GUOLIANG FAN

215 General Academic Building
Oklahoma State University
Stillwater, OK 74078
Tel: (405) 744-1547
Email: guoliang.fan@okstate.edu
Web: www.vcipl-okstate.org/glfan

Professional Summary

- 50 IEEE/Elsevier/Springer journals and 95 referred conference papers
- 2234 Scopus citations (H-index; 23) and 3569 Google Scholar citations (H-index; 28)
- Graduated 15 Ph.D. students and 16 M.S. students (with thesis option)
- Supervised 2 post-doc, 20 visiting scholars and near 20 undergraduate researchers
- Funded projects (> $3M) from NIH, FHWA, NSF, ARO, NASA and OCAST
- Associate Editor and Guest Editor for four international journals
- Endowed Professorship in 2012 and NSF Career Award in 2004
- Outstanding Young Alumni Achievement Award, ECE at UD, 2015

RESEARCH INTERESTS (EDICS: ARS-RBS, ARS-IVA, ARS-SRE)

- **Machine Learning**: **deep learning,** manifold learning, video mining, human motion modeling
- **Computer Vision**: object tracking/recognition, scene understanding, human motion estimation
- **Image and Video Processing**: wavelet-based statistical modeling, image compression, image enhancement, image/video segmentation, remote sensing data analysis and multimedia
- **Biomedical Imaging:** feature extraction, image registration, and 3D reconstruction

EDUCATIONS

2001 Ph.D. Electrical Engineering
University of Delaware, Newark, DE
Advisor: Dr. Xiang-Gen Xia
Thesis: *Wavelet-domain Statistical Image Modeling and Processing*

1996 M.S. Computer Engineering
Xidian University, Shaanxi, China
Advisor: Prof. Lihua Zhou
Thesis: *Application of Fractal Theory in the Second-Generation Image Coding*
Honor: *The Outstanding Master Thesis of Xidian University*, 1996

1993 B.S. Automation Engineering
Xian University of Technology, Shaanxi, China
Advisor: Prof. Shuzhen Xu
Thesis: *The Design of Graphical Interface for Modern Control Systems*

PROFESSIONAL EXPERIENCES

2012-Present **Professor and Cal & Marilyn Vogt Professor of Engineering**

2007-2012 ***Associate Professor with tenure***

2001-2007 ***Assistant Professor,*** *Director* of Visual Computing and Image Processing Lab
School of Electrical and Computer Engineering
Oklahoma State University

1996-1998 ***Graduate Assistant,*** Department of Electronic Engineering
Chinese University of Hong Kong, China

3/1996- ***Lecturer***
10/1996 Multimedia Technology Institute
Xidian University, Shaanxi, 710071, China

AWARDS AND PROFESSIONAL RECOGNITIONS

- Outstanding Area Chair Award, IEEE International Conference on Multimedia & Expo, 2020
- Best Paper Award, IEEE International Workshop on Perception Beyond Visible Spectrum, 2019
- Teaching Excellence Award, College of Engineering, OSU, 2015
- Outstanding Young Alumni Achievement Award, University of Delaware, 2015
- Cal & Marilyn Vogt Professorship in Engineering, 2012
- Outstanding Professor Award, OSU-IEEE, 2008 and 2011
- Halliburton Outstanding Young Faculty Award, College of Engineering, OSU, 2006
- IEEE Senior Member, July 2005
- Big XII Faculty Fellowship, OSU, 2005
- CAREER award, National Science Foundation (NSF), 2004
- Halliburton Excellent Young Teacher Award, College of Engineering, OSU, 2004
- Member of Tau Beta Pi (National Engineering Honor Society), April 2000
- First Prize of 1997 IEEE Region 10 (Asia-Pacific) Postgraduate Student Paper Contest, May 1998
- First Prize of 1997 IEEE Hong Kong Section Postgraduate Student Paper Contest, Dec. 1997
- National Outstanding Graduate Student, China Electronic Industrial Ministry, April 1996

PROFESSIONAL ACTIVITIES

- ***Associate/Guest Editor***
  - Associate Editor, IEEE Transactions on Image Processing, 2014-2019
  - Associate Editor, IEEE Journal of Health and Biomedical Informatics, 2012-Present
  - Associate Editor, IEEE Transactions on Information Technology in Biomedicine, 2008-2012
  - Associate Editor, EURASIP Journal on Image and Video Processing, 2012-Present
  - Guest Editor, Computer Vision and Image Understanding (CVIU), Elsevier, 2013
- ***Conference Chairs and Area Chair***
  - Area Chair, IEEE International Conference on Multimedia and Expo (ICME), 2020 and 2021
  - Co-chair, 4th, 6th, 7th, 8th, 10th, 11th IEEE Int'l Workshop on Object Tracking and Classification Beyond the Visible Spectrum (in conjunction with CVPR07-CVPR15)
  - Publication Chair, ACM Conference on Image and Video Retrieval (CIVR08), 2008
  - Track Chair, IEEE International Conference on Multimedia and Expo (ICME), 2007
  - Area Chair, IEEE Winter Conference on Applications of Computer Vision (WACV), 2015
- ***Session Chairs /Special Track Organizer***
  - Steering Committee, Workshop on Perception Beyond Visible Spectrum (PBVS), 2013-2016
  - Session Organizer, the 2nd International Symposium on Visual Computing (ISVC), 2006
  - Session Chair, the 2nd International Symposium on Visual Computing (ISVC), 2006
  - Session Chair, the 45th IEEE Int'l Midwest Symposium on Circuits and Systems, 2002
- ***Technical Program Committee (after 2010)***
  - IEEE Workshop on Online Learning and Classification (OTC), 2008, 2009, 2010
  - IEEE Workshop on Motion and Video Computing (WMVC), 2008
  - IEEE Workshop on Semantic Learning Applications in Multimedia (SLAM), 2007-2009
  - IEEE International Conference on Multimedia and Expo (ICME), 2007, 2008, 2009
  - International Workshop on Multimedia Data Mining and Management (MDMM), 2007

- ***Panelist and Proposal Reviewer***
  - NIH BCHI Study Session, 2020 and 2021
  - DoD Army Research Office (ARO)
  - NSF, Computer Vision (CV) Program
  - NSF, Information Technology Research (ITR) Program
  - NSF, Course, Curriculum and Lab Improvement (CCLI) Program
  - Louisiana Board of Regents Research Programs
- ***Journal Reviewer***
  - IEEE Trans. on Signal Processing
  - IEEE Trans. on Image Processing
  - IEEE Trans. on Circuits and Systems for Video Technology
  - IEEE Trans. on Geoscience and Remote Sensing
  - IEEE Trans. on Pattern Analysis and Machine Intelligence
  - IEEE Trans. on Medical Imaging
  - IEEE Trans. on Multimedia
  - IEEE Trans. on Industrial Electronics
  - IEEE Trans. on Systems, Man and Cybernetics, Part A
  - IEEE Trans. on Systems, Man and Cybernetics, Part B
  - IEEE Trans. on Biomedical Engineering
  - IEEE Signal Processing Letters
  - IEEE Geoscience and Remote Sensing Letters
  - IEE Proceedings - Vision, Image and Signal Processing
  - Journal of Computing and Information Technology
  - Journal of X-Ray Science and Technology
  - Photogrammetric Engineering and Remote Sensing
  - EURASIP Journal of Applied Signal Processing
  - Computer Vision and Image Understanding
  - Signal Processing, Elsevier
  - Information Fusion, Elsevier
  - Pattern Recognition, Elsevier
  - Optical Engineering, SPIE
  - Sensors, MDPI
- ***Other Services***
  - Advisory Committee, Central Technology Center, Oklahoma, 2014 and 2020

UNIVERSITY, COLLEGE, AND DEPARTMENT SERVICES

- Chair of ECE RPT Committee 2020-Present
- ECE Faculty Search Committee, 2020-2021
- Chair of ECE Head Search Committee 2014-2015
- Chair of ECE Faculty Search Committee, 2013-2014, 2015-2016
- CEAT Halliburton Award Committee, 2005 and 2007
- CEAT Bioengineering Faculty Search Committee, 2005-2006
- CEAT Bioengineering Initiative Committee, 2005
- Chair of ECE Publicity Committee, 2004-Present

