

Joseph P. Havlicek

The University of Oklahoma, School of Electrical & Computer Engineering

110 W. Boyd, DEH 150, Norman, OK 73019

Tel: (405) 325-8131 Fax: (405) 325-7066

E-mail: joebob@ou.edu

http://www.ou.edu/content/coe/ece/faculty_directory/dr_havlicek.html

Title: Gerald Tuma Presidential Professor

Unit: School of Electrical and Computer Engineering

Director: OU Center for Intelligent Transportation Systems

Member: OU Institute for Biomedical Engineering, Science, and Technology

► **Citizenship:** USA

► **Education:**

PhD EE The University of Texas at Austin, 1996.

Dissertation: "AM-FM Image Models."

Advisor: Prof. Alan C. Bovik.

MSEE Virginia Tech, 1988.

Thesis: "Median Filtering for Target Detection in an Airborne Threat Warning System."

Advisor: Prof. John C. McKeeman.

BSEE Virginia Tech, 1986. Minors in Mathematics, Computer Science.

► **Professional Experience:**

1/97 - present: School of Electrical & Computer Engineering, Univ. OK, Norman, OK

Gerald Tuma Presidential Professor: 4/17 - present

Williams Companies Foundation Presidential Professor: 4/09 - 4/17

Professor: 7/07 - present

Associate Professor: 7/02 - 6/07

Assistant Professor: 1/97 - 6/02

Held tenure track position requiring research, teaching, and service, as well as establishment of strong, externally funded research programs in signal, image, and video processing and intelligent transportation systems. Director and co-founder, OU Center for Intelligent Transportation Systems. Member, OU Institute for Biomedical Engineering, Science, and Technology. Total external grants and contracts exceeding \$18M.

6/87 - 1/97: U.S. Naval Research Laboratory, Washington, DC

Electrical Engineer

(Was affiliated with SFA, Inc., Landover MD, from 6/87-8/89)

(Was on *leave without pay* during semesters spent at UT Austin)

Engineering member of the team that developed the Navy's first two-color infrared missile warning receiver (Fly's Eye). The production version of this system protects Navy and Marine helicopters from surface to air missile attacks in Afghanistan and Iraq. Received the Department of the Navy Award of Merit for Group Achievement for this work. Designed and analyzed new algorithms for infrared target detection, tracking, and identification. Designed digital architectures for real-time implementation. Conducted experimental work on airborne and ground-based platforms. Extensive field experience at China Lake Naval Weapons Center, Miramar Naval Air Station, Patuxent River Naval Air Station, and Sandia National Laboratories.

6/93 - 12/96: Dept. Electrical & Computer Engineering, University of Texas, Austin, TX
Assistant Director, Laboratory for Vision Systems

Senior student administrator of laboratory whose members include approximately 12 research-supported graduate students. Authored and integrated grant proposals. Briefed sponsors. Authored contract reports. Reviewed papers for journals and conferences. Advised graduate students. Supervised honors undergraduate projects. Substitute lecturer for both graduate and undergraduate courses in the systems area.

1/93 - 12/93: Dept. E51, Still Video Products, IBM Corporation, Austin, TX
Software Developer

(on-sight contractor affiliated with Ralph Kirkley Associates, Austin, TX)

Developed C code for IBM PS/2 computers under OS/2 and MS Windows to port an implementation of the JPEG image compression/decompression standard from the IBM M/ACPA card to the IBM AudioVation card.

8/87 - 8/88: Bradley Department of Electrical Engineering, VPI & SU, Blacksburg, VA
Graduate Research Assistant

Under contract with NRL, led 9-man team in chip-level simulation of a real-time nonlinear image filter. Under contract with IBM, investigated the feasibility and performance of networks of LEO store-and-forward communication satellites.

12/84 - 5/87: Management Systems Laboratories, Blacksburg, VA
Software Engineer

Under contract with DOE, designed and implemented management decision support software for nuclear materials management on IBM mainframe computers.

► **Expert Testimony History:**

- In the matter of *Avago Technologies General IP (Singapore) Pte. Ltd. v. Audi AG*, case currently pending in German Patent Court. Provided written opinion to the German court. Retained by Grünecker Patent- und Rechtsanwälte PartG mbB on behalf of Avago Technologies General IP (Singapore) Pte. Ltd., 3/18 - present.
- In the matter of *Certain Semiconductor Devices and Consumer Audiovisual Products Containing the Same*, USITC Investigation No. 337-TA-1047. Testified at deposition and trial. Provided three expert reports, two declarations, and three witness statements. Retained by Steptoe & Johnson LLP and Kilpatrick, Townsend & Stockton LLP on behalf of Broadcom Limited, San Jose, CA, 3/17 - 12/17.
- Patent and prior art research, analysis of alleged infringing products, 11/12 - 3/13. McKool Smith.
- In the matter of *Certain Semiconductor Integrated Circuits and Products Containing Same*, USITC Investigation No. 337-TA-840. Infringement analysis and one written declaration. Retained by Covington & Burling LLP on behalf of Microchip Technology, Chandler, AZ, 2/17/12 - 3/21/12.

► **Honors & Awards:**

- Named to the University of Oklahoma Gerald Tuma Presidential Professorship, 2017.
- 2014 *IEEE International Conference on Image Processing Top 10% Paper Award*, for C.T. Nguyen and J.P. Havlicek, "On the amplitude and phase computation of the AM-FM image model."
- Named to the University of Oklahoma Williams Companies Foundation Presidential Professorship, 2009.
- Oklahoma Highway Safety Office Project Director's Award, FY 2009, co-recipient with Dr. R.D. Barnes, for implementing police electronic crash reporting in the State of Oklahoma.
- IEEE Maximum Impedance Award, OU School of ECE, 2007.
- University of Oklahoma College of Engineering Outstanding Faculty Advisor Award, 2005-2006.
- Oklahoma Highway Safety Office Award of Excellence, FY 2005, presented to the OU ITS Lab for enhancing traffic records management through project SAFE-T.

- Oklahoma Highway Safety Office Project Director's Award, FY 2003, co-recipient with Dr. J.J. Sluss, Jr., for enhancing highway safety through ITS projects.
- University of Oklahoma College of Engineering Brandon H. Griffith Faculty Award, 2003.
- Listed at number 22 in OU *FY 99 Awards – Top 25 Faculty/Staff – Norman Campus*.
- IEEE Favorite Instructor Award, OU School of ECE, 1998, 2000.
- University of Texas Engineering Foundation Award for Exemplary Engineering Teaching while Pursuing a Graduate Degree, 1992.
- Department of the Navy Award of Merit for Group Achievement, 1990.
- Management Systems Laboratories Outstanding Student Employee Scholarship, 1987.
- Eta Kappa Nu Honor Society
- Tau Beta Pi Honor Society
- Phi Kappa Phi Honor Society
- Listed in *Who's Who in America*, 2002 Ed.

► **Professional Memberships:**

- Institute of Electrical and Electronics Engineers (IEEE), Senior Member
- IEEE Signal Processing Society
- IEEE Intelligent Transportation Systems Society
- IEEE Computer Society

► **Professional Service:**

- Senior Area Editor, *IEEE Transactions on Image Processing*, Nov. 2015 - Feb. 2018.
- Associate Editor, *IEEE Transactions on Image Processing*, Dec. 2010 - Oct. 2015.
- Associate Editor, *IEEE Transactions on Industrial Informatics*, Jan. 2010 - Jul. 2013.
- *IEEE International Conference on Image Processing (ICIP)*
 - 2016: Paper Awards Committee.
 - 2013: Technical Area Chair for EDICS 6.1: Image & Video Analysis, Synthesis, and Retrieval.
 - 2012: Technical Area Chair for EDICS 6.2: Image & Video Analysis, Synthesis, and Retrieval; Session Chair.
 - 2007: Publications Chair, Organizing Committee, and Session Chair.
 - Reviewer (1998 - present).
- *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*
 - 2012, 2013, 2014: IVMS Technical Area Chair
 - Reviewer (2005-present).
- *IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI)*
 - 2016: Technical Program Committee.
 - 2012, 2014: Technical Program Committee, Session Chair.
 - 2010: General Co-Chair (with Prof. Scott Acton, University of Virginia).
 - 2008: Technical Program Co-Chair (with Prof. Scott Acton, University of Virginia).
 - 2006: Technical Program Co-Chair (with Prof. Til Aach, RWTH Aachen University, Germany).
 - 2004: Technical Program Co-Chair (with Prof. Til Aach, Medical University of Luebeck, Germany).
 - 2002: Publicity Chairman, Technical Program Committee, Session Chair.
 - 2000: Publicity Chairman, Technical Program Committee, Session Chair.
 - 1998: Technical Program Committee, Session Chair.
- *IEEE International Conference on Intelligent Transportation Systems (ITSC)*
 - 2013: Reviewer
 - 2011: Session Chair, reviewer.
 - 2009: Technical Program Committee, Special Session Organizer, Session Chair.
- *IEEE Workshop on Perception Beyond the Visible Spectrum*
 - 2014, 2015: Technical Program Committee.

- *IEEE Int'l. Workshop on Object Tracking and Classification Beyond the Visible Spectrum*
 - 2009, 2013: Technical Program Committee.
- *European Signal Processing Conference (EUSIPCO)*
 - 2015, 2016, 2017, 2018: Reviewer
- *45th IEEE Midwest Symposium on Circuits and Systems (2002)*: Session Organizer and Session Chair.
- *IEEE Asilomar Conference on Signals, Systems, and Computers*
 - 2000, 2001: special session organizer
- Presently serving or have served as a reviewer for *IEEE Transactions on Signal Processing*; *IEEE Transactions on Image Processing*; *IEEE Signal Processing Letters*; *IEEE Transactions on Pattern Analysis and Machine Intelligence*; *IEEE Transactions on Circuits and Systems II*; *IEEE Transactions on Communications*; *IEEE Transactions on Industrial Informatics*; *IEEE Transactions on Parallel and Distributed Systems*; *IEEE Transactions on Education*; *IEEE Transactions on Information Technology in Biomedicine*; *Journal of the Optical Society of America – A*; *IEE Proceedings – Vision, Image & Signal Processing*; *IEE Electronics Letters*; *EURASIP Journal on Applied Signal Processing*; *Journal of Electronic Imaging*; *Pattern Recognition Letters*; *Multidimensional Systems and Signal Processing*; *Signal Processing*.

