Bogdan Georgescu

CONTACT INFORMATION

Siemens Medical Solutions USA, Inc.
Medical Imaging Technologies
755 College Road East
Princeton, NJ 08540 USA

Phone: (609) 937-2950
Fax: (609) 734-6565
E-mail: BogdanDOTGeorgescuATsiemens DOT com
budagogATgmail DOT com

EDUCATION

Rutgers University, September 1998 - May 2004

Ph.D., Division of Computer & Information Sciences, May 2004
Dissertation: "Interpretation of the 3D Visual Environment from Uncalibrated Image Sequences"
Advisor: Professor Peter Meer
GPA: 4.0/4.0

M.Sci., Computer Science, May 2001
Essay: "Improved Method for Reconstruction from Uncalibrated Views"
GPA: 4.0/4.0

Course Work: Foundations of Computer Science, Pattern Recognition, Design and Analysis of Data Structures and Algorithms, Linear Programming, Computational Geometry, Parallel Computation: Algorithms and Complexity, Image Understanding, Machine Learning, Robust Computer Vision, Numerical Analysis, Topics in Computers in Biomedicine, Principles of AI.

Polytechnic University of Bucharest, September 1991 - July 1997

M. Sci. in Applied Electronics and Information Theory, July 1997
Department of Electronics and Telecommunications
Thesis: "Neural Model for Compression of Image Sequences"
Graduating Mark: 10.0/10.0

B. S., in Applied Electronics and Information Theory, July 1996
Department of Electronics and Telecommunications
Thesis: "A Neural Approach to Face Recognition"
Graduating Mark: 9.79/10.0

RESEARCH INTERESTS

Artificial Intelligence, Machine Learning, Medical Imaging, Robust Computer Vision, Structure from Motion, Image Understanding,Object Detection and Tracking, Computational Modeling.

HONORS AND AWARDS

Siemens Inventor of the Year 2012 in Medical Imaging for Comprehensive Patient Specific Modeling of the Heart

Co-author on patent 8920322 winner of Thomas Alva Edison Patent Award 2015, NJ; patent 7949173 winner of Thomas Alva Edison Patent Award 2013, NJ; patent 7916919 winner of Thomas Alva Edison Patent Award 2011, NJ; Among the 6 finalists for 2011 National Inventor of the Year Award, USA.

Part of the winner team receiving R&D 100 Award (eSieValves product) 2015, USA

Co-author of articles winners of Young Scientist Awards in 2017, 2013, 2011, 2010 at the prestigious Medical Image Computing and Computed Assisted Intervention Conferences; Co-author of the best paper award at VARVAI (ECCV 2016).

Co-author on article finalist of 2011 Arthur E. Weyman Young Investigator Award, American Society of Echocardiography Scientific Sessions.

Co-author on article finalist of 2011 Young Investigator Award, American College of Cardiology Scientific Sessions 2011.

Co-author of more than 100 granted patents, more than 100 articles in top journals, peer reviewed conferences and book chapters.

Rated "outstanding" (2004, 2005, 2006, 2007) by Siemens SCR senior management

1991 to 1997 - Government Merit Scholarship awarded to the top 1% of the students in Romania

First prize at the Student Workshop'96, Department of Applied Electronics and Information Engineering, Polytechnic University of Bucharest.

Honorable mention in the 1987 National Physics Olympics, Romania.

Professional Experience

Principal Key Expert Scientist *June, 2015 - present*
Medical Imaging Technologies, Siemens Medical Solutions USA, Inc., Princeton, NJ. Drive artificial intelligence / machine learning robust solutions for a wide range of medical imaging products such as advanced automated cardiac quantification in 2D/3D/4D US, CT, MR; Whole body analitics for CT, MR; Neuro analytics for CT, MR; Automatic medical imaging parsing, abnormality detection, report generation.

Principal Key Expert Scientist *June, 2012 - June 2015*
Principal Research Scientist *May, 2010 - June, 2012*
Senior Research Scientist *October, 2008 - May, 2010*
Project Manager *October, 2005 - October, 2008*
Integrated Data Systems Department, Siemens Corporate Research, Princeton, NJ. Provide robust solutions for advanced cardiac quantification with applications to 2D/3D/4D echocardiography, 4DCT and 4D MR. Formulate a new learning based approach to segmentation which uses expert knowledge embedded in large annotated medical databases. Push database-guided solutions for a wide range of medical applications such as catheter detection and tracking in angiography, tumor characterization in radiation therapy for oncology, automatic fetal measurements in ultrasound and semantic indexing of medical images. Computational modeling solutions for cardiovascular anatomy and function characterization, prediction and planning (Electrophysiology, Biomechanics & Blood flow);

Member of Technical Staff *January, 2004 - September, 2005*
Integrated Data Systems Department, Siemens Corporate Research, Princeton, NJ. Emphasis on robust statistical methods for real-time vision systems with focus on medical applications. Work on real-time detection, tracking and quantification of myocardial wall motion in ultrasound image sequences. Developed algorithms for adaptive appearance modeling for object tracking with occlusion modeling.

Graduate Research Assistant *September 1998 - May, 2004*
Center for Advanced Information Processing (CAIP), Rutgers University, Piscataway, NJ. Work in Robust Image Understanding Laboratory (RIUL) (www.caip.rutgers.edu/riul) with Prof. Peter Meer to investigate the use of robust methods in structure from motion problems. Implementation

of an automatic system for recovery of 3D structure and camera motion from uncalibrated image sequences. Initial estimation is solved with the HEIV method accounting for point dependent noise. Design of a robust algorithm for camera calibration and lens distortion correction based on analysis of line parametric space. Reformulation of image filtering as vector space projection with application to confidence based edge detection and image segmentation (EDISON system). Detection of interest point correspondences by combining the traditional optical flow with matching color distributions estimated with oriented kernels, achieving subpixel accuracy under large image transformations. (Includes current Ph.D. research, Ph.D. and Masters level coursework and research/consulting projects).
Other Projects:
Object Recognition System. Extraction and grouping of surface and shape features from coupled range/color images. Graph modeling and matching for object correspondences, identity and location.
Protein Structure Characterization by Distance Feature Vectors. Correlation with Secondary Structure. (Presented at Computer Science Open House, Rutgers University, 2001). A new labeling scheme is derived based on clustering feature vectors extracted from distance matrices. The new representation is put in correspondence with the secondary structure of proteins.

