Rogerio Schmidt Feris

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Education

Ph.D. degree in Computer Science (2002-2006)
University of California, Santa Barbara, USA
(Advised by Prof. Matthew Turk)

M.S. degree in Computer Science (1999-2001)
University of Sao Paulo, Brazil
(Advised by Prof. Roberto Cesar)

B.S. degree in Computer Engineering (1994-1998)
University of Rio Grande (FURG), Brazil

Professional Experience

Research Manager, IBM T. J. Watson Research Center, NY (2016-present)
I am currently managing the Vision and Learning Department, driving efforts towards strong research and product deliverables for the Watson Vision Services.

Research Scientist, IBM T. J. Watson Research Center, NY (2006-2016)
I am one of the key inventors of the IBM Intelligent Video Analytics (IVA), a leading-edge camera-based surveillance system with automatic event detection and search capabilities. My work on smart surveillance was published in high-profile conferences and featured at ABC news and CBS 60 minutes. Among other awards, I was named IBM Master Inventor and received an IBM Outstanding Innovation Achievement Award.

Affiliate Associate Professor, University of Washington, WA (2008-2016)
I have co-advised PhD students at University of Washington, in close collaboration with Prof. Ming-Ting Sun. I co-advised the PhD dissertation of Haowei Liu and Jun Xie (both working at Google now).

Adjunct Associate Professor, Columbia University, NY (2008, 2013, 2014)
In 2013 and 2014 I co-taught advanced graduate courses on "Visual Recognition and Search" (Electrical Engineering and Computer Science Departments). In 2008 I co-taught a graduate course on "Automatic Video Surveillance" (Computer Science Department).

Senior Software Engineer, IBM Global Technology Services, NY (2008)
In addition to working on core research, I had a one-year assignment to IBM Global Technology Services as a senior software engineer, with the goal of helping the commercialization of the IBM Intelligent Video Analytics (IVA) system. My code has been running in various components of the product.

Research Interests

- **Broad Research Interests:**
  - Computer Vision, Machine Learning, Multimedia, Artificial Intelligence
- **Specific Research Interests:**
  - Visual Analysis of People (Face / Clothing); Video Surveillance, Egocentric Vision;
  - Deep Learning; Visual Recognition and Search; Object Detection and Classification;
  - Visual Attributes, Multi-Task/Transfer Learning;

Selected Awards and Distinctions

- Invited Speaker at the National Academy of Engineering JAFOE meeting, which gathered sixty of the most promising engineers under the age of 45 from Japan and the United States - 2012
- TRECVid Surveillance Event Detection Competition (IBM-CMU-NUS team) – I was part of the team that ranked 1st in 4 out of 7 event detection tasks - 2012
- Named IBM Master Inventor - title reserved for leading inventors within IBM. Each year, only 1% of the IBM Research technical population receives this award - 2011
- IBM Outstanding Innovation Achievement Award – prestigious IBM Research award received for contributions in physical security and video analytics - 2011.
- Far-Reaching Research Award – competitive grant from IBM Research to pursue research towards building the next-generation camera networks (with Ankur Datta, Lisa Brown, and Rick Kjeldsen) - 2010.
- North American Frost & Sullivan Award for Video Surveillance Software Company of the Year – prize given to IBM in recognition of our work in video surveillance - 2008.
- IBM Emerging Leader in Multimedia – I was among eight students selected from top universities by IBM - July 2005.
- Best Computer Science MSc Thesis in Brazil – 2nd Prize (*Nationwide Competition*). Award received at the Congress of Brazilian Computer Society – 2002

Publications

[95+ papers, 2800+ citations (According to Google Scholar)]

Books

1. R. S. Feris, C. Lampert and D. Parikh (Eds.). "Visual Attributes". Advances in Computer Vision and Pattern Recognition, Springer, 2016.

Book Chapters

1. R. S. Feris, C. Lampert and D. Parikh. "Introduction to Visual Attributes". In Visual Attributes (eds: R. S. Feris, C. Lampert, and D. Parikh), Springer, 2017.

2. H. Liu, R. S. Feris, and M.T. Sun, "Benchmarking Datasets for Human Activity Recognition". Visual Analysis of Humans – Looking at People, Springer 2011

3. Y. Zhai, R. S. Feris, A. Hampapur, S. Russo, and S. Pankanti, "Parsing Object Events in Heavy Urban Traffic". Object Tracking, Intech, 2011.

4. H. Liu, M.T. Sun, and R. S. Feris, "Video Activity Recognition". Multimedia Analysis, Processing and Communication, Z. Li, J. Kacprzyk, D. Tao, E. Izquierdo, W. Lin, and H. Wang ed., Springer, 2010.

5. R. S. Feris, A. Hampapur, Y. Zhai, R. Bobbitt, L. Brown, D. Vaquero, Y-L. Tian. H. Liu and M-T. Sun, "Case Study: IBM Smart Surveillance System". Intelligent Video Surveillance: Systems and Technology, by Taylor & Francis Group, LLC, 2009.

6. Y. Zhai, R. S. Feris, L. Brown, R. Bobbitt, A. Hampapur, S. Pankanti, Q. Fan, A. Yanagawa, Y. Tian, S. Velipasalar, "Composite Event Detection in Multi-Camera and Multi-Sensor Surveillance Networks", Multi-Camera Networks: Concepts and Applications, by Elsevier, 2009.

7. Y. Tian, R. S. Feris, L. Brown, D. Vaquero, Y. Zhai and A.Hampapur, "Multi-Scale People Detection and Motion Analysis for Video Surveillance". Machine Learning for Human Motion Analysis: Theory and Practice, IGI Global, 2009.