► **Committee Assignments and University Service:**

- Committee A, School of Electrical & Computer Engineering (tenure and promotion/executive committee) (Aug 14 - Aug 16, Nov 04 - Aug 08)
- Chairman, Graduate Studies Committee, School of Electrical & Computer Engineering (Aug 08 - Jul 13)
- School of Electrical & Computer Engineering Graduate Liaison (Aug 08 - Jul 13)
- Graduate Studies Committee, School of Electrical & Computer Engineering (Aug 08 - Jul 13, Aug 97 - Aug 06)
- Chairman, College of Engineering PP03 Faculty Task Force (Mar 12 - Apr 13) (task force to revise and rewrite policies and procedures for faculty tenure, promotion, annual evaluations, and workload)
- University of Oklahoma Conflict of Interest Advisory Committee (Aug 15 - present)
- University of Oklahoma Graduate Council (Aug 10 - Jun 13)
- College of Engineering E-Club Faculty Co-Advisor (May 00 - May 04), Advisor (May 04 - Jan 06) (*this is the largest student organization on the OU campus*)
- Faculty Senate (Aug 02 - May 05)
- College of Engineering Academic Misconduct Board and Grade Appeals Board (Jun 03 - Jun 05)
- Coordinator, Systems Area Faculty Interest Group (FIG) (Dec 08 - present, Oct 00 - Aug 02)
- School of Music piano faculty search committee (Sep 16 - Dec 16, Sep 12 - Dec 12)
- School of Electrical & Computer Engineering Director Search Committee (Oct 04 - Jun 05)
- School of ECE Faculty Search Committee (97, 02, 03, 05, 06, 07, 14, 15, 17, 18)

► **Teaching:**

1/97 - present: School of Electrical & Computer Eng., University of OK, Norman, OK

- ECE2713, Digital Signals and Filtering (SP 18)
- ECE3223, Microcomputer System Design (FA 97)
- ECE3793, Signals and Systems (SP 97, FA 98, SP 99, FA 99, SP 00, FA 00, SP 01, SP 02, FA 02, SP 03, FA 03, SP 04, FA 04, SP 05, FA 05, SP 06, SP 07, SP 08, SP 15, SP 16, SP 17)
- ECE3960, Honors Reading (SP 00)
- ECE3980, Honors Research (FA 01, SP 02, SP 03, FA 11, SP 12)
- ECE4213, Digital Signal Processing (FA 02, FA 06, FA 07, FA 08, FA 09, FA 10, FA 11, FA 12, FA 14, FA 15, FA 16, FA 17)
- ECE4973, Digital Image Processing (SP 98)
- ECE4990, Special Studies (various semesters SP 98 – present)
- ECE5213, Digital Signal Processing (FA 02, FA 06, FA 07, FA 08, FA 09, FA 10, FA 11, FA 12, FA 14, FA 15, FA 16, FA 17)

- CS5273, Digital Image Processing (SP 98, FA 00, SP 02, SP 03, SP 04, SP 05)
- ECE5273, Digital Image Processing (SP 98, FA 00, SP 02, SP 03, SP 04, SP 05, SP 06, SP 07, SP 08, SP 09, SP 10, SP 11, SP 12, SP 13, SP 14, SP 15, SP 16, SP 17, SP 18)
- ECE5973/ECE4973, Multimedia Communications (FA 98)
- ECE5973, Kalman Filtering (FA 99, FA 03, FA 05)
- ECE5980, Thesis Research (SP 99 – present)
- ECE5990, Special Problems (various semesters FA 97 – present)
- ECE6283, Advanced Image Processing (FA 04)
- ECE6973, Advanced Image Processing (FA 01)
- ECE6980, Dissertation Research (SP 00 – present)

9/90 - 6/93: Dept. Electrical & Computer Eng., University of Texas, Austin, TX

- EE464K, Senior Design Projects (FA 90 – Summer 93)

1/91 - 12/96: Dept. Electrical & Computer Eng., University of Texas, Austin, TX

- EE381K, Topic 10: Image Processing (substitute lecturer)
- EE381K, Topic 8: Digital Signal Processing (substitute lecturer)
- EE380L, Topic 7: Computer Vision (substitute lecturer)
- EE351K, Probability and Random Processes (substitute lecturer)

► **Graduate Degree Production:**

Ph.D. Supervisions Completed:

1. Peter Tay, “An Optimally Well Localized Multi-Channel Parallel Perfect Reconstruction Filter Bank,” October, 2003.
2. Guangwei Mu “WAAS Error, Integrity and Availability Modeling for GPS-based Aircraft Landing System,” April, 2004 (co-supervised with Dr. Jim Sluss).
3. Hengqing Wen, “Anti-Spoof Design for TDMA Based GPS/LAAS Landing Aid,” December, 2004.
4. Yunhua Wang, “Multiplierless CSD Techniques for High Performance FPGA Implementations of Digital Filters,” April, 2007 (co-supervised with Dr. Linda DeBrunner).
5. Osama Alkhouli, “Hirschman Optimal Transform Least Mean Square Adaptive Filters,” October, 2007 (co-supervised with Dr. Victor DeBrunner).
6. Ngao D. Mamuya, “Biometric Classification with Factor Analysis,” May, 2010.
7. Nicholas A. Mould, “Neighborhood-Level Learning Techniques for Nonparametric Scene Models,” May, 2012.
8. Chuong T. Nguyen, “Modulation Domain Image Processing,” May, 2012.
9. Ekasit Vorakitolan, “Video CODEC with Adaptive Frame Rate Control for Intelligent Transportation System Applications,” May, 2014.
10. Patrick Adrian Campbell, “High-Fidelity and Perfect Reconstruction Techniques for Synthesizing Modulation Domain Filtered Images,” December, 2016.

Ph.D. Supervisions in Progress:

- Abiola Asojo
- John Williams
- John Junger

Additional Ph.D. Committees Served on:

1. Madhavi Kadiyala, “Design of Optimal Subband Filter Banks for Image Discrimination,” October, 1999.
2. Mohamed Allali, “Digital Signal Processing on the Unit Sphere via a Ramanujan Set of Rotations and Planar Wavelets” (interdisciplinary: Electrical Engineering and Mathematics), July, 2000.
3. Yunxiang Wu, “Iterative Decoding for Magnetic Recording Channels,” September, 2000.
4. Helen Jun Xing, “Performance Evaluation of CDMA Systems,” April, 2001.
5. Pamela Pike, “Leisure Piano Lessons: A Case Study of Lifelong Learning” (Music – DMA), May, 2001.

6. Longji Wang, "Active Vibration Control Systems in the Frequency and Sub-Band Domain," July, 2001.
7. Sebastian Torres, "Estimation of Doppler and Polarimetric Variables for Weather Radars," October, 2001.
8. Valliappa Lakshmanan, "A Hierarchical, Multiscale Texture Segmentation Algorithm for Real-World Scenes," October, 2001.
9. Richard Todd, "Design of Low-Density Parity Check Codes for Magnetic Recording Channels," December, 2002.
10. Guoping Wang, "A High-Performance Inner-Product Processor for Real and Complex Numbers," April, 2003.
11. Leslie Fife, "TriM: Tri-Modal Data Communication in Mobile Ad-Hoc Network Database Systems" (Computer Science), December 2003.
12. Kuo-Liang Li, "Usage and Development of Piano Method Books in Tiawan: Interviews and Observations with Piano Teachers" (Music – DMA), April, 2004.
13. Weijun Tan, "Low-Density Parity-Check Coding for High-Density Magnetic Recording Systems," July, 2004.
14. Haitao Xia, "Error-Correction Coding for High-Density Magnetic Recording Channels," September, 2004.
15. Yongshen Ni, "Fuzzy Correlation and Regression Analysis," April, 2005.
16. Dayong Zhou, "Adaptive Nonlinear System Compensation Techniques and their Applications to Digital Communication and Control Systems," April, 2005.
17. Xiaojuan Hu, "FIR Filter Design for Area Efficient Implementation," May, 2005.
18. Lesley Sisterhen, "The Use of Imagery, Mental Practice, and Relaxation Techniques for Musical Performance Enhancement" (Music – DMA), June, 2005.
19. Su Yang, "Design of PHY & MAC Layer Protocols for Inter-Vehicle Communications," October, 2005.
20. Rob Sulman, "Affine Group Actions on Euclidean Space" (Mathematics), April, 2006.
21. Peng Yan, "A Study on Mobile Ad Hoc Networks Equipped with Free-Space Optical Capabilities," December, 2006.
22. Yan Zhai, "Improved Nonlinear Filtering for Target Tracking," April, 2007.
23. Cheng Zhong, "Efficient Soft-Decision Decoding of Reed-Solomon Codes," May, 2008.
24. Yih-Ru Huang, "Optoelectronics Three-Dimensional Tracking System for Collision Risk Model," April, 2009.
25. Mari Iida, "The Acceptance of Western Piano Music in Japan and the Career of Takahiro Sonoda" (Music – DMA), April, 2009.
26. Yong Ma, "Multi-Modal Behavior and Clustering in Dynamical Systems with Applications to Wind Farms," April, 2009.
27. Yuzhen Xue, "Identification and Estimation of Multi-Modal Complex Dynamic System," May, 2009.
28. B.H.M. Priyantha Wijesinghe, "Development of a Prototype In-Situ Fatigue Sensor for Structural Health Monitoring of Highway Bridges" (Civil Engineering), April, 2010.
29. Han Wang, "Parallel Subspace Subcodes of Reed-Solomon Codes for Magnetic Recording Channels," May, 2010.
30. Yahia Tachwali, "Cognitive Radio Solution for IEEE 802.22," July, 2010.
31. Wei Guan, "Some Local and Global Aspects of Mathematical Digital Signal Processing" (Mathematics), August, 2010.
32. Molly Donovan Wong, "Development and Characterization of a High Energy Phase Contrast X-Ray Imaging System Prototype," June, 2011.
33. Chenxi Lin, "Problems in the Design and Operation of Uncertain Complex Engineering Systems," July, 2011.
34. Jie Lu, "Distributed Computation and Optimization over Networks," July, 2011.
35. Rodney Keele, "Advances in Modeling and signal processing for Bit-Patterned Magnetic Recording Channels with Written-In Errors," April, 2012.
36. Di Wang, "Learning Visual Features for Grasp Selection and Control" (Computer Science), April, 2012.
37. Phuong Pham, "Target Tracking Using Wireless Sensor Networks," November, 2012.
38. Lina Sawalha, "Exploiting Heterogeneous Multicore Processors through Fine-Grained

- Scheduling and Low-Overhead Thread Migration,” December, 2012.
39. Nickolas LaSorte, “The Coexistence of Wireless Medical Devices in the Presence of Heterogeneous Wireless Networks,” April, 2013.
 40. Shang Wang, “Waveform and Transceiver Optimization for Multi-Functional Airborne Radar Through Adaptive Processing,” May, 2013.
 41. Enfeng Jiang, “Channel Detection on Two-Dimensional Magnetic Recording,” July, 2013.
 42. David Sandmann, “Design and Implementation of a Precision Three-Dimensional Binocular Image Tracker for Departing Aircraft,” November, 2013.
 43. Min Zhu, “EEG/MEG Sparse Source Imaging and its Application in Epilepsy,” December, 2013.
 44. Seyed Hossein Hosseini, “Revealing Additional Information About Electricity Market Underlying Power System Using Power System Principles and Published Market Results,” September, 2014.
 45. James M. Kurdzo, “Pulse Compression Waveforms and Applications for Weather Radar” (Meteorology), October, 2015.
 46. Peng F. Tang, “Analysis of Backbone Technique: A Hilbert Transform and Discrete Hilbert Transform-Based Technique,” December, 2015.
 47. Benjamin P. Carlson, “Phenotype Operators for Improved Performance of Heuristic Encoding within Genetic Algorithms” (Computer Science), April, 2016.
 48. Erik Petrich, “Real-Time 3-D Scene Reconstruction,” May, 2016.
 49. Kristina Henckel, “A Pianistic Analysis of Bedřich Smetana’s Piano Cycle *Dreams, Six Characteristic Pieces for Piano*” (Music – DMA), November, 2016.
 50. Milad Javadi, “New Implication of Short Circuit Analysis in Assessing Impact of Renewable Energy Resources on System Strength of a Power Grid,” June, 2017.
 51. Xining Yu, “Digital Signal Processing Based Real-Time Phased Array Radar Backend System and Optimization Algorithms,” October, 2017.
 52. Muhammad Usman Ghani, “Optimization of a High-Energy X-Ray Inline Phase Sensitive Imaging System for Diagnosis of Breast Cancer,” April 2018.