Computer Consultant and Engineer *September 1993 - June 1998*
Amerilex S.R.L, Bucharest, Hewlett-Packard Authorized Support Provider and Corporate Account Reseller in Romania. Work in deploying and administration of computer networks; Networked Systems Professional Certificate from Hewlett-Packard.

Publications

Journal

F. C. Ghesu, **B. Georgescu**, Y. Zheng, S. Grbic, A. Maier, J. Hornegger, D. Comaniciu, "Multi-Scale Deep Reinforcement Learning for Real-Time 3D-Landmark Detection in CT Scans", IEEE Trans. Pattern Anal. Machine Intell. (PAMI), 2018 (to appear).

A. Amr, E. Kayvanpour, F. Sedaghat-Hamedani, T. Passerini, V. Mihalef, A. Lai, D. Neumann, **B. Georgescu**, S. Buss, D. Mereles, E. Zitron, A. E. Posch, M. Wrstle, T. Mansi, H. A. Katus, B. Meder, "Personalized Computer Simulation of Diastolic Function in Heart Failure". Genomics, Proteomics & Bioinformatics 14(4): 244-252 (2016)

D. Comaniciu, K. Engel, **B. Georgescu**, T. Mansi, "Shaping the Future through Innovations: From Medical Imaging to Precision Medicine", Medical Image Analysis (MIA), 2016

F.C. Ghesu, E. Krubasik, **B. Georgescu**, V. Singh, Y. Zheng, J. Hornegger, D. Comaniciu, "Marginal Space Deep Learning: Efficient Architecture for Volumetric Image Parsing", IEEE Trans. Medical Imaging (TMI), 2016

L. Itu, S. Rapaka, T. Passerini,**B. Georgescu**, C. Schwemmer, M. Schoebinger, T. Flohr, P. Sharma, D. Comaniciu, "A Machine Learning Approach for Computation of Fractional Flow Reserve from Coronary Computed Tomography", Journal of Applied Physiology, American Physiological Society, 2016

D. Neumann, T. Mansi, L. Itu, **B. Georgescu**, E. Keyvanpour, F. Sedaghat-Namedani, A. Amr, J. Haas, H. Katus, B. Meder, S. Steidl, J. Hornegger, D. Comaniciu, "A Self-Taught Artificial Agent for Multi-Physics Computational Model Personalization", Medical Image Analysis (MIA), 2016

L. Itu, T. Passerini, E. Badila, L. Calmac, D. Zamfir, D. Penes, R. Niculescu, E. Weiss, L. Kazar, M. Carp, A. Itu, C. Suciu, P. Sharma, **B. Georgescu**, D. Comaniciu, "Image-Based Computation of Instantaneous Wave-free Ratio from Routine Coronary Angiography: Evaluation of a Hybrid Decision Making Strategy with FFR", Journal American College of Cardiology, 67(13), 2016

E. Kayvanpour, T. Mansi , F. Sedaghat-Hamedani , A. Amr, D. Neumann, **B. Georgescu**, P. Seegerer, A. Kamen, J. Haas, K. S. Frese, M. Irawati, E. Wirsz, V. King, S. Buss, D. Mereles, E. Zitron, A. Keller, H. A. Katus, D. Comaniciu, B. Meder, "Towards Personalized Cardiology: Multi-Scale Modeling of the Failing Heart", PLOS ONE, July 31, 2015.

O. Zettinig, T. Mansi, D. Neumann, **B. Georgescu**, S. Rapaka, P. Seegerer, E. Kayvanpour, F. Sedaghat-Hamedani, A. Amr, J. Haas, H. Steen, H. Katus, B. Meder, N. Navab, A. Kamen, D. Comaniciu, "Data-driven estimation of cardiac electrical diffusivity from 12-lead ECG signals", Medical Image Analysis Journal (MIA), April 2014.

T. Mansi, I. Voigt, **B. Georgescu**, X. Zheng, E. A. Mengue, M. Hackl, R. I. Ionasec, T. Noack, J. Seeburger and D. Comaniciu, "An Integrated Framework for Finite-Element Modeling of Mitral Valve Biomechanics from Medical Images:Application to MitralClip Intervention Planning", Medical Image Analysis Journal (MIA), 2012.

Yang L, **Georgescu B**, Zheng Y, Wang Y, Meer P, Comaniciu D. "Prediction Based Collaborative Trackers (PCT): A Robust and Accurate Approach Toward 3D Medical Object Tracking" IEEE Transaction on Medical Imaging (TMI), vol. 30, no. 11, pp. 1921–1932, Nov. 2011.

V. Mihalef, R. I. Ionasec, P. Sharma, **B. Georgescu**, I. Voigt, M. Suehling, D. Comaniciu, "Patient-specific modelling of whole heart anatomy, dynamics and haemodynamics from four-dimensional cardiac CT images", Interface Focus Royal Society Journal on "Virtual Physiological Human", Vol.1 , No 3, June 2011. **Article image featured on the cover page**.

P. Thavendiranathan, S. Liu, S. Datta, M. Walls, A. Nitinunu, T. Van Houten, N. A. Tomson, L. Vidmar, **B. Georgescu**, Y. Wang, S. Srinivasan, N. De Michelis, S. V. Raman, T. Ryan, M. A. Vannan "Automated Quantification of Mitral Inflow and Aortic Outflow Stroke Volumes By 3-D Real-Time Volume Color Flow Doppler Transthoracic Echocardiography: Comparison with Pulsed Wave Doppler and Cardiac Magnetic Resonance Imaging", Journal of the American Society of Echocardiography (JASE), accepted 2011 (to appear).

