IEEE workshops on Big Data Computer Vision, Mathematical Methods on Biomedical Image Analysis, Articulated and Nonrigid Motion analysis and Undergraduate education in computer vision. Commercial successes of Dr. Kambhamettu's research include licensing his lab's motion tracking software to Canfield inc., biomedical (EdgeTrak, FuzzyMatte) and bioinformatics (Gel and Microarray segmentation) related software, and data (Vadana) use in numerous research labs, also successful funding of SBIR Phase-1, and previous launch of a multimedia company.

EDUCATION

University of S. Florida	Computer Science and Engg.	Ph.D.	1991-1994
University of S. Florida	Computer Science and Engg.	M.S.	1989-1991
Osmania University	Computer Science and Engg.	B.S.	1985-1989

PROFESSIONAL APPOINTMENTS

2010 - present	Professor, Dept. of Computer Science, University of Delaware
2010 - present	Joint faculty, Dept. of Biomedical Engineering, University of Delaware
2005 - present	Joint faculty, Dept. of Cognitive Science, University of Delaware
2003 - 2010	Associate Professor, Dept. of Computer Science, University of Delaware
1997 - present	Director, Video/Image Modeling and Synthesis (VIMS) Lab., University of Delaware
1997 - 2003	Asst. Professor, Dept. of Computer Science, University of Delaware
1996 - 1997	Visiting Faculty, Dept. of Computer Science, University of Delaware
1994 - 1996	Research Scientist, Lab. for Atmospheres; NASA-Goddard

HONORS AND AWARDS

2003 Nominated for Univ. of Delaware Faculty Excellence in Teaching
2000 NSF CAREER Award
1995 Excellence in Research Award at NASA-Goddard
1994 Excellent Graduate student Award (by Tau Beta Pi, South Florida Chapter)

PROFESSIONAL ACTIVITIES

Associate Editor: Pattern Recognition Letters (2011-2012)
Associate Editor: IEEE Transactions on Pattern Analysis and Machine Intelligence (2004-2008)
Associate Editor: Pattern Recognition (1999-2006)
Co-Editor: Special Issue on Articulated and Nonrigid Motion, Image and Vision Computing Journal (2006)
Panel(s) Member and Reviewer: NIH, NSF (1998-present)
Book Proposal Reviewer on Bioinformatics: Theory, Methods, and Applications for John Wiley & Sons. (2008)

Conference/Workshop Chair:
Computer Vision Chair: International Symposium on Visual Computing (2014)
General Chair: IEEE Workshop on Big Data Computer Vision (2013)
Program Chair: IEEE Workshop on Mathematical Methods on Biomedical Image Analysis (2009)
Program Committee (equivalent to Area Chair): 11th International Conference on Medical Image Computing and Computer Assisted Intervention MICCAI (2008)
Area Chair: Asian Conference on Computer Vision (2006)
Program Chair: IEEE Workshop on Articulated and Nonrigid Motion (2004)
Program Co-Chair: 2'nd IEEE CS Workshop on Undergrad. Ed. & Image Computation (2000)

Program Committee:
SPIE Radar Sensor Technology XVIII (2014)
IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2013)
The Third IEEE International Workshop on Mobile Vision (Held in conjunction with CVPR2013)
Imaging New Modalities in conjunction with German Conference on Pattern Recognition, GCPR 2013
SPIE Radar Sensor Technology XVII (2013)
IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2012)
International Workshop on Depth Image Analysis (Held in conjunction with ICPR2012)
6'th International Conference on Functional Imaging and Modeling of the Heart (FIMH 2011)
10th International Conference on Pattern Recognition (ICPR 2010)
5th International Symposium on Visual Computing (2009)
IEEE Workshop on Applications of Computer Vision (WACV) (2009)
2nd International Conference on Computer Vision Theory and Applications (2007)
IEEE conference on Computer Vision and Pattern Recognition (2007)
European Conference on Computer Vision (2006)
IEEE conference on Computer Vision and Pattern Recognition (2006)
IEEE International Conference on Computer Vision (2005)
IEEE conference on Computer Vision and Pattern Recognition (2005)
International Conference on Bioinformatics and its Applications (2004)
IEEE conference on Computer Vision and Pattern Recognition (2000)
IEEE Workshop on Human Modeling, Analysis and Synthesis (2000)
IEEE International Symposium on Computer Vision (1995)
Others:

Session Chair: International Symposium on Visual Computing (2013)
SPIE Radar Sensor Technology XVII (2013)
Session Chair: 11th International Conference on Pattern Recognition (ICPR 2012)
Session Chair: IEEE Conference on Computer Vision and Pattern Recognition (2008)
Panelist, Multimodal Information Retrieval and Applications workshop at IJCAI (2006)
Session Chair: Asian Conference on Computer Vision (2006)
Session Chair: 2'nd IEEE CS Workshop on Undergrad. Ed. & Image Computation (2000)
Publications Chair: IEEE Workshop on Human Modeling, Analysis and Synthesis, (2000)
Publications Chair: IEEE Conference on Computer Vision and Pattern Recognition (1998)
Session Chair: IEEE Workshop on Biomedical Image Analysis (1994)

GRANTS (with UD Portion of funding)

ARL grant: Innovative Research in Augmented Reality. 1/1/2014 - 12/31/2017, $153,341 (3 years)

NSF CDI-Type I: Collaborative Research: A Computational Thinking Approach to Mapping Critical Marine Mammal Habitat Through Readily-Deployable Video Systems. 9/1/2011 - 8/31/2014 $625K Collaborating Institutes: U of Alaska - Fairbanks, U of Virginia.

Army grant: Center for Detection of Obscured Targets. 5/1/2011 - 4/30/2016, $3M Collaborating Institutes: Delaware State University and Penn. State University.

NIC grant: High-resolution sea ice drift and detection of discontinuities. 1/1/2012 - 12/31/2012 $65K.

US Poultry grant: Development Of The Method For Early Sex Sorting in Poultry. 6/1/2012 - 5/21/2013 $55k.

NSF grant: Collaborative Research: PetaApps: Enabling Multiscale Modeling of Turbulent Clouds on Petascale Computers. September 2009 - August 2013, $1M.

INBRE-2 (NIH, from DBI): Interactive Computer-aided Diagnosis Tools for Ground-Glass Opacity Lung Tumors. June 2009 - May 2010, $120K.

Dept. of Homeland Security grant: DHS Center of Excellence: Maritime Domain Awareness, January 2009 - June 2010, $80K. Collaborating Institutes: University of Hawaii, University of Washington and University of Alaska.

NSF grant: 3D Stereo Imaging of Sea Ice from Ships. PI: Chandra Kambhamettu, October 2007 - September 2010, $220K.

NSF grant: Collaborative Research: Detailed investigation of the dynamic component of sea ice mass balance. PI: Chandra Kambhamettu, June 2006 - Sept 2010, $1.4M Collaborating Institutes: Department of Army Cold Regions Research and Engineering Laboratory and University of Alaska Fairbanks.

NASA grant: Massively Parallel Imagery Assimilation Using the 3D Multiscale Multicomponent Modeling Framework (MMMF), Investigators: K. Palaniappan, C. Kambhamettu and W.-K. Tao October 2007 - September 2008, $300K Collaborating Institutes: U. of Missouri-Columbia, NASA-GSFC.

Delaware Sea grant: Video-based bathymetric determination for rip current studies. Investigators: James T. Kirby, Chandra Kambhamettu and Jamie MacMahan. February 2007 - January 2009, $140K.

INBRE PhaseII (NIH, from DBI): 3D Image Analysis algorithms for Automatic computation of ground-glass opacity (GGO) of lung tumors. June 2006 - May 2009, $244K.

NIH Grant: 4D Tongue Modeling. Collaborating Institutes: University of Maryland Dental School, Johns Hopkins Univ. June 2001 - May 2006, $1.4M

ONR Grant: Stochastic Analysis of Satellite-Derived Arctic Sea-Ice Information. February 2003 - January 2005, $76K.

NSF SBIR Phase1: VisMartTM: A Novel Computer Vision based Solution for Intelligent Human Computer Interface, 2002, $100K.

NSF CAREER Grant: Methods for Nonrigid Motion Analysis. June 2000 - May 2004, $273K.

UDel Research Foundation Grant: Analysis of Tongue Contours from Ultrasound Image Sequences for Speech Disorders. June 2000 - May 2001, $30K.

NSF Grant: Nonrigid Motion and Structure Recovery from 2D Views. PI: Dr. Dmitry Goldgof, University of South Florida. June 1997 - May 2000, $107K.

NIH Grant: Edge and Velocity estimation of Ultrasound tongue images. Collaborating Institute: University of Maryland Dental School. June 1997 - May 2001, $180K.

NSF Infrastructure grant: Parallel and Distributed Computing: Systems and Application Development Infrastructure. University of Delaware. January 1997 - August 2002, $900K.

