

Ahmed Elgammal
Dept. of Computer Science
Rutgers, The state University of New Jersey
110 Frelinghuysen Road
Piscataway, NJ 08854-8019
Home 609-301-4808 - Cell 732-331-3536
Work: 848-445-8316 - Fax 732-790-0969
Email: elgammal@cs.rutgers.edu
Web page: <http://www.cs.rutgers.edu/~elgammal/>

Research Interest:

Computer Vision, Data Science, Human-Centered Computing, and Machine Learning.

Education:

- Ph.D. Computer Science, May 2002, University of Maryland, College Park, MD
Advisor: Prof. Larry S. Davis.
Thesis: “*Efficient Nonparametric Kernel Density Estimation for Real-time Computer Vision*”
Defense Committee: Larry S. Davis, Azriel Rosenfeld, Rama Chellapa, Amitabh Varshney
- M.Sc., Computer Science, June 2000. University of Maryland, College Park, MD.
- M.Sc., Computer Engineering and Automatic Control, June 1996. University of Alexandria, Alexandria, Egypt.
Thesis: “*Bilingual Document Image Analysis*”
- B.Sc., Computer Science and Automatic Control, July 1993, with Degree of honor. University of Alexandria, Alexandria, Egypt.

Current Appointment:

- Associate Professor, July 2008 – present
(Assistant Professor, September 2002 – July 2008)
Dept. of Computer Science, Rutgers, The state University of New Jersey.

Academic Affiliations and roles:

- Director of the Computer Science Master Program – 2014-present
- Member of the [Center for Computational Biomedicine Imaging & Modeling \(CBIM\)](#)
- Affiliated member with the Rutgers University Center Cognitive Science (RUCSS)
- Director of the [Art and Artificial Intelligence Laboratory](#) – 2014-present
- Director of the Human Motion Analysis Laboratory (HuMAN Lab)– 2002-present

Prior Appointments:

- Assistant Research Faculty, September 2001- August 2002. The Computer Vision Laboratory (CVL), Center For Automation Research (CFAR), Institute for Advanced Computer Studies (UMIACS), University of Maryland, College Park.
- Graduate Research Assistant, January 1998 - September 2001. The Computer Vision Laboratory (CVL), Institute for Advanced Computer Studies (UMIACS), University of Maryland, College Park, MD.
- Internship, summers of 1997, 1998, 1999, and 2001. Philips Research Laboratories, Briarcliff manor, NY.

- Graduate Teaching Assistant, August 1997 – January 1998. Dept. of Computer Science, University of Maryland, College Park.
- Graduate Teaching Assistant, August 1996 – May 1997. Dept. of Computer Science, Rutgers, The state University of New Jersey.
- Graduate Teaching Assistant/ Instructor, August 1993-August 1996. Dept. of Computer Science, University of Alexandria, Alexandria, Egypt.

Professional Services:

- Editorial Board: Image and Vision Computing Journal since June 2008.
- *Guest Editor*: Computer Vision and Image Understanding (CVIU) special issue on video analysis, 2009
- *Chair/Organizer*: ICCV Workshop on Closing the Loop Between Vision and Language 2015
- *Chair/Organizer*: ACCV Workshop on Detection and Tracking in Challenging Environments (DTCE) – Daejeon, Korea, November 2012.
- *Chair/Organizer*: The 3rd Workshop on Human Motion, Understanding, Capture, and Animation, with ECCV 2010.
- *Chair/Organizer*: The 2nd Workshop on Human Motion, Understanding, Capture, and Animation, with ICCV'07.
- *Area Chair*: IEEE International Conference on Computer Vision ICCV 2015.
- *Area Chair*: IEEE Computer Society Conference on Computer Vision CVPR 2014.
- *Area Chair*: 10th IEEE International Conference on Automatic Face and Gesture Recognition, Shanghai, China 2013.
- *Publication Chair*: 10th IEEE International Conference on Automatic Face and Gesture Recognition, Shanghai, China 2013.
- *Senior Program Committee*: AAI'13
- *Area Chair*: International Conference on Computer Vision ICCV'07.
- Session Chair: 6th International Conference on Computational Creativity (ICCC'15)
- Session Chair: Tracking Session - 21st International Conference on Pattern Recognition (ICPR'12), Tsukuba Science City, Japan, November 2012.
- Session Chair: International Conference on Computer Vision ICCV'07.
- Program Committee: AAI'15
- *Program Committee*: When Vision Meets Art Workshop, with ECCV 2014
- *Program Committee*: Vision Meets Cognition Workshop, with CVPR 2014
- *Program Committee*: IEEE Computer Society Conference on Computer Vision and Pattern Recognition: CVPR'15, CVPR'13, CVPR'12, CVPR'11, CVPR'10, CVPR'08, CVPR'07, CVPR'06.
- *Program Committee*: IEEE Conference on Biometrics: Theory, Applications and Systems, BTAS'07, BTAS'08.
- *Program Committee*: IEEE Workshop on CVPR for Human Communicative Behaviour Analysis, 2008, 2009, 2010.
- *Program Committee*: IEEE Online Learning for Computer Vision Workshop OLCV 2007, 2008, 2009, 2010.
- *Program Committee*: ACM Multimedia 2007, Interface track.

- *Program Committee:* Workshop on Dynamic Vision: WDV'09 with ICCV'09, WDV'7 with ICCV'07, WDV'06 with ECCV'06, WDV'05 with ICCV'05.
- *Program Committee:* International symposium on Visual Computing. ISVC'06 ISVC'07, ISVC'08, ISVC'09.
- *Program Committee:* The 7th International Conference on Face and Gesture Recognition FG'06.
- *Program Committee:* The European Conference on Computer Vision ECCV'10, ECCV'06.
- *Program Committee:* International Conference on Computer Vision ICCV'09, ICCV'05.
- *Program Committee:* IEEE Computer Society Workshop on Motion and Video Computing, 2007, 2005, 2002.
- *Program Committee:* IEEE Workshop on Applications of Computer Vision; (WACV'08).
- *Program Committee:* The 2nd International Workshop on Generative-Model based vision. GMBV 2004, Washington DC, USA, June 2004, with CVPR'04.

- Reviewer for most of the top journals in the computer vision field, including:
 - IEEE Transactions on Pattern analysis and Machine Intelligence (TPAMI)
 - International Journal of Computer Vision (IJCV)
 - IEEE Transaction on Image Processing. (TIP)
 - Computer Vision and Image Understanding (CVIU)
 - Pattern Recognition
 - Pattern Recognition Letters
 - Image and Video Computing (IVC)

Professional Memberships

- Senior Member of IEEE
- Member of the IEEE computer society and TC-PAMI.
- Member of the Renaissance Society of America
- Member of the British Machine Vision Association and Society for Pattern Recognition
- Member of the International Association of Pattern Recognition

Funded Research Grants:

- PI: NSF-IIS “Write-a-classifier: Joint learning from text and images for fine-grained recognition” – August 2014 - In collaboration with Smaranda Muresan at Columbia University
Award: \$1M
- PI: NSF-IIS “Detecting Abnormality in Images” – June 2012 – In collaboration with Jacob Feldman (Rutgers Psychology) and Ali Farhadi (U. of Washington)
Award: \$460K
- PI: ONR “Towards Smooth Encoding of Local Features and Their Spatial Arrangement for Recognition” – June 2012
Award: \$125K
- PI: Rutgers Faculty Research Grant "Micro-UAV Swarm for Real-time 3D Monitoring and Surveillance" – January 2012
Award \$50K
- PI: Siemens Collaborative Agreement – December 2011 - \$25K
- PI: Telcordia Research Gift – October 2011, \$28K
- PI: Google Research Award – June 2011

Award: \$55K.