M.S. Supervisions Completed:

1. Santha Parameswaran, “Modulation Domain Forecasting of Nonstationary and Chaotic Time Series,” March, 2000 (co-supervised with Dr. Monte Tull).
2. Tanachit Tangsukson, “AM-FM Texture Segmentation,” May, 2000.
3. Altaf Ahmed, “Designing a Global IP Routing Strategy,” July, 2001 (co-supervised with Dr. Jim Sluss).
4. Igor Ivić, “Demonstration of an Efficient Method for Estimating Spectral Moments,” November, 2001.
5. Chee-Hong Gan, “Design of a GIS-Based Traffic Management Center Software Control Platform for Oklahoma Department of Transportation,” April, 2002 (co-supervised with Dr. Jim Sluss).
6. Kok-Hoong Chow, “MPLS Modeling and Simulation in Optical Networks,” July, 2002 (co-supervised with Dr. Jim Sluss).
7. Fabrice Ouandji, “Modulation Domain Texture Features for Content-Based Image Retrieval (CBIR),” July, 2004.
8. Ekasit Vorakitolan, “Work Zone Features for Oklahoma’s Statewide Intelligent Transportation System,” July, 2004.
9. Nantapol Kitiyanan, “AM-FM Fingerprint Reference Point Detection and Matching,” November, 2004.
10. Krishnapraveen Suri, “Phase Reconstruction from Multicomponent AM-FM Image Representations,” April, 2005.
11. Roy Sivley, “Perfect Reconstruction AM-FM Image Models,” March, 2006.
12. Prakash K. Parthasarathy, “Minimum Entropy Based FIR Filter Estimation,” December, 2006 (co-supervised with Dr. Victor DeBrunner).
13. Chuong Nguyen, “Dual-Domain Target Tracking,” June, 2007.
14. Linda Ouandji, “Advanced Voice and Multimedia Communications System for the ODOT ITS Network,” October, 2008.
15. Adrian Campbell, “AM-FM Image Processing Toolbox,” December, 2008.

16. Colin Johnston, "Advanced Multi-Channel Dual Domain Constrained Adaptation Particle Filter for Infrared Target Tracking," April, 2009.
17. Anagha Wankhede, "Orientation Selective Perfect Reconstruction Filterbank Toolbox," May 2010.
18. Basel Kilani, "Statewide Console for Distributed Control of Intelligent Transportation Systems," December 2010.
19. Sahithi Peddireddy, "Reduction of Beat Type Digital Video Noise Using AM-FM Image Filters," December 2011.
20. Shawna Ong, "Auxiliary Particle Filter for Modulation Domain Infrared Target Tracking," May, 2012.
21. John R. Jünger III, "The Comparison of Taylor Series and Unscented Transform Kalman Filters," May 2012 (co-supervised with Dr. S. Lakshmivarahan).
22. Md. Ridwanul Alam, "Tissue Classification-Based Automated Threshold Selection (TCATS) for Segmentation of Bone in Marrow Proliferation Assessments," May 2015.
23. Jesyca Fuenmayor Bello, "A State Vector Augmentation Method for Including Velocity Information in the Likelihood Function of the SIR Video Target Tracking Filter," July 2016.
24. Hesham Makhoul, "Police Electronic Citation Mobile System for Statewide Deployment in Oklahoma," April, 2018.

M.S. Supervisions in Progress:

- Rodrigo Collao Benitez

Additional M.S. Committees Served on:

1. Kirankumar Govindarajan, "Implementation of a Wavelet Vocoder," July 1997.
2. Tod Bussert, "Using Artificial Neural Networks to Improve the Mechanical Signature Analysis Test," December, 1997.
3. Georgios Lezos, "Neural Network and Fuzzy Logic Techniques for Time Series Forecasting," December, 1998.
4. Chetan Anantharaman, "Implementation of Generic Subband/Wavelet Architectures for Image Coding," April, 1999.
5. Mir Sayed Ali, "A CORSIM Traffic Model to Support ITS and DTA in Oklahoma City," February, 2000.
6. Aaron Bansemer, "Retrieval and Analysis of the Electric Field in Thunderstorms" (Meteorology), April, 2000.
7. James Shields, "Design and Implementation of a High-Speed Multiplexer-Based Parallel Multiplier," May, 2000.
8. Rick Pendergraft, "A Performance Evaluation of an Augmented GPS Landing System," September, 2001.
9. Sudhir Rai, "Signal Analysis of Heart Rate Variability Data," December, 2001.
10. Rupa Balan, "Neural Network Modeling of Heart Rate Variability," April, 2002.
11. Anand Mohan, "Low Power and Low Space FIR Filter Design," June, 2002.
12. Alan Harris, "A Fiber Bragg Grating Load Cell," July, 2002.
13. Mahmuda Afroz, "A Design to Measure the Strain of a Large Structure Using Fiber Bragg Gratings," July, 2002.
14. Santiago Rendón, "A Statistical Evaluation of a Protected Service Volume Using an Augmented GPS Landing System," August, 2002.
15. Yuan Chen, "Effects of Digital Watermarking on Digital X-Ray Images," January, 2003.
16. Scott Graham, "A Video System for LAAS/WAAS Data Analysis," May, 2003.
17. Ewa Matusiak, "Uncertainty Principles for Finite Abelian Group and Applications" (interdisciplinary program in Signal Processing, Computational & Applied Mathematics — *SigCAM*), May, 2003.
18. Totrakool Khongsap, "Quantization on a Sphere" (interdisciplinary program in Signal Processing, Computational & Applied Mathematics — *SigCAM*), May, 2003.
19. Minh Quang Ta, "Minimum Entropy Estimation of FIR Filters," May, 2003.
20. Eric Wainright, "Wavelength Diversity in Free-Space Optics to Alleviate Fog Effects," December, 2003.
21. Benjamin Mohr, "Design, Implementation and Testing of a New Curved Path Navigator for LAAS and WAAS," April, 2004.

22. Erik Petrich, "Image Processing Methods for Product Label Identification on Cylindrical Surfaces," July, 2004.
23. John Paul Nguyenkim, "Implementation of a Redundant Binary Co-Processor onto an FPGA for Complex Arithmetic Signal Processing," September, 2004.
24. Anil Babu Chalamalasetti, "Analysis of Radar Signals with Oversampling in Range," September, 2004.
25. Yih-Ru Huang, "Evaluation of a Real Time DGPS (LAAS) Landing System for Missed Approaches and Guided Missed Approaches," September, 2004.
26. Wei Zhang, "Efficient Multiplierless Filter Implementations for Embedded Systems," October, 2004.
27. Ashish Parajuli, "Speech Enhancement Based on Perceptual Wavelet Thresholding and Auditory Masking," December, 2004.
28. Ayodeji Fajebi, "A Software Methodology for Embedded Intelligent Systems," February, 2005.
29. Abderrahmane Bennis, "Division and Square-Root Based on Redundant Binary Numbers," April, 2005.
30. Roland Ferenczhalmy, "Analysis of Adsorption and Desorption Kinetics of Volatile Analytes Using Mid-Infrared Laser Absorption Spectroscopy," August, 2005.
31. Deepak V. Bhogaraju, "Entropy Uncertainty in FIR Filter Implementations," September, 2005.
32. Benjamin Blevins, "Stereoscopic Tracking of Approaching Aircraft," December, 2005.
33. Brian Birk, "The Design and Implementation of a Fault Tolerant LAAS Base Station," May, 2006.
34. Nicholas Mould, "Reconfigurable Computing Architectures: Dynamic and Steering Vector Methods," May 2006.
35. Rodolfo Salas, "Control Electronics for Laser Absorption Spectroscopy," May, 2006.
36. Matthew S. Falk, "Developing a New Airway Criteria Using Aircraft's Required Navigational Performance," December, 2006.
37. Hieu Thai, "System Identification of Bridges Under a Moving Load and Implementation of the Bridge Monitoring System," March, 2007.
38. Kevin Ford, "Computer Hardware for Vibration Mitigation and Monitoring," March, 2007.
39. Molly Donovan, "Performance Evaluation of a Phase Contrast X-Ray Imaging Prototype System," June, 2007.
40. Kyle Sparger, "Roadside Data Collection and Monitoring using GPRS Cellular Network," July, 2007.
41. Patrick Macklin, "Development and Integration of a Power Management Board for the Collision Risk Model," September, 2007.
42. Adriana Sofia Otero, "Adaptive Localized Route Maintenance Mechanism to Improve Performance of VoIP Over Ad Hoc Networks," April, 2010.
43. Jasper Staab, "Binary Mimicry in the Executable File," May, 2010.
44. Yasmin Jahir, "AODVH: Multipath Routing Protocol for Hybrid Nodes in Disaster Area Wireless Network (DAWN)," July, 2010.
45. Jordan Kuehn, "FPGA Real-Time Motion Control and Automation of Biped Robot," December, 2010.
46. Jacob Henderson, "Application of Magnetic Field Distortion Characteristics for use in Autonomous Location Detection," May, 2011.
47. Sonya Wolff, "Pre-Execution: An Elegant Approach to the Memory Wall," July, 2011.
48. Feng Nai, "Wind Turbine Clutter Mitigation for Weather Radars," November, 2011.
49. Vasilij Mayer, "Redefining Airway Constraints Based on En Route Flight Tests," December, 2011.
50. Sina Asadallahi, "Distributed Adaptive Backoff Reservation Protocol for 802.11 Wireless Networks," July, 2012.
51. Nathan McVay, "Sensitivity Analysis of Long Term Bias Error in the Global Positioning System," October, 2012.
52. Timothy Wilson, "Remote Desktop Capability for Labview Programs on an Android Platform," November, 2012.
53. Muhammad Usman Ghani, "Quantitative Analysis of Contrast to Noise Ratio Using a Phase