INVITED TALKS

1. "Point Set Registration Approaches to Human Pose Estimation: A Two-perspective Study", Mathematical Issues in Information Sciences (MIIS2015), Xidian University, China, July 2015.
2. "*3D Human Pose Tracking from Depth Data: Energy-based and Registration-based Approaches*", South China University of Technology, Dec. 2014.
3. "*3D Human Pose Tracking from Depth Data: Energy-based and Registration-based Approaches*", Xidian University, Dec. 2014.
4. "*3D Human Pose Tracking from Depth Data: Energy-based and Registration-based Approaches*", Xi'an University of Technology, Dec. 2014.
5. "*3D Human Pose Tracking from Depth Data: Energy-based and Registration-based Approaches*", Xi'an Jiaotong University, Dec. 2014.
6. "*Topology-Constrained Manifold Learning for Motion Estimation and Target Tracking*", Xi'an University of Technology, China, May 2013.
7. "*Topology-Constrained Manifold Learning for Motion Estimation and Target Tracking*", Xi'an Jiaotong-Liverpool University, China, April 2013.
8. "*Automated Target Tracking, Recognition and Segmentation via Shape Manifold-Constrained Level Set*", Xidian University, China, Dec. 12, 20012.
9. "*Automated Target Tracking, Recognition and Segmentation via Shape Manifold-Constrained Level Set*", Xi'an University of Technology, Dec. 14, 20012.
10. "*Automated Target Tracking, Recognition and Segmentation via Shape Manifold-Constrained Level Set*", Beijing University of Technology, Dec. 17, 2012.
11. "*Joint Gait-Pose Manifold Learning for Human Motion Modeling*", Xidian University, China, Oct. 2011.
12. "*Coupled View and Identity Manifolds for Automated Target Tracking and Recognition in Infrared Imagery*", Northwest Polytechnic University, China, Oct. 2011.
13. "*Dual Gait Generative Models for Human Motion Estimation from a Monocular Uncelebrated Camera*", Xi'an Jiaotong University, Dec. 2008.
14. "*Human Detection, Tracking and Recognition: From Low-level to High-level Vision"*, the first Visual Perception and Communication Workshop, Xidian University, Dec. 2008.
15. "*Dual Gait Generative Models for Human Motion Estimation from a Monocular Uncelebrated Camera*", the first Visual Perception and Communication Workshop, Xidian University, Dec. 2008.
16. "*Computer Vision Research at OSU*", Beijing Institute of Technology, Dec. 2008.
17. "*Hybrid Body Representation for Pose Recognition, Detection and Segmentation*". Department of Electrical and Computer Engineering, Old Dominion University, April 2008
18. "*Advanced Retinal Imaging for Non-invasive Disease Study*", Image Science and Machine Vision Group, Oak Ridge National Laboratory, Feb. 2006.
19. "*Multi-aspect Target Tracking in Image Sequences using Particle Filters*", Department of Computer Science, OSU, Dec. 2005
20. "*Retinal Image Processing: Quality Assessment, Registration, and Feature Extraction*", Department of Biomedical Engineering, Shanghai Jiaotong University, Nov. 2005.
21. "*Statistical Mixture Modeling for Object-based Video Segmentation*", Graduate School, Xidian University, China, Oct., 2005.
22. "*Joint Key-frame Extraction and Object-based Video Segmentation*", Department of Computer Science, University of Missouri at Columbia, July 2005.
23. "*On Context-Based Bayesian Image Segmentation: Joint Multi-context and Multiscale Approach and Wavelet-Domain Hidden Markov Models*", in Proceedings of the 35th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 4-7, 2001 (Invited paper).

RESEARCH GRANTS AND CONTRACTS

[1] Co-Principal Investigator (PI: Dr. Tyler Ley and Dr. Paul Tikalsky, Civil Engineering), "*Advanced Characterization of Reclaimed Fly Ash for Transportation Construction*", Federal Highway Administration (FHWA), $891,225, 2019-2023.

[2] Principal Investigator (Co-PI: Emily Roberts), "*CATcare: Cognition Assistive Technology for Dementia Homecare*", National Institutes of Health (NIH), 2019-2022, $ 437,939.

[3] Principal Investigator, "*A Mobile Platform for Clinical Gait Analysis*", $135,000, Health Research Program (HRP), Oklahoma Center for the Advancement of Science and Technology (OCAST), 2018-2021.

[4] Co-Principal Investigator (PI: Dr. Weihua Sheng from ECE), "*NRI: Considerate Co-robot Intelligence through Ubiquitous Human State Awareness*", National Science Foundation, $725,000, 2014-2019.

[5] Principal Investigator, "*A Tool for Posture Assessment and Personalized Training*", $135,000, Health Research Program (HRP), Oklahoma Center for the Advancement of Science and Technology (OCAST), July 2012-June 2015.

[6] Principal Investigator, "*Vision-based Clinical Markerless Gait Stability Analysis*", $135,000, Health Research Program (HRP), Oklahoma Center for the Advancement of Science and Technology (OCAST), Aug. 2009-July 2012.

[7] Principal Investigator, "*Human Motion Analysis for Assessing Crew Vibration and Operator State*", Oklahoma NASA EPSCoR, $21,000, Feb. 2009-July 2009.

[8] Co-Principal Investigator (PI: Dr. Joseph Havlicek, University of Oklahoma), "*Multiple Domain Particle Filters with Dual-Band Sensing for Multi-Contextual Tracking and Recognition*", Army Research Office (ARO), $450K (plus $225K match from OSU and Regents), 2008-2011.

[9] Co-Principal Investigator (PI: Dr. Mahesh Rao from Geography and Co-PI: Dr. Johnson Thomas from Computer Science), "*Using a Multi-Resolution GIS-Modeling Approach to Evaluate the Carbon Sequestration Potential in Texas County, Oklahoma*", Oklahoma NASA EPSCoR, $21,000, Feb. 2005-July 2005.

[10] Co-Principal Investigator (PI: Dr. Joseph Havlicek, University of Oklahoma), "*Integrated Target Detection, Tracking, Classification, and Learning for Dual-band Infrared Imagery*", Army Research Office., $514,540, Aug. 2004-July 2007.

[11] Principal Investigator, "*CAREER: Advanced Statistical Modeling Approaches for Structured Video Representation and Research Oriented Multidisciplinary Education*", National Science Foundation (NSF), $439,895, June 2004-May 2010.

[12] Principal Investigator (Co-PI: Dr. Yen), "*Advanced Retinal Imaging for Non-invasive Disease Study*", $135,000, Health Research Program (HRP), Oklahoma Center for the Advancement of Science and Technology (OCAST), July 2003-June 2006.

[13] Co-Principal Investigator (PI: Dr. Thomas from CS and Co-PI: Dr. Rao from Geography), "*Development of a Web-GIS Decision Support System for Environmental Water Quality and Resource Management*", $50,000, Environmental Institute's Water Research Center, OSU, 2003- 2004.

[14] Principal Investigator (Co-PI: Dr. Thomas from Computer Science and Co-PI: Dr. Rao from Geography), "*Toward an Integrated Web-GIS Decision Support System for Evaluating USDA's Conservation Reserve Program (CRP)*", $22,306, Oklahoma NASA EPSCoR, Feb. 2003-Aug. 2003.

[15] Principal Investigator (Co-PI: Dr. Rao from Geography), "*Developing a GIS-based Tool for Automated Feature Information Retrieval from Multisource Geospatial Data: Application to CRP Mapping at Texas County, Oklahoma*", $49,999, Environmental Institute's Water Research Center, 2002-2003.

PH.D. DISSERTATIONS SUPERVISED

[1] Lin Guo, PhD Dissertation, "*Holistic Indoor Scene Understanding by Context Supported Instance Segmentation*", fall 2020, now a Post-doc in the School of Mechanical and Aerospace Engineering at OSU.

[2] Mahdi Yazdanpour, PhD Dissertation, "*Manhattan Frame based Approaches for Robust Dense Reconstruction of Indoor Scenes from Depth Sequences*", fall 2019. Now an assistant professor at Northern Kentucky University.

[3] Ayesha Siddiqua, PhD Dissertation, "*Deep Autoencoders for Cross-modal Retrieval*", summer 2019. Now Machine Learning Engineer at ONE Tech, Inc, Dallas, TX.

[4] Jung-Jae (Brian) Yin, PhD Dissertation, "Fully Automatic 3D Object Reconstruction from Multi-view Range Scan Data", fall 2017, Lead Engineer, Welch Allyn, NY.

[5] Liangjiang Yu, Ph.D. Dissertation, *Semantic Scene Understanding*, spring 2017, Senior Software Engineer, ASML, CA.