REFEREED PUBLICATIONS

JOURNALS

Yaw Adu-Gyamfi, Titus Tienaah, Nii Attoh-Okine, Chandra Kambhamettu, "A Functional Evaluation of Pavement Condition using a Complete Vision System", Accepted, Journal of Transportation Engineering.

Rohith MV, Gowri Somanath, Debra Norris, Jennifer Gutierrez, Chandra Kambhamettu, "A Camera flash based projector system for true scale metric reconstruction", ACM Journal on Computing and Cultural Heritage, Volume 6 Issue 1, March 2013.

Gayathri Mahalingam and Chandra Kambhamettu, "Face verification of age separated images under the influence of internal and external factors", Image and Vision Computing. Volume 30, Issue 12, Pages 1052-1061, Dec. 2012.

Yuanjie Zheng, Stephen Lin, Sing Bing Kang, Rui Xiao, James C. Gee, and Chandra Kambhamettu, "Single-image vignetting correction from gradient distribution symmetries", IEEE Trans. on Pattern Analysis and Machine Intelligence, Oct. 2012.

Rohith MV, Joshua Jones, Hajo Eicken, Chandra Kambhamettu, "Automatic vessel tracking and event detection in radar images", IEEE Transactions on Geoscience and Remote Sensing, Nov. 2012.

Rohith MV, Joshua Jones, Hajo Eicken and Chandra Kambhamettu "Extracting quantitative information on coastal ice dynamics and ice hazard events from marine radar digital imagery", IEEE Transactions on Geoscience and Remote Sensing, Nov. 2012.

Mani Thomas, Chandra Kambhamettu and Cathleen A. Geiger, "Motion Tracking of Discontinuous Sea Ice", IEEE Transactions on Geoscience and Remote Sensing, Vol.49, No.12, December 2011.

L.-P. Wang, O. Ayala, H. Parishani, W. W. Grabowski, A. A. Wyszogrodzki, Z. Piotrowski, G. R. Gao, C. Kambhamettu, X. Li, L. Rossi, D. Orozco and C. Torres, 2011, "Towards an integrated multiscale simulation of turbulent clouds on PetaScale computers", J. Phys.: Conf. Ser. 318, 072021. doi:10.1088/1742-6596/318/7/072021.

Hajo Eicken, Joshua Jones, Rohith MV, Chandra Kambhamettu, F. Meyer, A. R. Mahoney, and M. L. Druckenmiller (2011), "Environmental security in Arctic ice-covered seas: From strategy to tactics of hazard identification and emergency response", Marine Technology Society Journal, 45(3), 37-48, 2011.

Qi Li and Chandra Kambhamettu, "Contour Extraction of Drosophila Embryos", IEEE/ACM Transactions on Computational Biology and Bioinformatics, Vol.8, No.6, November/December 2011.

Yuanjie Zheng, Stephen Lin, Chandra Kambhamettu, Jingyi Yu, Sing Bing Kang, "Single-Image Vignetting Correction", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2009.

Thitwan Srinark and Chandra Kambhamettu, "An image analysis suite for spot detection and spot matching in two-dimensional electrophoresis gels", *Electrophoresis*, Vol. 29, No. 3, pages 706-715, February 2008, (Impact Factor@2006 = 4.106).

Shubhra Misra, James Kirby, Maurizio Brocchini, Fabrice Veron, Mani Thomas, and Chandra kambhamettu, "The mean and turbulent flow structure of a weak hydraulic jump", *Physics of Fluids*, Vol. 20, Issue 3, 2008.

J. Hutchings, C. Geiger, J. Richter-Menge, M. Doble, R. Forsberg, K. Giles, C. Haas, S. Hendricks, C. Kambhamettu, S. Laxon, T. Martin, M. Pruis, M. Thomas, P. Wadhams, H. J. Zwally, "Role of Ice Dynamics in the Sea Ice Mass Balance", *EOS*, 89, 50, 515-516, 2008.

Q. Li, J. Ye, and C. Kambhamettu, "Interest Point Detection Using Imbalance Oriented Selection", *Pattern Recognition*, Vol. 41, No. 2, Pages 672-688, 2008.

Qi Li, Jieping Ye, Min Li, and Chandra Kambhamettu, "Adaptive appearance based face recognition", *International Journal on Artificial Tools (IJAIT)*, Vol. 17, No. 1, Pages 175-193, 2008.

Qi Li, Chandra Kambhamettu and Jieping Ye. "Identity Representability of Facial Expressions: An Evaluation Using Feature Pixel Distributions". *Neurocomputing*, Vol. 71, No.10-12, Pages 1902-1912, 2008.

Thomas, M., C. A. Geiger and C. Kambhamettu. "High resolution (400m) Motion Characterization of Sea Ice using ERS-1 SAR Imagery", *Cold Regions Science and Technology*, 52, 207-223, 2008.

Wei Zhou and Chandra Kambhamettu, "A Unified Framework For Scene Illuminant Estimation", "*Image and Vision Computing* (IVC)", 26(3): 415-429 (2008).

Maureen Stone, Gregory Stock, Kevin Bunin, Kausum Kumar, Melissa Epstein, Chandra Kambhamettu, Min Li, Vijay Parthasarathy and Jerry Prince "Comparison of speech production in upright and supine position", *Journal of the Acoustical Society of America*, pp. 532-541, vol. 122, no. 1, July 2007.

Min Li, Chandra Kambhamettu and Maureen Stone, "Spline-based Motion analysis for 3D Surfaces Using Nonrigid Shape Properties", "*Image and Vision Computing* (IVC)", pp. 250-261, Vol. 25, Issue 3, 2006.

Thitwan Srinark and Chandra Kambhamettu, "A Framework for Multiple-Snake and Its Applications", Pattern Recognition (PR), Vol 39, pages 1555-1565, 2006.

Misra, S.K., M. Thomas, C. Kambhamettu, J.T. Kirby, F. Veron and M. Brocchini, "Estimation of complex air-water interfaces from PIV images", *Experiments in Fluids*, 40, 764-775, May 2006.

Qi Li and Jieping Ye and Chandra Kambhamettu. "Spatial interest pixel (SIPs): Useful low-level features of visual media data", *Multimedia Tools and Applications*, pp. 89-108, Volume 30, Number 1, July 2006.

M. Thomas, S. K. Misra, C. Kambhamettu, and J. T. Kirby, "A robust phase-correlation based motion estimation algorithm for PIV T, Measurement Science and Technology", 16(3) 865-877, 2005

Min Li, Chandra Kambhamettu and Maureen Stone, "Automatic Contour Tracking in Ultrasound Images", *International Journal of Clinical Linguistics and Phonetics.*, 19 (6-7): 545-554, 2005.

Min Li, Chandra Kambhamettu and Maureen Stone, "Tongue motion averaging from contour sequences", *International Journal of Clinical Linguistics and Phonetics.*, 19 (6-7): 515-528, 2005.

Thitwan Srinark and Chandra Kambhamettu, "A Microarray Image Analysis System Based on Multiple-Snake", Journal of Biological Systems Special Issue. The World Scientific Publishing. Vol. 12, No. 4, pages 202-209, December 2004.

Pavel Laskov and Chandra Kambhamettu, "Curvature-based Algorithms for Non-rigid Motion and Correspondence Estimation", *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI)", Vol. 25, No. 11, pp. 1349-1354, Nov. 2003.

Ye Zhang and Chandra Kambhamettu, "On Three Dimensional Scene Flow and Structure Recovery from Multiview Image Sequences", "Special Issue of *IEEE Transactions on Systems, Man, and Cybernetics on 3D Image Analysis and Modeling* (SMC)", Vol. 33, No. 4, pp. 592-606, August 2003.

Yusuf Akgul and Chandra Kambhamettu, "A Coarse-to-Fine Deformable Contour Optimization Framework", *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI)", Vol. 25, No. 2, pp. 174–196, Feb. 2003.

Chandra Kambhamettu, Dmitry Goldgof, Matthew He, and Pavel Laskov, "3D Nonrigid Motion Analysis Under Small Deformations", "*Image and Vision Computing* (IVC)", Vol. 21, No. 3, pp. 229-245, March 2003. (12'th in the 25 most downloaded articles of IVC: January - December 2003)

Ye Zhang and Chandra Kambhamettu, "3D Head Tracking Under Partial Occlusion", "*Pattern Recognition* (PR)", vol. 35, no. 7, pp. 1545-1557, 2002.

Lin Zhou, Chandra Kambhamettu, Dmitry Goldgof, K. Palaniappan and A. F. Hasle r, "Tracking Nonrigid Motion and Structure from 2D Satellite Cloud Images without Correspondences", "*IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI)", vol. 23, no. 11, pp. 1330-1336, Nov. 2001.