- PI: National Science Foundation – Office of International Science and Engineering (OISE)
Project title: “Computer Aided Pronunciation Learning Application”,
Award \$75K, October 2009-September 2012.
- Co-PI: National Science Foundation - Industrial Innovation and Partnerships (IIP). Planning Grant: Industry/University Cooperative Research Centers Program (I/UCRC) “Center for Dynamic Data Analytics”, March 2009, Award: \$10K
- Co-PI: National Science Foundation - Human Centered Computing Program - Medium Grant
Project title: Multimodal Capture of Teamwork in Collocated Collaboration”
Award: \$500K, September 2008- August 2011.
- Co-PI: Rutgers University Seed Funding for Collaborative Computing Research 2008
Project title: “Continuous Vital Monitoring for Trauma Triage using Wireless Sensor Networks”
Award: \$50K, Spring 2008.
- Co-PI: Rutgers University Academic Excellence Fund 2008
Project title: “Real-Time Multimodal Monitoring of Collaborative Teamwork”
Award: \$20K, Spring 2008.
- Co-PI: National Science Foundation Small Grants for Exploratory Research
Project title “Vision and RFID for Multimodal Tracking of Working Teams”
Award: \$84K, September 2007 – August 2008.
- PI: Mitsubishi Research Lab – “Novel methods for Face Tracking”
Award \$5,000 – Fall 2007.
- **PI: National Science Foundation CAREER Award** number 0546372.
Project title “Generalized Separation of Style and Content on Nonlinear Manifolds with Application to Human Motion Analysis”
Award: \$512K, January 2006 – December 2010.
- Co-PI: Department of Homeland Security
Project title: “Deception Detection from Visual and Multimodal Input”
Award \$3.5M, summer 2005- 2008.
- PI: National Science Foundation Award number 0328991.
Project title: “Nonlinear Spatiotemporal Models for Decomposing Style Variations using Kernel Methods”
Award: \$250K, Date: September 2003- August 2006
- Co-PI: National Science Foundation Award number 0428231.
Project title: “ITR –DDDAS - Advances in recognition and interpretation of human motion: An Integrated Approach to ASL Recognition”
Award: \$1.6M, Date: October 04 – October 07

- Co-PI: National Institute for Standards and Technology (NIST)
“Gesture-based Control of Mobile Platforms”
September 2002 – August 2004

Patents:

- United States Patent # 6,263,113 “Method for detecting a face in a digital image”, 2001.
- United States Patent # 7,057,636 “Conferencing System and Method for Automatic Determination of Preset Position Corresponding to Participants in Video-Mediated Communications”, 2006.
- European Patent #1,057,326 Automatic Determination of Preset Positions Corresponding to Participants in Video, 2008.

Honors, Awards, and Media

- IEEE senior member since 2013.
- International Innovation North America Magazine has published a report about our NSF funded project on Generalized Separation of Style and Content for Human Motion Analysis, May 2013.
- *Editor Choice Paper*: Image and Vision Computing Journal – April 2013 “Homeomorphic Manifold Analysis (HMA): Generalized Separation of Style and Content on Manifolds”.
- Google Research Award 2011
- Outstanding reviewer award, IEEE conference on Computer Vision and Pattern Recognition, June 2008.
- Rutgers Academic Excellence Award, Spring 2008.
- **National Science Foundation CAREER Award – January 2006.**
- *Recipient of Honorary Mention for Best Paper Award*. 4th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP'04), December 16-18, 2004, pages 656-662. Kolkata, India. With V. Shet, V. Shiv Naga Prasad, A. Elgammal, L. S. Davis, Y. Yacoob, paper title “*Multi-Cue Exemplar-Based Nonparametric Model for Gesture Recognition*”

Sample Media Coverage (for a more up to date and complete list check [the Art and Artificial Intelligence lab web site](#))

The paper “*Quantifying Creativity in Art Networks*” has received worldwide media attention. Here are few prominent posts about it:

- Yang Wang “Why do we love Picasso? A ‘creativity algorithm’ explains” The Washington Post, July 31, 2015
- Stephen Heyman “How Computing Can Help Art Historians” The New York Times, July 15, 2015
- Dominic Basulto “[Why it matters that computers are now able to judge human creativity](#)” *The Washington Post*, June 18, 2015.
- Devin Coldwey “[Computer Art Critic Picks Most Creative Paintings in History](#)” *NBC News*, June 11, 2015.

- Benjamin Sutton [“Can an Algorithm Determine Art History’s Most Creative Paintings?”](#) *Hyperallergic*, June 12, 2015.
- Marissa Fessenden [“History’s Most Creative Paintings, As Picked by a Computer”](#), *Smithsonian Magazine*, June 18, 2015.
- Richard Gray [“Move over art critics! Computer algorithm reveals the most original masterpieces of all time”](#) *The Daily Mail*, June 16, 2015.
- Guelda Voien [“Computer Program Ranks Relative ‘Creativity’ of Historical Paintings”](#) *Observer*, June 23, 2015.
- Rob Waugh [“A Computer Has Ranked The Human Race’s ‘Best’ Art Works”](#) *Yahoo News*, June 19, 2015.
- Marc Bain [“Picasso = Genius: This algorithm can judge “creativity” in art as well as the experts”](#) *Quartz*, June 11, 2015.
- Miguel Angel Criado [“El Cristo de Goya, el cuadro más original para las máquinas”](#) EL PAIS (Spain’s top national news paper, appeared also in the Brazilian edition) June 17, 2015.
- [“Los cuadros más creativos de la historia según la ciencia”](#) ABC news paper (Spain third largest news paper)
- Stefania Medetti [“Arriva l’algoritmo che analizza e cataloga l’arte”](#) *Panorama*, Italy, June 18, 2015.
- Philip Ferrari [“L’algoritmo che giudica le opere d’arte”](#) *Focus*, Italy, June 15, 2015
- “Machine Vision Algorithm Chooses the Most Creative Paintings in History” *MIT Technology Review*, June 10, 2015

The paper “Large-scale Classification of Fine-Art Paintings: Learning The Right Metric on The Right Feature” has received some media attention. Most prominent posts:

- “The Machine Vision Algorithm Beating Art Historians at Their Own Game” *MIT Technology Review*, May 11, 2015.
- Marissa Fessenden [“Computers Are Learning About Art Faster than Art Historians”](#) *Smithsonian Magazine*, May 13, 2015.
- Tanya Lewis [“Art-ificial Intelligence? Algorithm Sorts Paintings Like a Person”](#) *Live Science*, June 19, 2015

The paper “*Toward Automated Discovery of Artistic Influence*” has received extensive media coverage. Here are prominent posts about it:

- Haluka Maier-Borst [“Looking for the art formula”](#) *PM Magazine*, Germany, March 2015.
- Mohana Ravindranath, “Computer Science Putting Art Analysis on Faster Track,” *The Washington Post*, Nov. 10, 2014.
- Mohana Ravindranath, [“Can an algorithm tell us who influenced an artist?”](#) *The Washington Post*, Nov. 9, 2014.
- Antonio Martínez Ron, [“Este algoritmo quiere ser crítico de arte.”](#) *Vozpópuli*, Oct. 16, 2014 (in Spanish).

- Meghan Rosen, [“Computer program reveals artists’ influences,”](#) *Science News*, Oct. 13, 2014.
- Rosalind Mckever [“Can artificial intelligence really identify artistic influence?”](#), Apollo-magazine, September 19, 2014.
- Mostafa Heddaya, [“Seeing Art History with Machine Eyes,”](#) *Hyperallergic*, Aug. 26, 2014.
- Zach Sokol, [“An Intelligent Algorithm Made A Discovery That Slipped Past Art Historians For Years,”](#) *The Creators Project*, Aug. 26, 2014.
- Rafael Garcia [“Scientists create computer program that analyzes painting and identifies influences between artists”](#) article in portuguese, *Folha De S. Paulo*, August 24th, 2014
- Matthew Sparkes, [“Could Computers Put Art Historians Out of Work?”](#) *The Telegraph*, Aug. 18, 2014.
- [“When A Machine Learning Algorithm Studied Fine Art Paintings, It Saw Things Art Historians Had Never Noticed,”](#) *The Medium - The Physics arXiv Blog*, Aug. 18, 2014.

Ph.D. Students Advised (graduated)

- Turgay Senlet, Ph.D. awarded 2015, “Visual Localization, Semantic Video Segmentation and Labeling Using Satellite Maps”
Dr Senlet is currently at Google.
- Ishani Chakraborty, Ph.D. awarded 2013, “Object Category Detection and Recognition Through Topic Model Cascade.”
Dr. Chakraborty is currently at SRI, Princeton, NJ.
- Ali Elqursh, Ph.D. awarded 2013, “Online Non-rigid Motion and Scene Layer Segmentation.”
Dr. Elqursh is currently at Google
- Edinah Gngang, Ph.D. awarded 2013, “Computational aspects of the Combinatorial Nullstellensatz Method via a Polynomial Approach to Matrix and Hypermatrix Algebra.”
Dr. Gngang is currently a Golomb Assistant Professor of Mathematics at Purdue University.
- Marwan Torki, Ph.D. awarded 2011 “Learning The Manifolds of Local features and Their Spatial Arrangements.”
Dr. Torki is currently a faculty member at the Department of Computer Science, Alexandria University, Egypt.
- Toufiq Parag, Ph.D. awarded 2010 “Labeling Hypergraph-structured Data using Markov Network”
Dr. Parag is currently with Howard Hughes Medical Institute, Janelia Research Campus.
- Zhipeng Zhao, Ph.D. awarded 2009 “Towards a Local-Global Visual Feature-Based Framework for Recognition.”
Dr. Zhao is currently at Symantec.
- Chan-Su Lee, Ph.D. awarded 2007 “Modeling Human Motion Using Manifold Learning and Factorized Generative Models.”
Dr. Lee is currently a faculty member at School of Electronic Eng., Communication Eng. & Computer Science, Yeungnam University, Korea.
- Ramana Isukapalli, Ph.D. – awarded 2006 “Learning Effective Interpretation Policies.”
Dr Isukapalli is currently with Lucent Technologies.