8. D. Vaquero, R. S. Feris, L. Brown, A. Hampapur and Matthew Turk, "Attribute-based People Search", Intelligent Video Surveillance: Systems and Technology, by Taylor & Francis Group, LLC, 2009.

9. Y. Tian, A. Hampapur, L. Brown, R. S. Feris, M. Lu, A. Senior, C. Shu and Y. Zhai. "Event Detection, Query, and Retrieval for Video Surveillance". Artificial Intelligence for Maximizing Content Based Image Retrieval, 2008.

10. R. S. Feris, M. Turk, R. Raskar, K. Tan and G. Ohashi. "Recognition of Isolated Fingerspelling Gestures Using Depth Edges". B. Kisacanin, V. Pavlovic and T. Huang (eds.), Real-time Vision for Human-Computer Interaction, Springer-Verlag, 2005.

Journal Publications

1. J. Xie, R. S. Feris, and M.T. Sun. "Edge-Guided Single Depth Image Super Resolution". IEEE Transactions on Image Processing (TIP), vol. 25, no. 1, pp. 428-438, 2016.

2. J. Xie, Y. Hsu, R. S. Feris, and M.T. Sun. "Fine registration of 3D point clouds fusing structural and photometric information using an RGB-D camera". Journal of Visual Communication and Image Representation (JVCI), vol. 32, pp. 194-204, 2015.

3. J. Xie, R. S. Feris, S. Yu, and M.T. Sun. "Joint Super Resolution and De-noising from a Single Depth Image". IEEE Transactions on Multimedia (TMM), vol.17, no.9, pp.1525-1537, 2015.

4. R. S. Feris, B. Siddiquie, J. Petterson, Y. Zhai, A. Datta, L. Brown and S. Pankanti, "Large-Scale Vehicle Detection, Indexing, and Search in Urban Surveillance Videos", IEEE Transactions on Multimedia, 2012.

5. S. Pankanti, L. Brown, J. Connell, A. Datta, Q. Fan, R. S. Feris, N. Haas, Y. Li, N. Ratha and H. Thinh, "Practical Computer Vision: Example Techniques and Challenges", IBM Journal of Research and Development, 2011.

6. Y. Tian, R. S. Feris, H. Liu, A. Hampapur, and M. Sun. "Robust Detection of Abandoned and Removed Objects in Complex Surveillance Videos". IEEE Transactions on Systems, Man, and Cybernetics--Part C: Applications and Reviews, 2010.

7. H. Liu, R. S. Feris, V. Krueger and M.T. Sun. "Unsupervised Action Classification Using Space-Time Link Analysis". Eurasip Journal on Advances in Signal Processing, 2010.

8. A. Hampapur et al. "Analytics Driven Asset Management". IBM Smart Cities Journal, 2010.

9. R. S. Feris, R. Raskar, L. Chen, K. Tan and M. Turk. "Multi-Flash Stereopsis: Depth Edge Preserving Stereo with Small Baseline Illumination". IEEE Transactions on Pattern Analysis and Machine Intelligence **(PAMI 2008)**, vol. 30, no. 1, pp. 147-159, 2008.

10. Y. Zana, R. Cesar, R. Feris and M. Turk. "Local Approach for Face Verification in Polar Frequency Domain". Image and Vision Computing Journal, vol. 24, no. 8, pp. 904-913, 2006.

11. R. S. Feris, M. Turk, R. Raskar and K. Tan. "Specular Highlights Detection and Reduction with Multi-Flash Photography". International Journal of the Brazilian Computer Society, vol. 1, no. 12, pp. 35-42, 2006.

12. Y. Chang, C. Hu, R. S. Feris and M. Turk. "Manifold-Based Analysis of Facial Expressions". Image and Vision Computing Journal, vol.24, no. 6, pp. 605-614, 2006.

13. R. Raskar, K. Tan, R. S. Feris, J. Kobler, J. Yu and M. Turk. "Harnessing Real-World Depth Edges with Multi-Flash Imaging". IEEE Computer Graphics and Applications (IEEE CG&A), vol. 25, no. 1, pp. 32-38, January 2005.

14. R. S. Feris, V. Krueger and R. Cesar. "A Wavelet Subspace Method for Real-time Face Tracking". Journal of Real-time Imaging, vol. 10, pp. 339-350, 2004.

15. R. Raskar, K. Tan, R. S. Feris, J. Yu and M. Turk. "Non-photorealistic Camera: Depth Edge Detection and Stylized Rendering using Multi-Flash Imaging". ACM Transactions on Graphics **(SIGGRAPH 2004)**, Vol. 23, Issue 3, August 2004. Also accepted in SIGGRAPH Emergent Technologies, 2004.

Conference Publications

1. Z. Cai, Q. Fan, R. S. Feris and N. Vasconcelos. "A Unified Multi-Scale Deep Convolutional Neural Network for Fast Object Detection". European Conference on Computer Vision **(ECCV 2016)**, Amsterdam, Netherlands, 2016.

2. X. Peng, R. S. Feris, X. Wang and D. Metaxas. "A Recurrent Encoder-Decoder Network for Sequential Face Alignment". European Conference on Computer Vision **(ECCV 2016, Oral)**, Amsterdam, Netherlands, 2016.

3. J. Wang, Y. Cheng and R. S. Feris. "Walk and Learn: Facial Attribute Representation Learning from Egocentric Video and Contextual Data". IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2016, Oral)**, Las Vegas, Nevada, June 2016.