Lin Zhou and Chandra Kambhamettu, "Extending Superquadrics with Exponent Functions: Modeling and Reconstruction", *Graphical Model and Image Processing* (GMIP), January 2001, vol. 63, pp. 1-20 (available online at http://www.idealibrary.com).

Yusuf Akgul, Chandra Kambhamettu, and Maureen Stone, "Automatic Extraction and Tracking of The Tongue Contours", *IEEE Transactions on Medical Imaging* (TMI), pp. 1035-1045, Vol 18, No. 10, Oct. 1999.

A. Frederick Hasler, K. Palaniappan, Chandra Kambhamettu, Peter Black and Eri c Uhlhorn, "High Resolution Wind Fields within the Inner-Core and Eye of a Mature Tropical Cyclone using a Long Series of GOES One-Minute Images and a Massively Parallel Computer", *Bulletin of the American, Meteorological Society* (BAMS), vol. 79, no. 11, pp. 2483-2496, November, 1998.

Shin-yee Lu and Chandra Kambhamettu, "3D Vision of Dynamic Objects", *Handbook of Pattern Recognition and Computer vision* (edited by C.H. Chen, L. F. Pau and P.S.P. Wang), World Scientific Publishing Company, NJ/Singapore, pp. 425-454, 1997.

Matthew He and Chandra Kambhamettu, "Approximation to Small Deformation of Surfaces and Its Application", *Approximation Theory IX*, pp. 105-112, Nashville, TN, Jan 3-6, 1998.

Chandra Kambhamettu and Dmitry B. Goldgof, "Curvature-based Approach to Point Correspondence Recovery in Conformal Nonrigid Motion", *Computer Vision, Graphics and Image Processing: Image Understanding*, Vol. 60, No. 1, pp. 26-43, July 1994. *also re-printed in* Deformable Models in Medical Image Analysis by Ajit Singh, Dmitry Goldgof, and Demetri Terzopoulos, pp. 326-343, 1998.

Sanjoy K. Mishra, Dmitry B. Goldgof and Chandra Kambhamettu, "Estimating Nonrigid Motion from Point and Line Correspondences", *Pattern Recognition Letters* (PRL), Vol 15, No 6, pp. 559-566, 1994.

Sanjoy K. Mishra, Chandra Kambhamettu, Dmitry B. Goldgof and Thomas S. Huang, "Curvature-Based Nonrigid Motion Analysis from 3D Point Correspondences", *International Journal of Imaging Systems and Technology*, Vol 4, pp. 214-225, 1993.

Matthew He, Dmitry B. Goldgof and Chandra Kambhamettu, "Variation of Gaussian Curvature Under Conformal Mapping and Its Application", *Computers and Mathematics with Applications*, Vol 26, No 1, pp. 63-74, 1993.

BOOK CHAPTERS

Q. Li, J. Ye, and C. Kambhamettu, "Interest Pixel Mining", *Encyclopedia of Data Warehousing and Mining (Second Edition)*, Vol 2, 2008.

Geiger, C. A., M. V. Thomas, and C. Kambhamettu, "SAR motion products: Tools for monitoring changes in sea ice mass balance and thickness distribution", in book Arctic Sea Ice Thickness, from the *International Workshop on Arctic Sea Ice Thickness (IWASIT)*, 64-73, Elsevier Publishing, 2008.

Stone, M. and M.A. Epstein, C.Kambhamettu, M. Li, "Predicting 3D tongue shapes from midsagittal contours." In J. Harrington and M. Tabain (eds.), Speech Production: Models, Phonetic Processes, and Techniques, Psychology Press. Chapter 18, 315-330, 2005.

Lin Zhou and Chandra Kambhamettu and Dmitry B. Goldgof, "Nonrigid Motion and Structure Analysis from 2D with Application towards 3D Cloud Tracking", *Advances in Image Processing and Understanding, A Festschrift for Thomas Huang*, World Scientific, Series in Machine Perception and Artificial Intelligence - Vol. 52, pp. 57–87, 2002.

Chandra Kambhamettu, Dmitry B. Goldgof, Demetri Terzopoulos and Thomas S. Huang, "Nonrigid Motion Analysis", *Handbook of PRIP: Computer vision* (edited by Tzay Young), Vol 2, pp. 405-430, Academic Press, San Diego, CA 1994. *also re-printed in* Deformable Models in Medical Image Analysis by Ajit Singh, Dmitry Goldgof, and Demetri Terzopoulos, pp. 270-284, 1998.

Highly Refereed Conference Publications

Xiaolong Wang, Vincent Ly, Guoyu Lu, Chandra Kambhamettu. "Could We Minimize the Influence Brought by Gender and Race Difference in Age Estimation? In 12th IEEE International Conference on Machine Learning and Applications on Machine Learning with Multimedia Data", ICMLA, 2013. (oral)

Gowri Somanath, Scott Cohen, Brian Price, Chandra Kambhamettu. Stereo+Kinect for High Resolution Stereo Correspondences. In Third Joint 3DIM/3DPVT (3DV) Conference, 2013. (oral)

Rohith MV, Scott Sorensen, Stephen Rhein, Chandra Kambhamettu. Shape From Stereo and Shading by Gradient Constrained Interpolation. International Conference on Image Processing, ICIP 2013.

Rohith MV and Chandra Kambhamettu, Augmenting monocular motion estimation using intermittent 3D models from depth sensors, International Conference on Pattern Recognition, 2012 (oral).

Rohith MV and Chandra Kambhamettu, Application of heterogeneous motion models towards structure recovery from motion, *Eleventh Asian Conference on Computer Vision (ACCV)*, 2012. (oral)

Gayathri Mahalingam and Chandra Kambhamettu, Face Recognition in Videos - A Graph Based Modified Kernel Discriminant Analysis, *Eleventh Asian Conference on Computer Vision (ACCV)*, 2012.

Gowri Somanath and Chandra Kambhamettu, Arrangement based image representation for scene recognition, International Conference on Pattern Recognition (ICPR) 2012.

Gowri Somanath and Chandra Kambhamettu, Can faces verify blood-relations?, IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS) 2012.

H. Shatkay, R. Narayanaswamy, S. Nagaral, N. Harrington, R. Mv, G. Somanath, R. Tarpine, K. Schutter, T. Johnstone, D. Blostein, S. Istrail and C. Kambhamettu. OCR-based Image Features for Biomedical Image and Article Classification: Identifying Documents relevant to Cis-Regulatory Elements. Proc. of the ACM Conf. on Bioinformatics and Computional Biology (BCB). October, 2012. another version at *AAAI-2012 Fall Symposium on Information Retrieval and Knowledge Discovery in Biomedical Text*(oral)

G. Mahalingam and C. Kambhamettu, Can Discriminative Cues Aid Face Recognition Across Age?, *The 9th IEEE Conference on Automatic Face and Gesture Recognition*, 2011.

Rohith MV, Hossein Parishani, Orlando Ayala, Lian-Ping Wang and Chandra Kambhamettu "Collision-Explorer: A tool for visualizing droplet collisions in a turbulent", *6th International Symposium on Visual Computing (ISVC)*, 2011.(oral)

Gayathri Mahalingam and Chandra Kambhamettu, "Age Invariant Face Recognition Using Graph Matching", *Biometrics: Theory, Applications and Systems (BTAS)*, 2010.(oral)

Gayathri Mahalingam and Chandra Kambhamettu, "Video based Face Recognition Using Graph Matching", *Tenth Asian Conference on Computer Vision (ACCV)*, 2010.

Rohith MV and Chandra Kambhamettu, "Learning image structures for optimizing disparity estimation", *Tenth Asian Conference on Computer Vision (ACCV)*, 2010.

Gowri Somanath and Chandra Kambhamettu, "Abstraction and Generalization of 3D structure for recognition in large intra-class variation", *Asian Conference on Computer Vision (ACCV)*, 2010.

Rohith MV, Gowri Somanath, Chandra Kambhamettu, C. Geiger and Dave Finnegan, "Modified region growing for stereo of slant and textureless surfaces", *6th International Symposium on Visual Computing (ISVC)*, 2010.(oral)

Gowri Somanath, Rohith MV and Chandra Kambhamettu, "Single camera stereo system using prism and mirrors", *International Symposium on Visual Computing (ISVC)*, 2010.(oral)

Gayathri Mahalingam and Chandra Kambhamettu, "Face Recognition in Videos Using Adaptive Graph Appearance Models", *International Symposium on Visual Computing (ISVC)*, 2010.(oral)

Qi Li and Chandra Kambhamettu, "Contour Extraction of Drosophila Embryos", *Proceedings of the 21st Int. Conf. on Tools with Artificial Intelligence (ICTAI)*, Newark, NJ, November, 2009.(oral)

Yuanjie Zheng and Chandra Kambhamettu, "Learning Based Digital Matting", *The 20th IEEE International Conference on Computer Vision (ICCV)*, Kyoto, Japan, Sep. 29-Oct. 2, 2009.