M.Sc. Students Advised:

- Rayneet Arrora M.Sc. awarded 2012 *“Towards Automated Classification of Fine-art Painting Style: a Comparative Study”*
- Gagan Gutam, M.Sc. awarded 2007 *“A Scalable And High Performance Image Search Engine Using Semantic And Structural Image-Keyword Association”*.

Publications:

Citations are according to Google scholar, on June 2015. Overall h-index = 30, i10-index = 60.

Books Authored:

- [1] A. Elgammal “*Background Subtraction – Theory and Practice*” Morgan & Claypool Publishers, 2014.

Book and Journal Editorials:

- [2] Q. Liu, X. Li, A. Elgammal, X. Hua, D. Xu, D. Tao, Guest Editor: special issue on video analysis in the Computer Vision and Image Understanding Journal (CVIU). 2009.
- [3] A. Elgammal, B. Rosenhahn, and R. Klette, Editors Lecture Notes on Computer Science (LNCS) Volume on "Proceedings of the 2nd workshop on Human Motion - Understanding, Modeling, Capture and Animation". Springer, 2007.

Invited and Refereed Book Chapters:

- [4] A. Elgammal “*Homeomorphic Manifold Analysis (HMA): Untangling Complex Manifolds*” - Advances in Imaging & Electron Physics – Elsevier – Vol 187, 2015.
- [5] A. Elgammal “*Statistical Models for Background Subtraction*” in “Background Modeling and Foreground Detection for Video Surveillance”, CRC, 2014
- [6] A. Elgammal and A. Elqursh “*Background Subtraction for Moving Cameras*” in “Background Modeling and Foreground Detection for Video Surveillance”, CRC, 2014
- [7] A. Elgammal “*Background Subtraction – Theory and Practice*” in “Wide Area Surveillance - Real Time Motion Detection Systems”, Vijayan K. Asari (Ed.), Springer, 2013
- [8] M. Torki and A. Elgammal “*Learning Image Manifolds from Local Features*” in “Manifold Learning theory and Applications”, Yunqian Ma and Yun Fu (Eds.), CRC press, March 2012.
- [9] A. Elgammal and C.-S. Lee “*Human Motion Analysis Application of Manifold Learning*” in “Manifold Learning theory and Applications” Yunqian Ma and Yun Fu (Eds.), CRC press, March 2012.
- [10] A. Elgammal “*Figure-ground segmentation - pixel-based*” in “Guide to Visual Analysis of Humans: Looking at People”, Th. B. Moeslund, A. Hilton, V. Krüger, L. Sigal (Eds.), Springer.
- [11] A. Elgammal “*Motion analysis for gait recognition*” Biometrics Encyclopedia, Springer 2009.
- [12] A. Elgammal, Crystal Muang, and Dunxu Hu “*Skin Detection*” Biometrics Encyclopedia, Springer, 2009. [cited 75 times]
- [13] A. Elgammal and C.-S. Lee, “*The Role of Manifold Learning in Human Motion Analysis*”, in “Human Motion - Understanding, Modeling, Capture and Animation”. Springer – Computational Imaging Series. Springer, 2007. [cited 21 times]

Journal Publications:

- [14] M. Elhoseiny and A. Elgammal “*Generalized Twin Gaussian Processes using Sharma-Mittal Divergence*”, Machine Learning Journal, Springer – in press 2015.
- [15] H. Zhang, T. El-Gaaly, Z. Jiang, A. Elgammal “*Factorization on View-Object Manifold for Joint Object Recognition and Pose Estimation*” Computer Vision and Image Understanding Journal (CVIU), in press 2015.
- [16] X. Peng, J. Huang; Q. Hu; S. Zhang; A. Elgammal, and D. Metaxas “*From Circle to 3-Shpere: Robust Head Pose Estimation by Instance Parameterization*” Computer Vision and Image Understanding Journal (CVIU), in press 2015.
- [17] S. Huang, Y. Yu, D. Yang, A. Elgammal and D. Yang, “*Collaborative Graph Embedding: A Simple Way to Generally Enhance Subspace Learning Algorithms*”, IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), Accepted 2015.
- [18] S. Huang, A. Elgammal, J. Lu, D. Yang, “*Cross-Speed Gait Recognition Using Speed-Invariant Gait Templates and Globality-Locality Preserving Projections*”, IEEE Transactions on Information Forensics and Security (TIFS), in press 2015.
- [19] M. Elhoseiny and A. Elgammal “*Text to Multi-level MindMaps: A Novel Method for Hierarchical Visual Abstraction of Natural Language Text*”, Multimedia Tools and Applications Journal, Springer, April 2015.
- [20] H. Zhang, Z. Jiang, and A. Elgammal “*Satellite Recognition and Pose Estimation Using Homeomorphic Manifold Analysis*” IEEE Transactions on Aerospace and Electronic Systems (TAES) – 2014
- [21] B. Saleh, K. Abe, R. Arora, A. Elgammal “*Toward Automated Discovery of Artistic Influence*”, Multimedia Tools and Applications – Springer, 2014.
- [22] Haopeng Zhang, Zhiguo Jiang, and Ahmed Elgammal “*Vision-Based Pose Estimation for Cooperative Space Objects*”, Acta Astronautica, Volume 91, October–November 2013, Pages 115–122.
- [23] A. Elgammal and C.-S Lee “*Homeomorphic Manifold Analysis (HMA): Generalized Separation of Style and Content on Manifolds*”, Image and Vision Computing Journal, April 2013 - **Editor Choice Article**.
- [24] C.-S Lee and A. Elgammal “*Non-linear factorised dynamic shape and appearance models for facial expression analysis and tracking*”, IET- Computer Vision, Volume 6, Issue 6, November 2012, pp 567-580.
- [25] C.-S. Lee and A. Elgammal “*Style Adaptive Contour Tracking of Human Gait Using Explicit Manifold Models*” Machine Vision and Applications Journal, May 2012, Volume 23, Issue 3, pp 461-478.
- [26] E. K. Gnang, A. Elgammal, V. Retakh “*A Spectral Theory for Tensors*” The Annales de la Faculté des Sciences de Toulouse, Sér. 6, 20 no. 4 (2011), p. 801-841. arXiv:1008.2923v4 [math.SP]

- [27] C.-S. Lee and A. Elgammal “*Dynamic Shape Analysis: Bilinear and Multilinear Human Identification with Temporal Normalization*”, International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI), Volume 24, Issue 7, November 2010, pp. 1133-1157.
- [28] C.-S. Lee and A. Elgammal “*Coupled Visual and Kinematics Manifold Models for Human Motion Analysis*” International Journal on Computer Vision (IJCV). Volume 87, Numbers 1-2, March 2010.
[cited 56 times]
- [29] C.-S. Lee and A. Elgammal “*Tracking People on a Torus*” IEEE Transaction on Pattern Analysis and Machine Intelligence (TPAMI), Volume 31, Number 3, March 2009.
[cited 74 times]
- [30] C.-S. Lee and A. Elgammal “*Dynamic shape outlier detection for human locomotion*” Computer Vision and Image Understanding Journal (CVIU). Volume 113, Issue 3, March 2009.
- [31] Z. Zhao, A. Vashist, A. Elgammal, I. Muchnik and C. Kulikowski “*Combinatorial and Statistical Methods for Part Selection for Object Recognition*” International Journal of Computer Mathematics. Volume 84, Issue 9, September 2007, pages 1285-1297.
- [32] A. Elgammal and C.-S. Lee “*Nonlinear Manifold Learning for Dynamic Shape and Dynamic Appearance*” Computer Vision and Image Understanding (CVIU) special issue on generative model based vision. Volume 106, Number I, April 2007, pages 31-46.
[cited 53 times]
- [33] V. S. N. Prasad, L. S. Davis, S. D. Tran, A. Elgammal “*Edge affinity for pose-contour matching*” Computer Vision and Image Understanding Journal (CVIU) Volume 104, Issue 1, October 2006, Pages: 36-47.
- [34] Y. Wang, X. Huang, C.-S. Lee, S. Zhang, Z. Li, D. Samaras, D. Metaxas, A. Elgammal, P. Huang “*High Resolution Acquisition, Learning and Transfer of Dynamic 3D Facial Expressions*”, Computer Graphics Forum, Volume 23 Issue 3 2004, page 677.
[cited 136 times]
- [35] A. Elgammal, R. Duraiswami and L. S. Davis “*Efficient Kernel Density Estimation Using the Fast Gauss Transform with Applications to Color Modeling and Tracking*” IEEE transactions on Pattern Analysis and Machine Intelligence (TPAMI), Volume 25, number 11, November 2003, pages 1499- 1504.
[cited 198 times]
- [36] A. Elgammal, R. Duraiswami, D. Harwood and L. S. Davis “*Background and Foreground Modeling using Non-parametric Kernel Density Estimation for Visual Surveillance*” Proceedings of the IEEE, Volume 90 number 7, July 2002, pages 1151- 1163.
[cited 1379 times]