- Contrast X-Ray Imaging Prototype,” October, 2013.
54. Marcin Rutkowski, “Glitching-Aware Model Characterization Methodology for Power Estimation Techniques in CMOS Arithmetic Structures,” May, 2014.
 55. Kevin Windham, “Subsampling Effects on Range Migration Correction in SAR Imaging,” July, 2014.
 56. Milad Javadi, “Identification of Simultaneously Congested Transmission Lines in Power Market,” December, 2014.
 57. Nastaran Emaminejad, “Exploring the new CT Image Features to Improve Lung Cancer Diagnosis and Treatment Efficacy Assessment,” April, 2015.
 58. Faranak Aghaei, “Computer-Aided Breast MR Image Feature Analysis for Prediction of Tumor Response to Chemotherapy,” April, 2015.
 59. David Schwartzman Cohenca, “Weather Radar Spatio-Temporal Saliency (WR-STs),” June, 2015.
 60. Lesya Borowska, “Experiments on Electromagnetic Leakage from Laptops,” May, 2017.
 61. Jiayi Zhu, “Low-Cost, Software Defined FMCW Radar for Observations of Drones,” May, 2017.
 62. Johnny O’Keeffe, “Neuroimaging Features of Adults with and without Amnesic Mild Cognitive Impairment,” July, 2017.
 63. Lucia R. Fitzmorris, “Learning Assisted Decoupled Software Pipelining (LA-DSWP),” April, 2018.

► **Externally Funded Grants and Contracts:**

1. R.D. Barnes (PI) and J.P. Havlicek, “Expanding PARIS+ to Regional Police Agencies,” Southern Plains Transportation Center, **\$39,738**, 10/15/17-5/30/18. OU Pink Sheet Credit: 50% (\$19,869).
2. J.P. Havlicek (PI), R.D. Barnes, and M. Atiquzzaman, “OU Impaired Driver Database Hosting and Support,” State of Oklahoma, Highway Safety Office, **\$36,000**, 10/1/17-9/30/18. OU Pink Sheet Credit: 34% (\$12,240).
3. R.D. Barnes (PI), J.P. Havlicek, and M. Atiquzzaman, “PARIS Software Development and Integration,” State of Oklahoma, Highway Safety Office, **\$200,000**, 10/1/17-9/30/18. OU Pink Sheet Credit: 40% (\$80,000).
4. M. Atiquzzaman (PI), R.D. Barnes, and J.P. Havlicek, “SAFE-T Data Improvement Project,” State of Oklahoma, Highway Safety Office, **\$85,920**, 10/1/17-9/30/18. OU Pink Sheet Credit: 20% (\$17,184).
5. R.D. Barnes (PI) and J.P. Havlicek, “Engineering and Design of Intelligent Transportation System,” State of Oklahoma, Department of Transportation, **\$635,000**, 10/1/16-9/30/17. OU Pink Sheet Credit: 50% (\$317,500).
6. J.P. Havlicek (PI), R.D. Barnes, and M. Atiquzzaman, “Operation of Oklahoma Statewide Impaired Driver Database,” State of Oklahoma, Highway Safety Office, **\$39,811**, 1/1/17-9/30/17. OU Pink Sheet Credit: 34% (\$13,536).
7. R.D. Barnes (PI), J.P. Havlicek, and M. Atiquzzaman, “Police Automated Records Information System and Collision Reporting System,” State of Oklahoma, Highway Safety Office, **\$233,977**, 10/1/16-9/30/17. OU Pink Sheet Credit: 40% (\$93,591).
8. M. Atiquzzaman (PI), R.D. Barnes, and J.P. Havlicek, “Statewide Analysis for Engineering and Technology,” State of Oklahoma, Highway Safety Office, **\$88,877**, 10/1/16-9/30/17. OU Pink Sheet Credit: 20% (\$17,775).
9. R.D. Barnes (PI) and J.P. Havlicek, “Intelligent Transportation System Engineering and Design,” State of Oklahoma, Department of Transportation, **\$668,819**, 10/1/15-9/30/16. OU Pink Sheet Credit: 50% (\$334,410).
10. R.D. Barnes (PI), J.P. Havlicek, and M. Atiquzzaman, “Police Automated Records Information System and DUI Tracking Database,” State of Oklahoma, Highway Safety Office, **\$379,128**, 10/1/15-9/30/16. OU Pink Sheet Credit: 40% (\$151,651).
11. M. Atiquzzaman (PI), J.P. Havlicek, and R.D. Barnes, “Statewide Analysis for Engineering and Technology,” State of Oklahoma, Highway Safety Office, **\$88,877**, 10/1/15-9/30/16. OU Pink Sheet Credit: 20% (\$17,775).
12. L. Ding (PI), J.P. Havlicek, and D.T. Liu, “RII Track-2 FEC: Innovative, Broadly Accessible Tools for Brain Imaging, Decoding and Modulation,” National Science Foundation,

- \$1,357,173** (subcontract to the University of Rhode Island; prime contract award amount: \$5,999,853), 8/1/15-7/31/19. OU Pink Sheet Credit: 33% (\$447,867).
13. J.P. Havlicek (PI) and R.D. Barnes, "Oklahoma Bureau of Narcotics and Dangerous Drugs (OBND) PARIS System," Oklahoma Bureau of Narcotics and Dangerous Drugs, **\$7,201**, 5/1/15-12/31/15. OU Pink Sheet Credit: 50% (\$3,600).
 14. R.D. Barnes (PI), J.P. Havlicek, and M. Atiquzzaman, "OU Intelligent Transportation Systems FY15," Oklahoma Department of Transportation, **\$400,000**, 10/1/14-9/30/15. OU Pink Sheet Credit: 40% (\$160,000).
 15. J.P. Havlicek (PI), M. Atiquzzaman, and R.D. Barnes, "SAFE-T System Expert System Functionality: Option III," Oklahoma Department of Transportation, **\$232,127**, 1/1/15-12/31/16. OU Pink Sheet Credit: 34% (\$78,923).
 16. M.B. Yearly (PI), R.D. Palmer, and J.P. Havlicek, "System and Software Support for CGI (Supplement)," CGI Federal, Inc., **\$34,224**, 11/7/14-3/8/15, OU Pink Sheet Credit: 25% (\$8,556).
 17. M. Atiquzzaman (PI), R.D. Barnes, and J.P. Havlicek, "Enhancing Driver Safety During Severe Weather Conditions," Southern Plains Transportation Center, **\$199,998**, 7/1/14-6/30/16. OU Pink Sheet Credit: 30% (\$59,999).
 18. R.D. Barnes (PI), J.P. Havlicek, and M. Atiquzzaman, "Police Automated Records and Information System," State of Oklahoma, Highway Safety Office, **\$368,500**, 10/1/14-9/30/15. OU Pink Sheet Credit: 40% (\$147,400).
 19. M. Atiquzzaman (PI), J.P. Havlicek, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis," State of Oklahoma, Highway Safety Office, **\$74,825**, 10/1/14-9/30/15. OU Pink Sheet Credit: 20% (\$14,965).
 20. Joseph P. Havlicek, "PET Image Analysis Using a Novel Radioisotope Fluorothymidine for Identification of Bone Marrow Repopulation following Myeloablative Transplantation: Supplement," University of Oklahoma Health Sciences Center, Stephenson Cancer Center, **\$16,966**, 10/1/14-4/30/15. OU Pink Sheet Credit: 100% (\$16,966).
 21. J.L. Holter Chakrabarty (PI), J.P. Havlicek, and S.K. Vesely, "PET Image Analysis Using a Novel Radioisotope Fluorothymidine for Identification of Bone Marrow Repopulation following Myeloablative Transplantation," Oklahoma Shared Clinical and Translational Resources pilot grant funded by US Dept. Health and Human Services, National Institutes of Health. **\$50,000**. 1/8/14-6/30/14. Prime contractor: University of Oklahoma Health Sciences Center; subcontract awarded to OU Norman Campus: \$25,788. Subcontract PI: J.P. Havlicek. OU Pink Sheet Credit: 100% (\$25,788).
 22. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, and J.P. Havlicek, "ITS System Engineering and Integration," Oklahoma Department of Transportation, **\$344,000**. 10/1/13-9/30/14. OU Pink Sheet Credit: 35% (\$120,400).
 23. M. Atiquzzaman (PI), J.P. Havlicek, and R.D. Barnes, "University of Oklahoma SAFE-T Project," State of Oklahoma, Highway Safety Office, **\$174,000**, 10/1/13-9/30/14. OU Pink Sheet Credit: 20% (\$34,800).
 24. R.D. Barnes (PI), M. Atiquzzaman, and J.P. Havlicek, "OU TraCS/PARIS Project," State of Oklahoma, Highway Safety Office, **\$238,000**, 10/1/13-9/30/14. OU Pink Sheet Credit: 40% (\$95,200).
 25. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, and J.P. Havlicek, "ITS System Engineering and Integration," Oklahoma Department of Transportation, **\$344,000**. 10/1/12-9/30/13. OU Pink Sheet Credit: 37% (\$127,280).
 26. R.D. Barnes (PI), M. Atiquzzaman, and J.P. Havlicek, "Police Automated Records Information System," State of Oklahoma, Highway Safety Office, **\$155,000**, 10/1/12-9/30/13. OU Pink Sheet Credit: 40% (\$62,000).
 27. M. Atiquzzaman (PI), J.P. Havlicek, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis," State of Oklahoma, Highway Safety Office, **\$55,000**, 10/1/12-9/30/13. OU Pink Sheet Credit: 20% (\$11,000).
 28. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, and J.P. Havlicek, "ITS System Engineering and Integration," Oklahoma Department of Transportation, **\$312,150**. 10/1/11-9/30/12. OU Pink Sheet Credit: 35% (\$109,253).
 29. J.P. Havlicek (PI) and R.D. Barnes, "GPS Location Data Enhancement in Electronic Traffic Records," Oklahoma Transportation Center, **\$100,000**, 10/1/11-12/31/12. OU Pink Sheet