[6] Song Ge, Ph.D. Dissertation, *Non-rigid Articulated Point Set Registration for Human Pose Estimatio*n, summer 2015, Research Scientist, Qianxun Spatial Intelligence Inc., Shanghai, China

[7] Meng Ding, Ph.D. Dissertation, *Human Motion Analysis: from Gait Modeling to Shape Representation and Pose Estimation*, summer 2015, Research Scientist, National Institute of Health (NIH), MD.

[8] Jiulu Gong (Co-advised with Prof. Ningjun Fan and Prof. D. Chen, Beijing Institute of Technology, China), Ph. D. Dissertation: *Research on Joint Target Tracking, Recognition and Segmentation Using Infrared Data*, summer 2013, now Lecture in Beijing Institute of Technology.

[9] Xin Zhang, Ph.D. Dissertation: *Machine Learning for Video-based Human Motion Analysis*, spring 2011, Associate Professor in South China University of Technology, Guangzhou, China.

[10] Vijay Venkatarman, Ph.D. Dissertation: *Advanced Machine Learning Approaches for Target Detection, Tracking and Recognition*, fall 2010, now Principal Scientist at Honeywell Aerospace, Minnesota.

[11] Yi Ding, Ph.D. Dissertation: *Probabilistic Graphical Models for Sports Video Mining: Hybrid Generative and Discriminative Approaches*, fall 2010, Research Engineer, 3M, California.

[12] C. Tian, (co-advised with Prof. Xinbo Gao, Xidian University, China), "*Multi-view Face Detection and Recognition in Complex Background*", fall 2008, now Professor at Xidian University, China.

[13] C. Chen, Ph.D. Dissertation: *Human Detection, Recognition and Tracking: from Low-level to High-level Vision*, fall 2008, Senior Research Engineer at WayLink Systems Corp.

[14] Thitiporn Chanwimaluang, Ph.D. Dissertation: *Advanced Retinal Imaging: Feature Extraction, Image Registration, and 3D Reconstruction*, fall 2006, now a research staff at National Electronics and Computer Technology Center (NECTEC) in Thailand.

[15] Xiaomu Song, Ph.D. Dissertation: *Statistical Feature Selection and Extraction for Image and Video Segmentation*, summer 2005, Associate Professor, Widener University.

PHD/MS. STUDENTS UNDER SUPERVISION

[1] Nate Lannan, PhD Student

[2] Le Zhou, PhD student

[3] Xiaowei Chen, PhD student

[4] Zhe Yu, PhD student

M.S. STUDENTS SUPERVISED (THESIS OPTION)

[1] Yanyao Li, fall 2020

[2] Le Zhou, summer 2019

[3] Narges Nourian, Posthumous MS degree, spring 2017

[4] Lin Guo, M.S. Thesis, summer 2015

[5] Aravind Gopala Varma, M.S. Thesis, summer 2015

[6] Bo Li, M.S. Thesis, M.S. Thesis, summer 2014

[7] Ayesha Siddiqua, M.S. Thesis, fall 2011

[8] Liangjiang Yu, M.S. Thesis, summer 2011

[9] Michael Kruis, M.S. Thesis, summer 2010

[10] Jason Graham, M.S. Thesis, summer 2009

[11] Thomas Patten, M.S. Thesis, summer 2009

[12] Anne Krishna Sravanthi, M.S. Thesis, summer 2006.

[13] Xin Zhang, M.S. Thesis, summer 2005

[14] Vikay Bhaskar Venkataraman, M.S. summer 2005

[15] Ginto Cherian, M.S., fall 2004

[16] Lijie Liu, M.S. Thesis, summer 2003

M.S. STUDENTS SUPERVISED (NON-THESIS OPTION)

[1] Charlie Huddleston, M.S., (creative component), summer 2009

[2] Ragu Jegan Murugesan, M.S. (creative component), fall 2005

[3] Prabhakar Ponnusamy, M.S. (creative component), fall 2004

[4] Leah Modal, M.S. (creative component), spring 2004

UNDERGRADUATE STUDENT ADVISED

[1] Songyuan Zheng, Wentz Scholar, 2020-2021

[2] Steve Howell, Freshmen Research Scholar, 2020-2021

[3] Dylan Shadoan, CEAT Undergraduate Scholar, fall 2017

[4] Hongxi Lin, CEAT Undergraduate Scholar, fall 2017-fall 2019

[5] Ryan Swan, CEAT Undergraduate Scholar, fall 2017-spring 2019

[6] Xun Lin, ECE Undergraduate Researcher, 2016 and Wentz Scholar, 2017-2018

[7] Kelly Nugent, Wentz Semester Research Scholar, 2014-2015

[8] Jordan Knight, Minority undergraduate researcher, fall 2011

[9] Carion Pelton, Minority undergraduate researcher, fall 2011

[10] David Biswas, Wentz Scholar, 2008-2009, 2009-2010, NSF-REU student, 2009-2010

[11] John Davis, Wentz Scholar, 2008-2009, NSF-REU student, 2009-2010

[12] Stephen Nilson, NSF-REU student, summer 2007-fall 2007

[13] Andy Hammett, NSF-REU student, summer 2007-fall 2007

[14] Michael Fergades, NSF-REU Student, summer 2006- fall 2006

[15] Bryan Wright, NSF-REU Student, summer 2006- fall 2006

[16] Colby Toland, Freshmen Research Scholar, Wentz Scholar, spring 2004-spring 2006

[17] Kristoffer Lemoins, Minority Undergraduate Researcher, fall 2004 and spring 2005

POST-DOCTORAL SUPERVISED

[1] Dr. Xin Fan, Post-doc Research Fellow, May 2006- Dec. 2007

[2] Dr. Li Tang, Post-doc Research Fellow, Jan. 2005- Jan. 2006

VISITING SCHOLARS/PROFESSOR SUPERVISED

[1] Jing Yang, Joint PhD student, Guizhou University, China, 2018-2019

[2] Dr. Wei Liu, Lecture, Xi'an University of Engineering, 2018-2019

[3] Dr. Hua Shi, Lecture, Xi'an Technological University, 2017-2018

[4] Ms. Yamin Zhu, Lecture, Xi'an Technological University, 2017-2018

[5] Dr. Dan Xu, Lecture, Jiangsu University of Science and Technology, 2016-2017

[6] Dr. Guangxin Li, Associate Professor, Xidian University, 2016-2017

[7] Dr. Yulong Qiao, Professor, Harbin University of Engineering, 2016-2017

[8] Dr. Jian Ji, Associate Professor, Xidian University, 2014-2015

[9] Dr. Zhigang Ling, Lecture, Hunan University, 2014-2015

[10] Prof. Yuan Jia, Professor, Southwest University of Science and Technology, 2014-2015

[11] Dr. Guangfeng Lin, Lecture, Xi'an University of Technology, 2014-2015

[12] Prof. Jiangyun Li, Associate Professor, Beijing University of Science and Technology, 2014-2015

[13] Prof. Weiguang Liu, Associate Professor, Zhongyuan University of Technology, China, 2014

[14] Dr. Bin Xu, Lecture, Northeastern University, China, 2013-2014.

[15] Prof. Junding Sun, Associate Professor, Henan Henan Polytechnic University, China, 2012-2013.

[16] Jiulu Gong, Visiting PhD Student, Beijing Institute of Technology, 2011-2013.

[17] Prof. Zuofeng Zhou, Professor, Xi'an Institute of Optics and Precision Mechanics of Chinese Academy of Science (CAS), China, 2010-2011

[18] Prof. Weiguang Liu, Associate Professor, Zhongyuan University of Technology, China, 2009-2010

[19] Makoto Furuie, Researcher, Research Institute, National Printing Bureau (NPB), Japan, 2009-

[20] Ms. Min Geng, Visit Scholar, China University of Petroleum, Oct. 2008-April 2009

[21] Prof. Derong, Chen, Visiting Scholar, Beijing Insitute of Technology, Oct. 2008-Oct. 2009

[22] Ms. Shan (Sandra) Jiang, Visit Scholar, China University of Petroleum, Feb. 2007-Aug. 2007

[23] Chunna Tian, Visiting PhD Student, Xidian University, 2006-2007.

PUBLICATIONS

BOOKS

[1] ***Machine Vision Beyond Visible Spectrum***, Editors: R. I. Hammoud, **G. Fan**, R. W. McMillan, K. Ikeuchi, Springer, ISBN 978-3-642-11567-7, 2011.

BOOK CHAPTERS

[1] **G. Fan** and X.-G. Xia, "*Statistical Image Modeling and Processing Using Wavelet-Domain Hidden Markov Models*," Nonlinear Signal and Image Processing: Theory, Methods, and Applications, K. E. Barner and G. R. Arce (Editors), CRC Press, 2003, pp333-385.