P. Thavendiranathan, S. Liu, D. Verhaert, A. Calleja, A. Nitinunu, T. Van Houten, N. Tomson, **B. Georgescu**, H. Houle, J. Mancina, N. De Michelis, O. Simonetti, S. Rajagopalan, S. Raman, T. Ryan, M. Vannan, "Feasibility, Accuracy, and Reproducibility of Real-Time Full Volume 3-D Transthoracic Echocardiography to Measure Left Ventricular Volumes and Systolic Function Using a Fully Automated Endocardial Contouring Algorithm in Patients in Sinus Rhythm and Atrial Fibrillation", Journal of American College of Cardiology (JACC) accepted 2011 (to appear).

R. I. Ionasec, I. Voigt, **B. Georgescu**, Y. Wang, H. Houle, F. Vega-Higuera, N. Navab, D. Comaniciu, "Patient-Specific Modeling and Quantification of the Aortic and Mitral Valves from 4D Cardiac CT and TEE, IEEE", Transactions on Medical Imaging, vol.29, no.9, pp.1636–1651, Sept. 2010.

I. Zalud, S. Good, G. Carneiro, **B. Georgescu**, K. Aoki, L. Green, F. Shahrestani, R. Okumura, "Fetal biometry: a comparison between experienced sonographers and automated measurements", The Journal of Maternal-Fetal and Neonatal Medicine, 22:43–50, Issue 1, 2009.

Y. Zheng, A. Barbu, **B. Georgescu**, Michael Scheuering, and D. Comaniciu, "Four-Chamber Heart Modeling and Automatic Segmentation for 3D Cardiac CT Volumes Using Marginal Space Learning and Steerable Features", IEEE Transactions on Medical Imaging, 11:1668–1681, November 2008.

G. Carneiro, **B. Georgescu**, S. Good, D. Comaniciu, "Detection of Fetal Anatomies from Ultrasound Images using a Constrained Probabilistic Boosting Tree", IEEE Transactions on Medical Imaging Journal (TMI), 9:1342–1355, September 2008.

B. Georgescu, P. Meer, "Point Matching Under Large Image Deformations and Illumination Changes". IEEE Trans. Pattern Anal. Machine Intell., 26:674–689, June 2004.

P. Meer and **B. Georgescu**, "Edge Detection with Embedded Confidence", IEEE Trans. Pattern Anal. Machine Intell., 23:1315-1365, December 2001.

Book Chapters

F. C. Ghesu, **B. Georgescu**, J Hornegger, Efficient Medical Image Parsing, book chapter in Deep Learning for Medical Image Analysis, Jan. 2017.

Y. Wang, **Bogdan Georgescu**, T. Chen, WenWu, P. Wang, X. Lu, R. Ionasec, Y. Zheng,D. Comaniciu, "Learning-Based Detection and Tracking in Medical Imaging: A Probabilistic Approach", in Deformation Models, Lecture Notes in Computational Vision and Biomechanics, Vol. 7., Nov. 2012.

I. Shimshoni, **B. Georgescu**, P. Meer, "Adaptive Mean Shiftp Based Clustering in High Dimensions", in Nearest-Neighbor Methods in Learning and Vision, Theory and Practice, 203–220, MIT Press, March 2006 ISBN 0-262-19547-X.

Peer Reviewed Conferences

F.C. Ghesu, **B. Georgescu**, S. Grbic, A. Maier, J. Hornegger, D. Comaniciu: "Robust Multiscale Anatomical Landmark Detection in Incomplete 3D-CT Data", MICCAI 2017 **Winner MICCAI 2017 Young Scientist Award**

E. Sizikova, V. K. Singh, **B. Georgescu**, M. Halber, K. Ma, and T. Chen, "Enhancing Place Recognition using Joint Intensity - Depth Analysis and Synthetic Data", VARVAI (ECCVW) 2016 **Best Paper Award**

D. Yang, D. Xu, S.K. Zhou, **B. Georgescu**, M. Chen, S. Grbic, D. Metaxas, D. Comaniciu: "Automatic Liver Segmentation using an Adversarial Image-to-Image Network", MICCAI 2017

6 F.C. Ghesu, **B. Georgescu**, T. Mansi, D. Neumann, J. Hornegger, D. Comaniciu, "An Artificial Agent for Anatomical Landmark Detection in Medical Images", MICCAI, 2016

8. L. Calmac, R. Niculescu, E. Badila, L. Itu, L. Lazar, T. Passerini, P. Sharma, **B. Georgescu**, D. Comaniciu, "From Rest to Hyperemia: Initial Validation of a Data-Driven Approach for Functional Assessment of Coronary Lesions", EuroPCR, 2016

Y. Zheng, D. Liu, **B. Georgescu**, H. Nguyen, D. Comaniciu, "3D Deep Learning for Efficient and Robust Landmark Detection in Volumetric Data", MICCAI, October 2015.

F. C. Ghesu, **B. Georgescu**, Y. Zheng, J. Hornegger, D. Comaniciu, "Marginal Space Deep Learning: Efficient Architecture for Detection in Volumetric Image Data", MICCAI, October 2015.

I. Voigt, M. Scutaru, T. Mansi, **B. Georgescu**, N. El-Zehiry, H. Houle, D. Comaniciu, "Robust Live Tracking of Mitral Valve Annulus for Minimally-Invasive Intervention Guidance", MICCAI, October 2015 (oral presentation).

L. Calmac, R. Niculescu, E. Badila, E. Weiss, D. Zamfir, L. Itu, L. Lazar, M. Carp, A. Itu, C. Suciu, T. Passerini, P. Sharma, **B. Georgescu**, D. Comaniciu, "Image-Based Computation of Instantaneous Wave-free Ratio from Routine Coronary Angiography - Initial Validation by Invasively Measured Coronary Pressures", Transcatheter Cardiovascular Therapeutics (TCT) October 2015,

(podium presentation).