4. Y. Cheng, F. Yu, R. S. Feris, S. Kumar, A. Choudhary and S. F. Chang. "An Exploration of Parameter Redundancy in Deep Networks with Circulant Projections". IEEE International Conference on Computer Vision **(ICCV 2015)**, Santiago, Chile, December 2015.

5. J. Huang, R. S. Feris, Q. Chen and S. Yan. "Cross-domain Image Retrieval with a Dual Attribute-aware Ranking Network". IEEE International Conference on Computer Vision **(ICCV 2015)**, Santiago, Chile, December 2015.

6. Q. Chen, J. Huang, R. S. Feris, L. Brown, J. Dong and S. Yan. "Deep Domain Adaptation for Describing People Based on Fine-Grained Clothing Attributes". IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2015)**, Boston, Massachussetts, June 2015.

7. J. Bowler, R. S. Feris, L. Cao, J. Wang, and M. Zhou. "Automated Axon Segmentation from Highly Noisy Microscopic Videos". Winter Conference on Applications of Computer Vision (WACV 2015), Kona, Hawaii, 2015.

8. R. S. Feris, R. Bobbitt, and S. Pankanti. "Efficient 24/7 Object Detection in Surveillance Videos". IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS 2015), Germany, August 2015.

9. Y. Cheng, L. Brown, Q. Fan, R. S. Feris, S. Pankanti and T. Zhang. "RiskWheel: Interactive Visual Analytics for Surveillance Event Detection". IEEE International Conference on Multimedia and Expo (ICME 2014, Oral), Chengdu, China, 2014.

10. J. Xie, L. Chou, R. Feris and M.T. Sun, "Single Depth Image Super resolution and Denoising via Coupled Dictionary Learning with Local Constraints and Shock Filtering," IEEE International Conference on Multimedia and Expo (ICME 2014, Oral), 2014.

11. J. Xie, R. S. Feris and M.T. Sun. "Edge Guided Single Depth Image Super Resolution". IEEE International Conference on Image Processing (ICIP 2014), 2014.

12. Y. Cui, Y. Xiang, K. Rong, L. Cao, and R. S. Feris. "A Spatial-Color Layout Feature for Representing Galaxy Images". IEEE Winter Conference on Applications of Computer Vision (WACV 2014), Steamboat Springs, Colorado, 2014.

13. L. Brown, R. S. Feris, and S. Pankanti. "Temporal Non-Maximum Suppression for Pedestrian Detection Using Scene Context". International Conference on Pattern Recognition (ICPR 2014), Stockholm, Sweden, 2014.

14. R. S. Feris, L. Brown, S. Pankanti and M.T. Sun. "Appearance-based Object Detection under Varying Environmental Conditions". International Conference on Pattern Recognition (ICPR 2014, Oral), Stockholm, Sweden, 2014.

15. A. Mattos and R. S. Feris. "Fusing Well-Crafted Feature Descriptors for Efficient Fine-Grained Classification." IEEE International Conference on Image Processing (ICIP 2014), Paris, France 2014.

16. A. Mattos, R. Herrmann, K. Shigeno and R. S. Feris. "A Mission-Oriented Citizen Science Platform for Efficient Flower Classification Based on Combination of Feature Descriptors." International Workshop on Environmental Multimedia Retrieval, Glasgow, UK, 2014.

17. R. S. Feris, R. Bobbit, L. Brown and S. Pankanti. "Attribute-based People Search: Lessons Learnt from a Practical Surveillance System". ACM International Conference on Multimedia Retrieval (ICMR 2014), Oral Presentation, Glasgow, UK, 2014.

18. K. Scherbaum, R. S. Feris, J. Petterson, V. Blanz and H. Seidel. "Fast Face Detector Training Using Tailored Views". IEEE International Conference on Computer Vision **(ICCV 2013)**, Sydney, Australia, December 2013

19. Q. Chen, Z. Song, R. S. Feris, A. Datta, L. Cao, Z. Huang and S. Yan. "Efficient Maximum Appearance Search for Large-Scale Object Detection". IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2013)**, Portland, Oregon, June 2013.

20. F. Yu, L. Cao, R. S. Feris, J. Smith and S. Chang. "Designing Category-Level Attributes for Discriminative Visual Recognition". IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2013)**, Portland, Oregon, June 2013.

21. Q. Chen et al. "Spatio-Temporal Fisher Vector Coding for Surveillance Event Detection". ACM International Conference on Multimedia **(ACM MM 2013)**, Barcelona, Spain, 2013.

22. J. Xie, J. Hsu, R. S. Feris and M. Sun. "Fine Registration of 3D Point Clouds with ICP Using an RGB-D Camera". IEEE International Symposium on Circuits and Systems (ISCAS'13), Beijing, China, 2013.

23. R. S. Feris, A. Datta, M. T. Sun, and S. Pankanti. "Boosting Object Detection Performance in Crowded Surveillance Videos". Workshop on Applications of Computer Vision (WACV 2013), Florida, USA, 2013.

24. X. Wang, L. Cao, R. S. Feris, A. Datta and T. Xan. "Hierarchical Feature Pooling with Structure Learning: A new method for Pedestrian Detection". Structured Prediction: Tractability, Learning, and Inference, Portland, Oregon, 2013.

25. J. Leandro, R. Cesar and R. S. Feris. "Shape Analysis using the Spectral Graph Wavelet Transform". IEEE eScience Conference, Beijing, China 2013.

26. F. Rashed, B. Siddiquie, R. S. Feris, and L. Davis. "Domain Adaptation for Object Detection". Workshop on Applications of Computer Vision (WACV 2013), Florida, USA, 2013.