- Credit: 50% (\$50,000).
30. R.D. Barnes (PI) and J.P. Havlicek, "Fatality Analysis Reporting System and Roadway Inventory Correlation," Oklahoma Transportation Center, **\$100,000**, 10/1/11-12/31/12. OU Pink Sheet Credit: 50% (\$50,000).
 31. R.D. Barnes (PI), M. Atiquzzaman, and J.P. Havlicek, "OU Software Development & Integration Project," State of Oklahoma, Highway Safety Office, **\$220,000**, 10/1/11-9/30/12. OU Pink Sheet Credit: 40% (\$88,000).
 32. M. Atiquzzaman (PI), J.P. Havlicek, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis," State of Oklahoma, Highway Safety Office, **\$54,660**, 10/1/11-9/30/12. OU Pink Sheet Credit: 20% (\$10,932).
 33. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, J. Basara, and M.P. Tull, "A Mobile Intelligent Transportation System (ITS) Platform," Oklahoma Transportation Center, **\$341,352**. 1/1/11-2/29/12. OU Pink Sheet Credit: 20% (\$68,270).
 34. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "ITS System Engineering Crash Diagram Supplement," Oklahoma Department of Transportation, **\$17,645**. 10/1/10-6/30/12. OU Pink Sheet Credit: 25% (\$4,411).
 35. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "Intelligent Transportation System (ITS) Engineering and Integration Services," Oklahoma Department of Transportation, **\$341,000**. 10/1/10-6/30/12. OU Pink Sheet Credit: 25% (\$82,250).
 36. R.D. Barnes (PI), M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "OU Software Development & Integration Project," State of Oklahoma, Highway Safety Office, **\$234,573**, 10/1/10-9/30/11. OU Pink Sheet Credit: 30% (\$70,372).
 37. M. Atiquzzaman (PI), J.P. Havlicek, M.P. Tull, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis," State of Oklahoma, Highway Safety Office, **\$64,879**, 10/1/10-9/30/11. OU Pink Sheet Credit: 22% (\$14,273).
 38. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "Intelligent Transportation System (ITS) Engineering and Integration Services," Oklahoma Department of Transportation, **\$220,000**. 10/1/09-9/30/10. OU Pink Sheet Credit: 25% (\$55,000).
 39. R.D. Barnes (PI), M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "OU Software Development & Integration Project," State of Oklahoma, Highway Safety Office, **\$150,000**, 10/1/09-9/30/10. OU Pink Sheet Credit: 30% (\$45,000).
 40. M. Atiquzzaman (PI), J.P. Havlicek, M.P. Tull, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis," State of Oklahoma, Highway Safety Office, **\$55,000**, 10/1/09-9/30/10. OU Pink Sheet Credit: 22% (\$12,100).
 41. R.D. Barnes (PI), James J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "Roadway Weather Information System and Automatic Vehicle Location (AVL) Coordination," Oklahoma Transportation Center (OTC), **\$145,433**, 6/1/08-5/31/10. OU Pink Sheet Credit: 20% (\$29,087).
 42. R.D. Barnes (PI), James J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, and M.P. Tull, "Roadway Weather Information System and Automatic Vehicle Location (AVL) Coordination (Matching Funds)," Oklahoma Department of Transportation, **\$55,000**, 6/1/08-5/31/10. OU Pink Sheet Credit: 20% (\$11,000).
 43. R.D. Barnes (PI), J.J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, M.P. Tull, and H. Refai, "ITS System Engineering and Integration Supplement," Oklahoma Department of Transportation, **\$33,000**. 11/1/08-10/31/09. OU Pink Sheet Credit: 10% (\$3,300).
 44. R.D. Barnes (PI), J.J. Sluss, Jr., J.P. Havlicek, and M.P. Tull, "Intelligent Transportation System (ITS) Engineering and Integration Services," Oklahoma Department of Transportation, **\$155,000**. 10/1/08-9/30/09. OU Pink Sheet Credit: 25% (\$38,750).
 45. J.P. Havlicek (PI) and G. Fan, "Multiple Domain Particle Filters for Integrated Tracking and Recognition in IR Imagery," Department of Defense, Army Research Office, **\$474,000**, 7/1/08-6/30/11. OU Pink Sheet Credit: 100% (\$474,000).
 46. R.D. Barnes (PI), J.P. Havlicek, and M.P. Tull, "OU Software Development & Integration Project," State of Oklahoma, Highway Safety Office, **\$150,000**, 10/1/08-9/30/09. OU Pink Sheet Credit: 33% (\$49,500).
 47. R.D. Barnes (PI), J.P. Havlicek, and M.P. Tull, "OU Software Development & Integration Project Supplement," State of Oklahoma, Highway Safety Office, **\$5,000**, 7/15/09-9/30/09. OU Pink Sheet Credit: 33% (\$1,650).

48. M. Atiquzzaman (PI), J.P. Havlicek, M.P. Tull, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis System," State of Oklahoma, Highway Safety Office, **\$54,745**, 10/1/08-9/30/09. OU Pink Sheet Credit: 22% (\$12,044).
49. J.P. Havlicek (PI), M.P. Tull, and R.D. Barnes, "OU Software Development & Integration Project (TraCS) Supplement," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/07-9/30/08. OU Pink Sheet Credit: 40% (\$20,000).
50. J.P. Havlicek (PI), M.P. Tull, and R.D. Barnes, "OHP Troop S Civil Assessment System," State of Oklahoma, Department of Public Safety, **\$50,000**, 4/15/08-4/14/09. OU Pink Sheet Credit: 34% (\$17,000).
51. J.P. Havlicek (PI), M.P. Tull, and R.D. Barnes, "Automated Driver License Testing System," State of Oklahoma, Department of Public Safety, **\$108,035**, 10/1/07-9/30/08. OU Pink Sheet Credit: 40% (\$43,214).
52. J.P. Havlicek (PI), M.P. Tull, and R.D. Barnes, "OU Software Development & Integration Project (TraCS)," State of Oklahoma, Highway Safety Office, **\$150,000**, 10/1/07-9/30/08. OU Pink Sheet Credit: 40% (\$60,000).
53. J.P. Havlicek (PI), M. Atiquzzaman, M.P. Tull, and R.D. Barnes, "University of Oklahoma Crash Reporting and Analysis System (SAFE-T)," State of Oklahoma, Highway Safety Office, **\$53,171**, 10/1/07-9/30/08. OU Pink Sheet Credit: 30% (\$15,951).
54. M.P. Tull (PI), J.J. Sluss, Jr., J.P. Havlicek, and R.D. Barnes, "ITS System Engineering and Integration Services to be Provided by the OU ITS Lab as Part of the Oklahoma Transportation Center, FY 2008," Oklahoma Department of Transportation, **\$219,976**, 10/1/07-9/30/08. OU Pink Sheet Credit: 30% (\$65,993).
55. J.P. Havlicek (PI), J.J. Sluss, Jr., and M.P. Tull, "TraCS: Traffic and Criminal Software (continuation of OU Mobile Data Collection System Pilot Project)," State of Oklahoma, Highway Safety Office, **\$182,467**, 10/1/06-9/30/07. OU Pink Sheet Credit: 40% (\$72,987).
56. M.P. Tull (PI), J.J. Sluss, Jr., and J.P. Havlicek, "ITS System Engineering and Integration," Oklahoma Department of Transportation, **\$208,000**, 10/1/06-9/30/07. OU Pink Sheet Credit: 45% (\$93,600).
57. M.P. Tull (PI), J.J. Sluss, Jr., M. Atiquzzaman, J.P. Havlicek, and T. Runolfsson, "Advanced Voice and Multimedia Communications System for the ODOT ITS Network," State of Oklahoma, Department of Transportation (Oklahoma Transportation Center), **\$81,000**, 10/1/06-9/30/07. OU Pink Sheet Credit: 30% (\$24,300).
58. J.P. Havlicek (PI), J.J. Sluss, Jr., M. Atiquzzaman, M.P. Tull, and T. Runolfsson, "University of Oklahoma Crash Reporting and Analysis," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/06-9/30/07. OU Pink Sheet Credit: 25% (\$12,500).
59. J.P. Havlicek (PI), J.J. Sluss, Jr., M.P. Tull, and T. Runolfsson, "OU Mobile Data Collection System Pilot Project (Continuation)," State of Oklahoma, Highway Safety Office, **\$45,751**, 10/1/06-9/30/07. OU Pink Sheet Credit: 25% (\$11,438).
60. J.J. Sluss, Jr. (PI), J.P. Havlicek, M.P. Tull, and T. Runolfsson, "Truck Weight Enforcement Using Advanced Weigh-in-Motion Systems," Oklahoma Transportation Center, **\$78,223**, 5/1/06-4/30/07. OU Pink Sheet Credit: 25% (\$19,556).
61. T. Landers (PI), with 19 Co-PI's including J.P. Havlicek, "Inter-Modal Containerized Freight Security: FY 06 Allocation," Oklahoma Department of Transportation, **\$2,083,151**, 7/1/06-6/30/07. OU Pink Sheet Credit: 6% (\$124,989).
62. J.P. Havlicek (PI), J.J. Sluss, Jr., M.P. Tull, and T. Runolfsson, "OU Mobile Data Collection Project (CDL)," State of Oklahoma, Highway Safety Office, **\$105,277**, 3/1/06-9/30/06. OU Pink Sheet Credit: 25% (\$26,319).
63. J.J. Sluss, Jr. (PI), J.P. Havlicek, M.P. Tull, and T. Runolfsson, "Intelligent Transportation System (ITS) Engineering and Integration Services," Oklahoma Department of Transportation, **\$225,000**, 10/1/05-9/30/06. OU Pink Sheet Credit: 25% (\$56,250).
64. J.P. Havlicek (PI), M.P. Tull, and J.J. Sluss, Jr., "SAFE-T: State-Wide Analysis for Enhancing Transportation," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/05-9/30/06. OU Pink Sheet Credit: 33% (\$16,500).
65. R. Mc Pherson (PI), J.J. Sluss, Jr., J. Snow, J.P. Havlicek, J. Basara, M. Wolfenbarger, and C. Friebrich, "Clarus Weather System Design," Mixon/Hill, Inc. (prime contractor; flow-through from U.S. DoT – FHWA), **\$411,769**, 6/1/05-2/28/07. OU Pink Sheet Credit: 10% (\$41,177).