D. Neumann, T. Mansi, **B. Georgescu**, A. Kamen, E. Kayvanpour, A. Amr, F. Sedaghat-Hamedani, J. Haas, H. Katus, B. Meder, J. Hornegger, D. Comaniciu, "Robust Image-Based Estimation of Cardiac Tissue Parameters and Their Uncertainty from Noisy Data", MICCAI, September 2014 (oral presentation).

D. Neumann, T. Mansi, S. Grbic, I. Voigt, **B. Georgescu**, E. Kayvanpour, A. Amr, F. Sedaghat-Hamedani, J. Haas, H. A. Katus, B. Meder, J. Hornegger, A. Kamen, D. Comaniciu, "Automatic image-to-model framework for patient-specific electromechanical modeling of the heart". ISBI 2014: 935-938.

L. Itu, S. Puneet, B. Georgescu, A. Kamen, C. Suciu, D. Comaniciu, "Model Based Non-Invasive Estimation of PV Loop from Echocardiography", IEEE EMBC, August 2014.

T. Mansi, R. Beinart, O. Zettinig, S. Rapaka, **B. Georgescu**, A. Kamen, Y. Dori, M. Muz Zviman, D. A. Herzka, H. R. Halperin, D. Comaniciu, "A Framework for the Pre-clinical Validation of LBM-EP for the Planning and Guidance of Ventricular Tachycardia Ablation", STACOM, September 2014.

O. Zettinig, T. Mansi, **B. Georgescu**, E. Kayvanpour, F. Sedaghat-Hamedani, A. Amr, J. Haas, H. Steen, B. Meder, H. Katus, N. Navab, A. Kamen, D. Comaniciu, "Fast Data-Driven Calibration of a Cardiac Electrophysiology Model from Images and ECG", MICCAI 2013, September 2013 (oral presentation)

B. Georgescu, S. Rapaka, T. Mansi, O. Zettinig, and A. Kamen, "Towards Real-Time Cardiac Electrophysiology Computations Using GP-GPU Lattice-Boltzmann Method", MICCAI-HPC, September 2013.

T. Mansi, R. Beinart, O. Zettinig, S. Rapaka, **B. Georgescu**, A. Kamen, Y. Dori, M. Zviman, D. Herzka, H. Halperin, D. Comaniciu, "A Framework for the Pre-Clinical Validation of LBM-EP for the Planning and Guidance of Ventricular Tachycardia Ablation", MICCAI-STACOM, September 2013.

T. Mansi, **B. Georgescu**, J. Hussan, P. J. Hunter, A. Kamen, and D. Comaniciu, "Data Driven Reduction of a Cardiac Myofilament Model", Functional Imaging and Modeling of the Heart (FIMH), June 2013 (oral presentation).

O. Zettinig, T. Mansi, **B. Georgescu**, S. Rapaka, A. Kamen, J. Haas, K. Frese, F. Sedaghat Hamedani, E. Kayvanpour, A. Amr, S. Hardt, D. Mereles, H. Steen, A. Keller, H. A. Katus, B. Meder, N. Navab and D. Comaniciu, "From Medical Images to Fast Computational Models of Heart Electromechanics: An Integrated Framework towards Clinical Use", Functional Imaging and Modeling of the Heart (FIMH), June 2013 (oral presentation).

B. Georgescu, T. Mansi, X. Lu, A. Kamen, D. Comaniciu, V. Nadig, N. Seiberlich, M. Griswold, Model Based Automated 4D Analysis for Real-Time Free-Breathing Cardiac MRI, International Society for Magnetic Resonance in Medicine (ISMRM) annual meeting, April 2013.

S. Rapaka, T. Mansi, **B. Georgescu**, M. Pop, G. A. Wright, A. Kamen and D. Comaniciu, "LBM-EP: Lattice-Boltzmann Method for Fast Cardiac Electrophysiology Simulation from 3D Images", MICCAI 2012, Nice, France, September 2012, (to appear).

Y. Wang, D. Vitanovski, **B. Georgescu**, R. Ionasec, I. Voigt, S. Datta, G. Funka-Lea, D. Comaniciu,"Automatic Detection and Quantification of Mitral Regurgitation on TTE with Application to

Assist Mitral Clip Planning and Evaluation", MICCAI Workshop on Clinical Image-based Procedures: From Planning to Interventions (MICCAI-CLIP), acceptet, 2012 (to appear).

Y. Wang, **B. Georgescu**, S. Datta, S. Liu, P. Thavendiranathan, M.i Vannan, "Model-based Flow Quantification Using Conditional Random Fields with Global Preferences", IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), accepted 2012 (to appear).

T. Mansi, V. Mihalef, P. Sharma, **B. Georgescu**, X. Zheng, S. Rapaka, A. Kamen, D. Mereles,H. Steen, B. Meder, H. Katus, D. Comaniciu, "Data-driven Computational Models of Heart Anatomy, Mechanics and Hemodynamics: An Integrated Framework", IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), accepted 2012 (to appear).

X. Lu, M.-P. Jolie, **B. Georgescu**, C. Hayes, P. Speier, M. Schmidt, X. Bi, R. Kroeker, D. Comaniciu, P. Kellman, E. Mueller, J. Guehring, "Automatic view planning for cardiac MRI acquisition", MICCAI 2011, Toronto, Canada, September 2011.

Krist of Ralovich, Razvan Ionasec, Viorel Mihalef, Sharma Puneet, **B. Georgescu**, Allen Everett, Nassir Navab, and Dorin Comaniciu, "Computational fluid dynamics framework for large-scale simulation in pediatric cardiology", Computational Biomechanics for Medicine VI (CBM6) MICCAI Workshop 2011, Toronto, Canada, September 2011.