27. Y. Cai et al, "CMU-IBM-NUS@TRECVID 2012: Surveillance Event Detection". NIST Technical Report, 2012. **First place in the retrospective surveillance event detection task.**

28. R. S. Feris, B. Siddiquie, and S. Pankanti. "Learning Detectors from Large Datasets for Object Retrieval in Video Surveillance". International Conference on Multimedia and Expo (ICME 2012), Melbourne, Australia, 2012.

29. B. Siddiquie, R. S. Feris, A. Datta, and L. Davis. "Unsupervised Model Selection for View-Invariant Object Detection in Surveillance Environments". International Conference on Pattern Recognition (ICPR 2012, Oral), Tsukuba City, Japan, 2012.

30. A. Datta, L. Brown, R. S. Feris, and S. Pankanti, “Appearance Modeling for Person Re-Identification using Weighted Brightness Transfer Functions”. International Conference on Pattern Recognition (ICPR 2012), Tsukuba City, Japan, 2012.

31. B. Siddiquie, R. S. Feris and L. Davis. "Image Ranking and Retrieval Based on Multi-Attribute Queries". IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2011)**, **Oral Presentation** (3.5% acceptance), USA, 2011.

32. R. S. Feris, B. Siddiquie, Y. Zhai, J. Petterson, L. Brown and S. Pankanti. "Attribute-based Vehicle Search in Crowded Surveillance Videos". ACM International Conference on Multimedia Retrieval (ICMR 2011), Oral Presentation (16% acceptance), Trento, Italy, 2011.

33. A. Datta, R. S. Feris and D. Vaquero. "Hierarchical Ranking of Facial Attributes". IEEE International Conference on Automatic Face and Gesture Recognition (FG 2011), Santa Barbara, California, 2011.

34. R. S. Feris, J. Petterson, B. Siddiquie, L. Brown and S. Pankanti. "Large-Scale Vehicle Detection in Challenging Urban Surveillance Environments". Workshop on Applications of Computer Vision (WACV 2011), Kona, Hawaii, 2011.

35. H. Liu, R. S. Feris, V. Krueger and M.T. Sun. "Unsupervised Action Classification Using Space-Time Link Analysis". IEEE International Symposium on Circuits and Systems (ISCAS 2010), Paris, France, 2010.

36. L. Chen, J. McAuley, R. S. Feris, T. Caetano and M. Turk. “Shape Classification Through Structured Learning of Matching Measures”. IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2009)**, Miami, Florida, June 2009.

37. D. Vaquero, R. Raskar, R. S. Feris and M. Turk. “A Projector-Camera Setup for Geometry-Invariant Frequency Demultiplexing”. IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2009)**, Miami, Florida, June 2009

38. D. Vaquero, R. S. Feris, L. Brown and A. Hampapur, "Attribute-based people search in surveillance environments", Workshop on Applications of Computer Vision (WACV 2009), Snowbird, Utah, December 2009 (oral presentation, 12% acceptance)

39. A. Hampapur, R. Bobbitt, L. Brown, M. Desimone, R. S. Feris, R. Kjeldsen, M. Lu, C. Mercier, C. Milite, S. Russo, C. Shu, Y. Zhai, "Video Analytics in Urban Environments", IEEE International Conference on Advanced Video and Signal Based Surveillance, Genova, Italy, 2009.

40. R. S. Feris, Y. Tian, Y. Zhai and A. Hampapur. “Facial Image Analysis Using Local Feature Adaptation Prior to Learning” IEEE International Conference on Automatic Face and Gesture Recognition, Amsterdam, Netherlands, 2008.

41. Y. Tian, R. S. Feris and A. Hampapur, “Real Time Detection of Abandoned and Removed Objects in Complex Environments”. IEEE International Workshop on Visual Surveillance, 2008 (in conjunction with ECCV 2008).

42. D. Vaquero, R. S. Feris, M. Turk and R. Raskar. “Characterizing the Shadow Space of Camera-Light Pairs”. IEEE Conference on Computer Vision and Pattern Recognition **(CVPR 2008)**, Anchorage, Alaska, June 2008.

43. L. Chen, R. S. Feris, Y. Zhai, L. Brown and A. Hampapur. "An Integrated System for Moving Object Classification in Surveillance Videos", IEEE International Conference on Advanced Video and Signal-Based Surveillance", Santa Fe, New Mexico, September 2008.

44. L. Chen, R. S. Feris and M. Turk. "Efficient Partial Shape Matching Using the Smith-Waterman Algorithm". CVPR Workshop on Non-Rigid Shape Analysis and Deformable Image Alignment, Anchorage, Alaska, June 2008.

45. A. Hampapur, L. Brown, R. S. Feris, A. Senior, C. Shu, Y. Tian, Y. Zhai and M. Lu, "Searching Surveillance Video". IEEE International Conference on Advanced Video and Signal-Based Surveillance, London, UK, September 2007.

46. A. Senior, L. Brown, A. Hampapur, C. Shu, Y. Zhai, R. S. Feris, Y. Tian, S. Borger and C. Carlson, "Video Analytics for Retail: the IBM Smart Surveillance Retail Solution". IEEE International Conference on Advanced Video and Signal-Based Surveillance", London, UK, September 2007.

47. R. S. Feris, Y. Tian and A. Hampapur. "Capturing People in Surveillance Video". IEEE International Workshop on Visual Surveillance, 2007.

