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# FATIH PORIKLI

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## WORK EXPERIENCE:

**March 2000 – Present**

**Mitsubishi Electric Research Laboratories**, Cambridge, MA  
*Distinguished Research Scientist & Technical Manager*, Imaging Group

- Won the **R&D100 Award**, category: Scientist of the Year (select group of winners), 2006
- Won **2** Best Paper Awards, **1** Best Paper Runner-up, nominated for 3 other publications awards
- Supervised **40+** PhD student interns, thesis committee and co-advisor of **8**
- Associate Editor of **5** journals (IEEE SPM: impact factor 6.0, SIIMS: rank 2 / 236 in applied math)
- **90+** papers, **60+** patent applications (2700+ citations, 40 granted international patents)
- Ranks in the top **1%** among computer vision scientists worldwide (Microsoft Academic Search)
- Selected consistently among the Best Performing employees at MERL from 2003 to 2011
- Won the MELCO **Research Excellence Awards** in 2009 & 2011, the MELCO **Presidents Award** 2007, and the MERL **Directors Award** 2008 in recognition of contributions to strategic products
- Technically managed project oriented teams, hired people and allocated given resources
- Prepared **35 successful** project proposals (Corporate R&D), 1 final-tier ARDA proposal
- Developed fundamental technologies for **10+ key products**: Particle Beam IGRT, Surveillance DVR DX2500, MELCO Car Navigation, Satellite/SAR Imaging Suit, Electronic Toll Collection, Vehicle Traffic Control, Mitsubishi DTV Decoder, Physical Security PC55EXP, Harbor Monitoring, Stadium Multi-Camera System, HD Helicopter Television, MPEG Decoder IC
- Brought in **\$3M+** in external funds and technically contributed to (partial list):
  - Multi-modal Multi-Sensor Data Enhancement, 2011,
    - Development of compressive sensing, fusion, super-resolution, denoising, deblurring
    - \$540K research funding, 5 patent applications
  - Object Detection, Classification & Tracking, 2005~2010
    - Development of advanced aerial, indoors, outdoors, vehicle surveillance systems
    - \$1.5M research funding, \$200M+ in total sales, 15 patent applications
  - Medical Data Analysis, 2006~2011
    - Design of nonintrusive tumor trackers for particle beam IGRT system
    - \$1M research funding, \$300M+ in total sales (projected), 7 patent applications
  - GIS, Aerial Video, Radar & Car Navigation, 2004~2011
    - Stabilization/tracking for aerial cameras/radars, compression for car navigation devices
    - \$1M research funding, \$600M+ in total sales (projected), 6 patent applications
  - Electronic Toll Collection, Driver Safety, Traffic Control, 2003, 2007, 2009~2011
    - Camera sensor based traffic flow control and advanced electronic toll collection systems
    - \$500K research funding, \$100M+ in total sales, 2 patent applications