[2] **G. Fan**, V. Venkataraman, L. Tang, and J.P. Havlicek, ``*On Boosted and Adaptive Particle Filters for Affine-Invariant Target Tracking in Infrared Imagery*," in *Augmented Vision Perception in Infrared: Algorithms and Applied Systems* (Advances in Pattern Recognition), R.I. Hammoud, ed., Springer-Verlag, London, 2009, pp. 441-466.

[3] **G. Fan** and Y. Ding, "*Statistical Machine Learning Approaches for Sports Video Mining using Hidden Markov Models*" (book chapter), the Handbook of Research on Machine Learning Applications, IGI Global, 2009.

[4] **G. Fan**, X. Fan, V. Venkataraman, and Joseph Havlicek, "*Vehicle tracking and recognition*" (book chapter), Intelligent Video Surveillance: Systems and Technology (ISBN: 978-1-4398-1328-7), Taylor & Francis Group, 2010.

[5] **G. Fan** and Y. Ding, "*Event Detection in Sports Video based on Generative-Discriminative Models*" (book chapter), Computer Vision for Multimedia Applications: Methods and Solutions (ISBN: 9781609600242), Editors: J. Wang, J. Chen and S. Jiang, IGI, 2010.

[6] **G. Fan** and X. Zhang, "*Video-based Human Motion Estimation by Part-whole Gait Manifold Learning*", (book chapter), Machine Learning for Vision-based Motion Analysis (ISBN: 978-0-85729-056-4), Editors: L. Wang, G. Zhao, L. Chen and M. Pietikaine, Springer, 2010.

[7] **G. Fan**, X. Fan, V. Venkataraman and Joseph Havlicek, "*Appearance Learning by Adaptive Kalman Filters for Robust Infrared Tracking*" (book chapter), Machine Vision Beyond Visible Spectrum, Springer (978-3-642-11567-), Editors: R. I. Hammoud, G. Fan, R. W. McMillan, K. Ikeuchi, 2011.

[8] **G. Fan** and Y. Ding, "*Probabilistic Graphical Models for Sports Video Mining*", Intelligent Data Analysis for Real-Life Applications: Theory and Practice (ISBN13: 9781466618060), Editors: R. Magdalena, M. Martínez, J.M. Martínez, P. Escandell and J. Vila, IGI Global, 2012.

[9] **G. Fan** and X. Zhang, "*Gaussian Process-based Manifold Learning for Human Motion Modeling*", Intelligent Data Analysis for Real-Life Applications: Theory and Practice, Editors: R. Magdalena, M. Martínez, J.M. Martínez, P. Escandell and J. Vila, IGI Global, 2012.

(Names underlined are OSU students)

JOURNAL PUBLICATIONS

[1] L. Zhou, N. Lannan, **G. Fan** and J. Hausselle, "Human Motion Enhancement via Joint Optimization of Kinematic and Anthropometric Constraints", EAI Endorsed Transactions on Bioengineering and Bioinformatics, April 2021.

[2] M. Yazdanpour, **G. Fan** and W. Sheng, "ManhattanFusion: Online Dense Reconstruction of Indoor Scenes from Depth Sequences", IEEE Trans. Visualization and Computer Graphics, in press.

[3] L. Yu and **G. Fan**, "DrsNet: Dual-resolution Semantic Segmentation with Rare Class-Oriented Superpixel", Multimedia Tools and Applications, 80, 1687-1706 (2021).

[4] J. Ji, J. Wei, **G. Fan**, M. Bai, J. Huang, Q. Miao, "Image patch prior learning based on random neighborhood resampling for image denoising", IET Image Processing, Vol. 14, Issue 5, pp838-844, 2020.

[5] A. Siddiqua and G. Fan, "Semantics-enhanced supervised deep autoencoder for depth image-based 3D model retrieval", Pattern Recognition Letters, Vol. 125, July 2019, pp 806-812.

[6] Z. Peng, J. Wu, G. Fan, "CCDA: a concise corner detection algorithm", Machine Vision and Applications, Machine Vision and Applications, Issue 6, Volume 30, September 2019.

[7] S. Ge and G. Fan, "Topology-aware non-rigid point set registration via global–local topology preservation", Machine Vision and Applications, Issue 4, Volume 30, June 2019.

[8] Z. Ling, J. Gong, **G. Fan**, X. Lu, "Optimal Transmission Estimation via Fog Density Perception for Efficient Single Image Defogging", IEEE Transactions on Multimedia, No. 7, Vol. 20, July 2018, pp1699-1711.

[9] Z. Ling, **G. Fan**, J. Gong, S. Guo, "Learning deep transmission network for efficient image dehazing", Multimedia Applications and Tools, Feb. 2018.

[10] X. Zhang, M. Ding and **G. Fan**, "Video-based Human Walking Estimation by Using Joint Gait and Pose Manifolds", IEEE Trans. Circuits and Systems for Video Technology, Vol. 27, Issue 7, 2017, pp1540 - 1554.

[11] Z. Ling, **G. Fan**, Y. Liang and J Zuo, "*Joint optimization and perceptual boosting of global and local contrast for efficient contrast enhancement*." Multimedia Tools and Applications (2017): 1-18.

[12] Z. Ling, **G. Fan**, J. Gong, Y. Wang, and X. Lu, "*Perception Oriented Transmission Estimation for High Quality Image Dehazing*", Neurocomputing, Vol. 224, Feb. 8, 2017.

[13] B. Xu, **G. Fan**, and Dan Yang, "*Topic Modeling Based Image Clustering by Events in Social Media*", Scientific Programming, Vol. 2016, 2016.

[14] G. Lin, **G. Fan**, X. Kang, E. Zhang, L. Yu, *"Heterogeneous Feature Structure Fusion for Classification*", Pattern Recognition, Vol. 53, May 2016, pages 1-11.

[15] M. Ding and **G. Fan**, "*Articulated and Generalized Gaussian Kernel Correlation for Human Pose Estimation*", IEEE Trans. Image Processing, Vol.25, Issue 2, Feb. 2016.

[16] M. Ding and **G. Fan**, "*Multi-Layer Joint Gait-Pose Manifolds for Human Gait Motion Modeling*", IEEE Trans. Cybernetics, Vol. 45, Number 11, Nov. 2015.

[17] S. Ge and **G. Fan**, "Articulated Non-Rigid Point Set Registration for Human Pose Estimation from 3D Sensors", Sensors (Physical Sensors), June 2015.

[18] J. Lan, Y. Jiang, **G. Fan**, D. Yu and Q. Zhang, "*Real-Time Automatic Obstacle Detection method for Traffic Surveillance in Urban Traffic*", Journal of Signal Processing Systems, May 2015.

[19] L. Yu, **G. Fan**, J. Gong, and J. Havlicek, "*Joint Infrared Target Recognition and Segmentation Using Shape Manifold-Aware Level Set*", Sensors (Special issues on Sensors in New Road Vehicles), April 2015.

[20] X. Wu, J. Sun, **G. Fan**, and Z. Wang, "*Improved Local Ternary Patterns for Automatic Target Recognition in Infrared Imagery*", Sensors, 2015, 15(3), 6399-6418.

[21] J. Gong, **G. Fan**, L. Yu, J. P. Havlicek, D. Chen and N. Fan, "*Joint Target Tracking, Recognition and Segmentation for Infrared Imagery using Shape Manifold-based Level Set*", Sensors (Special Issue on Detection and Tracking of Targets in Forward-Looking Infrared (FLIR) Imagery) (invited paper), 2014.

[22] J. Sun, **G. Fan**, L. Yu, X, Wu, "Concave-convex local binary features for automatic target recognition in infrared imagery", EURASIP Journal on Image and Video Processing, 2014:23. (*Highly accessed*)

[23] J. Gong, **G. Fan**, L. Yu, J. P. Havlicek, D. Chen and N. Fan, "*Joint View-Identity Manifold for Infrared Target Tracking and Recognition*", Computer Vision and Image Understanding (CVIU), Vol. 118, Jan. 2014, pages 211-224.

[24] **G. Fan**, R. I. Hammoud, F. Sadjadi, B. Kamgar-Parsi, "*Special Section on Advances in Machine Vision Beyond the Visible Spectrum (BVS)*", Computer Vision and Image Understanding (CVIU), Issue 12, Vol. 117, December 2013, pages 1645-1646.

[25] X. Zhang, **G. Fan** and L. Chou, "*Two-layer Dual Gait Generative Models for Human Motion Estimation from a Single Camera*", Image and Vision Computing, (Special issue on Machine Learning in Motion Analysis), Vol. 31, Issue 6-7, June-July 2013, pages 473-486.