48. R. S. Feris, R. Raskar and M. Turk. "Dealing with Multi-scale Depth Changes and Motion in Depth Edge Detection". Proceedings of SIBGRAPI'06 Brazilian Symposium on Computer Graphics and Image Processing, Manaus, Brazil, October 2006. IEEE Computer Society press. Awarded "One of the Best Image Processing and Computer Vision Papers"

49. H. Guan, J. Chang, L. Chen, R. Feris, and M. Turk. "Multi-view Appearance-based 3D Hand Pose Estimation". IEEE Workshop on Vision for Human Computer Interaction (in conjunction with CVPR'06), New York, NY, June 2006.

50. H. Guan, R. S. Feris and M. Turk. "The Isometric Self-Organizing Map for Hand Pose Estimation". International Conference on Face and Gesture Recognition, Southampton, UK, 2006.

51. R. S. Feris, L. Chen, M. Turk, R. Raskar and K. Tan. "Discontinuity Preserving Stereo with Small Baseline Multi-Flash Illumination". International Conference on Computer Vision **(ICCV 2005)**, - **oral presentation** (4% acceptance), Beijing, China, 2005.

52. Y. Zana, R. Cesar, R. S. Feris and M. Turk. "Face Verification in Polar Frequency Domain: a Biologically Motivated Approach". International Symposium on Visual Computing, Lake Tahoe, NV, 2005.

53. R. S. Feris, R. Raskar, K. Tan and M. Turk. "Specular Reflection Reduction with Multi-Flash Imaging". Proceedings of SIBGRAPI'04 Brazilian Symposium on Computer Graphics and Image Processing, Curitiba, Brazil, October 2004. IEEE Computer Society press – also accepted as a poster in SIGGRAPH 2004.

54. R. S. Feris, M. Turk, R. Raskar, K. Tan and G. Ohashi. "Exploiting Depth Discontinuities for Vision-based Fingerspelling Recognition". IEEE Workshop on Real-Time Vision for Human-Computer Interaction (in conjunction with CVPR'04), Washington DC, USA, June 2004

55. K. Tan, J. Kobler, R. S. Feris, P. Dietz and R. Raskar. "Shape Enhanced Surgical Visualizations and Medical Illustrations with Multi-flash Imaging". International Conference

on Medical Imaging Computing and Computer Assisted Intervention (MICCAI'04), Rennes, France 2004.

56. C. Hu, Y. Chang, R. S. Feris and M. Turk. "Manifold Based Analysis of Facial Expression". IEEE Workshop on Face Processing in Video (in conjunction with CVPR'04), Washington DC, USA, June 2004.

57. C. Hu, R. S. Feris and M. Turk. "Real-time View-Based Face Alignment Using Active Wavelet Networks". Workshop on Analysis and Modeling of Faces and Gestures (in conjunction with ICCV'03), Nice, France, October 2003.

58. C. Hu, R. S. Feris and M. Turk. "Active Wavelet Networks for Face Alignment". In Proceedings of British Machine Vision Conference, Norwich, 2003.

59. M. Turk, C. Hu, R. S. Feris, F. Lashkari and A. Beall. "TLA Based Face Tracking". In Proceedings of the 15th International Conference on Vision Interfaces, Calgary, Canada, 2002.

60. R. S. Feris, J. Gemmell, K. Toyama and V. Krueger. "Hierarchical Wavelet Networks for Facial Feature Localization". International Conference on Automatic Face and Gesture Recognition, Washington D.C., USA, May 20-21, 2002.

61. R. S. Feris, V. Krueger and R. M. Cesar Jr. "Efficient Real-Time Face Tracking in Wavelet Subspace". Workshop on Recognition, Analysis and Tracking of Faces and Gestures in Real-Time Systems (in conjunction with ICCV'01), Vancouver, BC, 2001.

62. R. S. Feris and R. M. Cesar Jr. "Locating and Tracking Facial Landmarks Using Gabor Wavelet Networks". Lecture Notes in Computer Science, vol. 2013, pp. 311-320. ICAPR'2001 International Conference on Advances in Pattern Recognition, Rio de Janeiro, Brazil, May 2001. The International Association for Pattern Recognition, Springer-Verlag press.

63. V. Krueger and R. Feris. "Wavelet Subspace Method for Real-time Face Tracking. Proc. Pattern Recognition", 23rd DAGM Symposium, Munich, Germany 2001.

64. R. S. Feris, T. E. Campos and R. M. Cesar Jr. "A Project for Face Recognition from Video Sequences Using GWN and Eigenfeature Selection". In Proceedings of WAICV'2000 Workshop in Artificial Intelligence and Computer Vision, pp. 141-145, Atibaia, Brazil, November 2000.

65. R. S. Feris and R. M. Cesar Jr. "Tracking Facial Features Using Gabor Wavelet Networks". In Proceedings of SIBGRAPI'2000 Brazilian Symposium on Computer Graphics and Image Processing, pp. 22-27, Gramado, Brazil, October 2000. IEEE Computer Society press.

66. T. E. Campos, R. S. Feris, R. M. Cesar Jr. "Improved Face versus Non-Face Discrimination Using Fourier Descriptors through Feature Selection". In Proc. of SIBGRAPI'2000 Brazilian Symposium on Computer Graphics and Image Processing, pp. 28-35, Gramado, Brazil, October 2000. IEEE Computer Society press.

67. R. S. Feris, T. E. Campos, R. M. Cesar Jr. "Detection and Tracking of Facial Features in Video Sequences". Lecture Notes on Artificial Intelligence, vol. 1793, pp. 127-135. Proc. MICAI-2000, Acapulco, Mexico, April 2000. Springer-Verlag press.