## Technical Highlights:

- Invented novel data **features & descriptors**: relational combinatorial features that provide 70x speedup and 5x~20x less errors (award winning), region covariance matrix descriptor that is demonstrated as one of the best region features for segmentation, detection, and recognition (300+ citations), boosted feature selection and classifier adaptation method that achieves the minimal memory imprint (3% of original) for low-cost on-camera systems
- Developed **classification & learning** methods, **video analytics**: the first manifold boosting classifiers that provide 10x performance improvement while running 30x faster than traditional SVMs: one of the most accurate (96% accuracy @  $10^{-5}$  FA) human detection methods (award winning), Fourier Frequency Mapping for fast SVM kernel approximation (50x acceleration, award winning), automatic parameter estimation & outlier detection methods using spectral clustering (key feature of video analytics products), analytical manifold learning methods (improve detection rate 90% for large affine transforms), “Value of Information” metrics that provide 4x more accurate active learning, online dictionary learning methods (for lightweight processing), kernel based weakly supervised clustering that improves accuracy from 60% to 99%, the fastest traffic congestion method using HMMs (robust to any lighting condition, achieves 95% accurate detection), compressive sensing and dictionary learning based robust low-rank and subspace learning
- Developed advanced high dimensional **signal processing** algorithms: matrix decomposition based texture compression (5x improvement over JPEG), Bayesian update fitting of stochastic models to temporal data (2x more accurate than online EM when models overlap), high accuracy automatic target detection for very noisy (6dB) radar signals, frequency synthesis for MPEG-2 that minimizes the design complexity and drift (3dB improvement in HDTV streams), bandwidth renegotiation that minimizes latency 35% while optimizing bandwidth (a new feature of Mitsubishi QS Router)
- Developed state-of-the-science **computer vision** solutions: automatic video object segmentation (10x faster than motion segmentation, ‘product quality’ object trackers including multi-kernel mean-shift, regression, particle filtering (improve performance from 73% to 90%) for surveillance and medical applications, robust fast (100fps/single target) UAV aerial target tracking, multi-modal registration for optical, infrared, and medical imagery, the first dynamic programming based calibration method for multi-camera networks, essential tools to imaging products including filter banks, MPEG-7 metadata generation, level-set image segmentation, image reconstruction (4x super-resolution), the first statistical mixture of model fitting for effective removal of moving cast shadows (45% better detection)
- Developed sensor network based **cyber-physical systems** including real-time patient monitoring technology for IGRT system (with 2mm precision), wireless motion sensor network that monitors living/working spaces to optimize task scheduling and event detection, critical care monitoring system using Dynamic Bayesian Networks and multi-modal bio-signal analysis for real-time human state prediction (remote health monitoring), autonomous driving system that detects objects for obstacle avoidance (car navigation)
- Designed **high performance computing** methods: one of the fastest bilateral filtering method that runs in constant time (runs at 200fps @ 1MB data on NVIDIA GPU using CUDA), highly cited (250+) integral histogram that accelerates search more than 100x, parallel processing algorithms that accelerate signal processing tasks up to 80x, efficient scan-line search using dynamic programming for distortion compensation from  $O(M^4 x^M)$  to  $O(M^2)$  complexity that enables projecting video onto any dynamic surface, volumetric synthesis and rendering (CT to 4DCT / ultrasound / X-ray)

**May 1999 – March 2000**

**Hughes Research Laboratories, Malibu, CA**

Contractor (Computer Vision Expert), Information Sciences Lab

- Developed novel road extraction methods for very low-resolution multi-channel satellite imagery as key components of the aerial surveillance product
- Designed an electron microscope data analyzer to find nano-level properties of atomic structures to halve the cost of special IC production

**July 1997 – August 1998**

**AT&T Bell Labs, Holmdel, NJ**

Contractor (Developer), Image Processing Group (started as an intern)

- Achieved boundary accurate 3D estimation while preventing from surface singularities for low texture images by mesh patch matching for company's experimental 3D display
- Prepared a comprehensive formulation of the psychometric aspects of 3D perception to reduce long-term eye-strain

## **HONORS:**

- **R&D100 Award**, category: Scientist of the Year (select group of winners), 2006
- **Best Paper Prize** (IEEE Advanced Video & Signal based Surveillance), IEEE AVSS 2011
- **Best Paper Prize** (IEEE OTCBVS Workshop), IEEE CVPR 2010
- **Best Paper Prize – Runner up** (out of 1300 papers), IEEE CVPR 2007
- **Public Utility Systems Research Excellence Award** for excellent performance of developed technology for the system deciphering damages through the Helicopter TV images, 2009
- **MELCO-ATC Excellence Award** for contribution to planning and monitoring technologies for scanning particle beam therapy, 2009
- **Corporate R&D Award** for contributions to product competitiveness thorough innovative algorithm development for video surveillance systems, 2008
- **MERL Directors Award** for contributions to product development of medical image based alignment technology for particle beam radiotherapy, 2008
- **Most Popular Scientist Award** from Popular Science Magazine, TR, for the contributions in smart camera systems, 2007
- **Best Paper Prize – nomination** (out of 900 papers), IEEE ICME 2007
- **Best Paper Prize – nomination** (out of 250 papers), IEEE AVSS 2009
- 5 and 10 years of **High Achievement Awards** by MERL 2005, 2010
- **Top 0.005%** in the National University Entrance Exam
- Ranked **32<sup>nd</sup>** among **700,000** students
- Full scholarship for overseas doctorate study from National High Educational Council (**Top 1%**)
- Full scholarship for 5 years from the Board of Education of Bilkent University (**Top 2.5%**)
- Honorable mention at the Regional Peace Poems Awards