[26] V. Venkataraman, **G. Fan**, J. Havlicek, X. Fan, Y. Zhai and M. Yeary, "*Adaptive Kalman filtering for Histogram-based Appearance Learning in Infrared Imagery*", IEEE Trans. on Image Processing, Vol. 21, Nov. 11, Nov. 2012, pages 4622-35.

[27] C. Tian, **G. Fan**, X. Gao and Q. Tian, "*Multi-view Face Recognition: From TensorFace to V-TensorFace and K-TensorFace*", IEEE Trans. on Systems, Man, and Cybernetics: Part B (Special issue on Subspace and Manifold Learning), Vol. 42, Issue 2, April 2012.

[28] V. Venkataraman, **G. Fan**, L. Yu, X. Zhang, W. Liu, and J.P. Havlicek, "*Automated Target Tracking and Recognition using Coupled View and Identity Manifolds for Shape Representation*", EURASIP Journal of Advances in Signal Processing (Special Issue on Object Tracking and Monitoring Using Advanced Signal Processing Techniques), 2011:124.

[29] C. Chen and **G. Fan**, "*Coupled Region-Edge Shape Priors for Joint Localization and Figure-ground Segmentation*", Pattern Recognition, Vol. 43, Issue 7, Pages 2521-2531, July 2010

[30] X. Zhang and **G. Fan**, "*Dual Gait Generative Models for Human Motion Estimation from a Single Camera*", IEEE Trans. on Systems, Man, and Cybernetics: Part B: Cybernetics, (Special issue on New Advances in Video-based Gait Analysis and Applications: Challenges and Solutions), Vol. 40, No. 4, pp1034-1049, Aug. 2010.

[31] Y. Ding and **G. Fan**, "*Sports Video Mining via Multi-channel Segmental Hidden Markov Models*", IEEE Trans. Multimedia, Vol. 11, No. 7, pp1301-1309, Nov. 2009.

[32] T. Chanwimaluang, G. Fan, G. G. Yen, and S. R. Fransen, "*3-D Retinal Curvature Estimation*", IEEE Trans. on Information Technology in Biomedicine, Vol. 13, No. 6, pp997-1005, Nov. 2009.

[33] X. Fan, **G. Fan** and J. Havlicek, "*Generative Graphical Models for Maneuvering Target Tracking*", IEEE Trans. Aerospace and Electronics Systems, Vol.46, No.2, April 2010.

[34] X. Fan and **G. Fan**, "*Graphical Models for Joint Segmentation and Recognition of License Plate Characters*", IEEE Signal Processing Letters, Vol. 16, No. 1, pp10-13, Jan. 2009.

[35] Y. Zhai, M. Yeary, J. Havlicek, and **G. Fan**, "*A New Centralized Sensor Fusion-Tracking Methodology based on Particle Filtering for Power-aware Systems*,"' IEEE Trans. Instrumentation and Measurement, Vol. 57, No. 10, pp2377-2387, 2008

[36] X. Song, **G. Fan** and M. Rao, "*SVM-based Data Editing for One-class Classification of Remotely Sensed Imagery*", IEEE Geoscience and Remote Sensing Letters, April 2008.

[37] X. Song and **G. Fan**, "*Selecting Salient Key-frames for Joint Spatio-temporal Video Segmentation*", IEEE Trans. Image Processing, Vol. 16, No. 12, pp3035-3046, Dec. 2007.

[38] R. Mahesh, **G. Fan** and J. Thomas, G. Cherian, "*A Web-based GIS Decision Support System for Managing and Planning USDA's Conservation Reserve Program (CRP)*", Environmental Modelling and Software, Oct. 2006.

[39] X. Song and **G. Fan**, "*Joint Key-frame Extraction and Object Segmentation for Content-based Video Analysis*", IEEE Trans. Circuits and Systems for Video Technology, Vol. 16, No. 7, pp904- 914, July 2006.

[40] T. Chanwimaluang, **G. Fan**, and S. Fransen, "*Hybrid Retinal Image Registration*", IEEE Trans. Information Technology in Biomedicine, Vol. 10, No. 1, , pp129-142, Jan. 2006.

[41] X. Song, G. Cherian, and **G. Fan**, "*A ν-insensitive SVM Approach for Compliance Monitoring of the Conservation Reserve Program*", IEEE Geoscience and Remote Sensing Letters, Vol. 2, No. 2, pp99-103, April, 2005.

[42] X. Song, **G. Fan**, and M. Rao, "*Automated CRP Mapping using Non-parametric Machine Learning Approaches*", IEEE Trans. Geoscience and Remote Sensing, Vol. 43, No. 4, pp888-897, April, 2005.

[43] L. Liu and **G. Fan**, "*Combined Key-frame Extraction and Object-based Video Segmentation*", IEEE Trans. Circuits and System for Video Technology, Volume 15, No. 7, pp869 – 884, July, 2005.

[44] L. Liu and **G. Fan**, "*A New JPEG2000 Compliant Region-of-Interest Image Coding Method: Partial Significant Bitplanes Shift*", IEEE Signal Processing Letters, Vol. 10, No. 2, pp35-38, Feb. 2003.

[45] **G. Fan** and X.-G. Xia, "*Wavelet-based Texture Analysis and Synthesis Using Hidden Markov Models,*" IEEE Trans. on Circuits and Systems I: Fundamental Theory and Applications, Vol. 50, No. 1, pp106-120, Jan. 2003.

[46] **G. Fan** and X.-G. Xia, "*A Joint Multi-context and Multiscale Approach to Bayesian Image Segmentation,*" IEEE Trans. Geoscience and Remote Sensing, Vol. 39, No. 12, 2001, pp2680-2688.

[47] **G. Fan** and X.-G. Xia, "*Image Denoising Using Local Contextual Hidden Markov Model in the Wavelet Domain,*" IEEE Signal Processing Letters, Vol. 8, No. 5, 2001, pp125-128.

[48] **G. Fan** and X.-G. Xia, "*Improved Hidden Markov Models in the Wavelet-Domain,*" IEEE Trans. on Signal Processing, Vol. 49, No. 1, 2001, pp115-120.

[49] **G. Fan** and W. K. Cham, "*Post-processing of Low Bit-rate Wavelet-based Image Coding Using Multiscale Edge Characterization,*" IEEE Trans. on Circuits and Systems for Video Technology, Vol. 11, No. 12, pp1263 -1272, Dec. 2001.

[50] **G. Fan** and W. K. Cham, "*Model-Based Edge Reconstruction for Low Bit-rate Wavelet Compressed Images,*" IEEE Trans. on Circuits and Systems for Video Tech., Vol. 10, No. 1, 2000, pp120-132.

CONFERENCE PAPERS

[1] L. Guo and G. Fan, "LoCOP: Local Collaborative Object Presence for Semantic Labeling via Score MAP Reinference" accepted by the 2021 IEEE International Conference on Image Processing.

[2] L. Zhou, N. Lannan, and G. Fan, "Human Motion Enhancement via Tobit Particle Filtering and Differential Evolution" accepted by the 2021 IEEE International Conference on Image Processing.

[3] N. Lannan, L. Zhou, G. Fan, and J. Hausselle, "Human Motion Enhancement Using Nonlinear Kalman Filter Assisted Convolutional Autoencoders", IEEE International Conference on Bioinformatics and Bioengineering, Oct. 26-28, 2020.

[4] L. Zhou, N. Lannan, G. Fan, J. Hausselle, "A Hybrid Approach to Human Motion Enhancement under Kinematic and Anthropometric Constraints", IEEE International Conference on Bioinformatics and Bioengineering, Oct. 26-28, 2020.

[5] M. Yazdanpour, G. Fan, W. Sheng, "Online Manhattan Keyframe-based Dense Reconstruction from Indoor Depth Sequences", IEEE Conference on Visual Communications and Image Processing (VCIP), Dec. 2019.

[6] A. Siddiqua and G. Fan, "Asymmetric supervised deep autoencoder for depth image based 3D model retrieval", IEEE Conference on Visual Communications and Image Processing (VCIP), Dec. 2019.

[7] L. Guo, G. Fan and W. Sheng, "Creating 3D Bounding Boxe Hypotheses from Deep Network Score-Maps", IEEE International Conference on Image Processing (ICIP), Sept. 2019.