Refereed Conference Publications: (*In the field of computer vision, certain conferences and workshops are highly selective and rigorously double-blind reviewed by three reviewers and a chair. Conference papers are typically full papers (8-12 pages) and are published in archival proceedings. For this reason, conference papers are considered primary publications.*)

- [37] M. Elhoseiny and A. Elgammal “Overlapping Domain Cover for Scalable and Accurate Regression Kernel Machines”, the 26th British Machine Vision Conference (BMVC’15), September 2015. [oral presentation]
- [38] A. Elgammal and B. Saleh “Quantifying Creativity in Art Networks”, the 6th International Conference on Computational Creativity (ICCC’15), Park City, Utah, June 29-July 2nd 2015. [oral presentation]
- [39] M. Elhoseiny and A. Elgammal “*Generalized Twin Gaussian Processes using Sharma-Mittal Divergence*” – European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PPKDD’15), Porto, Portugal, September 2015. [oral presentation]
- [40] M. Elhoseiny, S. Huang, and A. Elgammal “Weather Classification with Deep Convolution Neural Networks”, IEEE International Conference on Image Processing (ICIP’15), Quebec City, September 2015. [oral presentation]
- [41] S. Huang, M. Elhoseiny, A. Elgammal, D. Yang “*Learning Hypergraph-regularized Attribute Predictors*”, Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR’15), Boston, June 2015.
- [42] P. Vepakomma and A. Elgammal “*Iterative Embedding with Robust Correction using Feedback of Error Observed*” 4th Workshop on Machine Learning for Interactive Systems (MLIS), held in conjunction with the International Conference on Machine Learning (ICML) 2015, Lille, France, July 2015. [oral presentation]
- [43] S. Huang, M. Gao, D. Yang, X. Huang, A. Elgammal and X. Zhang, “*Unbalanced Graph-based Transduction on Superpixels for Automatic Cervigram Image Segmentation*”, IEEE International Symposium on Biomedical Imaging (ISBI’15), New York, April 2015. [oral presentation]
- [44] T. El-Gaaly, V. Froyen, A. Elgammal, J. Feldman, M. Singh “*A Bayesian Approach to Perceptual 3D Object-Part Decomposition Using Skeleton-Based Representations*” Proceedings of the 29th AAAI Conference (AAAI’15), Austin, Texas, January 2015. [oral presentation]
- [45] S. Huang, A. Elgammal, M. Elhoseiny, D. Yang, X. Zhang, “Improving Non-Negative Matrix Factorization via Ranking Its Bases”, IEEE international conference on Image Processing (ICIP), 2014
- [46] A. Bakry and A. Elgammal “Untangling Object-View Manifold for Multiview Recognition and Pose Estimation” The 13th European Conference on Computer Vision (ECCV’14) September 2014.
- [47] E. L. Spratt and A. Elgammal “Computational Beauty: Aesthetic Judgment at the Intersection of Art and Science” 2nd Workshop on When Vision Meets Art (VisArt) in Conjunction with ECCV 2014, Springer LNCS. [oral presentation]
- [48] T. Senlet, T. El-Gaaly, A. Elgammal “Hierarchical Semantic Hashing: Visual Localization from Buildings on Maps” 22nd International Conference on Pattern Recognition (ICPR) 2014.

- [49] T. El-Gaaly, M. Torki, A. Elgammal “Spatial-Visual Label Propagation for Local Feature Classification” 22nd International Conference on Pattern Recognition (ICPR) 2014 [oral presentation].
- [50] B. Saleh, K. Abe and A. Elgammal “Knowledge Discovery of Artistic Influences: A Metric Learning Approach” The Fifth International Conference on Computational Creativity - ICC3 2014 [oral presentation]
- [51] C. Tonde and A. Elgammal “Simultaneous Twin Kernel Learning using Polynomial Transformations for Structured Prediction”, Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR’14) June 2014.
- [52] S. Huang, A. Elgammal, L. Huangfu, D. Yang, X. Zhang, “Globality-Locality Preserving Projections for Biometric Data Dimensionality Reduction”, IEEE conference on Computer Vision and Pattern Recognition Workshop on Biometrics, 2014
- [53] M. Elhoseiny, B. Saleh, and A. Elgammal “Write a Classifier: Zero Shot Learning Using Purely Textual Descriptions”, IEEE International Conference on Computer Vision (ICCV’13)
- [54] A. Elqursh and A. Elgammal “Online Motion Segmentation using Dynamic Label Propagation”, IEEE International Conference on Computer Vision, (ICCV’13)
- [55] Sheng Huang, Ahmed Elgammal, and Dan Yang “Learning Speed Invariant Gait Template via Thin Plate Spline Kernel Manifold Fitting”, the British Machine Vision Conference (BMVC’13), September 2013.
- [56] Kanako Abe, Babak Saleh and Ahmed Elgammal “An Early Framework for Determining Artistic Influence” The 2nd International Workshop on Multimedia for Cultural Heritage, MM4CH Naples, Italy 2013. [oral presentation]
- [57] Praneeth Vepakomma and Ahmed Elgammal “Embedding Super-Symmetric Tensors of Higher-Order Similarities of High-Dimensional Data”, ECML/PKDD 2013 Workshop on Tensor Methods for Machine Learning, Prague September 2013.
- [58] Haopeng Zhang, Tarek El-Gaaly, Ahmed Elgammal, Zhiguo Jiang “Joint Object and Pose Recognition Using Homeomorphic Manifold Analysis” twenty-seventh AAAI Conference on Artificial Intelligence (AAAI’13), July 2013 [oral presentation].
- [59] Babak Saleh, Ali Farhadi, Ahmed Elgammal “Object-Centric Anomaly Detection by Attribute-Based Reasoning”, Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR’13), June 2013.
- [60] Amr Bakry, Ahmed Elgammal “Manifold Kernel Partial Least Squares for Lipreading and Speaker identification”, Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR’13), June 2013.
- [61] Ishani Chakraborty, Ahmed Elgammal, and Randall Burd “Video based Activity Recognition in Trauma Resuscitation”, the 10th IEEE International Conference on Automatic Face and Gesture Recognition (FG’2013), Shanghai, China, April 2013.
- [62] T. Senlet and A. Elgammal “Segmentation of Occluded Sidewalks in Satellite Images”, 21st International Conference on Pattern Recognition (ICPR’12), Tsukuba Science City, Japan, November 2012.