Gowri Somanath, Rohith MV, Dimitris Metaxas, Chandra Kambhamettu, "D - Clutter: Building object model library from unsupervised segmentation of cluttered scenes", *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2009. (22.1% acceptance rate)

Yuanjie Zheng, Chandra Kambhamettu, Steve Lin, "Single-Image Optical Center Estimation from Vignetting and Tangential Gradient Symmetry", *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2009. (22.1% acceptance rate)

Mani Thomas, Chandra Kambhamettu, Cathleen Geiger, "Vector Field Resampling using Local Streamline", International Conference on Pattern Recognition (ICPR), 2008. (oral presentation)

Rohith MV, Gowri Somanath, Chandra Kambhamettu, Cathleen Geiger, "Towards estimation of dense disparities from stereo images containing large textureless regions", International Conference on Pattern Recognition (ICPR), 2008. (poster presentation)

Yuanjie Zheng, Chandra Kambhamettu, Thomas Bauer, and Karl Steiner, "Estimation of Ground-Glass Opacity Measurement in CT Lung Images", MICCAI, II:238-245, NY, September 2008.

Yuanjie Zheng, Jingyi Yu, S. B. Kang, S. Lin, C. Kambhamettu, "Single-Image Vignetting Correction based on Radial Gradient", *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2008. (oral presentation, 4% acceptance rate)

Yuanjie Zheng, Chandra Kambhamettu, Jingyi Yu, Thomas Bauer and Karl Steiner, "FuzzyMatte: A Computationally Efficient Scheme for Interactive Matting", *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2008. (poster presentation)

Thomas, M., C. Kambhamettu and S. Kumar, "Face Recognition using a Color Subspace LDA approach", *Proceedings of the 20th Int. Conf. on Tools with Artificial Intelligence (ICTAI)*, Dayton, Ohio, November, 2008.

Thomas, M., C. Kambhamettu, C. A. Geiger, J. Hutchings, M. Engram, "Near-real time motion analysis for APLIS 2007: A systems modeling perspective", Proceedings of the 15th ACM International Symposium on Advances in Geographic Information Systems (in cooperation with SIGMETRICS), Seattle, November, 2007. (Acceptance Rate: 29%)

Yuanjie Zheng, Jingyi Yu, Chandra Kambhamettu, Sarah Englander, Mitchell D. Schnall, and Dinggang Shen, "De-enhancing the Dynamic Contrast-Enhanced Breast MRI for Robust Registration", MICCAI, Brisbane, Australia, November 2007. (Acceptance Rate: 199/637=31%)

W. Zhou and C. Kambhamettu, Binocular Stereo Dense Matching in the Presence of Specular Reflections, *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, Vol. 2, pp. 2363-2370, 2006. (264/1131 = 23.3%)

T. Srinark and C. Kambhamettu, "An approach for spot matching in 2-D electrophoresis gels", *International Conference on Image Processing*, 2006. (Acceptance Rate: 18%)

M. Li, C. Kambhamettu and M. Stone, "A Level Set Approach for Shape Recovery of Open Contours", pp. 601-611, Vol. 1, *Asian Conference on Computer Vision*, Hyderabad, India 2006. (Acceptance Rate: 64/500=12%)

Thomas, M., S. K. Misra, C. Kambhamettu and J.T. Kirby, "Dynamic Open Contours Using Particle Swarm Optimization with Application to Fluid Interface Extraction", Proceedings of the Asian Conference on Computer Vision (ACCV), Vol. 1, pp643-652, Hyderabad, January, 2006. (Acceptance Rate: 64/500=12%)

T. Srinark, C. Kambhamettu and M. Stone, "A Hierarchical Method for 3D Rigid Motion Estimation", *Asian Conference on Computer Vision*, pp. 791-800, Vol. 2, Hyderabad, India 2006. (Acceptance Rate: 128/500=25%)

Thomas, M. and C. Kambhamettu, "An approximation to mean-shift via swarm intelligence", Proceedings of the 18^{th} Int. Conf. on Tools with Artificial Intelligence (ICTAI), pp583-590, Arlington, VA, November, 2006. (Acceptance Rate: 60/240=25%)

Qi Li, Jieping Ye, Min Li and Chandra Kambhamettu, "Adaptive Appearance Based Face Recognition", 18th IEEE International Conference on Tools with Artificial Intelligence (ICTAI'06), pp. 677-684, Arlington, VA, November, 2006. (Acceptance Rate: 60/240=25%)

Qi Li and Chandra Kambhamettu, "Identity Representability of Facial Expressions: An Evaluation Using Feature Pixel Distributions", The Fifth International Conference on Machine Learning and Applications (ICMLA'06), pp. 296-301, Dec. 2006, Orlando, Florida. (Acceptance Rate: 22%)

Jieping Ye, Tao Xiong, Qi Li, Ravi Janardan, Jinbo Bi, Vladimir Cherkassky and Chandra Kambhamettu, "Efficient model selection for regularized linear discriminant analysis", The Fifteenth ACM International Conference on Information and Knowledge Management (CIKM 2006), pp. 532-539, Nov. 2006. (Acceptance Rate: 81/537=15%)

Hui Kong, Xuchun Li, Jian-Gang Wang, Eam Khwang Teoh, and Chandra Kambhamettu, "Discriminant low-dimensional subspace analysis for face recognition with small number of training samples", British Machine Vision Conference (BMVC'05), Oxford, UK, September 5-8, 2005. (Acceptance Rate: 53/243=21%)

Hui Kong, Xuchun Li, Jian-Gang Wang, Eam Khwang Teoh, and Chandra Kambhamettu, "Generalized 2D Fisher discriminant analysis", British Machine Vision Conference (BMVC'05), Oxford, UK, September 5-8, 2005. (Acceptance Rate: 53/243=21%)

Wei Zhou and Chandra Kambhamettu, "Estimation of the Size and Location of Multiple Area Light Sources", to appear in *17th international conference on pattern recognition*, pp. 214-217, Vol.3, Cambridge, United Kingdom, August 23-26, 2004. (Acceptance Rate: 625/1781=35%)

Qi Li and Jieping Ye and Chandra Kambhamettu. "Linear Projection Methods in Face Recognition under Unconstrained Illuminations: A Comparative Study", *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, vol. II, pp. 474-481, Washington DC, June 2004. (Acceptance Rate: 206/873=23.6%)

Wei Zhou and Chandra Kambhamettu, "A Unified Framework For Scene Illuminant Estimation", *British Machine Vision Conference*, London, United Kingdom, September 7-9, 2004. (Acceptance Rate: 42/275=15%)

Min Li, Chandra Kambhamettu and Maureen Stone, "A General Framework for 2D Multiframe and 3D Surface-to-Surface Motion Estimation", *British Machine Vision Conference*, London, United Kingdom, September 7-9, 2004. (Acceptance Rate: 56/275=20%)

Wei Zhou and Chandra Kambhamettu, "Separation of Reflection Components by Fourier Decoupling", *Asian Conference on Computer Vision*, January 27-30 2004, Jeju Island, Korea.

Min Li and Chandra Kambhamettu, "Nonrigid point correspondence recovery for planar curves using Fourier decomposition", *Asian Conference on Computer Vision*, January 27-30 2004, Jeju Island, Korea.

Thitwan Srinark and Chandra Kambhamettu, "Multiple Snakes: A Guiding Scheme for Object Segmentation", *Asian Conference on Computer Vision*, January 27-30 2004, Jeju Island, Korea.

Qi Li and Jieping Ye and C. Kambhamettu. "Spatial interest pixel (SIPs): Useful low-level features of visual media data", *IEEE Intl. Conf. on Data Mining (ICDM'03)*, pp 163-170, 2003. (Acceptance Rate: 58/501=11%)

Qi Li, Tao Li, Shenghuo Zhu and Chandra Kambhamettu, "Improving medical/biological data classification performance by wavelet pre-processing", pp 657-660, The 2002 International Conference on Data Mining (ICDM 2002). (Acceptance Rate: 118/369=32%)

Qi Li, Tao Li , Shenghuo Zhu and Chandra Kambhamettu, "How well can wavelet denoising improve the accuracy of computing fundamental matrices?", IEEE Workshop on Motion and Video Computing, pp. 247-252, Dec 5-6, 2002, Orlando, FL USA.

Min Li and Chandra Kambhamettu, "Motion-based Post Processing of Deformable Contours", *ICVGIP 2002*, December 2002, Ahmedabad, India.

Lin Zhou and Chandra Kambhamettu, "Representing and Recognizing Complete Set of Geons Using Extended Superquadrics", *International Conference on Pattern Recognition* (ICPR2002), Quebec City Quebec, Canada, August 11 to August 15, 2002.

Wei Zhou and Chandra Kambhamettu, "Estimation of Illuminant Direction and Intensity of Multiple Light Sources", *European Conference on Computer Vision* (ECCV2002), Vol IV, pp. 206–220, Copenhagen, Denmark, May 27 to June 2, 2002.