## **TEACHING:**

**1997** Research Assistant, Electrical and Computer Eng., NYU – Poly, NY

**1993** Teaching Assistant, Electrical and Electronics Engineering, Ankara University, TR

**1986** Instructor, Turbo Basic Programming, First Step Computer Center, TR

## EDUCATION:

- 2002 Ph.D., Electrical & Computer Engineering**  
New York University – Poly, NY  
Minors: 1. Mathematics, 2. Computer Science  
Thesis: Automatic Video Object Segmentation. Advisor: Prof. Yao Wang (IEEE fellow)
- 1996 M.S. Electrical Engineering**  
New York University – Poly, NY  
Concentration: Signal Processing Motion Estimation. Advisor: Prof. Yao Wang (IEEE fellow)  
University of Southern California, Los Angeles, CA  
Enrolled in EE graduate program; transferred to NYU – Poly
- 1992 B.S. Electrical Engineering**  
Bilkent University, Ankara, TR. Advisor Prof. Levent Onural (IEEE fellow)

## KEYNOTE TALKS:

- “Vision application of structural learning through manifolds”, **IAPR S+SSPR Keynote**, 2010  
“Surveillance technologies from a practical point of view”, **IEEE AVSS Panel**, 2009  
“Past and future of smart camera systems”, **IEEE DICTA Plenary**, 2008  
“Future generation detection and tracking systems”, **ISVC Keynote**, 2007

## Invited Lectures:

- “Computer vision manifolds”, **University of Minnesota, IMA Invited Colloquium Speaker**, 2011  
“Learning in non-linear spaces”, **Brown University**, 2011  
“Video analytics”, **Siemens**, 2010  
“Inference on manifolds”, **Boston University, Distinguished Lecture Series**, 2010  
“Is world made of manifolds?” **The Ohio State University**, 2009  
“Future of surveillance systems”, **IEEE AVSS**, Genoa, 2009  
“Manifold learning”, **MIT**, 2008  
“Detection, classification and tracking in manifolds”, **Google**, 2007  
“Issues in video analytics: research vs. applications”, **IEEE AVSS Panel**, 2007  
“Covariance matrix descriptors”, **Boston University, CS Department**, 2006  
“Object detection and tracking”, **University of Illinois-Chicago**, 2006  
“Combining detection and tracking”, **Sarnoff**, 2005  
“Advanced computer vision solutions for surveillance systems”, **Rutgers University**, 2005  
“How to learn backgrounds in challenging environments”, **EPFL**, 2004  
“Image processing tools for multi-camera systems”, **University of Maryland**, 2003  
“Video object segmentation using video-cubes”, **Carnegie-Mellon**, 2003

## ACADEMIC RESPONSIBILITIES:

### Editor:

- **Associate Editor**, IEEE Signal Processing Magazine, 2011 to present (impact rate 6.0)
- **Associate Editor**, SIAM Imaging Sciences, 2011 to present (2 / 236 in applied math)
- **Associate Editor**, EURASIP Journal of Image & Video Processing, 2011 to present
- **Associate Editor**, Journal of Machine Vision Applications, Springer, 2006 to present
- **Associate Editor**, Journal of Real-Time Image and Video Processing, Springer, 2004 to present
- **Guest Editor**, Journal of Machine Vision Applications, SI on Car Navigation Systems, 2011
- **Guest Editor**, EURASIP JIVP, SI on Tracking in Complex Scenes, 2008
- **Guest Editor**, Journal of Machine Vision Applications, SI on Dynamic Textures, 2009
- **Co-editor**, Springer Book on Video Analytics for Business Intelligence, C. Shan, F. Porikli, T. Xiang, S. Gong, 2011