- [63] T. Elgaaly, M. Torki, A. Elgammal and M. Singh “*RGBD Object Pose Recognition Using Local-Global Multi-Kernel Regression*”, 21st International Conference on Pattern Recognition (ICPR’12), Tsukuba Science City, Japan, November 2012.
- [64] A. Elqursh and A. Elgammal “*Video Figure Ground Labeling*”, 21st International Conference on Pattern Recognition (ICPR’12), Tsukuba Science City, Japan, November 2012.
- [65] R. Aroara and A. Elgammal “*Towards Automated Classification of Fine-Art Painting Style: A Comparative Study*”, 21st International Conference on Pattern Recognition (ICPR’12), Tsukuba Science City, Japan, November 2012.
- [66] A. Elqursh and A. Elgammal “*Single Axis Relative Rotation from Orthogonal Lines*”, 21st International Conference on Pattern Recognition (ICPR’12), Tsukuba Science City, Japan, November 2012.
- [67] A. Elqursh and A. Elgammal “*Online Moving Camera Background Subtraction*”, The 12th European Conference on Computer Vision (**ECCV’12**), Florence, Italy, October 2012. [cited 32 times]
- [68] T. Senlet and A. Elgammal, “*Satellite Image Based Precise Robot Localization on Sidewalks*,” in 2012 IEEE International Conference on Robotics and Automation (ICRA’12), Minneapolis, USA, May 2012 [oral presentation]
- [69] M. Torki and A. Elgammal “*Regression from Local Features for Viewpoint and Posture Estimation*”, The 13th IEEE International Conference on Computer Vision (**ICCV’11**), Barcelona, Spain, October 2011. [cited 30 times]
- [70] T. Senlet and A. Elgammal “*A Framework for Global Vehicle Localization Using Stereo Images and Satellite and Road Maps*”, 2nd IEEE Workshop on Computer Vision in Vehicle Technology: From Earth to Mars, in conjunction with ICCV, Barcelona, Spain, 2011.
- [71] T. Parag and A. Elgammal. “*Higher Order Markov Networks for Model Estimation*”, In Proceedings of International Symposium on Visual Computing (ISVC’11) 2011, LNCS-Volume 6938.
- [72] T. Parag and A. Elgammal “*Supervised Hypergraph Labeling*” Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR’11**), June 2011.
- [73] A. Elqursh and A. Elgammal “*Line-Based Relative Pose Estimation*” Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR’11**), June 2011.
- [74] S. Smaldone, C. Tonde, V. K. Ananthanarayanan, A. Elgammal, and L. Iftode “*The Cyber-Physical Bike: A Step Towards Safer Green Transportation*” 12th Workshop on Mobile Computing Systems and Applications (HotMobile) 2011. [oral presentation]
- [75] M. Torki, A. Elgammal, and C-S. Lee “*Learning a Joint Manifold Representation from Multiple Data Sets*” Proceedings of the International Conference on Pattern Recognition (ICPR’10), August 2010.
- [76] I. Chakraborty and A. Elgammal “*Object Localization by Propagating Connectivity via Superfeatures*” Proceedings of the International Conference on Pattern Recognition (ICPR’10), August 2010.

- [77] M. Torki and A. Elgammal “*One-Shot Multi-Set Non-rigid Feature-Spatial Matching*” Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'10), June 2010. [cited 23 times]
- [78] M. Torki and A. Elgammal “*Putting Local Features on a Manifold*” Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'10), June 2010. [cited 17 times]
- [79] I. Chakraborty and A. Elgammal “*Contour segment matching by integrating intra and inter shape cues of objects*” Proceedings of the British Machine Vision Conference (BMVC'09), London, UK, Sept 2009.
- [80] Z. Zhao and A. Elgammal “*Information Theoretic Key Frame Selection for Action Recognition*” Proceedings of the British Machine Vision Conference (BMVC'08), Sept 2008. [cited 23 times]
- [81] Z. Zhao and A. Elgammal “*Human Activity Recognition from Frames’ Spatiotemporal Representation*” Proceedings of the International Conference on Pattern Recognition (ICPR'08). Dec. 2008. [Oral presentation.]
- [82] Z. Zhao and A. Elgammal “*Spatiotemporal Pyramid Representation for Recognition of Facial Expressions and Hand Gestures*” Proceedings of the International Conference on Automatic Face and Gesture Recognition (FG'08), Sept 2008.
- [83] T. Parag, F. Porikli and A. Elgammal “*Adaptive Linear Weak Classifiers for Online learning and Tracking*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'08).
[cited 38 times]
- [84] C.-S. Lee, A. Elgammal and D. Metaxas “*Nonlinear dynamic shape and appearance models for facial motion tracking*” Proceedings of the 2nd Pacific Rim conference on Advances in image and video technology, Santiago, Chile 2007. LNCS-Volume 4872
- [85] C.-S. Lee and A. Elgammal “*Modeling View and Posture Manifolds for Tracking*” In Proceedings of the International Conference on Computer Vision (ICCV'07), Rio de Janeiro, Brazil October 14-21 2007 [oral presentation]
[cited 111 times]
- [86] A. Elgammal “*Human-centered Multimedia, Representations and Challenges*” In Proceedings of the 1st ACM international Workshop on Human-Centered Multimedia, in conjunction with ACM-Multimedia (Santa Barbara, California, USA, October 27 - 27, 2006). HCM '06. pages 11-18. **Invited Position Paper.** [cited 21 times]
- [87] C.-S. Lee and A. Elgammal “*Body Pose Tracking From Uncalibrated Camera Using Supervised Manifold Learning*” NIPS- Workshop on Evaluation of Articulated Human Motion and Pose Estimation. EHum06. [cited 22 times]
- [88] T. Parag and A. Elgammal “*Unsupervised Learning of Boosted Tree Classifier using Graph Cuts for Hand Pose Recognition*” the 17th British Machine Vision Conference (BMVC'06), Edinburgh, September 4-7 2006. Volume III, pages 1259-1269
- [89] C.-S. Lee, Y. Wang, X. Huang, Z. Li, A. Kanaujia, A. Elgammal, Dimitris Samaras, Dimitris Metaxas, Xiangfeng Gu, and Peisen Huang, “*Subtle Facial Expression Synthesis using Motion*

- Manifold Embedding and Nonlinear Decomposable Generative Models*”, The ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), Vienna, Austria, September 2-4, 2006.
- [90] Z. Zhao and A. Elgammal, “*A statistically selected Part-Based Probabilistic Model for Object Recognition*”, International Workshop on Intelligent Computing in Pattern Analysis/Synthesis, (IWICPAS'06). Xi'an, China, August 25-26, 2006. LNCS 4153, pages 95-104.
- [91] R. Isukapalli, A. Elgammal and R. Greiner “*Learning Policies for Efficiently Identifying Objects of Many Classes*” The 18th International Conference on Pattern Recognition (ICPR'06), Hong Kong, August 21-24, 2006. volume III, pages 356-361.
- [92] I. Chakraborty and A. Elgammal “*Combining Low and High Level Features for Object Recognition*” The 18th International Conference on Pattern Recognition (ICPR'06), Hong Kong, August 21-24, 2006. [oral presentation]
- [93] C.-S. Lee and A. Elgammal, “*Nonlinear Shape and Appearance Models for Facial Expressions Analysis and Synthesis*”, The 18th International Conference on Pattern Recognition (ICPR'06), Hong Kong, August 21-24, 2006. volume I, pages 497-502. [oral presentation] [cited 28 times]
- [94] C.-S. Lee and A. Elgammal, “*Simultaneous Inferring View and Body Pose Using Torus Manifolds*”, The 18th International Conference on Pattern Recognition (ICPR'06), Hong Kong, August 21-24, 2006. volume III, pages 489-494. [cited 38 times]
- [95] C.-S. Lee, A. Elgammal and D. Metaxas, “*Synthesis and Control of High Resolution Facial Expressions for Visual Interactions*”, IEEE 2006 International Conference on Multimedia & Expo (ICME'06), pp.64-67, Toronto Canada July 9-14, 2006. pages 65-68. [oral presentation]
- [96] C.-S. Lee, A. Elgammal “*Shape Outlier Detection Using Pose Preserving Dynamic Shape Models*” In Proc. of ICML Workshop on Machine Learning Algorithms for Surveillance and Event Detection. June 29, 2006. [oral presentation]
- [97] C.-S. Lee and A. Elgammal, “*Carrying Object Detection Using Pose Preserving Dynamic Shape Model*”, IV Conference of Articulated Motion and Deformable Objects (AMDO), Mallorca, Spain July 11-14, 2006. LNCS-Volume 4069, pages 315-325. [oral presentation]
- [98] C.-S. Lee and A. Elgammal, “*Human Motion Synthesis by Motion Manifold Learning and Motion Primitive Segmentation*”, IV Conference of Articulated Motion and Deformable Objects (AMDO), Mallorca, Spain July 11-14, 2006. LNCS-Volume 4069, pages 464-473.
[oral presentation] [cited 27 times]
- [99] Z. Zhao, A. Vashist, A. Elgammal, I. Muchnik and C. Kulikowski “*Discriminative Part Selection using Combinatorial and Statistical Models for Part-Based Object Recognition*” Beyond Patches Workshop in conjunction with CVPR'06, 17th of June 2006. [oral presentation]
- [100] T. Parag, A. Elgammal and A. Mittal “*A Framework for Feature Selection for Background Subtraction*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'06) – New York City, June 17-22, 2006. volume II, pages 1916-1923
[cited 61 times]
- [101] R. Isukapalli, A. Elgammal and R. Greiner “*Learning Efficient Multiclass Object Detection Hierarchy*” 9th European Conference on Computer Vision (ECCV'06), Graz, Austria May 7 - 13, 2006. LNCS-Volume 3951 Vol. I, pages 352-364.

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- [102] N. Ravi, P. Shankar, A. Frankel, A. Elgammal and L. Iftode “*Indoor Localization Using Camera Phones*”, in the Proceedings of the 7th IEEE Workshop on Mobile Computing Systems and Applications, WMCSA'06, April 2006. pages 1-7.