68. T. E. Campos, R. S. Feris, R. M. Cesar Jr. "Eigenfaces versus Eigeneyes: First Steps Towards Performance Assessment of Representations for Face Recognition". Lecture Notes on Artificial Intelligence, vol. 1793, pp. 193-201. Proceedings of MICAI-2000, Acapulco, Mexico, April 2000. Springer-Verlag press.

69. R. S. Feris, W. F. Lages. "Stereo Image Matching Using Correlation and Relaxation Labeling". IV Congress for Scientific Initiation and Postgraduation at Aeronautics Institute of Technology, pp. 193-199, Sao Jose dos Campos-SP, Brazil, October 1998 (in portuguese).

Theses and Reports

1. R. S. Feris. "Detection and Analysis of Depth Discontinuities with Lighting and Viewpoint Variation", PhD thesis, University of California, Santa Barbara, 2006.

2. R. S. Feris, J. Gemmell, K. Toyama and V. Krueger. "Facial Feature Detection using a Hierarchical Wavelet Face Database". Microsoft Research Technical Report MSR-TR-2002-05, January 2002.

3. R. S. Feris, R. Cesar Jr. "Efficient Real-time Face Tracking in Wavelet Subspace". MSc. thesis, University of Sao Paulo, May 2001. Awarded as the Second Best Computer Science MSc. Thesis in Brazil (Nationwide Competition, 2002)

Demos and Posters

1. IBM Centennial Demo – Traffic Analysis Using Video Analytics. Lincoln Center, Manhattan, New York 2011.

2. R. S. Feris, L. Brown, Q. Fan, A. Datta, S. Pankanti, A. Hampapur, Y. Zhai, R. Bobbitt, R. Kjeldsen, M. Lu, C. Shu, S. Russo and C. Milite, "IBM Smart Surveillance System: Searchable Video Analytics for Urban Environments and Retail Stores". CVPR DEMO, 2010.

3. A. Agrawal, V. Branzoi, R. Chellappa, R. S. Feris, R. Raskar, K. Tan and M. Turk. "Depth Edges in Real-Time Using a Multi-Flash Camera". CVPR DEMO, 2005

4. R. Raskar, K. Tan, R. S. Feris, J. Yu and M. Turk. "Non-photorealistic Camera: Automatic Stylization with Multi-Flash Imaging". SIGGRAPH Emergent Technologies, 2004.

5. R. S. Feris, R. Raskar, K. Tan and M. Turk. "Specular Reflection Reduction Using a Multi-Flash Camera". Poster at SIGGRAPH, 2004.

Issued Patents

1. 9,495,599 - Determination of train presence and motion state in railway environments
2. 9,477,890 - Object detection using limited learned attribute ranges
3. 9,471,852 - User-configurable settings for content obfuscation
4. 9,460,361 - Foreground analysis based on tracking information
5. 9,460,349 - Background understanding in video data
6. 9,443,148 - Visual monitoring of queues using auxiliary devices
7. 9,430,874 - Estimation of object properties in 3D world
8. 9,424,659 - Real time processing of video frames
9. 9,396,548 - Multi-cue object detection and analysis
10. 9,342,594 - Indexing and searching according to attributes of a person

11. 9,330,312 - Multispectral detection of personal attributes for video surveillance
12. 9,330,111 - Hierarchical ranking of facial attributes
13. 9,322,647 - Determining camera height using distr of object heights and object image heights
14. 9,299,162 - Multi-mode video event indexing
15. 9,280,833 - Topology determination for non-overlapping camera network
16. 9,262,445 - Image ranking based on attribute correlation
17. 9,251,425 - Object retrieval in video data using complementary detectors
18. 9,245,186 - Semantic parsing of objects in video
19. 9,224,049 - Detection of static object on thoroughfare crossings
20. 9,224,046 - Multi-view object detection using appearance model transfer from similar scenes
21. 9,165,375 - Automatically determining field of view overlap among multiple cameras
22. 9,134,399 - Attribute-based person tracking across multiple cameras
23. 9,104,919 - Multi-cue object association
24. 9,082,201 - Surface contamination determination system
25. 9,069,104 - Pathway management using model analysis and forecasting
26. 9,058,669 - Incorporating video meta-data in 3D models
27. 8,948,454 - Boosting object detection performance in videos
28. 8,934,670 - Real time processing of video frames for triggering an alert
29. 8,837,776 - Rule-based combination of a hierarchy of classifiers for occlusion detection
30. 8,824,791 - Color correction for static cameras
31. 8,811,663 - Object detection in crowded scenes
32. 8,774,532 - Calibration of video object classification
33. 8,675,917 - Abandoned object recognition using pedestrian detection
34. 8,620,026 - Video-based detection of multiple object types under varying poses
35. 8,488,881 - Object segmentation at a self-checkout
36. 8,483,481 - Foreground analysis based on tracking information
37. 8,249,301 - Video object classification
38. 8,170,276 - Object detection system based on a pool of adaptive features
39. 8,107,678 - Detection of abandoned and removed objects in a video stream
40. 7,738,725 - Stylized rendering using a multi-flash camera

Academic Experience

- **Adjunct Associate Professor, Columbia University**

  - Instructor: Visual Recognition and Search, Spring 2014 (Graduate course)
  (http://rogerioferis.com/VisualRecognitionAndSearch2014/home.html)

  - Instructor: Visual Recognition and Search, Spring 2013 (Graduate course)
  (http://rogerioferis.com/VisualRecognitionAndSearch2013/home.html)