[8] M. Yazdanpour, G. Fan and W. Sheng, "Online Reconstruction of Indoor Scenes with Local Manhattan Frame Growing", IEEE Workshop on Perception Beyond Visible Spectrum (PBVS), in conjunction with CVPR2019, June 16, 2019 (best paper award).

[9] L. Guo, G. Fan and W. Sheng, "Dual Graphical Models for Relational Modeling of Indoor Object Categories", IEEE Workshop on Perception Beyond Visible Spectrum (PBVS), in conjunction with CVPR2019, June 16, 2019.

[10] N. Lannan and G. Fan, "Filter Guided Manifold Optimization in the Autoencoder Latent Space", IEEE Workshop on Perception Beyond Visible Spectrum (PBVS), in conjunction with CVPR2019, June 16, 2019.

[11] D. Liang, G. Fan, G. Lin, W. Chen, X. Pan, and H. Zhu, "Three-Stream Convolutional Neural Network with Multi-task and Ensemble Learning for 3D Action Recognition", IEEE Workshop on Perception Beyond Visible Spectrum (PBVS), in conjunction with CVPR2019, June 16, 2019.

[12] Z. Peng, J. Wu and G. Fan,"A rapid face detection method based on skin color model and local binary gradient feature." Proc. of the IEEE 5th International Conference on Systems and Informatics, 2018.

[13] A. Siddiqua and G. Fan, "Supervised Deep-Autoencoder for Depth Image-based 3D Model Retrieval", IEEE Winter Conference on Applications of Computer Vision, March 2018.

[14] M. Yazdanpour, G. Fan, W. Sheng, "Real-Time Volumetric Reconstruction of Manhattan Indoor Scenes from Depth Sequences", IEEE Visual Communications and Image Processing, Dec. 2017.

[15] L. Guo, G. Fan, W. Sheng, "Robust Object Detection by Cuboid Matching with Local Plane Optimization in Indoor RGB-D Images", IEEE Visual Communications and Image Processing, Dec. 2017. (Best student paper candidate)

[16] L. Yu and G. Fan, "*Edge-aware Integration Model for Semantic Labeling of Rare Classes*", IEEE International Conference on Image Processing, Beijing, China, Sept. 17-20, 2017.

[17] J. Yim and G. Fan, *"Fully Automatic and Robust 3D Modeling for Range Scan Data of Complex 3D Objects*", International Symposium on Visual Computing, Las Vegas, Dec. 12-14, 2016.

[18] L. Yu and G. Fan, "*Rare Class Oriented Scene Labeling Using CNN Incorporated Label Transfer*", International Symposium on Visual Computing, Las Vegas, Dec. 12-14, 2016.

[19] Z. Ling, G. Fan, Y. Wang, and X. Lu, "*Learning Deep Transmission Network for Single Image Dehazing*", in Proc. International Conference on Image Processing (ICIP2016), Phoenix, Arizona, Sept., 2016.

[20] B. Xu and G. Fan, "*Multimodal Topic Modeling-based Geo-annotation for Social Event Detection in Large Photo Collections*", in Proc. International Conference on Image Processing (ICIP2015), Quebec City, Canada, Sept., 2015.

[21] S. Ge and G. Fan, "*Sequential Non-rigid Point Registration for 3D Human Pose Tracking*", in Proc. International Conference on Image Processing (ICIP2015), Quebec City, Canada, Sept., 2015.

[22] G. Lin and G. Fan, L. Yu, X. Kang, E. Zhang, "*Heterogeneous Structure Fusion for Target Recognition in Infrared Imagery*", in Proc. of the Workshop on Perception beyond Visible Spectrum (PBVS) in conjunction with CVPR2015, Boston, June 2015.

[23] S. Ge and G. Fan, "*Non-rigid Articulated Point Set Registration with Local Structure Preservation*", in Proc. of the Workshop on Perception beyond Visible Spectrum (PBVS) in conjunction with CVPR2015, Boston, June 2015.

[24] M. Ding and G. Fan, "*Articulated Gaussian Kernel Correlation for Human Pose Estimation*", in Proc. of the Workshop on Perception beyond Visible Spectrum (PBVS) in conjunction with CVPR2015, Boston, June 2015.

[25] S. Ge and G. Fan, "*Non-rigid Articulated Point Set Registration for Human Pose Estimation*", in Proc. IEEE Winter Conference on Applications of Computer Vision (WACV), Waikoloa Beach, HI, Jan. 6-9, 2015.

[26] M. Ding and G. Fan, "*Generalized Sum of Gaussians for Real-Time Human Pose Tracking from a Single Depth Sensor*", in Proc. IEEE Winter Conference on Applications of Computer Vision (WACV), Waikoloa Beach, HI, Jan. 6-9, 2015.

[27] M. Ding and G. Fan, "*Fast Human Pose Tracking with Single Depth Sensor using Sums of Gaussians Models*", in Proc. International Symposium on Visual Computing (ISVC), Las Vegas, Dec. 2014.

[28] S. Ge, G. Fan, and M. Ding, "*Non-rigid Point Set Registration with Global-Local Topology Preservation*", in Proc. IEEE Workshop on Perception beyond Visible Spectrum (in conjunction with CVPR2014), June 23, 2014.

[29] M. Khan, G. Fan, D. R. Heisterkamp, L. Yu, "*Automatic Target Recognition in Infrared Imagery Using Dense HOG Features and Relevance Grouping of Vocabulary*", in Proc. IEEE Workshop on Perception beyond Visible Spectrum (in conjunction with CVPR2014), June 23, 2014.

[30] J. Sun, G. Fan, X. Wu, "*New Local Edge Binary Patterns for Image Retrieval*", in Proc. IEEE International Conference on Image Processing (ICIP), Sept. 15-18, 2013, Melbourne, Australia.

[31] Z. Zhou and G. Fan, "*A Directional Shock Diffusion Approach to Single Image Super-resolution*", in Proc. IEEE International Conference on Image Processing (ICIP), Sept. 15-18, 2013, Melbourne, Australia.

[32] J. Gong, G. Fan, J. P. Havlicek, N. Fan and D. Chen, "*Infrared Target Tracking, Recognition and Segmentation using Shape-aware Level Set*", in Proc. IEEE International Conference on Image Processing (ICIP), Sept. 15-18, 2013, Melbourne, Australia.

[33] L. Yu, G. Fan, J. Gong, and J. P. Havlicek, "*Simultaneous Target Recognition, Segmentation and Pose Estimation*", in Proc. IEEE International Conference on Image Processing (ICIP), Sept. 15-18, 2013, Melbourne, Australia.

[34] M. Ding and G. Fan, "*Multi-Layer Joint Gait-Pose Manifold for Human Motion Modeling*", IEEE Automatic Face and Gesture Recognition (FG), April 22-26, 2013, Shanghai, China.

[35] M. Ding, G. Fan, X. Zhang, S. Ge, and L. Chou, "*Structure-guided Joint Gait and Pose Manifolds for Video-based Motion Estimation*", in Proc. IEEE International Conference on Image Processing (ICIP), Sept. 30-Oct. 3, 2012, Orlando, Florida.

[36] J. Gong, G. Fan, L. Yu, J. Havlicek, D. Chen, "*Joint View and Identity Manifold for Automated Target Tracking and Recognition*", in Proc. IEEE International Conference on Image Processing (ICIP), Sept. 30-Oct. 3, 2012, Orlando, Florida.

[37] Y. Ding and G. Fan, "*Finding the Game Flow from Sports Video*", in Proc. Joint ACM Workshop on Modeling & Representing Events (J-MRE'11), Nov. 30, 2011, Scottsdale, Arizona.

[38] G. Fan, X. Zhang and M. Ding, "*Gaussian Process for Human Motion Modeling: A Comparative Study*", in Proc. IEEE Workshop on Machine Learning for Signal Processing, Sept. 18-20, 2011, Beijing, China.

[39] V. Venkataraman, G. Fan, L. Yu, X. Zhang, W. Liu and J. P. Havlicek, "*Joint Target Tracking and Recognition using View and Identity Manifolds*", in Proc. IEEE CVPR Workshop on Object Tracking and Classification Beyond Visible Spectrum (OTCBVS1011), Colorado Spring, Colorado, June 25, 2011.

[40] X. Zhang and G. Fan, "*Joint Gait-Pose Manifold for Video-based Human Motion Estimation*", in Proc. IEEE CVPR Workshop on Machine Learning for Vision-based Motion Analysis (MLVMA'11), Colorado Spring, Colorado, June 25, 2011.

[41] X. Zhang, D. Biswas, and G. Fan, "*A Software Pipeline for 3D Animation Generation using Mocap Data and Commercial Shape Models*", in Proc. ACM Conference on Image and Video Retrieval, Xi'an, China, June 15-17, 2010.