[cited 70 times]

- [103] C.-S. Lee and A. Elgammal “*Gait Tracking Recognition using Person-Dependent Dynamic Shape Model*”, 7th International Conference Automatic Face and Gesture Recognition, (FGR'06) Southampton, UK, April 10-12 2006. pages 553-559
- [104] R. Isukapalli, A. Elgammal and R. Greiner “*Learning to Identify Facial Expression during Detection using Markov Decision Process*”, 7th International Conference Automatic Face and Gesture Recognition, (FGR'06) Southampton, UK, April 10-12 2006. pages 305-310
- [105] I. Awasthi and A. Elgammal “*Learning Nonlinear Manifolds of Dynamic Textures*”, International Conference on Computer Vision Theory and Applications (VISAPP'06), 25 - 28 February, 2006, Setúbal, Portugal. Pages 243-250.
- [106] C.-S. Lee and A. Elgammal “*Facial Expression Analysis using Nonlinear Decomposable Generative Models*” in IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG'05), held in conjunction with ICCV'05, Beijing, China on October 16, 2005. LNCS-Volume 3723, pages 17-31.

[oral presentation] [cited 42 times]

- [107] R. Isukapalli, A. Elgammal, and R. Greiner “*Learning a Dynamic Classification Method to Detect Faces and Identify Facial Expression*” in IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG'05), held in conjunction with ICCV'05, Beijing, China on October 16, 2005. LNCS-Volume 3723, pages 70-84.

[oral presentation] [cited 36 times]

- [108] C.-S. Lee and A. Elgammal “*Homeomorphic Manifold Analysis: Learning Decomposable Generative Models for Human Motion Analysis*” Workshop on Dynamic Vision (WDV'05), held in conjunction with ICCV'05, Beijing, China on October 22, 2005. LNCS-Volume 4358, pages 100–114. [oral presentation]
- [109] C.-S. Lee and A. Elgammal “*Style Adaptive Bayesian Tracking Using Explicit Manifold Learning*” in the British Machine Vision Conference (BMVC'05), pages 739-748.
- [110] A. Elgammal “*Learning to Track: Conceptual Manifold Map for Closed-Form Tracking*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'05) San Diego, CA, June 20-26, 2005, volume I, pages 724-730. [cited 22 times]
- [111] C.-S. Lee and A. Elgammal “*Towards Scalable View-Invariant Gait Recognition: Multilinear Analysis for Gait*” Audio- and Video-based Biometric Person Authentication (AVBPA'05), July 20 - 22, 2005. LNCS-Volume 3546, pages 395-405. [cited 25 times]
- [112] V. Shet, V. Shiv Naga Prasad, A. Elgammal, L. S. Davis, Y. Yacoob, “*Multi-Cue Exemplar-Based Nonparametric Model for Gesture Recognition*”, 4th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP'04), December 16-18, 2004, pages 656-662. Kolkata, India. *Recipient of Honorary Mention for Best Paper Award.*

- [113] Y. Wang, X. Huang, C.-S. Lee, S. Zhang, Z. Li, D. Samaras, D. Metaxas, A. Elgammal, P. Huang “*High Resolution Acquisition, Learning and Transfer of Dynamic 3D Facial Expressions*”, in the proceedings of the annual Eurographics Conference - **Eurographics 2004**.
[cited 136 times]
- [114] A. Elgammal, C.-S. Lee “*Separating Style and Content on a Nonlinear Manifold*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR'04**), Washington, DC, June 26-July 2nd, 2004, volume I, pages 478-485. [oral presentation]
[cited 178 times]
- [115] A. Elgammal, C.-S. Lee “*Inferring 3D Body Pose from Silhouettes using Activity Manifold Learning*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR'04**), Washington, DC, June 26-July 2nd, 2004, volume II, pages 681-688.
[cited 408 times]
- [116] A. Elgammal “*Nonlinear Manifold Learning for Dynamic Shape and Dynamic Appearance*” 2nd International Workshop on Generative-Model based vision. GMBV'04, Washington DC, USA, June 2004 in association with CVPR'04. [cited 10 times]
- [117] A. Elgammal, C.-S. Lee “*Gait Style and Gait Content: Bilinear Model for Gait Recognition Using Gait Re-sampling*”, Proceedings of the Sixth IEEE International Conference on Automatic Face and Gesture Recognition (FGR'04) Seoul, Korea, May17-19, 2004. pages 147-152.
[cited 59 times]
- [118] A. Elgammal, V. Shet, Y. Yacoob, and L. S. Davis “*Learning Dynamics for Exemplar-based Gesture Recognition*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR'03**), Madison, Wisconsin, June 16-22, 2003, volume I, pages 571-578.
[oral presentation][cited 118 times]
- [119] A. Elgammal, R. Duraiswami, and L. S. Davis “*Probabilistic Tracking in Joint Feature-Spatial Spaces*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR'03**), Madison, Wisconsin, June 16-22, 2003. Volume I, pages 781-788.
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- [120] S.-N. Lim, A. Elgammal, L. S. Davis “*A Scalable Image-Based Multi-Camera Visual Surveillance System*” IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS'03) Miami, FL, July 21-22, 2003. Page 205.
[cited 46 times]
- [121] S.-N. Lim, A. Elgammal, L. S. Davis “*Image-based Pan-Tilt Camera Control in a Multi-Camera Surveillance Environment*” IEEE International Conference on Multimedia & Expo (**ICME'03**) Baltimore, MD, July 6-9, 2003. Volume I, pages 645-648.
[cited 38 times]
- [122] A. Elgammal, V. Shet, Y. Yacoob, L. S. Davis “*Exemplar-Based Tracking and Recognition of Arm Gestures*”, 3rd International Symposium on Image and Signal Processing and Analysis (ISPA), Rome, Italy 2003.

- [123] A. Elgammal, V. Shet, Y. Yacoob, L. S. Davis, “*Gesture Recognition using a Probabilistic Framework for Pose Matching*” The Seventh International Conference on Control, Automation, Robotics and Vision, (ICARCV'02), Singapore in December 2-5, 2002. Volume 2, pages 763-769.
- [124] A. Elgammal, R. Duraiswami and L. S. Davis, “*Efficient Non-parametric Adaptive Color Modeling Using Fast Gauss Transform*” IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR'01**), Kauai, Hawaii, December 2001. Volume II, pages 563-570. [*cited 66 times*]
- [125] A. Elgammal, L. S. Davis “*Probabilistic Framework for Segmenting People under occlusion*”. IEEE 8th International Conference on Computer Vision (**ICCV'01**), Vancouver, Canada July 9-12, 2001. Volume I, pages 145-152.
[*cited 239 times*]
- [126] A. Elgammal, R. Duraiswami and L. S. Davis “*Efficient Kernel Density Estimation Using the Fast Gauss Transform with Applications to Segmentation and Tracking*”. Second International Workshop on Statistical and Computational Theories of Vision, in conjunction with IEEE 8th International Conference on Computer Vision, Vancouver, Canada July 9-12, 2001. [*cited 14 times*]
- [127] A. Elgammal and M. A. Ismail, “*Techniques for Language Identification for Hybrid Arabic-English Document Images*”, IEEE Sixth International Conference on Document Analysis and Recognition (ICDAR'01), Seattle, Washington, U.S.A. September 10-13, 2001. Pages 1100-1104. [oral presentation] [*cited 50 times*]
- [128] A. Elgammal and M. A. Ismail, “*A Graph-Based Segmentation and Feature-extraction Framework for Arabic Text Recognition*”, IEEE Sixth International Conference on Document Analysis and Recognition (ICDAR'01), Seattle, Washington, U.S.A. September 10-13, 2001. Pages 622-626. [*cited 38 times*]
- [129] A. Elgammal, D. Harwood, L. S. Davis “*Non-parametric Model for Background Subtraction*” Proceedings of the 6th European Conference on Computer Vision (**ECCV'00**), June/July 2000. Volume II, pages 751-767.
[*cited 2130 times*]
- [130] M. Abdelmottaleb and A. Elgammal “*Face Detection in Complex Environment from Color Images*”, 6th IEEE International conference on Image Processing (**ICIP'99**), October 1999.
[*cited 102 times*]
- [131] A. Elgammal, D. Harwood, L. S. Davis “*Non-parametric Model for Background Subtraction*” Frame Rate Application Workshop, September 1999, in conjunction with IEEE 7th International Conference on Computer Vision (ICCV'99), Kerkyra, Greece, September 1999.