Sasa Grbic, Razvan Ionasec, Yang Wang, Tommaso Mansi, **B. Georgescu**, Matthias John, Jan Boese, Yefeng Zheng, Nassir Navab and Dorin Comaniciu, "Model-Based Fusion of Multi-Modal Volumetric Images: Application to Transcatheter Valve Procedures", MICCAI 2011, Toronto, Canada, September 2011. **Finalist MICCAI 2011 Young Scientist Award**.

Ingmar Voigt, Tommaso Mansi, Razvan Ionasec, Etienne Assoumou Mengue, Helene Houle, **B. Georgescu**, Dorin Comaniciu, "Robust Physically-Constrained Modeling of the Mitral Valve and Subvalvular Apparatus", MICCAI 2011, Toronto, Canada, September 2011.

T. Mansi, I. Voigt, E. Assoumou Mengue, R. Ionasec, **B. Georgescu**, T. Noack, J. Seeburger, and D. Comaniciu, "Towards Patient-Specific Finite-Element Simulation of MitralClip Procedure", MICCAI 2011, Toronto, Canada, September 2011. **Winner MICCAI 2011 Young Scientist Award**.

X. Lu, Y. Wang, **B. Georgescu**, A. Littman, and D. Comaniciu, "Automatic Delineation of Left and Right Ventricles in Cardiac MRI Sequences Using a Joint Ventricular Model", Functional Imaging and Modeling of the Heart (FIMH), New York, May, 2011.

I. Voigt, T. Mansi, V. Mihalef, R. I. Ionasec, A. Calleja, E. A. Mengue, H. Houle., **B. Georgescu**, J. Hornegger, and D. Comaniciu, "Patient-Specific Model of Left Heart Anatomy, Dynamics and Hemodynamics from 4D TEE: A First Validation Study", Functional Imaging and Modeling of the Heart (FIMH), New York, May, 2011.

Y. Wang, **B. Georgescu**, S. Datta, S. Liu, M. A. Vannan, D. Comaniciu, "Automatic Cardiac Flow Quantification on 3D Volume Color Doppler Data", IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Chicago, April 2011.

P. Thavendiranathan, S. Liu, S. Datta, M. Walls, A. Calleja, A. Nitinunu, T. V. Houten, N. A. Tomson, **B. Georgescu**, Y. Wang, S. Srinivasan, N. De Michelis, S. Rajagopalan, S. V. Raman, T. Ryan, M. A. Vannan, "Automated 3-D Quantification of Mitral Regurgitation by Real-Time Volume Color Flow Doppler: Comparsion with Cardiac Magnetic Resonance Imaging", American Society of Echocardiography, 22nd Annual Scientific Sessions, June 2011. **Finalist 2011 Arthur E. Weyman Young Investigator's Award Competition**.

P. Thavendiranathan, S. Liu, D. Verhaert, A. Calleja, A. Nitinunu, T. Van Houten, **B. Georgescu**, H. Houle, N. De Michelis, S. V. Raman, T. Ryan, M. A. Vannan, "Feasibility, Accuracy, and Reproducibility of A Fully Automated Algorithm to Measure Left Ventricular Systolic Function by Real-Time Volume Transthoracic Echocardiography in Patients in Sinus Rhythm and Atrial Fibrillation. A comparison to Magnetic Resonance Imaging and 2-D Bi-Plane Simpson's Method", American College of Cardiology, 60th Annual Scientific Sessions, April 2011, **Finalist 2011 Young Investigators's Award Competition**.

S. Liu, S. Datta, P. Thavendiranathan, Y. Wang, S. Srinivasan, **B. Georgescu**, A. Ntinunu, T. V. Houten, L. Vidmar, N. Tomson, N. De Michelis, A. Calleja, M.A. Vannan. "Automated 3-D quantification of left ventricular stroke volume by transthoracic real-time volumetric color flow Doppler imaging: comparison with spectral Doppler and 3-D volumetric stroke volume", Poster presentation, American College Of Cardiology Scientific Sessions 2011.

P. Thavendiranathan, S. Liu, A. Calleja, H. Houle, Y. Wang, C. Duong, S. Datta, B. Georgescu, A. Ntinunu, T. Van Houten, L. Vidmar, N. Tomson, T. Ryan, M. A. Vannan. "Automated 3-D voxel longitudinal, circumferential, and radial myocardial mechanics by real-time volume transthoracic echocardiography: feasibility and reproducibility", Poster presentation, American Society Of Echocardiography Scientific Sessions 2011.

S. Grbic, R. Ionasec, **B. Georgescu**, N. Navab, D. Comaniciu, "Complete Valvular Heart Apparatus Model from 4D Cardiac CT", Medical Image Computing and Computer Assisted Intervention (MICCAI), Beijing, China, September 2010. **Winner MICCAI 2010 Young Scientist Award**.

S. Mittal, Yefeng Zheng, **B. Georgescu**, F. Vega-Higuera, Shaohua Kevin Zhou, P. Meer, D. Comaniciu: "Fast Automatic Detection of Calcified Coronary Lesions in 3D Cardiac CT Images", International Workshop on Machine Learning in Medical Imaging (MLMI), in conjunction with MICCAI 2010. Beijing, China, September 2010.

X. Lu, **B. Georgescu**, M.-P. Jolly, J. Guehring, A. Young, B. Cowan, A. Littmann, D. Comaniciu, "Cardiac Anchoring in MRI through Context Modeling",Medical Image Computing and Computer Assisted Intervention (MICCAI), Beijing, China, September 2010.

D. Vitanovski, R. Ionasec, A. Tsymbal, A. Taylor, M. Huber, **B. Georgescu**, K. Zhou, J. Hornegger, D. Comaniciu, "Cross-Modality Assessment and Planning for Pulmonary TrunkTreatment Using CT and MRI Imaging" Medical Image Computing and Computer Assisted Intervention (MICCAI), Beijing, China, September 2010.