[42] Mathanker SK, Weckler PR, Taylor RK, G Fan, "Adaboost and support vector machine classifiers for automatic weed control: Canola and Wheat", ASABE Annual International Meeting,Pittsburgh, Pennsylvania, June 20-June 23, 2010.

[43] X. Zhang, G. Fan, and L. Chou, "*Two-layer Gait Generative Models for Estimating Unknown Human Gait Kinematics*", in Proc. IEEE ICCV Workshop on Machine Learning for Vision-based Motion Analysis (MLVMA'09), Japan, Oct. 2009.

[44] C. Chen and G. Fan, "*Combining Spatial and Temporal Priors for Articulate Human Tracking with Online Learning*", in Proc. IEEE ICCV Workshop on Dynamic Vision Workshop, Japan, Oct. 2009.

[45] Y. Ding and G. Fan, "*Event Detection in Sports Video based on Generative-Discriminative Models*", in Proc. the 1st ACM International Workshop on Events in Multimedia (EiMM09) in conjunction with the ACM Multimedia Conference, Oct. 2009, Beijing, China.

[46] V. Venkataraman, G. Fan, Xin Fan, and Joseph Havlicek, "*Appearance Learning by Adaptive Kalman Filters for FLIR Tracking*" in Proc. IEEE CVPR Workshop on Object Tracking and Classification Beyond Visible Spectrum (OTCBVS09), Miami, Florida, 2009.

[47] C. Johnston, N. Mould, J. Havlicek and Guoliang Fan, *"Dual Domain Auxiliary Particle Filter with Integrated Target Signature Update*", in Proc. IEEE CVPR Workshop on Object Tracking and Classification Beyond Visible Spectrum (OTCBVS09), Miami, Florida, 2009.

[48] S. Jiang, K. Shuang, G. Fan, C. Tian, and Y. Wang, "*Multiview Face Recognition based on Manifold Learning and Multilinear Analysis*", in Proc. IEEE International Conference on Signal Processing, Oct. 26-29, 2008, Beijing, China.

[49] Y. Ding and G. Fan, "*Multi-channel Segmental Hidden Markov Models for Sports Video Mining*", in Proc. ACM Multimedia Conference (MM2008), Oct. 27-Nov. 1 , 2008, Vancouver, Canada.

[50] X. Zhang and G. Fan, *"Dual Generative Models for Human Motion Estimation from an Uncalibrated Monocular Camera*", in Proc. International Conference on Pattern Recognition (ICPR2008), Tampa, Florida, Dec. 2008.

[51] C. Tian, G. Fan, and X. Gao "*Multi-view Face Recognition via Non-linear Tensor Decomposition*", in Proc. International Conference on Pattern Recognition (ICPR2008), Tampa, Florida, Dec. 2008.

[52] V. Venkataraman, X. Fan and G. Fan, "*Integrated Target Tracking and Recognition via Joint Appearance-Motion Generative Models*", in Proc. IEEE CVPR Workshop on Object Tracking and Classification in and Beyond Visible Spectrum (OTCBVS08), Anchorage, Alaska, June 2008.

[53] C. Chen and G. Fan, "*Hybrid Body Representation for Integrated Pose Recognition, Localization and Segmentation*", in Proc. of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), Anchorage, Alaska, June 2008.

[54] X. Fan and G. Fan, "*Joint Segmentation and Recognition of License Plate Characters*", in Proc. of IEEE International Conference on Image Processing (ICIP), San Antonio, TX, Sept. 2007.

[55] T. Chanwimaluang and G. Fan, "*Constrained Optimization for Retinal Curvature Estimation Using an Affine Camera*" in the Proc. of IEEE CVPR Workshop on Beyond Multiview Geometry: Robust Estimation and Organization of Shapes from Multiple Cues (BMG07), in conjunction with CVPR2007, Minneapolis, Minnesota, June 22, 2007.

[56] X. Fan and G. Fan, "*Generative Graphical Models for Maneuvering Object Tracking and Dynamic Analysis*", in Proc. of CVPR Workshop Object Tracking and Classification in and Beyond Visible Spectrum (OTCBVS07), Minneapolis, MN, June 22, 2007.

[57] V. Venkataraman, G. Fan and X. Fan, "*Target Tracking with Online Feature Selection in FLIR Imagery*", in Proc. IEEE CVPR Workshop on Object Tracking and Classification in and Beyond Visible Spectrum (OTCBVS07), Minneapolis, MN, June 22, 2007.

[58] Y. Ding and G. Fan, "*Segmental Hidden Markov Models for View-based Sport Video Analysis*", in Proc. IEEE CVPR Workshop on Semantic Learning Applications in Multimedia (SLAM07), Minneapolis, MN, June 22, 2007.

[59] Y. Ding and G. Fan, "*Two-layer Generative Models for Video Mining*", in Proc. of IEEE International Conference on Multimedia and Expo (ICME), Beijing, China, July 2007.

[60] Y. Ding and G. Fan, "*Camera View-based Football Video Analysis*", in Proc. of IEEE International Symposium on Multimedia, San Diego, CA, Dec. 11-14, 2006.

[61] X. Zhang and G. Fan, "*Retinal Spot Lesion Detection Using Adaptive Multiscale Morphological Processing*", in Proc. International Symposium on Visual Computing, Lake Tahoe, NV, Nov. 11-13, 2006, also in LNCS, Vol. 4292, Editors: G. Bebis, Springer, 2006.

[62] T. Chanwimaluang and G. Fan, "*Affine Camera for 3D Retinal Surface Reconstruction*", in Proc. International Symposium on Visual Computing, Lake Tahoe, NV, Nov. 11-13, 2006, also in LNCS, Vol. 4292, Editors: G. Bebis, Springer, 2006.

[63] C. Chen and G. Fan, "*What Can We Learn from Biological Vision Studies for Human Motion Segmentation*", in Proc. International Symposium on Visual Computing, Lake Tahoe, NV, Nov. 11-13, 2006, also in LNCS, Vol. 4292, Editors: G. Bebis, Springer, 2006.

[64] J P. Havlicek, C. T. Nguyen, and G. Fan, and V. Venkataraman, "Integration of a Dual-band IR Data Acquisition System using Low-cost PV320 Camera", in Proc. SPIE Vol. 6206, Defense and Security Symposium, Infrared Technology and Applications XXXII, Orlando, FL, April 17-21, 2006.

[65] G. Fan, V. Venkataraman, L. Tang, J. P. Havlicek, "*A Comparative Study of Boosted and Adaptive Particle Filters for Affine-Invariant Target Detection and Tracking*", in the Proc. of 3rd Joint IEEE International Workshop on Object Tracking and Classification in and Beyond the Visible Spectrum (OTCBVS'06), New York City, June 22, 2006.

[66] L. Tang, V. Venkataraman, G. Fan, "*Multi-aspect Target Tracking in Image Sequences Using Particle Filters*", in Proc. International Symposium on Visual Computing, Lake Tahoe, Nevada, Dec. 2005, also in LNCS, Vol. 3804, Editors: G. Bebis, Springer, 2005.

[67] T. Chanwimaluang and G. Fan, "*Retinal Image Registration for NIH's ETDRS*", in Proc. International Symposium on Visual Computing, Lake Tahoe, Nevada, Dec. 2005, also in LNCS, Vol. 3804, Editors: G. Bebis, Springer, 2005. (*GS citations: 1, SCI citation: 1*)

[68] X. Song and G. Fan, "*A New Video Analysis Approach for Coherent Key-frame Extraction and Object Segmentation*", in Proc. of IEEE International Workshop on Multimedia Signal Processing, Shanghai, China, Oct-Nov. 2005.

[69] C. Chen and G. Fan, "*Perception Principles Guided Video Segmentation*", in Proc. of IEEE International Workshop on Multimedia Signal Processing, Shanghai, China, Oct-Nov. 2005.

[70] X. Song and G. Fan, "*Key-frame Extraction for Object-based Video Segmentation*", in Proc. of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP2005), Philadelphia, PA, March 2005.

[71] X. Song and G. Fan, "*Joint Key-frame Extraction and Object-based Video Segmentation*", in Proc. of IEEE Workshop on Motion and Video Computing (MOTION 2005), Breckenridge, Colorado, Jan. 5-6, 2005.

[72] A. Awawedeh and G. Fan, "*Pseudo Cepstrum for Assessing Stereo Quality of Retinal Images"*, in Proc. of the 37th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 2003.