Other Publications:

- [132] A. Elgammal [“Computer science can only help -not hurt- art historians”](#) The Conversation - December 2014

- [133] B. Saleh, K. Abe and A. Elgammal [“A Computer Vision System for Artistic Influence Mining”](#) Robohub - November 2014
- [134] Emily L. Spratt and Ahmed Elgammal, “The Digital Humanities Unveiled: Perceptions Held by Art Historians and Computer Scientists about Computer Vision Technology,” arXiv:1411.6714
- [135] S. Smaldone, C. Tonde, V. K Ananthanarayanan, A. Elgammal, L. Iftode “Improving Bicycle Safety through Automated Real-Time Vehicle Detection” Department of computer science technical report, Rutgers University DCS-TR-665-2010
- [136] C.-S. Lee and A. Elgammal “*Tracking People on a Torus*” Department of computer science technical report, Rutgers University DCS-TR-611- 2007.
- [137] I. Awasthi and A. Elgammal “*Dynamic Textures Using Non-Linear Dimensionality Reduction*”, ICGST International Conference on Graphics, Vision and Image Processing (GVIP'05) 19-21 December 2005.
- [138] C. Yang, R. Duraiswami, A. Elgammal and L. Davis “*On-Line Kernel-Based Tracking in Joint Feature-Spatial Spaces*” Demonstration in the IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2004 (CVPR'04)
- [cited 24 times]
- [139] A. Elgammal “*Nonlinear Generative Models for Dynamic Shape and Dynamic Appearance*” Department of computer science technical report, Rutgers University DCS-TR-549- 2004
- [140] Ph.D. Dissertation “*Efficient Nonparametric Kernel Density Estimation for Real-time Computer Vision*” Department of computer science. University of Maryland, College Park.
- [141] A. Elgammal “*Real-time algorithms for visual surveillance*” Department of computer science technical report CS-TR # 4314. University of Maryland, College Park.
- [142] D.M. Lyons, T. Brodsky, E. Cohen-Solal and A. Elgammal, “*Video Content Analysis for Surveillance Applications*”, Philips Digital Video Technologies Workshop 2000.
- [143] M.Sc. thesis “Bilingual (Arabic/Latin) Document Image analysis with Font independent Arabic Character Recognition”, Faculty of Engineering, University of Alexandria. July 1996.

Selected Talks and Presentations:

- *Invited Presentation:* Rijksmuseum First Biannual Workshop on Computational Art History, June 2015, Amsterdam, Netherlands. Title: “*Computational Art History at the Macro Level*”
- *Conference Presentation:* “Quantifying Creativity in Art Networks”, The Sixth International Conference on Computational Creativity, June 2015.
- *Invited Talk:* DIMACS, Rutgers, June 2015.
- *Invited Talk:* **Temple University**, February 20th 2015
- *Talk:* THATCamp: The Humanities and Technology Camp, New York February 10th 2015.
- *Conference Presentation:* “*Knowledge Discovery of Artistic Influences: A Metric Learning Approach*” The fifth International Conference on Computational Creativity, May 2014.
- *Invited Talk:* Applied Communication Sciences (previously Telcordia) – November 28th 2012
- *Invited Talk:* Sarnoff – Princeton NJ - November 21st 2012
- *Invited Talk:* **North Carolina State University**, Title: “*On the Role of Manifold in Human Motion Analysis*”, March 27th, 2009.

- *Conference Presentation: “Modeling View and Posture Manifolds for Tracking”*, the International Conference on Computer Vision ICCV'07, Rio de Janeiro, Brazil, October 2007.
- *Talk: UIUC*, Title: “*On the Role of Manifold in Human Motion Analysis*”, April 20th 2007
- *Talk: CMU*, Title: “*On the Role of Manifold in Human Motion Analysis*”, April 2nd 2007.
- *Invited Talk: University of Miami*, Title: “*On the Role of Manifold in Human Motion Analysis*”, March 28th, 2007.
- *Talk: Rutgers- RUCCS-IGERT Perceptual Science Series*. Title: “*On the Role of Manifold in Human Motion Analysis*”. November 27th 2006.
- *Talk: University of Toronto*. Title: “*On the Role of Manifold in Human Motion Analysis*” on November 10, 2006.
- *Talk: USC*. Title: “*On the Role of Manifold in Human Motion Analysis*”, November, 2006.
- *Talk: Caltech*. Title: “*On the Role of Manifold in Human Motion Analysis*”, November, 2006.
- *Talk: UCLA*. Title: “*On the Role of Manifold in Human Motion Analysis*”, October, 2006.
- **Invited Position Paper Presentation:** workshop on Human-centered Multimedia in conjunction with ACM- Multimedia 2006. Title: “*Human-centered Multimedia, Representations and Challenges*” on October 27th, 2006.
- *Conference Presentation: “Nonlinear Shape and Appearance Models for Facial Expressions”*, The 18th International Conference on Pattern Recognition (ICPR), Hong Kong, August, 2006.
- *Conference Presentation: “Combining Low and High Level Features for Object Recognition”*, The 18th International Conference on Pattern Recognition (ICPR), Hong Kong, August, 2006.
- *Invited Talk: Dagstuhl Workshop Human Motion - Understanding, Modeling, Capture and Animation*. Title: “*On the Role of Manifold in Human Motion Analysis*” on June 11, 2006.
- *Invited Talk: Stevens Institute of Technology*. Title: “*Nonlinear Generative Models for Dynamic Shape and Dynamic Appearance*”. On May 1st, 2006.
- *Invited Talk: Cairo University*. Title: “*Nonlinear Generative Models for Dynamic Shape and Dynamic Appearance*”. On December 26th 2005.
- *Invited Talk: University of Delaware*. Title: “*Nonlinear Generative Models for Dynamic Shape and Dynamic Appearance*”. On November 21st 2005.
- *Conference Presentation: Workshop on Dynamic Vision (WDV05)*, held in conjunction with ICCV'05. Title “*Homeomorphic Manifold Analysis: Learning Decomposable Generative Models for Human Motion Analysis*” on October 22, 2005.
- *Conference Presentation: IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG'05)*, held in conjunction with ICCV'05. Title: “*Learning a Dynamic Classification Method to Detect Faces and Identify Facial Expression*” on October 16, 2005.
- *Conference Presentation: IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG'05)*, held in conjunction with ICCV'05. Title: “*Facial Expression Analysis using Nonlinear Decomposable Generative Models*” on October 16, 2005.
- *Conference Presentation: IEEE conference on Audio- and Video-based Biometric Person Authentication (AVBPA'06)*. Title: “*Towards Scalable View-Invariant Gait Recognition: Multilinear Analysis for Gait*”. On July 21st, 2005.
- *Invited Talk: Brooklyn Polytechnic University*. Title: “*Nonlinear Generative Models for Dynamic Shape and Dynamic Appearance*”. April 8th 2005.
- *Demonstration: IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2004 (CVPR'04) “On-Line Kernel-Based Tracking in Joint Feature-Spatial Spaces”* Changjiang Yang, Ramani Duraiswami, Ahmed Elgammal and Larry Davis
- *Conference Presentation: The Second International Workshop on Generative-Model based vision. GMBV 2004, Washington DC, USA, June 2004 in association with CVPR'04*. Title: “*Nonlinear Generative Models for Dynamic Shape and Dynamic Appearance*”
- *Conference Presentation: IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2004 (CVPR'04) “Separating Style and Content on a Nonlinear Manifold”* June 27, 2004.

- *Invited Talk: IBM Watson* Research Laboratory “*Real-time Algorithm for Visual Surveillance*”, April 29, 2004 .
- *Invited Talk: Drexel University* “*Nonlinear Decomposable Generative Models for Dynamic Shape and Dynamic Appearance*”, April 22, 2004.
- *Invited Talk: University of Maryland*, College Park “*Nonlinear Decomposable Generative Models for Dynamic Shape and Dynamic Appearance*” February 27, 2004 - invited
- *Conference Presentation: IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2003 (CVPR'03)* “*Learning Dynamics for Exemplar-Based Gesture Recognition*” July 11, 2003
- *Conference Presentation: Second International Workshop on Statistical and Computational Theories of Vision, “Efficient Kernel Density Estimation Using the Fast Gauss Transform with Applications to Segmentation and Tracking”* in conjunction with IEEE 8th International Conference on Computer Vision, Vancouver, Canada July 9-12, 2001.
- Philips Research Laboratory, August 2000

Teaching:

Rutgers University:

- Undergraduate:
 - Introduction to Digital Imaging and Multimedia: Spring 2008, Fall 2009--2014.
 - Discrete Structure II (206): Spring 2007.
 - Design and Analysis of Algorithms (344), Spring 2006.
 - Discrete Structures I (205): Fall 2002, Fall 2003, Fall 2004, Fall 2009.
- Graduate:
 - Machine Learning (536): Fall 2005, Spring 2007.
 - Seminar: Readings in Object Recognition: Fall 2006.
 - Computer Vision (534): Spring 2004, Spring 2005, Fall 2007, Spring 2010--2015.
 - Seminar in Computer Vision (Looking at People): Spring 2002.