66. J.P. Havlicek (PI), J.J. Sluss, Jr., M.P. Tull, and T. Runolfsson, "OU Mobile Data Collection System Pilot Project," State of Oklahoma, Highway Safety Office, **\$208,000**, 4/25/05-3/31/06. OU Pink Sheet Credit: 25% (\$52,000).
67. J.P. Havlicek (PI) and J.J. Sluss, Jr., "University of Oklahoma Crash Reporting and Analysis System (FMCSA Supplement)," State of Oklahoma, Highway Safety Office, **\$75,000**, 1/1/05-9/30/05. OU Pink Sheet Credit: 50% (\$37,500).
68. J.P. Havlicek (PI) and J.J. Sluss, Jr., "University of Oklahoma Crash Reporting and Analysis System," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/04-9/30/05. OU Pink Sheet Credit: 50% (\$25,000).
69. J.J. Sluss, Jr. (PI) and J.P. Havlicek, "Intelligent Transportation System Engineering and Integration Services," Oklahoma Department of Transportation, **\$222,356**, 10/1/04-9/30/05. OU Pink Sheet Credit: 50% (\$111,178).
70. J.P. Havlicek (PI) and G. Fan, "Integrated Detection, Tracking, Classification, and Learning for Dual-Band Infrared Imagery," Department of Defense, Army Research Office, **\$465,897**, 7/1/04-6/30/07. OU Pink Sheet Credit: 100% (\$465,897).
71. J.J. Sluss, Jr. (PI) and J.P. Havlicek, "Design and Integration of ITS (Intelligent Transportation Systems) Project in Oklahoma," Oklahoma Department of Transportation, **\$164,500**, 10/1/03-9/30/04. OU Pink Sheet Credit: 50% (\$82,250).
72. J.P. Havlicek (PI) and J.J. Sluss, Jr., "A Statewide Crash Reporting and Analysis System," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/03-9/30/04. OU Pink Sheet Credit: 50% (\$25,000).
73. J.J. Sluss, Jr. (PI) and J.P. Havlicek, "Design and Integration of ITS (Intelligent Transportation Systems) Project in Oklahoma (Year 0)," Oklahoma Department of Transportation, **\$41,000**, 7/1/03-9/30/03. OU Pink Sheet Credit: 50% (\$20,500).
74. J.J. Sluss, Jr. (PI), J.P. Havlicek, and S. Radhakrishnan, "Development of a 511 Traveler Information Program Deployment Plan for Oklahoma," Oklahoma Department of Transportation, **\$50,000**, 1/1/03-6/30/04. OU Pink Sheet Credit: 33% (\$16,500).
75. J.P. Havlicek (PI) and J.J. Sluss, Jr., "A Statewide Accident Reporting and Analysis System," Oklahoma Transportation Center, **\$30,000**, 1/1/03-9/30/03. OU Pink Sheet Credit: 50% (\$15,000).
76. J.P. Havlicek (PI) and J.J. Sluss, Jr., "ITS Features for Enhanced Highway Safety in Work Zones," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/02-9/30/03. OU Pink Sheet Credit: 50% (\$25,000).
77. J.J. Sluss, Jr. (PI) and J.P. Havlicek, "Design and Integration of ITS (Intelligent Transportation Systems) Project in Oklahoma," Oklahoma Department of Transportation, **\$145,000**, 6/18/02-9/30/03. OU Pink Sheet Credit: 50% (\$72,500).
78. J.E. Fagan (PI), J.P. Havlicek, and G.R. Schaumburg, "Determining the Required Navigational Performance of the GPS, WAAS, and LAAS Systems for Precision Simple and Complex Approaches and the Development of Models for the Prediction of the Operational Performance of these Navigation Systems," Federal Aviation Administration, **\$545,000**, 5/1/02-6/30/03. OU Pink Sheet Credit: 30% (\$163,500).
79. J.J. Sluss, Jr. (PI), J.P. Havlicek, and S. Radhakrishnan, "Oklahoma Statewide ITS Strategic Plan and ITS/CVO Plan," Federal Highway Administration/Oklahoma Department of Transportation subcontract; prime contractor: P.B. Farradyne, Inc., **\$32,692**, 3/1/02-3/31/03. OU Pink Sheet Credit: 33% (\$10,788).
80. J.E. Fagan (PI), J.P. Havlicek, and G.R. Schaumburg, "Determining the Required Navigational Performance of the GPS, WAAS, and LAAS Systems for Precision Simple and Complex Approaches and the Development of Models for the Prediction of the Operational Performance of these Navigation Systems in a Wide Variety of Aircraft (Global Positioning System Wide and Local Area Augmentation System)," Federal Aviation Administration, **\$240,000**, 2/1/00-6/30/02. OU Pink Sheet Credit: 30% (\$72,000).
81. J.P. Havlicek (PI), "Decentralized Image Retrieval for Education \ (DIRECT\)," National Science Foundation subcontract; prime contractor: University of Virginia, PI: S.T. Acton, **\$63,171**, 1/1/02-12/31/03. OU Pink Sheet Credit: 100% (\$63,171).
82. J.P. Havlicek (PI) and J.J. Sluss, Jr., "System Development and Testing for ITS," State of Oklahoma, Highway Safety Office, **\$50,000**, 10/1/01-9/30/02. OU Pink Sheet Credit: 50% (\$25,000).

83. M.P. Tull (PI), J.P. Havlicek, J.J. Sluss, Jr., and J. Cheung, "Artificial Intelligence Based Forecasting," Lucent Technologies, **\$39,943**, 1/1/01-5/31/01. OU Pink Sheet Credit: 37% (\$14,779).
84. P. Pulat (PI), J.J. Sluss, Jr., J.P. Havlicek, S. Radhakrishnan, and S.A. Moses, "Design and Evaluation of a Hierarchical Highway Network Structure and a Decision Support System with Surveillance Information to Enhance Business Partnerships in the E-Marketplace," National Science Foundation, **\$100,001**, 8/15/00-8/14/01. OU Pink Sheet Credit: 20% (\$20,000).
85. J.P. Havlicek (PI) and J.J. Sluss, Jr., "System Development, Integration, and Component Testing for Oklahoma City's Intelligent Transportation System," State of Oklahoma Highway Safety Office, **\$50,000**, 10/1/00-9/30/01. OU Pink Sheet Credit: 50% (\$25,000).
86. M.P. Tull (PI), J.J. Sluss, Jr., J.P. Havlicek, and S. Radhakrishnan, "Artificial Intelligence Based Inventory and Forecasting," Lucent Technologies, **\$248,428**, 1/1/00-12/31/00. OU Pink Sheet Credit: 33% (\$81,981).
87. J.P. Havlicek (PI) and J.J. Sluss, Jr., "System Development, Integration, and Component Testing for Oklahoma City's Intelligent Transportation System," State of Oklahoma Highway Safety Office, **\$50,001**, 10/1/99-9/30/00. OU Pink Sheet Credit: 50% (\$25,001).
88. J.J. Sluss, Jr. (PI) and J.P. Havlicek, "An Intelligent Transportation System for Oklahoma City," State of Oklahoma Department of Transportation, **\$80,000**, 7/1/99-8/15/00. OU Pink Sheet Credit: 50% (\$40,000).
89. J.E. Fagan (PI), J.P. Havlicek, J.J. Sluss, Jr., and G.R. Schaumburg, "A Proposal for Research to Determine the Required Navigational Performance of the GPS, WAAS, and LAAS Systems for Simple and Complex Approaches and the Development of Models for the Prediction of the Operational Performance of these Navigation Systems in a Wide Variety of Aircraft," Federal Aviation Administration, **\$866,300**, 4/16/99-6/30/01. OU Pink Sheet Credit: 30% (\$259,890).
90. M.P. Tull (PI), J.J. Sluss, Jr., and J.P. Havlicek, "Extended Artificial Intelligence Based Forecasting and Inventory Planning Models," Lucent Technologies, **\$232,754**, 1/1/99-12/31/99. OU Pink Sheet Credit: 33.3% (\$77,507).
91. J.J. Sluss, Jr. (PI) and J.P. Havlicek, "System Architecture Design for Oklahoma City's Intelligent Transportation System," State of Oklahoma Department of Transportation, **\$49,776**, 5/13/98-10/31/98. OU Pink Sheet Credit: 50% (\$24,888).
92. M.P. Tull (PI), J.J. Sluss, Jr., J.P. Havlicek, V.E. DeBrunner, L.S. DeBrunner, S.C. Lee, and S. Radhakrishnan, "Artificial Intelligence Based Forecasting and Inventory Planning Models," Lucent Technologies, **\$229,298**, 11/1/97-12/31/98. OU Pink Sheet Credit: 21% (\$48,153).

► **Total External Funding: \$18,411,535**

► **Total Attributable to J.P. Havlicek (OU Pink Sheet Credit): \$6,394,225**

► **Internally Funded Grants:**

1. H. Liu (PI), J. Holter Chakrabarty, and J.P. Havlicek, "Development of a Predictive Imaging Model for Prediction of Relapse Following Allogeneic Bone Marrow Transplantation," University of Oklahoma Bioengineering Center seed funding for interdisciplinary Research, **\$47,172**. 12/15/13-12/14/14.
2. P.S. Harvey, R.W. Floyd, L. Gruenwald, J.P. Havlicek, Y. Li, and J.-S. Pei, "Safer School Buildings for Wind and Earthquakes: A Multidisciplinary Approach," University of Oklahoma College of Engineering seed funding for interdisciplinary Research, **\$10,000**. 6/1/15-5/31/16.

Total Internal Funding: \$57,172

► **Invited Lectures:**

1. J.P. Havlicek, "Designing Perceptually-Based Image Filters in the Modulation Domain," School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, May 3, 2011.

2. J.P. Havlicek, "Designing Perceptually-Based Image Filters in the Modulation Domain," Dept. Automation, Shanghai Jiao Tong University, Shanghai, China, September 25, 2010.
3. J.P. Havlicek, "Infrared Target Tracking in the Modulation Domain," Dept. Electrical & Computer Engineering, University of New Mexico, Albuquerque, NM, March 28, 2008.
4. J.P. Havlicek, "Multidimensional AM-FM Models with Image Processing Applications," School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, November 22, 2002.
5. J.P. Havlicek, "Image Texture Retrieval Using Joint Amplitude-Frequency Modulation Models," Dept. Electrical and Computer Engineering, University of Virginia, Charlottesville, VA, July 22, 2002.
6. J.P. Havlicek, "Modulation Models for Image Processing and Machine Vision," Dept. Electrical Engineering, The Ohio State University, Columbus, OH, March 31, 1998.
7. J.P. Havlicek, "Modulation Models for Image Processing and Machine Vision," School of Electrical & Computer Engineering, Oklahoma State University, Stillwater, OK, March 26, 1998.
8. J.P. Havlicek, "Wideband Frequency Excursions in Multicomponent AM-FM Models," School of Electrical & Computer Engineering Colloquium Seminar Series, the University of Oklahoma, Norman, OK, September 18, 1997.
9. J.P. Havlicek, "AM-FM Image Models," IEEE Oklahoma City Section meeting, Oklahoma City, OK, March 20, 1997.
10. J.P. Havlicek, "AM-FM Image Models," School of Electrical & Computer Engineering, the University of Oklahoma, Norman, OK, July 18, 1996.
11. J.P. Havlicek, "AM-FM Image Analysis," Dept. Electrical Engineering, University of Washington, Seattle, WA, May 14, 1996.
12. J.P. Havlicek, "AM-FM Image Analysis," Dept. Electrical Engineering, The Pennsylvania State University, University Park, PA, April 22, 1996.