### Conference Organization:

- **General Chair**, IEEE International Conference on Advanced Video & Signal Based Surveillance (AVSS), 2010, Boston
- **Technical Program Chair**, IEEE International Conference on Advanced Video & Signal Based Surveillance (AVSS), 2012, Beijing
- **Area Chair**, IEEE Conference on Computer Vision & Pattern Recognition (CVPR), 2009
- **Area Chair**, IAPR International Conference on Pattern Recognition (ICPR), 2010
- **Program Chair**, Visual Communications & Image Processing, 2004 to present
- **Program Chair**, SPIE Real-Time Imaging, 2003 to present
- **Track Chair**, IEEE International Conference on Multimedia & Expo (ICME) 2007 and 2008
- **Industrial Chair**, IEEE International Conference on Computer Vision (ICCV), 2011
- **Corporate Relations Chair**, IEEE Conf. Computer Vision & Pattern Recognition (CVPR), 2012
- **Special Tracks Chair**, International Symposium on Visual Computing (ISVC), 2009
- **Advisory Board**, IAPR International Conference on Pattern Recognition (ICPR), 2010
- **USA Liaison**, IEEE Intelligent Vehicles Symposium (IV), 2009
- Senior Member IEEE, member ACM, SPIE

### Panelist Judge:

- **National Science Foundation, NSF**, Computer Vision – Small Panel, 2011
- **National Science Foundation, NSF**, Computer Vision Panel, 2010
- **National Science Foundation, NSF**, Image Processing Panel, 2008

### Session Organizer / Chair:

- IEEE Online Learning for Computer Vision Workshop (with IEEE CVPR 2010) (**organizer**)
- IEEE Online Learning for Computer Vision Workshop (with IEEE ICCV 2009) (**organizer**)
- IEEE Online Learning for Classification Workshop (with IEEE CVPR 2008) (**organizer**)
- IEEE Online Learning for Classification Workshop (with IEEE CVPR 2007) (**organizer**)
- International Symposium of Visual Computing (ISVC) 2007, Algorithms for the Understanding of Dynamics in Complex and Cluttered Scenes (**organizer**)
- IEEE Workshop on People tracking in non-overlapping camera networks, ICPR 2012 (**Program Chair**)

- IEEE Workshop on Modeling, Simulation and Visual Analysis of Large Crowds 2011 (**Program Chair**)
- IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS) 2006, Video Object Tracking Session (**chair**)
- IEEE International Conference on Image Processing (ICIP) 2006, Object Detection (**chair**)
- SPIE Real Time Imaging 2004-2008 Video Compression & Image Analysis Sessions (**chair**)
- IAPR Machine Vision Applications (MVA) 2005, Intelligent Transport Systems Session (**chair**)
- International Symposium of Visual Computing (ISVC) 2005, Autonomous Navigation (**chair**)
- IS&T Image & Video Communications Processing 2003, 2005, Video Scaling - Tracking (**chair**)
- IEEE International Conference on Image Processing (ICIP) 2003, Surveillance Video (**chair**)
- IEEE International Conference on Multimedia & Expo (ICME) 2002, 2003, 2005, Multimedia Analysis & Multi-Camera Systems Sessions (**chair**)