Ye Zhang and Chandra Kambhamettu, "Stereo Matching with Segmentation-based Cooperation", *European Conference on Computer Vision* (ECCV2002), Vol II, pp. 556–571, Copenhagen, Denmark, May 27 to June 2, 2002.

Pavel Laskov and Chandra Kambhamettu, "Curvature-Based Algorithms for Non-Rigid Motion and Correspondence Estimation", *Fifth Asian Conference on Computer Vision* (ACCV2002), Vol I, pp. 19–2 6, Melbourne, Australia, January 2002.

Ye Zhang and Chandra Kambhamettu, "On 3D Scene Flow and Structure Estimation", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR2001), Vol. II, pp. 778-785, Kauai Marriott, Hawaii, December 2001.

Thitiwan Srinark and Chandra Kambhamettu, "A Framework for Multiple Snakes", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR2001), V ol II, pp. 202–209, Kauai Marriott, Hawaii, December 2001.

Pavel Laskov and Chandra Kambhamettu, "Comparison of 3D Algorithms for Non-rigid Motion and Correspondence Estimation", *12th British Machine Vision Conference* (BMVC2001), pp. 273–282, Manc hester, UK, September 2001.

Pavel Laskov and Chandra Kambhamettu, "Kernel Method for Linear Operator Variational Problems: Nonlinear Unit Normal Algorithm for Non-Rigid Motion Estimation of 3D Surfaces", *Workshop on Kernel & Subspace Methods for Computer Vision* (ICANN 2001), Vienna. Austria, August 2001.

Pavel Laskov and Chandra Kambhamettu, "Tracking Non-Rigid Objects using Functional Distance Metric", *Indian Conference on Computer Vision, Graphics and Image Processing*
(ICVGIP2000), Bangalore, India, Dec. 20-22, 2000.

Ye Zhang and Chandra Kambhamettu, "Integrated 3D Scene Flow and Structure Recovery from Multi-viewImage Sequences", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR2000), pp. II-674-681, South Carolina, June 2000.

Lin Zhou and Chandra Kambhamettu, "Hierarchical Structure and Nonrigid Motion Recovery from 2D Monocular Views", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR2000), pp. II-752-759, South Carolina, June 2000.

Lin Zhou, Chandra Kambhamettu and Dmitry Goldgof, "Fluid Structure and Motion Analysis from Multi-spectrum 2D Cloud Image Sequences", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR2000), pp. II-744-751, South Carolina, June 2000.

Yusuf Akgul, Chandra Kambhamettu and Maureen Stone, "A Task-Specific Contour Tracker for Ultrasound", *IEEE Workshop on Mathematical Methods in Biomedical Image Analysis* (MMBIA2000), pp. 135-141, South Carolina, June 2000.

Ye Zhang and Chandra Kambhamettu, "Robust 3D Head Tracking Under Partial Occlusion", *4'th International Conference on Face and Gesture Recognition* (FG2000), pp. 176-182, Grenoble, France, March 2000.

Yusuf Akgul and Chandra Kambhamettu, "Recovery and Tracking of Continuous 3D Surfaces from Stereo Data Using A Defor mable Dual-Mesh", *7'th IEEE International Conference on Computer Vision* (ICCV1999), pp. 765-772, Kerkyra, Greece, September 1999.

Yusuf Akgul and Chandra Kambhamettu, "A Scale-Space Based Approach for Deformable Contour Optimization", *2'nd International Conference on Scale-Space Theories in Computer Vision* (SSTC1999), pp. 410-422, Kerkyra, Greece, September 1999.

Yusuf Akgul and Chandra Kambhamettu, "A New Multi-Level Framework for Deformable Contour Optimization", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR1999), Vol. II, pp. 465-470, Fort Collins, CO, June 1999.

Lin Zhou, Chandra Kambhamettu and Dmitry Goldgof, "Extracting Nonrigid Motion and 3D Structure of Hurricanes from Satellite Image Sequences without Correspondences", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR1999), Vol. II, pp. 280-285, Fort Collins, CO, June 1999.

Lin Zhou and Chandra Kambhamettu, "Extending Superquadrics with Exponent Functions: Modeling and Reconstruction", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR1999), Vol. II, pp. 73-78, Fort Collins, CO, June 1999.

Lin Zhou, Chandra Kambhamettu and Dmitry Goldgof, "Structure and Affine Motion Analysis of Satellite Cloud Images", *Indian Conference on Computer Vision, Graphics and Image Processing* (ICVG IP1998), pp. 285-291, New Delhi, India, Dec. 21-23, 1998.

Yusuf Akgul, Chandra Kambhamettu and Maureen Stone, "Analysis of The Tongue Surface Movement Using A Spatiotemporally Coherent Deformable Model" *Fourth IEEE Workshop on Applications of Computer Vision* (WACV1998), pp. 109-114, Princeton, New Jersey, Oct. 9-21, 1998.

Yusuf Akgul, Chandra Kambhamettu and Maureen Stone, "Extraction and Tracking of The Tongue Surface from Ultrasound Image Sequences", *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR1998), pp. 298-303, Santa Barbara, CA, June 23-25 1998.

Yusuf Akgul, Chandra Kambhamettu and Maureen Stone, "Automatic Analysis of Tongue Surface Motion from Ultrasound Images", *IEEE Workshop on Biomedical Image Analysis* (WBIA1998), pp. 126-132, Santa Barbara CA, June 26-27, 1998.

Ram Balasubramanian, Dmitry B. Goldgof and Chandra Kambhamettu, "Structure and Nonrigid Motion Estimation from 2D Views", *International Conference on Image Processing* (ICIP1998), pp. 933-937, Chicago IL, October 4-7, 1998.

S. Kumar, Chandra Kambhamettu, Maha Sallam and D. B. Goldgof, "Model based Estimation of Point correspondences in Nonrigid motion", *International Conference on Image Processing* (ICIP1996), vol. I, pp. 359-362, Lausanne, Switzerland, 1996.

Matthew He and Chandra Kambhamettu "General Small Deformations of Surfaces and its Applications", *Chamonix conference '96, Chamonix - Mont-Blanc, France.*

K. Palaniappan, M. Faisal, Chandra Kambhamettu and A. Frederick Hasler, "Implementation of Automatic Semi-fluid Motion Analysis Algorithm on a Massively Parallel Computer", *10th International Parallel Processing Symposium* (IPPS1996), pp. 864-872, 1996.

Chandra Kambhamettu, K. Palaniappan and A. Frederick Hasler, "Coupled, Multi-resolution Stereo and Motion Analysis", *IEEE International Symposium on Computer Vision* (ISCV1995), pp. 43-48, November, 1995.

K. Palaniappan, Chandra Kambhamettu, A. Frederick Hasler and Dmitry B. Goldgof, "Structure and Semi-fluid Motion Analysis of Stereoscopic Satellite Images for Cloud Tracking", *International Conference on Computer Vision* (ICCV1995), pp. 659-665, 1995.

Chandra Kambhamettu, Dmitry B. Goldgof and Matthew He, "Determination of Motion parameters and Estimation of Point Correspondences in small Nonrigid deformations", *Proceedings of IEEE conference on Computer Vision and Pattern Recognition* (CVPR1994), pp. 943-946, 1994.

Chandra Kambhamettu, Dmitry B. Goldgof and Matthew He, "On a study of invariant features in nonrigid transformations", *IEEE Workshop on Qualitative Vision*, pp. 118-127, 1993.

Chandra Kambhamettu and Dmitry B. Goldgof, "Point Correspondence Recovery in Nonrigid Motion", *Proceedings of IEEE conference on Computer Vision and Pattern Recognition* (CVPR1992), pp. 222-227, 1992.

Chandra Kambhamettu and Dmitry B. Goldgof, "Towards Finding Point Correspondences in Nonrigid Motion", *The 7'th Scandinavian Conference on Image Analysis* (SCIA1991), pp. 1126-1133, 1991.

Refereed Conference and Workshop Publications

Guoyu Lu, Vincent Ly, Chandra Kambhamettu. Large-scale Structure-from-Motion Reconstruction with Small Memory Consumption. The 11th International Conference on Advances in Mobile Computing and Multimedia, 2013.

Vincent Ly and Chandra Kambhamettu. Mobile Scene Flow Synthesis. 9th IEEE International Workshop on Multimedia Information Processing and Retrieval (IEEE MIPR2013), in conjunction with IEEE International Symposium on Multimedia (ISM), to be held at Anaheim, California, 2013.

Xiaolong Wang and Chandra Kambhamettu. Gender Classification of Depth Images Based on Shape and Texture Analysis. In 1st IEEE Global Conference on Signal and Information Processing, GlobalSIP, 2013.

Xiaolong Wang, Vincent Ly, Guodong Guo, Chandra Kambhamettu. A New Approach for 2D-3D Heterogeneous Face Recognition. IEEE International Symposium on Multimedia, ISM, 2013.