► Conference Presentations Without Proceedings:

1. K.M. Williams, J.L. Holter Chakrabarty, L. Lindenberg, S. Adler, J. Gea-Banacloche, B. Blacklock-Schuver, F.T. Hakim, D.D. Hickstein, J.N. Kochenderfer, J. Wilder, T. Chinn, K. Kurdziel, S.M. Steinberg, H. Khuu, F.I. Lin, D.H. Fowler, D. Halverson, D.N. Avila, G. Selby, T.N. Taylor, J. Mann, J. Hsu, R.B. Epstein, S.L. Anderson, C.T. Nguyen, J. Havlicek, S. Li, T. Pham, T. Kraus, S.K. Vesely, PhD, S.Z. Pavletic, C.M. Bollard, P. Choyke, and R.E. Gress, "FLT imaging reveals kinetics and biology of engraftment after myeloablative HSCT," *56th American Society of Hematology (ASH) Annual Meeting and Exposition*, San Francisco, CA, Dec. 6-9, 2014.
2. K.M. Williams, J.L. Holter, L. Lindenberg, S. Adler, J. Gea-Banacloche, B. Blacklock-Schuver, F. Hakim, D. Hickstein, J. Kochenderfer, J. Wilder, T. Chinn, K. Kurdziel, S. Steinberg, H. Khuu, D. Fowler, F.I. Lin, D. Halverson, D.N. Avila, G. Selby, S.L. Anderson, C.T. Nguyen, J.P. Havlicek, T.N. Taylor, J. Mann, J. Hsu, R. Epstein, S.K. Vesely, S. Li, T. Kraus, T. Pham, S.Z. Pavletic, C. Bollard, P. Choyke, and R.E. Gress, "Novel imaging reveals early engraftment and stem cell homing," *NIH Blood and Marrow Transplant (BMT) Consortium: 20th Anniversary Allogeneic Stem Cell Transplant at NIH Conference and Celebration*, Washington, DC, Sep. 11-12, 2014.

Publications

A. Archival Journal Papers:

1. K.M. Williams, J. Holter-Chakrabarty, L. Lindenberg, Q. Dong, S.K. Vesely, C.T. Nguyen, J.P. Havlicek, K. Kurdziel, J. Gea-Banacloche, F.I. Lin, D.N. Avila, G. Selby, C.G. Kanakry, S. Li, T. Scordino, S. Adler, C.M. Bollard, P. Choyke, and R.E. Gress, "Imaging of subclinical haemopoiesis after stem-cell transplantation in patients with haematological malignancies: A prospective pilot study," *The Lancet Haematology*, vol. 5, no. 1, pp. e44-e52, Jan. 2018, published online Dec. 13, 2017.

2. E.D. Ross, S.S. Gupta, A.M. Adnan, T.L. Holden, J. Havlicek, and S. Radhakrishnan, "Neurophysiology of spontaneous facial expressions: I. Motor control of the upper and lower face is behaviorally independent in adults," *Cortex*, vol. 76, pp. 28-42, Mar. 2016.
3. L. Yu, G. Fan, J. Gong, and J.P. Havlicek, "Joint infrared target recognition and segmentation using a shape manifold-aware level set," *Sensors*, special issue on sensors in new road vehicles, vol. 15, no. 5, pp. 10118-10145, Apr. 2015.
4. J. Gong, G. Fan, L. Yu, J.P. Havlicek, D. Chen, and N. Fan, "Joint target tracking, recognition and segmentation for infrared imagery using a shape manifold-based level set," *Sensors*, vol. 14, no. 6, pp. 10124-10145, Jun. 2014.
5. J. Gong, G. Fan, L. Yu, J.P. Havlicek, D. Chen, and N. Fan, "Joint view-identity manifold for infrared target tracking and recognition," *Comput. Vision, Image Understand.*, vol. 118, pp. 211-224, Jan. 2014.
6. N. Mould and J.P. Havlicek, "Neighborhood-level learning techniques for nonparametric scene models," *Signal, Image, Video Process.*, doi: 10.1007/s11760-013-0571-x, 15 pp., Oct. 2013.
7. V. Venkataraman, G. Fan, J.P. Havlicek, X. Fan, Y. Zhai, and M. Yeary, "Adaptive Kalman filtering for histogram-based appearance learning in infrared imagery," *IEEE Trans. Image Process.*, vol. 21, no. 11, pp. 4622-4635, Nov. 2012.
8. 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 J. Advances Signal Process.*, v. 2011, doi: 10.1186/1687-6180-2011-124, 17 pp., Dec. 7, 2011.
9. P.C. Tay, J.P. Havlicek, S.T. Acton, and J.A. Hossack, "Properties of the magnitude terms of orthogonal scaling functions," *Digital Signal Process.*, vol. 20, no. 5, pp. 1330-1340, Sep. 2010.
10. X. Fan, G. Fan, and J.P. Havlicek, "Generative model for maneuvering target tracking," *IEEE Trans. Aerospace, Elect. Sys.*, vol. 46, no. 2, pp. 635-655, Apr. 2010.
11. 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, Measurement*, vol. 57, no. 10, pp. 2377-2387, Oct. 2008.
12. V. DeBrunner, J.P. Havlicek, T. Przebinda, and M. Özaydın, "Entropy-based uncertainty measures for $L^2(\mathbb{R}^n)$, $\ell^2(\mathbb{Z})$, and $\ell^2(\mathbb{Z}/N\mathbb{Z})$ with a Hirschman optimal transform for $\ell^2(\mathbb{Z}/N\mathbb{Z})$," *IEEE Trans. Signal Process.*, vol. 53, no. 8, pp. 2690-2699, Aug. 2005.
13. S.T. Acton, D.P. Mukherjee, J.P. Havlicek, and A.C. Bovik, "Oriented texture completion by AM-FM reaction-diffusion," *IEEE Trans. Image Process.*, vol. 10, no. 6, pp. 885-896, Jun. 2001.
14. J.P. Havlicek and P.C. Tay, "Determination of the number of texture segments using wavelets," *Electron. J. Diff. Eqns.*, vol. Conf. 07, 2001, pp. 61-70, <http://ejde.math.swt.edu/conf-proc/07/toc.html>. Also published in *Proc. 16th Conf. Appl. Math.*, Edmond, OK, Feb. 23-24, 2001, pp. 61-70.
15. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Multidimensional quasi-eigenfunction approximations and multicomponent AM-FM models," *IEEE Trans. Image Process.*, vol. 9, no. 2, pp. 227-242, Feb. 2000.
16. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Multicomponent multidimensional signals," *Multidimensional Syst. and Signal Process.*, vol. 9, no. 4, invited paper, pp. 391-398, Oct. 1998.
17. J.P. Havlicek, "The evolution of modern texture processing," *Elektrik, Turkish Journal of Electrical Engineering and Computer Sciences*, vol. 5, no. 1, special issue on image processing, pp. 1-28, 1997.
18. A.C. Bovik, J.P. Havlicek, M.D. Desai, and D.S. Harding, "Limits on discrete modulated signals," *IEEE Trans. Signal Process.*, vol. 45, no. 4, pp. 867-879, Apr. 1997.
19. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "The mutlicomponent AM-FM image representation," *IEEE Trans. Image Process.*, special issue on nonlinear image processing, vol. 5, no. 6, pp. 1094-1100, Jun. 1996.
20. J.P. Havlicek, J.C. McKeeman, and P.W. Remaklus, "Networks of low-earth orbit store-and-forward satellites," *IEEE Trans. Aerospace and Elect. Sys.*, vol. 31, no. 2, pp. 543-554, Apr. 1995.
21. J.P. Havlicek, G.R. Katz, and J.C. McKeeman, "Even length median filters in optimal signal

- processing,” *Electron. Letters*, vol. 28, no. 13, pp. 1258-1260, Jun. 18, 1992.
22. J.P. Havlicek, K.A. Sarkady, G.R. Katz, and J.C. McKeeman, “Fast efficient median filters with even length windows,” *Electron. Letters*, vol. 26, no. 20, pp. 1736-1737, Sep. 27, 1990.

B. Book Chapters:

1. O. Alkhoul, V. DeBrunner, and J. Havlicek, “Hirschman Optimal Transform (HOT) DFT Block LMS Algorithm,” in *Adaptive Filtering*, L. Garcia, ed., ISBN: 978-953-307-158-9, In-Tech, Sep. 2011, pp. 135-152.
2. G. Fan, V. Venkataraman, X. Fan, and J.P. Havlicek, “Appearance Learning for Infrared Tracking with Occlusion Handling,” in *Machine Vision Beyond Visible Spectrum*, R.I. Hammoud, G. Fan, R.W. McMillan, and K. Ikeuchi, ed., Augmented Vision and Reality Series, Springer, Berlin, Heidelberg, Jun. 2011, pp. 33-64.
3. G. Fan, X. Fan, V. Venkataraman, and J.P. Havlicek, “Vehicle Tracking and Recognition,” in *Intelligent Video Surveillance: Systems and Technology*, Y. Ma and G. Qian, ed., CRC Press - Taylor & Francis Group, Oxford, Dec. 2009, pp. 149-179.
4. 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.
5. J.P. Havlicek, P.C. Tay, and A.C. Bovik, “AM-FM Image Models: Fundamental Techniques and Emerging Trends,” in *Handbook of Image and Video Processing, 2 ed.*, A.C. Bovik, ed., Elsevier Academic Press, Burlington, MA, 2005, pp. 377-395.
6. M.S. Pattichis, J.P. Havlicek, S.T. Acton, and A.C. Bovik, “Multidimensional AM-FM Models with Image Processing Applications,” in *Advances in Image Processing and Understanding: A Festschrift for Thomas S. Huang*, A.C. Bovik, C.W. Chen, and D. Goldgof, ed., Series in Machine Perception and Artificial Intelligence, vol. 52, World Scientific Publishing, Singapore, 2002, pp. 277-305.
7. M.P. Tull, J.J. Sluss, Jr., and J.P. Havlicek, “Product Demand Forecasting Using Genetic Programming,” in *Fuzzy Engineering Expert Systems with Neural Network Applications*, A.B. Badiru and J.Y. Cheung, John Wiley & Sons, New York, 2002, pp. 274-281.
8. J.P. Havlicek and A.C. Bovik, “Image Modulation Models,” in *Handbook of Image and Video Processing*, A.C. Bovik, ed., Communications, Networking, and Multimedia Series by Academic Press, San Diego, 2000, pp. 305-316.
9. J.P. Havlicek, A.C. Bovik, and D. Chen, “AM-FM Image Modeling and Gabor Analysis,” in *Visual Information Representation, Communication, and Image Processing*, C.W. Chen and Y. Zhang, ed., Optical Engineering Series by Marcel Dekker, Inc., New York, 1999, pp. 343-385.