#### Technical Program Committee:

- IEEE Conference Computer Vision and Pattern Recognition (CVPR) 2005~2011
- IEEE International Conference on Computer Vision (ICCV) 2005, 2007, 2009, 2011
- European Conference on Computer Vision (ECCV) 2006, 2008, 2010
- IEEE International Conference on Image Processing (ICIP) 2004, 2006, 2007, 2008
- IEEE Conference on Intelligent Transportation Systems (ITS) 2006, 2007, 2008
- International Symposium of Visual Computing (ISVC) 2005~2011
- Computer Vision in Vehicle Technology, From Earth to Mars (CVVT), 2011
- IEEE Workshop on Applications of Computer Vision (WACV) 2006, 2008, 2009, 2010
- IEEE Workshop on Performance Evaluation of Tracking Sys. (PETS) 2005, 2006, 2007, 2008
- IEEE Advanced Video and Signal based Surveillance (AVSS) 2005, 2006, 2007, 2009
- IEEE Workshop on Object Tracking & Class. Beyond Visible Spectrum (OTCBVS), 2006~2010
- IS&T Image and Video Communications and Processing (IVCP) 2003, 2005
- Visual Communications and Image Processing (VCIP) 2004, 2006, 2008, 2010
- International Workshop on Online Pattern Recognition and Machine Learning Techniques for Computer Vision Applications (OPRMLT) 2008
- IEEE Workshop on Motion and Video Computing (WMVC) 2008
- IEEE International Workshop on Mobile Multimedia Processing (WMMP) 2008
- IEEE Workshop on Multi-Camera and Multi-modal Sensor Fusion, (MCMMSF) (2008)
- IEEE Intelligent Vehicles Symposium (IVS) 2004
- IEEE Digital Image Computing: Techniques and Applications (DICTA) 2010
- IEEE Workshop on Video-Oriented Object and Event Classification, ICCV 2009
- IEEE International Workshop on Multimedia Signal Processing (WMSP) 2008

#### Journal Reviewer:

- IEEE Transactions on Pattern Analysis & Machine Intelligence, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
- IEEE Computer Society Pattern Recognition Letters, 2005, 2006, 2007, 2008, 2010
- IEEE Transactions on Image Processing 2003, 2004, 2006, 2006, 2007, 2008, 2009, 2010
- IEEE Transactions on Circuits & Systems for Video Tech., 1997, 1998, 2000, 2002, 2003, 2006, 2007, 2008, 2009, 2010
- ACM Multimedia 2002, 2004, 2006, ACM Computer Applications in Health Care, 2003~2007

## PUBLICATIONS:

1. A. Joshi, F. Porikli, and N. Papanikolopoulos, "Scalable active learning for multi-class image classification", IEEE Transaction on Pattern Recognition and Machine Intelligence (PAMI), 2012
2. F. Porikli, A. Yilmaz, "Object detection and tracking", Video Analytics for Business Intelligence, Springer, Book Chapter, 2012
3. F. Porikli, R. Sundaresan, K. Suwa, "SAR despeckling by sparse reconstruction on affinity nets", 9th European Conference on Synthetic Aperture Radar. EUSAR, 2012
4. Y. Wang, F. Porikli, "Multiple dictionary learning for blocking artifact reduction", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2012
5. N. Rao, F. Porikli, "A clustering approach to optimize online dictionary learning", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2012
6. A. Joshi, F. Porikli, N. Papanikolopoulos, "Coverage optimized active learning for k-NN classifiers", IEEE International Conference on Robotics and Automation, 2012
7. R. Sundaresan, F. Porikli, "Additive noise removal by sparse reconstruction on affinity nets", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2012
8. F. Porikli, A. Bovik, C. Plack, G. AlRegib, J. Farrell, P. Le Callet, Q. Huynh-Thu, S. Möller, and S. Winkler, "Multimedia quality assessment", IEEE Signal Processing Magazine", 2011 (impact factor 6.0)
9. H. Nguyen, F. Porikli, Concentric ring signature descriptor for 2.5/3D objects", IEEE International Conference on Image Processing (ICIP), 2011
10. F. Porikli, H. Ozkan, "Data driven frequency mapping for computationally scalable object detection", IEEE Advanced Video and Signal based Surveillance (AVSS), 2011 (**Best paper prize**)
11. M. Hussein, F. Porikli, S. Aslan, R. Li, "CrossTrack: robust 3D tracking from two cross-sectional views", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2011
12. Z. Lian, A. Godil, B. Bustos, M. Daoudi, J. Hermans, S. Kawamura, Y. Kurita, G. Lavoué, H.V. Nguyen, R. Ohbuchi, Y. Ohkita, Y. Ohishi, F. Porikli, M. Reuter, I. Sipiran, D. Smeets, P. Suetens, H. Tabia, and D. Vandermeulen, "Shape retrieval on non-rigid 3D watertight meshes", Eurographics, Shape Retrieval Contest (SHREC), 2011
13. A. Joshi and F. Porikli, "Scene-adaptive human detection with incremental active learning", IAPR International Conference on Pattern Recognition (ICPR), 2010
14. F. Porikli, "Needle picking for very low SNR target detection in radar signals", SPIE Defense & Security, 2010 (oral)
15. V. Venkataraman, F. Porikli, "RelCom: relational combinatorics features for rapid object detection", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2010, IEEE OTBVS Workshop (oral) (**Best paper prize**)
16. A. Joshi, F. Porikli, and N. Papanikolopoulos, "Breaking the interactive bottleneck in multi-class classification with active selection and binary feedback", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2010
17. A. Joshi, F. Porikli, and N. Papanikolopoulos, "Multi-class batch-mode active learning for image classification", IEEE International Conference on Robotics and Automation (ICRA), 2010
18. T. Lee, F. Porikli, A. Chaudhuri, H. Chen, CycleStack: inferring periodic behavior via temporal sequence visualization in ultrasound video", IEEE Pacific Visualization Conference (PacVis), 2010
19. F. Porikli, "Learning on manifolds", IAPR Joint Workshop on Structural and Statistical Pattern Recognition, 2010 (invited paper)
20. F. Porikli, F. Bashir, H. Sun, "Compressed domain video object segmentation", IEEE Transactions on Circuits, System in Video Technology, 2010
21. M. Hussein, F. Porikli, L. Davis, "Pedestrian detection in images: a practical comparative Study, IEEE Transaction on Intelligent Transportation Systems, 2009