Rohith MV, Stephen Rhein,Guoyu Lu, Scott Sorensen, Andrew R. Mahoney, Hajo Eicken, G. Carleton Ray, Chandra Kambhamettu. Iterative reconstruction of large scenes using heterogeneous feature tracking. In the first workshop on Big Data Computer Vision, CVPR, 2013.

Guoyu Lu, Vincent Ly, Haoquan Shen, Abhishek Kolagunda, Chandra Kambhamettu. Improving Image-Based Localization Through Increasing Correct Feature Correspondences. 9th International Symposium on Visual Computing, 2013.

Guoyu Lu, Vincent Ly, Xiaolong Wang, Rohith MV, Orlando Ayala, Lian-Ping Wang, Chandra Kambhamettu. A Tool for Visualizing Large-Scale Interactions Between Turbulence and Particles in 3D Space through 2D Trajectory Visualization. 9th International Symposium on Visual Computing, 2013.

Philip Saponaro, Chandra Kambhamettu, Kenneth Ranney, Anders Sullivan. Towards Auto-calibration of Smart Phones Using Orientation Sensors. In Third IEEE International Workshop on Mobile Vision, CVPR, 2013.

Gowri Somanath, Rohith MV, Chandra Kambhamettu, "VADANA: A dense dataset for facial image analysis", BeFIT 2011 *First IEEE International Workshop on Benchmarking Facial Image Analysis Technologies (held in conjunction with the ICCV 2011).*

Rohith MV and Chandra Kambhamettu, "Estimation and utilization of articulations in recovering non-rigid structure from motion using motion subspaces", *International ACM Workshop on Multimedia access to 3D Human Objects (MA3HO)*, 2011.

Gayathri Mahalingam and Chandra Kambhamettu, "Face Verification across Age Progression using Adaboost and Local Binary Patterns", *Indian Conference on Vision, Graphics and Image Processing (ICVGIP)*, 2010.

Rohith MV, Gowri Somanath, Debra H. Norris, Jae Gutierrez, and Chandra Kambhamettu, "A Camera flash based projector system for true scale metric reconstruction", IEEE Workshop on Applications of Computer Vision (WACV), Snowbird, Utah, December, 2009.

Scott Grauer-Gray and Chandra Kambhamettu, "Hierarchical Belief Propagation For Stereo To Reduce Search Space Using CUDA", IEEE Workshop on Applications of Computer Vision (WACV), Snowbird, Utah, December, 2009.

Rohith MV, Gowri Somananth, Chandra Kambhamettu and Cathleen Geiger, "Stereo Analysis of Low Textured Regions With Application Towards Sea-Ice Image Reconstruction", The 2009 International Conference on Image Processing, Computer Vision, and Pattern Recognition (IPCV), Las Vegas, Nevada, July, 2009.

Yuanjie Zheng, Chandra Kambhamettu, Thomas Bauer, and Karl Steiner, "Accurate estimation of Pulmonary nodule's growth rate in CT images with nonrigid registration and precise nodule detection and segmentation", IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), Miami, Florida, June, 2009.

S. Zhang, J. Zhou, X. Wang, S. Chang, D. Metaxas, G. Pappas, F. Delis, N. Volkow, G-J. Wang, P. Thanos, C. Kambhamettu, "3D segmentation of rodent brains using deformable models and variational methods", IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), Miami, Florida, June, 2009.

Thomas, M., C. Kambhamettu, C. A. Geiger, "Mapping of Large Scale Discontinuous Motion of Sea Ice", Ph.D. showcase at the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM GIS), Santorini, Irvine, CA, Nov, 2008.

Scott Grauer-Gray, Chandra Kambhamettu and K. Palaniappan, "Implementation of Belief Propagation on the GPU using CUDA with application towards Cloud Tracking and Reconstruction", 5th IAPR Workshop on Pattern Recognition in Remote Sensing (in conjunction with ICPR), Tampa, Florida, December, 2008.

Thomas, M., C. A. Geiger, C. Kambhamettu and P. Kannan, "Streamline Regularization for Large Discontinuous Motion of Sea Ice", 5th IAPR Workshop on Pattern Recognition in Remote Sensing (in conjunction with ICPR), Tampa, Florida, December, 2008.

Mani Thomas, Senthil Kumar, C. Kambhamettu, "Face Recognition using a color PCA framework", *International Conference on Computer Vision Systems*, 2008.

Yuanjie Zheng, Karl Steiner, Thomas Bauer, Jingyi Yu, Dinggang Shen, and Chandra Kambhamettu, "Lung Nodule Growth Analysis from 3D CT Data with a Coupled Segmentation and Registration Framework",

IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA) 2007, Rio de Janeiro, Brasil, Oct 14-15, 2007.

M. Thomas, C. A. Geiger, C. Kambhamettu, J. Hutchings, J. A. Richter-Menge, M. Engram, "Near-real time application of SAR-derived sea ice differential motion during APLIS Ice Camp 2007", Annual Conference of the Remote Sensing and Photogrammetry Society, Newcastle, UK, 2007.

M. Thomas, C. A. Geiger and C. Kambhamettu "High resolution motion estimation of sea ice using an implicit quad-tree approach", *ISPRS Hannover Workshop, High-Resolution Earth Imaging for Geospatial Information*, 2007.

Thomas, M., C. A. Geiger and C. Kambhamettu, "Vector field characterization in ERS-1 imagery of sea-ice", Proceedings of the 8^{th} Workshop on Applications of Computer Vision (WACV), Austin, February, 2007.

Hui Kong, Xuchun Li, Jian-Gang Wang and Chandra Kambhamettu, "Ensemble LDA for Face Recognition", Advances in Biometrics, International Conference (ICB 2006), pp. 166-172, Hong Kong, China, January 5-7, 2006.

Thomas, M., C. A. Geiger and C. Kambhamettu, "Mesoscale Sea Ice Features Derived From Discontinuous Nonrigid Motion SAR Products", Proceedings of the 18th International Conference on Port and Ocean Engineering Under Arctic Conditions (POAC), Vol. 3, pp1011-1020, 2006.

Q. Li, C. Kambhamettu and J. Ye, "Integrating spatial and discriminant strength for feature selection and linear dimensionality reduction", *IEEE Workshop on Beyond Patches, in conjunction with CVPR*, accepted, 2006.

Geiger, C. A. Geiger, M. V. Thomas, and C. Kambhamettu, "SAR motion products: Tools for monitoring changes in sea ice mass balance and thickness distribution", International Workshop on Arctic Sea Ice Thickness (IWASIT), Rungsted Kyst, Denmark, 7-8 Nov 2005, 10 pages.

T. Srinark and C. Kambhamettu, "An Approach for Spot Detection of 2-D Electrophoresis Images", *International Conference on Biomedical Engineering* (ICBE), Singapore, 2005.

S. K. Misra, J. T. Kirby, M. Brocchini, F. Veron, M. Thomas and C. Kambhamettu, "Coherent structures in a quasi-steady spilling breaker", for presentation at Waves 2005 , Madrid, 2005.

Yusuf Sinan Akgul and Chandra Kambhamettu, "Acoustic Flow and its applications", The 20th International Symposium on Computer and Information Sciences (ISCIS'05), pp. 646-655, Istanbul, Turkey, October 26-28, 2005.

Thitwan Srinark and Chandra Kambhamettu, "A Microarray Image Analysis System Based on Multiple-Snake", International Conference on Bioinformatics and Its Applications (ICBA'04), December 16-19, 2004.

Misra, S. K., Kirby, J. T., Brocchini, M., Thomas, M., Veron, F., Kambhamettu, C., "Extra strain rates in spilling breaking waves", 29'th Intl. Conf. Coastal Engg., Lisbon, September 2004.

Min Li, Chandra Kambhamettu and Maureen Stone, "Spline-based Motion Recovery for 3D Surfaces Using Nonrigid Shape Properties", *IEEE Workshop on Articulated and Nonrigid Motion*, Washington DC, June 2004.

Mani Thomas, Cathleen Geiger and Chandra Kambhamettu, "Discontinuous Nonrigid Motion Analysis of Sea Ice using C-Band Synthetic Aperture Radar Satellite Imagery", *IEEE Workshop on Articulated and Nonrigid Motion*, Washington DC, June 2004.

Lin Zhou and Chandra Kambhamettu, "3D Motion compensated interpolation of multispectral cloud image sequences", *Applications of Computer Vision (ACV)*, Prague, May 11-14, 2004.

Thitiwan Srinark and Chandra Kambhamettu, "An Approach for 3D Segmentation on Multiresolution Surfaces", *International Conference on Intelligent Technologies*, pp. 384-393, December 17-19 2003, Chiang Mai, Thailand.