  - Instructor: Automatic Video Surveillance, Spring 2008 (Graduate Course)
  (http://www.andrewsenior.com/technical/surveillanceclass/)

- **Affiliate Associate Professor, University of Washington**

  Co-advised the PhD dissertations of Haowei Liu and Jun Xie (both working at Google now) and was involved in other academic activities (such as selection of PhD students)

- **Short Courses / Tutorials**

  - ICCV 2015 Tutorial on Tools for Efficient Object Detection

(http://mp7.watson.ibm.com/ICCV2015/ObjectDetectionICCV2015.html) with Piotr Dollar, Xiaoyu Wang, Kaiming He, Ross Girshick, Rodrigo Benenson, and Jan Hosang

- CVPR 2014 Tutorial on Learning Visual Semantics: Models, Massive Computation, and Innovative Applications
(http://mp7.watson.ibm.com/LearningVisualSemantics/index.htm) with Liangliang Cao, John Smith, and Shih-Fu Chang

- CVPR 2012 Tutorial on Looking at People: Benchmarking Human Activity Recognition (with Haowei Liu and Ming-Ting Sun)

Professional Activities

- **Program Chair**
  - IEEE Winter Conference on Applications of Computer Vision (WACV) 2017
  - 1st GNY Area Vision and Multimedia Meeting, 2011.

- **Area Chair**
  - IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2017,2016,2015
  - IEEE International Conference on Computer Vision (ICCV) 2015
  - ACM Multimedia 2017
  - International Symposium on Visual Computing (ISVC) 2015

- **General Co-Chair**
  - Workshop on Moving Cameras Meet Video Surveillance (http://mp7.watson.ibm.com/MCMVS2016/) – with Quanfu Fan and Steve Mann, 2016
  - Third International Workshop on Parts and Attributes (https://filebox.ece.vt.edu/~parikh/PnA2014/) - with Christoph Lampert and Devi Parikh, 2014
  - Second International Workshop on Parts and Attributes (http://pub.ist.ac.at/~chl/PnA2012/) - with Christoph Lampert, 2012
  - First International Workshop on Parts and Attributes (http://rogerioferis.com/PartsAndAttributes/) – with Christoph Lampert, Tiberio Caetano, and David Forsyth, 2010
  - GNY Area Vision and Multimedia Meeting - with Shih-Fu Chang and Liangliang Cao, 2012

- **Industry and Practitioner chair**

  - International Conference on Multimedia Retrieval (ICMR), 2016

- **LDV Vision Summit:** judge for the Entrepreneurial Computer Vision Challenges (http://www.ldv.co/visionsummit/2015/speakers), 2015

- **Award Committee Member**

  - City University of Hong Kong (CUHK) International Selection Committee for PhD thesis Award, 2015

  - Member of the committee for selection of the best paper award – International Conference in Image Processing (ICIP 2008)

- Watson Chair of the Multimedia Professional Interest Community (2013 – present)
- Corporate Relations Chair, IEEE Conference on Automatic Face and Gesture Recognition (FG 2011), Santa Barbara, USA, 2011
- Doctoral Consortium Co-Chair, IEEE Conference on Automatic Face and Gesture Recognition (FG 2011), Santa Barbara, USA, 2011
- Grant reviewer: Expert proposal evaluator for FIT-IT, Vienna, Austria, 2011.
- Department Intern Coordinator, IBM Research, 2010
- Seminar PIC Coordinator, IBM Research, 2010-2011
- Program Committee Member: CVPR (2007-2014), ICCV (2007, 2009, 2011), ECCV (2008,2010,2012), AVSS (2008), WACV (2011), ICIP (2009), ICPR (2010,2014), ACCV (2007,2009), Visual Surveillance Workshop (2009,2010) and others
- Reviewer for major conferences and journals in computer vision/graphics, including ACM SIGGRAPH, IEEE Transactions on PAMI, Pattern Recognition Letters, IVC Journal, CVIU Journal, CVPR, ICCV, Face and Gesture Recognition, Eurographics, ISMAR, etc.
- Member of the organizing committee for the 2006 and 2007 "IBM Watson Emerging Leaders in Multimedia Workshop"
- Member of the organizing committee of I Workshop on Artificial Intelligence and Computer Vision, 19-22 November 1997, Atibaia, Brazil.

Media Press Coverage

- **CBS 60 Minutes** – starting at minute 7:20 when they show our system: http://www.youtube.com/watch?v=Nf_PzCfpPug
- **ABC News** - How they put our video analytics to test: http://abclocal.go.com/wls/story?section=news/special_segments&id=7294108
- **ABC News** - How we helped solving a high-profile suicide case in the city of Chicago: http://abclocal.go.com/wls/story?section=news/local&id=7154116
- **ABC News** - Our general video Analytics in the city of Chicago: http://abclocal.go.com/wls/story?section=news/national_world&id=6138580
- My PhD work was featured at **Photo.net** and **SlashDot**
- **Master's dissertation / Brazilian Media**: My work on face tracking was featured at Jornal do SBT and TV USP.
- **High-School Project / Brazilian Media**: In 1993, during my technical high-school, I developed a software for constructing facial sketches from witnesses descriptions (coding in assembly for accessing the video memory card, dealing with bit planes, etc.) My work was reported in several newspapers, magazines, and television programs, including Ciencia Viva and RBS TV.