22. A. Joshi, F. Porikli, and N. Papanikolopoulos, "Multi-class active learning with binary user feedback," *Advances in Neural Information Processing Systems (NIPS), Workshop on Analysis and Design of Algorithms for Interactive Machine Learning (ADA-IML)*, 2009.
23. O. Tuzel, F. Porikli, P. Meer, "Kernel methods for weakly supervised mean-shift clustering", *IEEE International Conference on Computer Vision (ICCV)*, 2009 (oral, 3.1% acceptance rate)
24. A. Joshi, F. Porikli, and N. Papanikolopoulos, "Multi-class active learning for image classification", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2009
25. F. Porikli, P. Pan, "Regressed importance sampling on manifolds for efficient object tracking", *IEEE Advanced Video and Signal based Surveillance (AVSS)*, 2009 (oral) (**Best paper nomination**)
26. P. Pan, F. Porikli, D. Schonfeld, "Recurrent tracking using multifold consistency", *IEEE Conference on Computer Vision Pattern Recognition (CVPR), IEEE PETS workshop*, 2009 (oral)
27. K. Sengupta, F. Porikli, "Geometric sequence imaging with Bayesian smoothing for optical and capacitive imaging sensors", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), IEEE OTBVS Workshop*, 2009 (oral)
28. M. Hussein, F. Porikli, L. Davis, "Object detection via boosted deformable features", *IEEE International Conference on Image Processing (ICIP)*, 2009 (oral)
29. F. Porikli, "Constant Time  $O(1)$  Bilateral Filtering", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2008 (oral)
30. O. Tuzel, F. Porikli, P. Meer, "Regression based class-specific tracking for fast object detectors", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2008
31. T. Parag, F. Porikli, A. Elgammal, "Adaptive linear weak classifiers for online boosting", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2008
32. M. Hussein, F. Porikli, L. Davis, "Kernel integral spaces", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2008
33. P. Pan, F. Porikli, D. Schonfeld, "A new method for tracking performance evaluation based on a reflective model and perturbation analysis", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Taiwan, 2009
34. O. Tuzel, F. Porikli, P. Meer, "Human detection via classification on Riemannian manifolds", *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2008
35. Z. Yin, F. Porikli, R. Collins, "Likelihood map fusion for visual object tracking", *IEEE Workshop on Application of Computer Vision (WACV)*, Colorado, 2008 (oral)
36. X. Mei, F. Porikli, "Joint tracking and video registration by factorial Hidden Markov Models", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2008
37. F. Porikli, O. Tuzel, "Learning on Lie groups for invariant detection via tracking", *International Workshop On Object Recognition*, Lake Como, 2008 (Invited)
38. O. Tuzel, F. Porikli, P. Meer, "Human detection via classification on Riemannian manifolds", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2007* (oral) (**Best paper prize**)
39. F. Porikli, Z. Yin, "Temporally static region detection in multi-camera systems", *IEEE International Conference on Computer Vision (ICCV), PETS workshop*, Rio De Janeiro, 2007 (oral)
40. F. Porikli, "Detection of temporarily static regions by processing video at different frame rates", *IEEE Advanced Video and Signal based Surveillance (AVSS)*, London, 2007 (oral)
41. F. Bashir, F. Porikli, "Collaborative tracking of objects in EPTZ cameras", *Video Coding and Image Processing (VCIP)*, San Jose, 2007 (oral)
42. F. Porikli, T. Kocak, "Fast distance transform computation using dual scan line propagation", *SPIE, Real-Time Imaging Conference*, San Jose, 2007 (oral)
43. X. Mei, K. Zhou, F. Porikli, "Probabilistic visual tracking via robust template matching & incremental subspace update", *IEEE International Conference on Multimedia and Expo (ICME)*, Beijing, 2007 (oral) (**Best paper nomination**)
44. F. Porikli, Y. Ivanov, T. Haga, "Robust abandoned object detection using dual foregrounds", *EURASIP Journal on Advances in Signal Processing, Special Issue*, 2007