Y. Zheng, M. John, R. Liao, J. Boese, U. Kirschstein, **B. Georgescu**, S. K. Zhou, J. Kempfert, T. Walther, G. Brockmann, and D. Comaniciu, "Automatic Aorta Segmentation and Valve Landmark Detection in C-Arm CT: Application to Aortic Valve Implantation", Medical Image Computing and Computer Assisted Intervention (MICCAI), Beijing, China, September 2010.

I. Voigt, R. Ionasec, **B. Georgescu**, J. Boese, G. Brockmann, J. Hornegger, D. Comaniciu "Computational Decision Support for Percutaneous Aortic Valve Implantation", Proceedings of the 5th International Workshop on Medical Imaging and Augmented Reality (MIAR), in conjunction with MICCAI 2010. Beijing, China, September 2010.

S. Liu, **G. Georgescu**, A. Ntinunu, T.V. Houten, H. Houle, N. De Michelis, A. Calleja, M.E. Orsinelli, P. Li, P. Thavendiranathan, T. Ryan, M. A. Vannan. "Automated 3-D quantification of left ventricular volumes and ejection fraction in atrial fibrillation by transthoracic real-time volume imaging". Poster presentation, American College Of Cardiology Scientific Sessions 2010.

P. Thavendiranathan, S. Liu, **B. Georgescu** , A. Ntinunu, A. Calleja, D. Verhaert, H. Houle,

T.V. Houten, J. Mancina, N. De Michelis, D. Orsinelli, M.E. Orsinelli, S. Raman, T. Ryan, M.A. Vannan . "Automated contour correction with instantaneous real-time 3D-volume transthoracic echocardiography improves accuracy of left ventricular volume measurements in patients with systolic dysfunction: comparison to cardiac MRI". Poster presentation, American College Of Cardiology Scientific Sessions 2010.

Y. Wang, **B. Georgescu**, H. Houle and D. Comaniciu, "Volumetric Myocardial Mechanics from 3D+t Ultrasound Data with Multi-model Tracking", Statistical Atlases and Computational Models of the Heart (STACOM), Lecture Notes in Computer Science, 2010

R. Ionasec, I. Voigt, V. Mihalef, S. Grbic, D. Vitanovski, Y. Wang, Y. Zheng, J. Hornegger, N. Navab and **B. Georgescu**, "Patient-Specific Modeling of the Heart: Applications to Cardiovascular Disease Management" Statistical Atlases and Computational Models of the Heart (STACOM), Lecture Notes in Computer Science, 6364:14–24, 2010

V. Mihalef, R. Ionasec, P. Sharma, **B. Georgescu**, M. Huber, D. Comaniciu, "Patient-specific modeling of whole heart anatomy, dynamics and hemodynamics from 4D cardiac CT images". In: Proceedings of VPH (2010) (to appear).

Y. Wang, **B. Georgescu**, D. Comaniciu, H. Houle, "Learning-Based 3D Myocardial Motion Flow Estimation Using High Frame Rate Volumetric Ultrasound Data", IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Rotterdam, The Netherlands, April 2010.

V. Mihalef, R. Ionasec, Y. Wang, Y. Zheng, **B. Georgescu**, D. Comaniciu, "Patient-Specific Modeling of Left Heart Anatomy, Dynamics and Hemodynamics from High Resolution 4D CT" IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Rotterdam, The Netherlands, April 2010.

I. Voigt, D. Vitanovski, R. I. Ionasec, A. Tsymbal, **B. Georgescu**, K. Zhou, M. Huber, N. Navab, J. Hornegger, D. Comaniciu, "Learning discriminative distance functions for valve retrieval and improved decision support in valvular heart disease", SPIE Medical Imaging, 2010, San Diego, USA, February 2010.

S. Grbic, R. I. Ionasec, Y. Zheng, D. Zaeuner, **B. Georgescu**, D. Comaniciu "Aortic Valve and Ascending Aortic Root Modeling from 3D and 3D+t CT", SPIE Medical Imaging, 2010, San Diego, USA, February 2010.

R. I. Ionasec, Y. Wang, **B. Georgescu**, I. Voigt, N. Navab, D. Comaniciu "Robust Motion Estimation Using Trajectory Spectrum Learning: Application to Aortic and Mitral Valve Modeling from 4D TEE", International Conference on Computer Vision (ICCV), Kyoto, Japan, September 2009.

D. Vitanovski, R. I. Ionasec, **B. Georgescu**, M. Huber, R. Taylor, J. Hornegger, D. Comaniciu, "Personalized pulmonary trunk modeling for intervention planning and valve assessment estimated from CT data", Medical Image Computing and Computer Assisted Intervention (MICCAI), London, UK, September 20-24 2009.

R. I. Ionasec, I. Voigt, **B. Georgescu**, H. Houle, J. Hornegger, N. Navab, D. Comaniciu, "Modeling and assessment of the Aortic-Mitral valve coupling from 4D TEE and CT", Medical Image Computing and Computer Assisted Intervention (MICCAI), London, UK, September 20-24 2009 - **Best Session Poster Award**.

X. Lu, **B. Georgescu**, D. Comaniciu, "Discriminative Joint Context for Automatic Landmark Set Detection from a Single Cardiac MR Long Axis Slice", Functional Imaging and Modeling of the Heart (FIMH), LNCS 5528, pp. 457-465, Nice, France, June 2009.

Y. Zheng, X. Lu, **B. Georgescu**, A. Littmann, E. Mueller, D. Comaniciu, "Robust Object Detection Using Marginal Space Learning and Ranking-Based Multi-Detector Aggregation: Application to Left Ventricle Detection in 2D MRI Images", Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), June 2009.

I. Voigt, R. I. Ionasec, **B. Georgescu**, H. Houle, M. Huber, J. Hornegger, D. Comaniciu "Model-driven physiological assessment of the mitral valve from 4D TEE", SPIE Medical Imaging 2009, Orlando, USA, February 2009.

R. I. Ionasec, A. Tsymbal, D. Vitanovski, **B. Georgescu**, K. Zhou, N. Navab, D. Comaniciu, "Shape-based diagnosis of the aortic valve", SPIE Medical Imaging, 2009, Orlando, USA, February 2009.