Mentorship (interns)

- Shuangfei Zhai (PhD Student, Binghamton University/SUNY) – Projects: 1) Efficient Deep Learning and 2) Generative Models
- Yongxi Lu (PhD Student, UCSD) – Project: Deep Multi-Task Learning, 2016
- Zhaowei Cai (PhD Student, UCSD, co-advised with Quanfu Fan) – Project: Efficient Object Detection, 2015.
- Jing Wang (PhD Student, Northwestern University) – Project: Representation Learning from Egocentric Videos, 2015
- Felix Yu (PhD Student, Columbia University, co-advised with Liangliang Cao) – Project: Zero-shot learning, 2013
- Chen Qiang (PhD Student, NUS) – Project: Large-Scale Object Detection, 2012
- Xiaoyu Wang (PhD Student, U. Missouri) – Project: Traffic Analysis for IBM Centennial Demo, 2011.
- Behjat Siddiquie (PhD Student, UMD) – Projects: 1) Image Ranking and Retrieval Using Multi-Attribute Queries and 2) Large-Scale Vehicle Detection, Summer and Fall 2010
- James Petterson (PhD Student, NICTA) – Project: Large-scale feature selection for object detection, Summer 2010
- Ankur Datta (Post-doc, CMU) – Project: Hierarchical Attribute Ranking, 2009.
- Duan Tran (PhD Student, UIUC) – Project: Large Scale Object Classification. IBM Research Intern. Summer and Fall 2008.
- Haowei Liu (PhD Student, UW) – Project: Activity Analysis. IBM Research/GTS Intern. Summer and Fall 2008.
- Daniel Vaquero (PhD Student, UCSB) – Project: People Search. IBM Research/GTS Intern. Summer and Fall 2008.
- Anil Kongara (MS Student. U. Houston) – Project: Cognitec Face Recognition Integration. IBM Developer Intern. Summer and Fall 2008.
- Longbin Chen (PhD Student, UCSB) – Far-field Object Classification, Structured Learning for Shape Classification. IBM Research Intern - Fall and Winter 2007.

Thesis Committees

- Brendan Jou, Columbia University, 2016
- Xiaodong Yang, City University of New York, 2015
- Shizhi Chen, City University of New York, 2013
- Eanes Pereira, Universidade Federal de Campina Grande, 2012
- Haowei Liu, University of Washington, 2011

Invited Talks

- Keynote speaker - Conference on Graphics, Patterns and Images (SIBGRAPI 2016), Sao Jose dos Campos, Brazil, 2016. "Representation Learning Beyond Human Labels: Practical Applications in Visual Analysis of People" (http://gibis.unifesp.br/sibgrapi16/index.php#InvitedSpeakers)

- Keynote speaker – International Joint Conference on Artificial Intelligence (IJCAI) BeyondLabeler Workshop, New York City, USA, 2016. "Representation Learning Beyond Human Labels: Practical Applications in Visual Analysis of People" (http://smileclinic.alwaysdata.net/ijcai16workshop/#three)

- Invited Speaker - NYC Computer Vision Meetup, 2015. "Deep Domain Adaptation for Describing People Based on Fine-grained Attributes"

- Invited Speaker – Workshop on Recent Trends in Computer Vision, Boston, USA, 2015. "Deep Domain Adaptation for Describing People Based on Fine-grained Attributes".

- Invited Speaker – International Conference on Multimedia Retrieval (ICMR) Practitioner's day, Glasgow, Scotland, 2014. "Multimedia Analytics at IBM Research".

- "Smart Surveillance: Towards Visual Search based on Fine-Grained Semantic Attributes" Talk given at NYU Center for Urban Science and Progress, New York City, 2014.

- Invited Speaker – CVPR Workshop on Fine-Grained Visual Categorization, Portland, Oregon, 2013

- Invited Speaker - National Academy of Engineering JAFOE meeting, Irvine, California, 2012. "Intelligent Video Surveillance"

- "Attribute-based Object Retrieval". Talk given at University of Delaware, 2012. Host: Jingyi Yu.

- Invited Speaker - ICMR 2011 Practitioner's day, Trento, Italy 2011. "Attribute-based Object Retrieval"

- "Searching for People and Vehicles in Urban Environments". City College of New York, May 2010. Host: Yingli Tian

- "The IBM Smart Surveillance System". Talk given at Cognitec, Dresden, Germany, September 2008. Host: Roger Kelesoglu

- "Person Identification through Search Based on Physical Attributes". Invited talk at IBM Conference on Maturing and Leveraging Biometrics Analytics, 2008.

- "The IBM Smart Surveillance System". University of Washington, 2007. Host: Linda Shapiro

- "Computer Vision for Digital Photography and Smart Surveillance". Princeton University, 2007. Host: Fei-Fei Li

- "Multi-Flash Photography and Applications". Kodak Research, Intelligent Systems Lab, Rochester, NY, 2007. Host: Jiebo Luo

- "Detection and Modeling of Depth Discontinuities with Lighting and Viewpoint Variation". HP Laboratories, Computer Vision and Graphics group, Palo Alto, CA, 2007. Host: Bruce Culbertson

- "Discontinuity Detection and Modeling with Lighting and Viewpoint Variation". Adobe Advanced Technology Labs, Seattle, WA, 2006 (also presented at University of Washington). Host: David Salesin

- "Detection and Analysis of Depth Discontinuities in Computer Vision". NASA – Jet Propulsion Laboratory, 2006. Host: Larry Matthies

- "What Can We Do with a Multi-Flash Camera?" IBM T.J. Watson Research, Hawthorne, NY, 2005. Host: Deepak Turaga (as part of Emerging Leaders in Multimedia Seminar)

- "A Wavelet Subspace Method for Real-time Face Tracking". Microsoft Research, Redmond, WA, 2001. Host: Kentaro Toyama