Thitiwan Srinark and Chandra Kambhamettu, "A Novel Method for 3D Surface Mesh Segmentation", *6th IASTED International Conference on Computers, Graphics, and Imaging*, pp. 212-217, August 13-15, 2003, Honolulu, Hawaii.

Min Li, Chandra Kambhamettu and Maureen Stone, "Snake for Band Edge Extraction and Its Applications", *6th IASTED International Conference on Computers, Graphics, and Imaging*, pp. 261-266, August 13-15, 2003, Honolulu, Hawaii.

Thitiwan Srinark and Chandra Kambhamettu, "A Novel Segmentation Method for 3D Surface Meshes", *4th Symposium on Trends in Unstructured Mesh Generation, 7th US National Congress on Computational Mechanics*, pp. 68, July 27-31, 2003, Albuquerque, New Mexico.

Qi Li, Chris Brown, Chandra Kambhamettu , Tao Li, and Shenghuo Zhu. "A framework of individually-focused teleconferencing (IFT) via an efficient 3D reprojection technique", *ACM SAC Multimedia and Visualization Track (MMV)*, pp 951-955, March 9 to 12, 2003, Melbourne, Florida.

Stone, M., Sutton, M. Parthasarathy, V., Prince, J., Li, M., and Kambhamettu, C. "Effects of upright and supine orientation on tongue position during silence", *Joint meeting of the Acoustical Society of America*, Iberoamerican Congress of Acoustics and Mexican Congress on Acoustics. Cancun, Mexico. December 2-6, 2002.

Kai Chen, Chandra Kambhamettu and Dmitry Goldgof, "Extraction of MPEG-4 FAP Parameters from 3D Face Data Sequences" *International Workshop on Very Low Bitrate Video Coding* (VLBV1998), pp. 77-80, Urbana IL, October 8-9, 1998.

Chandra Kambhamettu, Dmitry B. Goldgof and Alade Tokuta, "Towards a Representation of Facial Expressions for Recognition and Display", *Florida AI Research Symposium* (FLAIRS1990), pp. 85-89, 1990.

Non-Refereed Publications

Philip Saponaro, Chandra Kambhamettu. Concealed target detection using augmented reality with SIRE radar. Proc. SPIE 8714, Radar Sensor Technology XVII, 87140S (May 31, 2013);

Geiger, C. A., G. Somanath, V. Ly, C. Kambhamettu, M. Thomas, and Pablo Clemente-Colon. Visualizing and Assessing Sea-Ice Motion Below the Continuum Scale, ASF News and Notes, 2012, Fall Volume 8:3.

P. Saponaro and Chandra Kambhamettu, "Concealed Target Detection Using Augmented Reality with SIRE Radar". To appear in SPIE Defense, Security, and Sensing: Radar Sensor Technology XVII, Baltimore, Maryland, 29 April - 3 May 2013.

Andrew R. Mahoney, Hajo Eicken, Chandra Kambhamettu, Joshua Jones, Rohith MV and Lewis H. Shapiro, "Coastal sea ice radars at Barrow, Alaska: Watching the ice go by since 1973", AGU, 2012.

Somanath, G., Rohith MV, C., Geiger, C. Kambhamettu, "Reconstruction of snow and ice surfaces using multiple view vision techniques", *Proceedings of the 65th Eastern Snow Conference*, in press.

Dimitris Metaxas, Chandra Kambhamettu and Dmitry Goldgof, editorial, special issue on Articulated and nonrigid motion, "*Image and Vision Computing* (IVC)", 2006.

Chandra Kambhamettu, K. Palaniappan and A. Frederick Hasler, "Hierarchical Motion Decomposition for Cloud-Tracking", *AMS 17th Conference on Interactive Information and Processing Systems for Meteorology*, Oceanography, and Hydrology (IIPS), (at the AMS 81st Annual Meeting in Albuquerque, New Mexico), January 14-19, 2001.

Fritz Hasler, Peter G. Black, K. Palaniappan, Mohan Karyampudy, Marit Jentoft-Nilsen and Chandra Kambhamettu, "Synthesis of Eyewall Mesovortex and Eyewall Convective Structures in Hurricane Luis (1995) Using Concurrent GOES -8 & -9 Stereo, 1-Min Rapid Scan GOES-9 and NOAA Airborne Radar Observations", *22nd AMS Conference on Hurricanes and Tropical Meteorology Ft. Collins*, CO, May 19-23, 1996.

Chandra Kambhamettu, K. Palaniappan and A. Frederick Hasler, "Automated Cloud-drift Winds from GOES Images" *SPIE Proc. on GOES-8 and Beyond*, pp. 122-133, Denver, Colorado, 1996.

Chandra Kambhamettu and Dmitry B. Goldgof, "Left Ventricle Wall Motion Tracking Using Curvature Properties", *SPIE: Biomedical Image Processing*, Vol. 1450, pp. 311-322, 1992.

Chandra Kambhamettu and Dmitry B. Goldgof, "Application of the Nonrigid Shape Matching Algorithms to Volumetric Cardiac Images", *SPIE: Biomedical Image Processing II*, pp. 264-276, 1991.

Provisional Patents

2009: Systems and Methods for obtaining an Image Alpha Matte Inventors: Chandra Kambhamettu, Yuanjie Zheng, Karl V. Steiner and Thomas Bauer

2013: Prism Camera Methods, Apparatus, and Systems Inventors: Chandra Kambhamettu, Gowri Somanath and Rohith MV.

INVITED PRESENTATIONS

Large Scale Depth analytics, 3rd GNY Area Multimedia and Vision Meeting, June 2013.

Interactive Visualization of Droplet-Fluid Interaction Using Saliency Based Volume Visualization, 2011 Workshop on Multiscale Computing of Cloud Physics.

An Overview of Advances in Image Analysis with Geophysics Applications at the University of Delaware Video/Image Modeling and Synthesis Lab (UD-VIMS), Geophysical Institute Seminar, University of Alaska-Fairbanks, July 7, 2010.

Computer-aided Diagnosis of Ground-Glass Opacity Lung Tumors (and other image analysis works at VIMS), Delaware Biotechnology Institute (DBI) Colloquium Seminar Speaker, Nov 19, 2008.

Matting for Lungo Tumor Segmentation, Presentation to ELCAP team at Delaware Biotechnology Institute (DBI) CAVE, Oct 23 2008.

Near-Real Time Analysis of Sea Ice in Support of Field Logistics, SEDNA Workshop, Oct 27 2008.

Clinical Translational Research in Medical Image Analysis: Research on Ground Glass Opacity Tumors, May 12 2008, Helen F. Graham Cancer Center, Christiana Care. (Host: Nick Petrelli, MD)

Face Motion Analysis, 2007 Applied Mathematics Summer Workshop, Applied Mathematics Research Center, Delaware State University, August 26, 2007

System for Polar Ice Tracking from Remote Sensing Images, Colloquium Seminar Speaker, Applied Mathematics Research Center, Delaware State University, June 2007.

Real Time Image Processing and Analysis for Mobile Device, ARL (with Drs. Liu and Lin of DSU), July 2007.

GGO Estimation of Lung Tumors, Delaware Biotechnology Institute (DBI), U. of Delaware, 2006

GGO Estimation of Lung Tumors and Visualization, Delaware State University, U. of Delaware, 2006

VIMS Research, MVSR Engg. college, Osmania University, 2006

4D Tongue Analysis, Department of Cognitive Science, University of Delaware, November 15, 2005

Structure Reconstruction and Nonrigid Motion Analysis from 2D Images, Department of ECE, University of Delaware, July 19, 2004

Nonrigid Motion Analysis Research and Applications, Department of Computer Science, Rutgers University, April 26, 2004

Nonrigid Motion Analysis Research and Applications, Department of Computer Science, Stevens Institute of Technology, March 22nd, 2004.

Methods for Medical and Bioinformatics Image Analysis, Department of Chemistry & Biochemistry, University of Delaware, Dec 2003.

Structure, Nonrigid Motion Analysis and Visualization from 2D Images, IEEE-CS Colloquium, Department of Computer Science and Engineering, University of South Florida, 2002.

Nonrigid Motion Analysis and Its Applications, Spring Colloquium Series, Department of Mechanical Engineering, Drexel University, 2002.

Structure and Nonrigid Motion Analysis from 2D Images and Scene Flow, Fall Colloquium Series, GRASP Lab, University of Pennsylvania 2001.

Structure and Nonrigid Motion Analysis from 2D Images, International Inst. of Information Technology (IIIT) 2001.

Motion and Structure Analysis of 2D Satellite Cloud Image Sequences, Internet-2 Day (UD), 2000. Video is available at http://www.udel.edu/topics/internet2/i2day/.

Nonrigid Motion Analysis and Classfication, Dept. of Math and Computer Science, Nova University, FL., 1999.

Nonrigid Motion Tracking, Thirty-Third Annual Allerton Conference on Communication, Control, and Computing, University of Illinois, Urbana, 1995.