45. J. Shao, F. Porikli, R. Chellappa, "Estimation of contour motion and deformation for non-rigid object tracking", *Journal of Optical Society of America*, vol. 24, pp. 2109-2121, 2007
46. X. Mei, S. K. Zhou, H. Wu, F. Porikli, "Integrated detection, tracking and recognition for IR video-based vehicle classification", *Pattern Recognition Letters*, Elsevier, 2007
47. F. Porikli, "Achieving real-time object detection and tracking under extreme conditions", *Journal of Real-Time Image Processing*, Springer, 2006
48. F. Porikli, O. Tuzel, P. Meer, "Covariance tracking using model update based on Lie algebra", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, New York, 2006
49. F. Porikli, O. Tuzel, "Covariance tracker", *Video Proceedings, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, New York, 2006
50. O. Tuzel, F. Porikli, P. Meer, "Region covariance: a fast descriptor for detection and classification", *European Conference on Computer Vision (ECCV)*, Gratz, 2006 (oral)
51. F. Porikli, F. Bashir, "A complete performance evaluation platform including matrix-based measures for joint object detector and tracker systems", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, IEEE PETS Workshop, New York, 2006 (oral)
52. F. Porikli, O. Tuzel, "Fast construction of covariance matrices for arbitrary size image windows", *IEEE International Conference on Image Processing (ICIP)*, Atlanta, 2006
53. J. Shao, R. Chellappa, F. Porikli, "Shape-regulated particle filtering for tracking non-rigid objects", *IEEE International Conference on Image Processing (ICIP)*, Atlanta, 2006 (oral)
54. F. Porikli, T. Kocak, "Robust license plate detection using covariance descriptor in a neural network framework", *IEEE Advanced Video and Signal based Surveillance (AVSS)*, 2006 (oral)
55. F. Porikli, X. Mei "Automatic spatial alignment of visible and IR images by fast image registration via joint gradient maximization", *SPIE Security & Defense, Electro-Optical Infrared Systems*, Sweden, 2006 (oral)
56. F. Porikli, "Making silicon a little bit less blind: seeing & tracking humans", *SPIE OE Magazine, Electronic Imaging & Signal Processing*, 2006
57. F. Porikli, "Integral histogram: a fast way to extract histogram features", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Santa Barbara, 2005 (oral)
58. F. Porikli, J. Thornton, "Shadow flow: A recursive method to learn moving cast shadows", *IEEE International Conference on Computer Vision (ICCV)*, Beijing, 2005
59. F. Porikli, J. Katz, E. Goubet, "Pedestrian tracking using thermal infrared imaging", *SPIE Defense & Security Symposium (DSS)*, Orlando, 2006
60. F. Porikli, O. Tuzel, "Multi-kernel object tracking", *IEEE International Conference on Multimedia and Expo (ICME)*, Amsterdam, 2005 (oral)
61. F. Porikli, "Multiplicative background-foreground estimation under uncontrolled illumination using intrinsic images", *IEEE International Multi-Workshop – Motion*, 2005 (oral)
62. F. Porikli, "Ambiguity detection by data fusion: spectral clustering approach", *IEEE International Conference on Integration of Knowledge Intensive Multi-Agent Systems*, 2005 (oral)
63. F. Porikli, J. Shao, H. Maehara, "Extracting roads from aerial images using feature based classifiers", *IAPR Conference on Machine Vision Applications*, Japan, 2005
64. F. Porikli, O. Tuzel, "Object tracking in low-frame-rate video", *SPIE - Image and Video Communication and Processing*, 2005 (oral)
65. O. Tuzel, F. Porikli, P. Meer, "A Bayesian approach to background modeling and low frame rate tracking", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Workshop on Real-time Machine Vision for Intelligent Vehicles, 2005 (oral)
66. F. Porikli, "Computationally efficient histogram extraction for rectangular image regions", *SPIE Real-Time Image Processing*, San Jose, 2005 (oral)
67. C. Wren, F. Porikli, "Waviz: spectral similarity for object detection", *IEEE International Multi-Workshop – PETS*, Breckenridge, 2005 (oral)
68. F. Porikli, O. Tuzel, "Bayesian background generation based foreground detection", *3rd ACM Workshop on Video Surveillance & Sensor Networks*, ACM Multimedia, 2005 (oral)