Y. Zheng, X. Lu, **B. Georgescu**, A. Littmann, E. Mueller, and D. Comaniciu, "Automatic Left Ventricle Detection in MRI Images Using Marginal Space Learning and Component-Based Voting", Proc. SPIE Medical Imaging, February 2009.

H. Houle, S. Liu, A. Nitnunu, T. Van Houten, **B. Georgescu**, Y. Wang, C. Duong, T. Sockeel, S. Datta, M. E. Orsinelli, T. Ryan, M. Vannan, "Automated Quantification of Volume Myocardial Mechanics By Transthoracic Real-Time Volume Imaging: Initial Clinical Experience", ASE 20th Annual Scientific Sessions, February 2009.

J. Choi, **B. Georgescu**, R. I. Ionasec, S. Raman, G. Hong, S. Liu, H. Houle, M. A. Vannan, "Novel Semi-Automatic Quantitative Assessment of The Aortic Valve and Aortic Root from Volumetric 3D Echocardiography: Comparison to Volumetric Cardiac Computed Tomography (CT)", American Heart Association Scientific Sessions, AHA, New Orleans, USA, November 2008.

E. Gassner, R. I. Ionasec, **B. Georgescu**, S. Vogt, U. J. Schoepf, D. Comaniciu, "Performance of a Dynamic Aortic Valve Model for Quantification of the Opening Area at Cardiac MDCT. Comparison to Manual Planimetry", Radiological Society of North America, RSNA, 2008, Chicago, USA, November 2008.

R.n I. Ionasec, **B. Georgescu**, D. Comaniciu, S. Vogt, U. J. Schoepf, E. Gassner, "Patient Specific 4D Aortic Root Models Derived from Volumetric Image Data Sets", Radiological Society of North America, RSNA, 2008, Chicago, USA, November 2008.

Y. Zheng, X. Lu, **B. Georgescu**, A. Littmann, E. Mueller, D. Comaniciu, "Automatic Left Ventricle Detection in MRI Images Using Marginal Space Learning and Component-Based Voting", SPIE Medical Imaging, 2009.

Y. Zheng, **B. Georgescu**, M. Scheuring, D. Comaniciu, "Left Ventricle Endocardium Segmentation for CT Volumes Using an Optimal Smooth Surface", SPIE Medical Imaging, 2009.

H. Ling, S. K. Zhou, Y. Zheng, **B. Georgescu**, M. Suehling, D. Comaniciu, "Hierarchical, Learning-based Automatic Liver Segmentation", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Anchorage, Alaska, June 2008.

L. Yang, **B. Georgescu**, Y. Zheng, P. Meer, D. Comaniciu, "3D Ultrasound Tracking of the Left Ventricles Using One-Step Forward Prediction and Data Fusion of Collaborative Trackers", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Anchorage, Alaska, June 2008.

G. Carneiro, F. Amat, **B. Georgescu**, S. Good, D. Comaniciu, "Semantic-based Indexing of Fetal Anatomies from 3-D Ultrasound Data Using Global/Semi-local Context and Sequential Sampling", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Anchorage, Alaska, June

2008.

L. Yang, **B. Georgescu**, Y. Zheng, D. J. Foran, D. Comaniciu, "A Fast and Accurate Tracking Algorithm of the Left Ventricle in 3D Echocardiography", 5th IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Paris, France, May 2008.

X. Lu, **B. Georgescu**, Y. Zheng, J. Otsuki, D. Comaniciu, "Automatic Detection of Standard Planes in 3D Echocardiography", 5th IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Paris, France, May 2008.

Y. Zheng, A. Barbu, **B. Georgescu**, M. Scheuering, D. Comaniciu, "Four-Chamber Heart Modeling and Automatic Segmentation for 3D Cardiac CT Volumes", SPIE Symposium on Medical Imaging, San Diego California, February 2008, (oral presentation).

Y. Zheng, A. Barbu, **B. Georgescu**, M. Scheuering, D. Comaniciu, "Fast Automatic Heart Chamber Segmentation from 3D CT Data Using Marginal Space Learning and Steerable Features", 11th International Conference on Computer Vision (ICCV), Rio de Janeiro, Brazil, October 2007 (oral presentation).

G. Carneiro, **B. Georgescu**, S. Good, D. Comaniciu, "Automatic Fetal Measurements in Ultrasound Using Constrained Probabilistic Boosting Tree", Proc. of Medical. Image Computing and Computer Assisted Intervention (MICCAI), Brisbane, Australia, October 2007.

A. Barbu, V. Athitsos, **B. Georgescu**, S. Boehm, P. Durlak, D. Comaniciu, "Hierarchical Learning of Curves: Application to Guidewire Localization in Fluoroscopy", IEEE Conf. Computer Vision and Pattern Recognition (CVPR), pp. 1–8, Minneapolis, MN, 2007 (oral presentation).

S. K. Zhou, J. Shao, **B. Georgescu**, D. Comaniciu, R. Chellappa, "Pairwise Active Appearance Model and its Application to Echocardiography Tracking", Proc. of Medical Image Computing and Computer Assisted Intervention (MICCAI), pp. 736–743, Copenhagen, Denmark, October 2006, (oral presentation).

J. Xiao, **B. Georgescu**, S. Zhou, D. Comaniciu, T. Kanade, "Simultaneous Registration and Modeling of Deformable Shapes", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), vol.2, pp. 2429–2436, New York, NY, June 2006.

X. S. Zhou, J. H. Park, **B. Georgescu**, C. Simopoulos, J. Otsuki, D. Comaniciu, "Image-based Multiclass Boosting and Echocardiographic View Classification", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), vol.2, pp. 1559–1565, New York, NY, June 2006.

X. S. Zhou, J. Shao, **B. Georgescu**, D. Comaniciu, "BoostMotion: Boosting a Discriminative Similarity Function for Motion Estimation, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), vol.2, pp. 1761–1768, New York, NY, June 2006, (oral presentation).