Curriculum Development:

- Developed a new undergraduate course on multimedia and image computing – offered for the first time on Spring 2008 and reoffered in Fall 2009. It was added to the regular computer science curriculum in 2010.
- Developed a new advanced computer vision course at the department of computer science, Rutgers University – Spring 2003. The course title is “Looking at People” and it covers different topics related to the analysis of humans (detection, tracking and identification) in images and videos.
- Developed a new seminar "Readings on Object Recognition" – offered in fall 2006

Instructed and Assisted in teaching:

University of Maryland, College park:

- Fall 2000: Computer Vision.
- Fall 1997: Object Oriented Programming in C++.

Rutgers University:

- Fall 1996, Spring 1997: Introduction to computer science

University of Alexandria, Egypt:

- Sept 1993- Aug 1996: Theory of computation, Algorithms, stochastic processes, discrete mathematics, data structures, database systems, computer architecture, and digital design.

Rutgers University Committees

- Department of Computer Science Hiring Committee 2014/2015.
- Faculty of Art and Science advisory committee to review Appointments and Promotions (A&P): Fall 2009 –2011.
- Faculty of Art and Science Scholarship Committee: Fall 2007 - 2008.
- Department of Computer Science Master Advising Committee 2014-present
- Department of Computer Science Hiring Committee 2013/2014.
- Department of Computer Science Hiring Committee 2011/2012.
- Department of Computer Science Academic Planning Committee 2011/2012.
- Department of Computer Science, award committee: Fall 2009/2010.
- Department of Computer Science, Graduate Admission Committee: 2009/2010.
- Department of Computer Science, Graduate Committee: Fall 2006 – Fall 2009--present.
- Department of Computer Science, Undergraduate Curriculum Committee: January 2004-Fall 2006

Member of Ph.D. Committees

- Lin Zhong (Rutgers CS – Advisor: Dimitris Metaxas)
Ph.D. defense committee member, February 2015,
“Single Image deblurring with or without face prior and its applications”
- Seha Kim (Rutgers Psychology – Advisor: Jacob Feldman)
Ph.D. defense external committee member, April 2015,
“Inference of 3D Shape from Line Drawing”
- Mustafa Gokhan Uzunbas (Rutgers CS – Advisor: Dimitris Metaxas)
Ph.D. defense committee member, December 2014,
“Automatic and Interactive Segmentations Using Deformable and Graphical Models”
- Wenjia Yuan (Rutgers ECE – Advisor Kristen Dana)
Ph.D. defense external committee member, September 2014
“Computational Photography Methods for Visual MIMO”
- Baiyang Liu (Rutgers CS – Advisor: Casimir Kulikowski)
Ph.D. defense committee member, September 2014,
“Selection-based Dictionary Learning for Sparse Representation in Visual Tracking”
- Mingchen Gao (Rutgers CS – Advisor: Dimitris Metaxas)
Ph.D. defense committee member, June 2014,
“Cardiac Reconstruction and Analysis from High Resolution CT Images”
- Peter Borosan (Rutgers CS – Advisor: Andrew Nealen)
Ph.D. defense committee member, November 2013,
“Automatic Meshing and Rigging for the Creation and Deformation of 3D Shapes”
- John Wilder (Rutgers Psychology – Advisor: Jacob Feldman)
Ph.D. defense external committee member, October 2013,
“The influence of complexity on the detection of contours”

- Ali Elqursh (Rutgers CS - Primary Advisor)
Ph.D. defense committee Chair, July 2013
“Online Non-rigid Motion and Scene Layer Segmentation”
- Thang Le (Rutgers CS – Advisor: Casimir Kulikowski)
Ph.D. defense committee member, August 2011,
“Clustering by Graph Density Variation Analysis with Density-based Cluster Validity Indices”
- Begumhan Turgut (Rutgers CS – Advisor: Rich Martin)
Ph.D. defense committee member, August 2011,
“Advances In Instantaneous and Dynamic Localization In Indoor Environments”
- Peng Yang (Rutgers CS – Advisor: Dimitris Metaxas)
Ph.D. defense committee member, March 2011,
“Facial Expression Analysis”
- Stephen Merritt (Rutgers Anthropology)
Ph.D. defense external committee member, October 2010,
“Experimental butchery factors’ influence on cut mark cross-sectional size: implications for Early Stone Age carnivory”
- Jiankuan Ye (Rutgers CS - Advisor: Casimir Kulikowski)
Ph.D. defense committee member, October 2010,
“An Experimental Study and Geometrical Analysis on a Linear Programming Support Vector Machine”
- Zhiguo Li (Rutgers CS- Advisor: Dimitris Metaxas)
Ph.D. defense committee member, July 2010,
“Video-based Facial Expression Analysis”
- Yuchi Huang (Rutgers CS- Advisor: Dimitris Metaxas)
Ph.D. defense committee member, July 2010,
“Hypergraph Based Visual Object Categorization and Segmentation”
- Atul Kanaujia (Rutgers CS- Advisor: Dimitris Metaxas)
Ph.D. defense committee member, December 2009,
“Conditional Models For 3D Human Pose Estimation”.
- Qi Wei (Rutgers CS - Advisor: Dinesh Pai)
Ph.D. defense committee member, December 2009,
“Biomechanical Modeling and Simulation of Human Eye Movement”.
- Nikita Lytkin (Rutgers CS - Advisor: Casimir Kulikowski)
Ph.D. defense committee member, September 2009,
“Variance-based Clustering Methods and Higher Order Data Transformations and Their Applications”.
- Zhipeng Zhao (Rutgers CS – Primary Advisor)
Ph.D. defense committee Chair, September 2009,
“Towards a Local-Global Visual Feature-Based Framework for Recognition”.

- Kooksang Moon (Rutgers CS - Advisor: Vladimire Povlovic)
Ph.D. defense committee member, December 2008,
“Coupled Embedding Of Sequential Processes Using Gaussian Process Models”.
- Konstantinos Kleisouris (Rutgers CS - Advisor: Rich Martin)
Ph.D. defense committee member, September 2008,
“Improving the Speed and Accuracy of Indoor Localization”.
- Erica Briscoe (Rutgers, Dept. of Psychology - Advisor: Jacob Feldman),
External Ph.D. defense committee member, August 2008.
“Shape Skeletons and Shape Similarity”
- Minyoung Kim (Rutgers CS - Advisor: Vladimire Povlovic)
Ph.D. defense committee member, April 2008
“Discriminative Models and Dimensionality Reduction for Regression”.
- Su Chen (Rutgers CS - Advisor: Muthu. Muthukrishnan)
Ph.D. defense committee member, February 2008,
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“Bootstrapping Location-aware Personal Computing”.
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M.Sc. defense committee Chair, May 2007
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- Chan Su Lee (Rutgers CS - Primary Advisor)
Ph.D. defense committee Chair, May 2007
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- Hossein Mahoor (Universty of Miami - Advisor Mohamed Abdel-mottaleb)
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- Akshay Vashist (Rutgers CS - Advisor: Casimir Kulikowski)
Ph.D. defense committee member, September 2006,
“Multipartite Graph Clustering for Structured Clustering and Automating Ortholog Extraction”
- Ramana Isukapalli (Rutgers CS - Advisor: Ahmed Elgammal)
Ph.D. defense committee member, August 2006,
“Learning Effective Interpretation Policies”
- Rong Zhao (Rutgers CS - Advisor: Dimitris Metaxas)
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“Image and Video Classification”
- HwaSeob Joseph Yun (Rutgers CS - Advisor: Casimir Kulikowski)
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“Consistent Triplets in Graph Clustering for Protein Sequence Analysis”

- Ishan Awathi (Rutgers, Dept. of Electrical and Computer Engineering - Advisor: Ivan Marsic)
Master thesis committee member, March 2006,

“Nonlinear Models for Dynamic Textures”

- Jing Wang: (Rutgers, Dept. of Electrical and computer engineering - Advisor: Kristin Dana),
Ph.D. defense committee external member, August 2005,

“Modeling Surface Geometry”

- Subarna Sadhukhan (Rutgers CS- Advisor: Dinesh Pai)
Master thesis committee member, March 2005,

“Hand Grasp Tracking Using the Tango”