69. F. Zillani, S. Velastin, F. Porikli, L. Marcenaro, T. Kelliher, A. Cavallaro, P. Bruneaut, "Performance evaluation of event detection solutions: the CREDs experience", IEEE Advanced Video and Signal based Surveillance (AVSS), Italy, 2005 (oral)
70. F. Porikli, Y. Wang, "Automatic video object segmentation using volume growing and hierarchical clustering", Journal of Applied Signal Processing, Issue on Object-Based and Semantic Image and Video Analysis, July 2004
71. F. Porikli, T. Haga, "Event detection by eigenvector decomposition using object and frame features", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), IEEE Workshop on Human Modeling, Analysis and Synthesis, 2004 (oral)
72. F. Porikli, "Trajectory distance metric using Hidden Markov Model based representation", European Conference on Computer Vision (ECCV), IEEE PETS Workshop, 2004 (oral)
73. F. Porikli, Clustering variable length sequences by eigenvector decomposition using HMMs", IAPR International Conference on Pattern Recognition (ICPR), Workshop SSPR, 2004 (oral)
74. F. Porikli, X. Li, "Traffic congestion analysis in compressed video without tracking", IEEE International Conference on Intelligent Vehicles, Parma, 2004
75. F. Porikli, "Trajectory pattern detection by HMM parameter space features and eigenvector clustering", IEEE International Conference on Multimedia and Expo (ICME), Taipei, 2004 (oral)
76. F. Porikli, "Nonlinear warping recovery by scan-line search using dynamic programming", IEEE International Conference on Image Processing (ICIP), Singapore, 2004 (oral)
77. X. Li, F. Porikli, "A hidden Markov model framework for traffic event detection using video features", IEEE International Conference on Image Processing (ICIP), Singapore, 2004 (oral)
78. F. Porikli, "Automatic image segmentation by solving Eikonal equation based on Gaussian mixture models", IS&T/SPIE Symposium on Electronic Imaging, San Jose, 2004 (oral)
79. F. Porikli, "Real-time video object segmentation for MPEG encoded video sequences", IS&T/SPIE Symposium on Electronic Imaging, San Jose, 2004 (oral)
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**OTHER:**

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