W. Hong, **B. Georgescu**, X. S. Zhou, S. Krishnan, Y. Ma, D. Comaniciu, "Database-Guided Simultaneous Multi-slice 3D Segmentation for Volumetric Data", 9th European Conference on Computer Vision, (ECCV), IV:pp. 397–409 Graz, Austria, May 2006.

Y. Zheng, X. S. Zhou, **B. Georgescu**, S. Zhou, D. Comaniciu, "Example Based Non-rigid Shape Detection", 9th European Conference on Computer Vision, (ECCV), IV:pp. 423–436, Graz, Austria, May 2006.

B. Georgescu, X. S. Zhou, D. Comaniciu, B. Rao, "Database-Guided Segmentation of Anatomical Structures with Complex Appearance", IEEE Conference on Computer Vision and Pattern

Recognition (CVPR), pp. 429–436, San Diego, CA, June 2005, (oral presentation).

S. K. Zhou, **B. Georgescu**, X. S. Zhou, D. Comaniciu, "Image Based Regression Using Boosting Method", 10th International Conference on Computer Vision (ICCV), pp. 541–548, Beijing, China, October 2005.

Alan S. Katz, Sriram Krishnan, Xiang Zhou, **Bogdan Georgescu**, Michael Gera, Dorin Comaniciu, Jinbo Bi, Glenn Fung, Jianming Liang, Bharat Rao, Roger Grimson, Nathaniel Reichek, "Clinical Evaluation of a Novel Automatic Real-Time Myocardial Tracking and Wall Motion Scoring Algorithm for Echocardiography Introduction" oral abstract, American College of Cardiology Annual Scientific Session, Orlando, Florida, March 2005 (oral presentation).

W. Chen, P. Meer, **B. Georgescu**, W. Hei, L. A. Goodell, D. J. Foran, "Image mining for investigative pathology. Using optimized feature extraction and data fusion", Computer Methods and Programs in Biomedicine, 79:59–72, May 2005.

B. Georgescu, X. S. Zhou, D. Comaniciu, B. Rao, "Real-Time Multi-Model Tracking of Myocardium in Echocardiography using Robust Information Fusion", Proc. of Medical. Image Computing and Computer Assisted Intervention (MICCAI), pp. 777–785, Rennes, Saint-Malo, France, September 2004.

B. Georgescu, D. Comaniciu, T. X. Han, S. Zhou, "Multi-Model Component-Based Tracking using Robust Information Fusion", 2nd Workshop on Statistical Methods in Video Processing, Prague, Czech Republic, May 2004.

B. Georgescu, I. Shimshoni and P. Meer, "Mean Shift Based Clustering in High Dimensions: A Texture Classification Example", 9th International Conference on Computer Vision, pp. 456–463, Nice, France, October 2003.

B. Georgescu and P. Meer, "Balanced Recovery of 3D Structure and Camera Motion from Uncalibrated Image Sequences", 7th European Conference on Computer Vision, Vol. II, pp. 294-308, Copenhagen, Denmark, May 2002.

C. M. Christoudias, **B. Georgescu**, P. Meer, "Synergism in Low Level Vision", 16th International Conference on Pattern Recognition, Vol. IV, pp. 150–155, Quebec City, Canada, August 2002.

B. Matei **B. Georgescu** and P. Meer, "A Versatile Method for Trifocal Tensor Estimation", 8th International Conference on Computer Vision, Vol. II, pp. 578-585, Vancouver, BC, Canada, July 2001.

K. Xu, **B. Georgescu**, D. Comaniciu, P. Meer, "Performance Analysis in Content-Based Retrieval with Textures", 15th International Conference on Pattern Recognition, Vol IV, pp. 275-278, Barcelona, Spain, September 2000.

D. Comaniciu, **B. Georgescu**, P. Meer, W. Chen, D. Foran, "Decision Support System for Multiuser Remote Microscopy in Telepathology", Proc. 12th IEEE Symposium on Computer-Based Medical Systems, Stamford, CT, June 1999.

V.E. Neagoe and **B. Georgescu**, "A Neural Vector Quantization for Image Sequence Compression", Real World Application of Intelligent Technologies, Proc. of Romanian-German Workshop, Bucharest, 1997.

B. Georgescu and B. Iordanescu, a series of 4 articles about advanced applications in Z80 assembly language (in romanian), "PC Magazin", no. 4/1990, no. 1/1991, no. 2/1991, no. 3/1991.

Other

Reviewer:
IEEE Trans. Pattern Analysis and Machine Intelligence, IEEE Trans. on Image Processing, IEEE Trans. on Biomedical Engineering, IEE Electronic Letters, IEEE Signal Processing Letters, Image and Vision Computing Journal, IEEE International Conf. on Computer Vision, European Conf. on Computer Vision, IEEE Computer Society Workshop on Motion and Video Computing, IEEE Conf. on Computer Vision and Pattern Recognition, International Syposium on Visual Computing, Medical Imaging and Computer Assisted Intervention

Program Committee Member:
IEEE Computer Society Workshop on Motion and Video Computing 2005, International Symposium on Visual Computing 2005, IEEE Conf. on Computer Vision and Pattern Recognition 2006.

Patents: >100 Patents Granted; >100 Patent Applications (registered with Siemens/US patent office).
Patent number 8,920,322: Winner of Thomas Alva Edison Patent Award 2015, New Jersey. Patent number 7,949,173: Winner of Thomas Alva Edison Patent Award 2013, New Jersey. Patent number 7,916,919: Winner 2011 Thomas Alva Edison Patent Award, New Jersey. Among the 6 finalists for 2011 National Inventor of the Year Award.

Computer Skills

Languages: [Current] C/C++, Python, MATLAB, [Past] Java, Prolog, Lisp, x86 assembly, TMS320C50, Z80.
Operating Systems: Unix/Linux, Windows.

Languages

Romanian (native), English (fluent), French (proficient).