[73] T. Chanwimaluang and G. Fan, "*An Efficient Algorithm for Extraction of Anatomical Structures in Retinal Images*", in Proc. IEEE International Conference on Image Processing (ICIP2003), Barcelona, Span, September 2003.

[74] T. Chanwimaluang and G. Fan, "*An Efficient Blood Vessel Detection Algorithm for Retinal Images using Local Entropy Thresholding*", in Proc. of the 2003 IEEE International Symposium on Circuits and Systems (ISCAS2003), Bangkok, Thailand, 2003.

[75] G. Cherian, X. Song, G. Fan, and M. Rao, "*Application of Support Vector Machines for Automatic Compliance Monitoring of the Conservation Reserve Program (CRP) Tracts*", in Proc. IEEE Goescience and Remote Sensing Symposium (IGARSS2004), Alaska, September 20-24, 2004.

[76] X. Song, G. Fan, and M. Rao, "*Machine Learning Approaches for Multisource Geospatial Data Classification with Application to CRP Mapping in Texas County, Oklahoma*", in Proc. IEEE Workshop on Advances in Techniques for Analysis of Remotely Sensed Data, NASA Goddard Visitor Center, Washington DC, October 27/28, 2003.

[77] X. Song and G. Fan, "*On Capturing Likelihood Disparity for Unsupervised Image Segmentation*", in Proc. IEEE Statistical Signal Processing Workshop, St. Louis, MO, September 2003.

[78] X. Song and G. Fan, "*Unsupervised Bayesian Image Segmentation using Wavelet-domain Hidden Markov Models*", in Proc. IEEE International Conference on Image Processing (ICIP2003), Barcelona, Span, September 2003.

[79] L. Liu, Y. Dong, X. Song, and G. Fan, "*An Entropy-based Segmentation Algorithm for Computer-Generated Document Images*", in Proc. IEEE International Conference on Image Processing (ICIP2003), Barcelona, Span, September 2003.

[80] Y. Dong, L. Liu, X. Song, and G. Fan, "*A New Simplified Quantization Rate-Distortion Model for Fast Document Image Segmentation*", in Proc. of the 45th IEEE International Midwest Symposium on Circuits and Systems, Tulsa, OK, Aug. 2002.

[81] L. Liu and G. Fan, "*A New Method for JPEG2000 Region-of-Interest Image Coding: Most Significant Bitplanes Shift*", in Proc. of the 45th IEEE International Midwest Symposium on Circuits and Systems, Tulsa, OK, Aug. 2002.

[82] X. Song and G. Fan, "*A Study of Supervised, Semi-Supervised and Unsupervised Multiscale Bayesian Image Segmentation*", in Proc. of the 45th IEEE International Midwest Symposium on Circuits and Systems, Tulsa, OK, Aug. 2002.

[83] X. Song and G. Fan, "*Unsupervised Image Segmentation using Wavelet-domain Hidden Markov Models*", in Proc. SPIE Wavelet X, Volume 5207, San Diego, CA, August 2003.

[84] G. Fan and X. Song, "*A Study of Contextual Modeling and Texture Characterization for Multiscale Bayesian Segmentation*", in Proc. of the IEEE International Conference on Image Processing (ICIP2002), Rochester, NY, Sept. 2002.

[85] G. Fan and X.-G. Xia, "*On Context-Based Bayesian Image Segmentation: Joint Multi-context and Multiscale Approach and Wavelet-Domain Hidden Markov Models*", in Proc. of the 35th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 4-7, 2001 (Invited paper).

[86] G. Fan and X.-G. Xia, "*Texture Analysis and Synthesis Using Wavelet-Domain Hidden Markov Models*", in Proc. of the 5th IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing, Baltimore, MD, June 2001.

[87] G. Fan and X.-G. Xia, "*Maximum Likelihood Texture Analysis and Classification Using Wavelet-Domain Hidden Markov Models*", in Proc. of the 34th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Oct. 29-Nov. 1, 2000.

[88] G. Fan and X.-G. Xia, "*Wavelet-Based Statistical Image Processing Using Hidden Markov Tree Model*", in Proc. of the Conference on Information Science and Systems, Princeton (CISS2000), NJ, March, 2000.

[89] G. Fan and X.-G. Xia, "*Wavelet-Based Image Denoising Using Hidden Markov Models*", in Proc. of the IEEE International Conference on Image Processing (ICIP2000), Vancouver, Canada, Sept. 2000.

[90] G. Fan and X.-G. Xia, "*Multiscale Texture Segmentation Using Hybrid Contextual Labeling Tree*", in Proc. of the IEEE International Conference on Image Processing (ICIP2000), Vancouver, Canada, Sept. 2000.

[91] G. L. Fan and W. K. Cham, "*Post-processing for Low Bit-rate Wavelet-based Image Coding Using Multiscale Edge Characterization*", in Proc. of the IEEE Data Compression Conference (DCC98), Snowbird, UT, 1998, p545.

[92] G. L. Fan, W. K. Cham and J. Z. Liu, "*Model-Based Edge Reconstruction for Low Bit-rate Wavelet-based Image Coding*", in Proc. of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP98), Seattle, WA, 1998, p2561-2564.

[93] G. L. Fan and W. K. Cham, "*Multiscale Image Reconstruction for Low Bit-Rate Wavelet Image Coding*", in Proc. of the 1998 IEEE International Conference on Image Processing (ICIP98), Chicago, IL, Oct. 1998, p420-424.

[94] G. Fan and L. Zhou, "Visual Entropy-based Classified Bath Fractal Transform for Image Coding", in Proc. of the IEEE International Conference on Signal Processing (ICSP1996), Oct. 1996, Beijing, China.

[95] G. Fan and L. Zhou, "*Design of Hausdorff Measure-based Image Classifier*", ACTA Electronica Sinica (in Chinese), Vol. 25, No.11, pp120-123, Nov. 1997.

COURSES TAUGHT

- **ENGR1111 General Engineering**
  - Course Description: An introduction to the study and practice of engineering. Skills for students in CEAT; expected engineering student behavior; tools needed by CEAT students; and the role of engineers in society.
- **ECEN3513 Signal Analysis**
  - Course Description: Introduction to continuous-time and discrete-time signals and systems, linear time-invariant systems, convolution, periodic signals, Fourier series, Fourier transform, sampling theorem, modulation/demodulation, multiplexing-demultiplexing.
- **ECEN4523 Communication Theory**
  - Course Description: This course provides the fundamental theory of the basic building blocks in all communication systems, including amplitude modulation/demodulation, angle modulation and demodulation, and performance analysis of communication systems
- **ECEN4503 Random Signals and Noise**
  - Course Description: Introduction to probability theory; Random variables, distribution and density functions; Operations on Single and multiple random variables; Pairs of random variables; Random process; Analysis of electrical systems using concepts of probability.
- **ECEN4763 Introduction to Digital Signal Processing**
  - Course Description: Introduction to discrete linear time-invariant (LTI) systems, linear convolution, Linear constant coefficient difference equation (LCCDE), Z-transform, sampling theorem, digital filter design, discrete Fourier transform, DSP application.
- **ECEN5793 Digital Image Processing**
  - Course Description: An introduction to basic concepts and methodologies for digital image processing, including image formation and acquisition, image enhancement, image restoration, color image processing, image compression, and morphological processing.
- **ECEN 5763 Digital Signal Processing**
  - Course Description: This course is intended to build on an introductory DSP course. Discrete linear time-invariant (LTI) systems; Z-transform, design of FIR/IIR filters, discrete Fourier transform (DFT); sampling theory, down-sampling and up-sampling, transform analysis of LTI system, structures of LTI systems, signal analysis using DFT.
- **ECEN 5282 Computer Vision**
  - Course Description: This course covers advanced topics on the development of machine vision techniques, including camera models, camera calibration, texture analysis, clustering for image segmentation, , Principle Component Analysis (PCA), hidden Markov models (HMMs).
- **ECEN 6001 Ph.D. Graduate Seminar Series**
  - Course Description: The course is designed to prepare new Ph.D. students for research and study. ECEN faculty will share their experiences and knowledge on succeeding in graduate school. This course will help new students to become engaged in the Ph.D. program and also make students aware of the expectations and opportunities for Ph.D. graduates.
- **ECEN 5060.356 Pattern Recognition and Machine Learning**
  - Course Description: Fundamentals of pattern recognition and machine learning; linear models for regression; linear models for classification, kernel methods, clustering, mixture models, Expectation Maximization (EM), dimension reduction, Principal Component Analysis (PCA), PCA extensions.