PhD THESES SUPERVISED

Rohith M.V, *Structure from Nonrigid motion using 3D models.* PhD. 2013.

Gowri Somanath, *Indoor Scene Understanding.* PhD. 2012. Intel, CA.

Gayathri Mahalingam, *Face Recognition/Verification Across Age Progression in Images and Videos.* PhD. 2012. MORPH project, UNC Wilmington.

Mani Thomas, *Analysis of Large Magnitude Discontinuous Non-rigid Motion.* PhD. 2009. Now at Canfield Scientific, NJ.

Qi Li, *An Integration Framework of Feature Selection and Extraction for Appearance-based Recognition.* PhD. 2006. Faculty, Western Kentucky University.

Min Li, *Novel Frameworks for Deformable Model and Nonrigid Motion Analysis.* PhD. 2005. Faculty, Lincoln University.

Wei Zhou, *Scene Illuminant Estimation with Binocular Stereo Matching.* PhD. 2005. Comverse Technologies.

Thitiwan Srinark, *Image Analysis Frameworks For Applications in Bioinformatics.* PhD. 2005. Faculty in Kasetsart University, Bangkok, Thailand.

Ye Zhang, *Recovery of 3-Dimensional Scene Flow and Structure.* PhD. 2001. Chief Scientist and Vice President of Development, Ensuredmail, Wilmington, DE.

Pavel Laskov, *Extensions of Differential-Geometric Algorithms for Estimation of 3D Non-Rigid Motion and Correspondence.* PhD. 2001. Senior Researcher, Fraunhofer FIRST, Berlin, Germany.

Lin Zhou, *Structure and Nonrigid Motion Analysis from 2D Images.* PhD. 2000. Chief Cryptographer and Director of IT, Ensuredmail, Wilmington, DE.

Yusuf Akgul, *Spatiotemporal Analysis of Deformable Contours.* PhD. 2000. Faculty, Gebze Inst. of Tech., Turkey.

MASTERS THESES SUPERVISED

Mani Thomas, *Global Motion Estimation of Sea Ice Using Synthetic Aperture Radar Imagery.* M.S., 2003.

Kai Chen, *3D Facial Motion Tracking and MPEG-4 SNHC FAP Extraction.* M.S., 1998.

David Saxe, *Robust Skin Identification* (major co-advisor: Rick Foulds, ASEL) M.S., 1998.

CURRENT PHD SUPERVISION

Vincent Ly: 3D scene flow for Smart environments
Philip Saponaro: Auto-calibration of PTZ cameras with application to Smart Cities
Scott Sorensen: Dense reconstruction and mosaicing of sea ice imagery
Abhishek Kolagunda: Prostate tumor segmentation for virtual surgery application
Guoyu Lu: Large-scale image-based localization
Xiaolong Wang: 2.5D Face verification under Age Progression
Stephen Rhein: Extraction of meaningful patterns in big data microscopic imagery

UNDERGRADUATE STUDENTS RESEARCH PROJECT SUPERVISION

Ryan O'Dowd: Collaborative system for animation (2012, 2013)
Joshua Kirby: 3D CAVE Visualization of Lung (2007, 2008)
Patrick Coller: 3D Image Analysis, Visualization and Tele-immersion of Sliced Biomedical Datasets (2006, 2007)
George Kirk (McNair Scholar): Maya Face Modeling and Analysis (completed, 2001)
Chris Haase: Face and Human Body Project (completed, 2001)
Matthew Munn (McNair Scholar): Maya Face Modeling and Analysis (completed, 2002)
Cheryl Rice: Face and Human Body Project (completed, 2001)
Jeff Isselee: Face and Human Body Project (completed, 2001)
Alan Weissman: Face and Human Body Project (completed, 2001)
Brian Hassel: Multimedia Organizer, (completed, 2001)
Neal Goldstein: Multimedia Organizer, (completed, 2001)
Shaun Ramsey (NSF-REU): Facial Synthesis using MPEG-4 (completed, 1999)
Timothy Patton (NSF-REU): Cloud Motion Analysis and Visualization (completed, 1997)
BS Senior Thesis Committee: Armando Caro Enhancing POCv2's Client/Server Testing System (completed, 1998).

PhD Defense Chair

Lenny Tsap: Physically-Based Modeling of Nonrigid Motion in Biomechanics Problems (completed, 1999), University of South Florida, Computer Science and Engineering Dept.

PhD Committee (incomplete)

Feng Li (UD-CIS), October 2011, Yuanyuan Ding (UD-CIS), July 2010,
Zhiguo Li (Rutgers-CS), "Video-based Facial Expression Analysis", July 2010,
Yuchi Huang (Rutgers-CS), "Hypergraph Based Visual Object Categorization and Segmentation", July 2010,
Atul Kanaujia (Rutgers-CS), Dec 2009, Yu Yuan (UD-CIS), June 2009, Rui Hu(UD-ECE), 2009,
Thommen Korah(UD-CIS), 2007, Raymond Chen(UD-ECE), May 2006
Parimala Thulasiraman: Irregular Computations on Multithreaded Architectures (completed, 2000), Electrical and Computer Engineering Dept.
Rogelio Hasimoto-Beltran: An Error Resilient Framework for Image and Video Transmission over Packet Switch Networks (completed, 2000), Electrical and Computer Engineering Dept.
Ram Balasubramanian: Nonrigid Motion Tracking and Structure Reconstruction with Application to MPEG-4 (completed, 1999), University of South Florida, Computer Science and Engineering Dept.
Sami Iren: Network-Conscious Image Compression (completed, 1999), University of Delaware, Computer Sciences Dept.

POST-DOCTORAL SUPERVISION

Yuanjie Zheng: Biomedical image analysis of HRCT images of Lung (2007-09)

DEPARTMENT and UNIVERSITY SERVICE ACTIVITIES

UD-CIS Chair, Graduate Committee 2013
UD-CIS Lab Manager Search Committee 2013
UD-Bangalore Engineering Program Planning Committee, UD, 2012
Executive Committee, Biomedical engineering Dept., UD, 2010-2012
UD Member, College of Arts and Science Committee on Faculty Awards, 2009-10
University Faculty Senate Representative, 2008-10
UD-CIS Graduate Committee 2010-present
UD-CIS Chair, Graduate Committee 2008-10
UD-CIS Member, UD President visit Committee 2007
UD-CIS Member, CIS Graduate Program Committee 2007
UD-CIS Member, CIS Recruitment Committee 2006-07
UD-CIS Chair, CIS Space Committee 2006
UD-CIS Member, CIS Recruitment Committee 2005-06
UD-CIS Member, CIS Recruitment Committee 2004-05
UD Member, CIS Chair Search Committee 2005
UD Faculty Participant, Bioinformatics Seminar series 2003
UD McNair Search Committee 2002
UD ASHA Faculty Advisor 2000-present
UD Faculty Participant for INTERNET-2 2000
UD TA Development Committee, UD Supercomputing Committee 1998

Research Products (Partial List)

- Design and Development of The Polar Sea-Ice Topography REconstruction System (PSITRES), a 3D camera system that can be mounted on icebreakers to quantitatively measure sea ice. Big Ice stereo image data was captured for the first time ever consisting of several weeks of ice data from the cruise.
- VADANA Data for face verification under age progression.
- A pipeline system for stereo and structure from motion analysis of textureless areas towards dense reconstruction of sea ice.

- A patent-pending single camera stereo system using prism and mirrors that is cost effective, portable and can be calibrated similar to traditional stereo to obtain high quality 3D reconstruction. Our results show that it works on close range (within a feet), medium range (within 5 feet) and far range outdoor scene.

- Development of FuzzyMatte, a patent-pending software designed specifically for Ground Glasss Opacity Lung tumor extraction from CT data. This system is currently being finalized and planned to be tested by Christiana Care Hospital specialists.

- Development of near-real time operational SAR (Synthetic Aperture Radar) motion products which is a first successful attempt to support civilian scientific sea ice field campaign. The product is available at http://vims.cis.udel.edu/MMT/. It is deployed to National Ice Center (NIC), and also licensed to Canfield inc.

- Development of software tools for Edge Detection. One of the software tools developed under NIH funding, EdgeTrak, performs real time tracking of tongue contours from ultrasound imagery. This licensed software is adopted for Linguistics and Otolaryngology research in several institutions including Cornell Univ., NYU, Johns Hopkins and Univ. of Maryland. (available at vims web site http://vimswiki.cis.udel.edu)

- Development of stereo and motion analysis tools for remote sensing data including clouds, ice. One of the developed tools, Structure and Motion Analysis system (SMAS), built under NSF-CAREER grant estimates 3D structure and motion from monocular image sequences of hurricanes.

- Development of image analysis tools for Bioinformatics research. Microarray Image Analysis System and 2-D Electrophoresis spot detection and spot matching is available for researchers at vims web site (http://vimswiki.cis.udel.edu).