C. Refereed Conference Papers:

1. H. Soltani, K.K. Muraleetharan, and J.P. Havlicek, “Characterizing dynamics of pile-supported structures using system and subsystem identification methods,” in *Proc. 11th Int’l. Workshop Structural Health Monitoring*, Stanford, CA, Sep. 12-14, 2017, 8 pp.
2. C.T. Nguyen, J.P. Havlicek, Q. Duong, S. Vesely, R. Gress, L. Lindenberg, P. Choyke, J. Holter Chakrabarty, and K. Williams, “An automatic 3D CT/PET segmentation framework for bone marrow proliferation assessment,” in *Proc. IEEE Int’l. Conf. Image Process.*, Phoenix, AZ, Sep. 25-28, 2016, pp. 4126-4130.
3. C.T. Nguyen, J.P. Havlicek, J. Holter Chakrabarty, Q. Duong, and S.K. Vesely, “Towards automatic 3D bone marrow segmentation,” in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Mar. 6-8, 2016, pp. 9-12.
4. J.C. Fuenmayor Bello and J.P. Havlicek, “A state vector augmentation technique for incorporating indirect velocity information into the likelihood function of the SIR video target tracking filter,” in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Mar. 6-8, 2016, pp. 109-112.
5. C.T. Nguyen and J.P. Havlicek, “Color to grayscale image conversion using modulation domain quadratic programming,” in *Proc. IEEE Int’l. Conf. Image Process.*, Québec City, Canada, Sep. 27-30, 2015, pp. 4580-4584.

6. J. Holter Chakrabarty, C.T. Nguyen, J. Havlicek, S.K. Vesely, L. Lindenberg, S. Adler, B.A.J. Blacklock-Schuver, K. Kurdziel, F. Lin, D. Avila, G.B. Selby, J. Mann, J. Hsu, A. Chai, R.B. Epstein, N.Q.T. Duong, S. Li, T. Kraus, S. Hopps, T. Pham, C.M. Bollard, P. Choyke, R. Gress, and K.M. Williams, "Novel imaging analysis of the marrow compartment after myeloablative HSCT reveals the kinetics and degree of myeloablation and cell Recovery," *Proc. 2015 American Society for Blood and Marrow Transplantation (BMT) Tandem Meetings*, San Diego, CA, Feb. 11-15, 2015. Published in *Biology of Blood and Marrow Transplantation*, vol. 21, no. 2, pp. S319-S320, Feb. 2015.
7. C.T. Nguyen, J.P. Havlicek, G. Fan, J.T. Caulfield, and M.S. Pattichis, "Robust dual-band MWIR/LWIR infrared target tracking," in *Proc. IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Nov. 2-5, 2014, pp. 78-83.
8. C.T. Nguyen and J.P. Havlicek, "On the amplitude and phase computation of the AM-FM image model," in *Proc. IEEE Int'l. Conf. Image Process.*, Paris, France, Oct. 27-30, 2014, pp. 4318-4322.
9. C.T. Nguyen and J.P. Havlicek, "Linear adaptive infrared image fusion," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, San Diego, CA, Apr. 6-8, 2014, pp. 117-120.
10. P.A. Campbell and J.P. Havlicek, "Frequency guided phase unwrapping for improved AM-FM reconstruction," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, San Diego, CA, Apr. 6-8, 2014, pp. 129-132.
11. E. Vorakitolan, J.P. Havlicek, R.D. Barnes, and A.R. Stevenson, "Simple, effective rate control for video distribution in heterogeneous intelligent transportation system networks," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, San Diego, CA, Apr. 6-8, 2014, pp. 37-40.
12. 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 Int'l. Conf. Image Process.*, Melbourne, Australia, Sep. 15-18, 2013, pp. 3283-3287.
13. L. Yu, G. Fan, J. Gong, and J.P. Havlicek, "Simultaneous target recognition, segmentation, and pose estimation," in *Proc. IEEE Int'l. Conf. Image Process.*, Melbourne, Australia, Sep. 15-18, 2013, pp. 2655-2659.
14. P.A. Campbell, J.P. Havlicek, A.R. Stevenson, and R.D. Barnes, "Realization of ITS applications through mapping technologies: a survey of advanced traveler information systems," in *Proc. 15th Int'l. IEEE Conf. Intel. Transportation Syst.*, Anchorage, AK, Sep. 16-19, 2012, pp. 788-795.
15. C.T. Nguyen and J.P. Havlicek, "AM-FM models, partial Hilbert transform, and the monogenic signal," in *Proc. IEEE Int'l. Conf. Image Process.*, Orlando, FL, Sep. 30 - Oct. 3, 2012, pp. 2337-2340.
16. N. Mould and J.P. Havlicek, "A stochastic learning algorithm for pixel-level background models," in *Proc. IEEE Int'l. Conf. Image Process.*, Orlando, FL, Sep. 30 - Oct. 3, 2012, pp. 1233-1236.
17. J. Gong, G. Fan, L. Yu, J.P. Havlicek, and D. Chen, "Joint view-identity manifold for target tracking and recognition," in *Proc. IEEE Int'l. Conf. Image Process.*, Orlando, FL, Sep. 30 - Oct. 3, 2012, pp. 1357-1360.
18. N. Mould and J.P. Havlicek, "A conservative scene model update policy," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Apr. 22-24, 2012, pp. 145-148.
19. C.T. Nguyen and J.P. Havlicek, "Gradient-based texture cartoon decomposition," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Apr. 22-24, 2012, pp. 85-88.
20. S. Peddireddy, N. Mould, and J.P. Havlicek, "AM-FM picture carrier beat type noise filters," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Apr. 22-24, 2012, pp. 209-212.
21. C.T. Nguyen, J.D. Williams, J.P. Havlicek, and M. Özaydın, "FM processing with generalized amplitude & phase: application to modulation domain geometric image transformations," in *Proc. IEEE Int'l. Conf. Image Process.*, Brussels, Belgium, Sep. 11-14, 2011, pp. 81-84.
22. E. Vorakitolan, N. Mould, J.P. Havlicek, R.D. Barnes, and A.R. Stevenson, "A low-cost distributed instrumentation system for monitoring, identifying and diagnosing irregular patterns of behavior in critical ITS components," in *Proc. 14th Int'l. IEEE Conf. Intel. Trans-*

- portation Syst., Washington, DC, Oct. 5-7, 2011, pp. 2045-2050.
23. P.A. Campbell, J.R. Junger, J.P. Havlicek, A.R. Stevenson, and R.D. Barnes, "Pathfinder: Oklahoma's advanced traveler information system," in *Proc. 14th Int'l. IEEE Conf. Intel. Transportation Syst.*, Washington, DC, Oct. 5-7, 2011, pp. 402-407.
 24. B.H. Kilani, P.A. Campbell, J.P. Havlicek, M.P. Tull, A.R. Stevenson, and R.D. Barnes, "Peer-based communication for a distributed, virtual Traffic Management Center," in *Proc. 14th Int'l. IEEE Conf. Intel. Transportation Syst.*, Washington, DC, Oct. 5-7, 2011, pp. 2068-2073.
 25. E. Vorakitolan, J.P. Havlicek, M. Atiquzzaman, and R.D. Barnes, "Exploiting trunked radio to support ITS network expansion and redundancy," in *Proc. 22nd IEEE Int'l. Symp. Personal, Indoor, Mobile Radio Comm.*, Toronto, Canada, Sep. 11-14, 2011, pp. 761-766.
 26. 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. 8th Joint IEEE Int'l. Workshop Object Tracking, Class., in and Beyond the Visible Spectrum*, in conjunction with the 2011 IEEE Computer Soc. Conf. Comput. Vision, Pattern Recog., Colorado Springs, CO, Jun. 20-25, 2011, pp. 33-40.
 27. J.T. Caulfield and J.P. Havlicek, "Advanced image processing techniques for extracting regions of interest using multimode IR processing," in *Proc. 39th IEEE Applied Imagery Pattern Recog. Workshop*, Washington, DC, Oct. 13-15, 2010, pp. 238-241.
 28. C.T. Nguyen and J.P. Havlicek, "Modulation domain texture decomposition," in *Proc. IEEE Int'l. Conf. Image Process.*, Hong Kong, Sep. 26-29, 2010, pp. 2741-2744.
 29. M. Shook, J. Junger, N. Mould, and J.P. Havlicek, "Quantifying infrared target signature evolution using AM-FM features," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Austin, TX, May 23-25, 2010, pp. 189-192.
 30. C.T. Nguyen and J.P. Havlicek, "Coherent texture decomposition using AM-FM model," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Austin, TX, May 23-25, 2010, pp. 81-84.
 31. C.T. Nguyen, P.A. Campbell, and J.P. Havlicek, "FM filters for modulation domain image processing," in *Proc. IEEE Int'l. Conf. Image Process.*, Cairo, Egypt, Nov. 7-11, 2009, pp. 3973-3976.
 32. C.M. Johnston, N.A. Mould, and J.P. Havlicek, "Multichannel dual domain infrared target tracking for highly evolutionary target signatures," in *Proc. IEEE Int'l. Conf. Image Process.*, Cairo, Egypt, Nov. 7-11, 2009, pp. 4117-4120.
 33. B.H. Kilani, E. Vorakitolan, J.P. Havlicek, M.P. Tull, and A.R. Stevenson, "Distributed ITS control and the Oklahoma virtual TMC," in *Proc. 12th Int'l. IEEE Conf. Intel. Transportation Syst.*, St. Louis, MO, Oct. 4-7, 2009, pp. 785-790.
 34. J.R. Junger, J.P. Havlicek, R.D. Barnes, and M.P. Tull, "Prediction aggregation of remote traffic microwave sensors speed and volume data," in *Proc. 12th Int'l. IEEE Conf. Intel. Transportation Syst.*, St. Louis, MO, Oct. 3-7, 2009, pp. 672-678.
 35. C.M. Johnston, N. Mould, J.P. Havlicek, and G. Fan, "Dual domain auxiliary particle filter with integrated target signature update," in *Proc. 6th Joint IEEE Int'l. Workshop Object Tracking, Class., in and Beyond the Visible Spectrum*, in conjunction with the 2009 IEEE Computer Soc. Conf. Comput. Vision, Pattern Recog., Miami, FL, Jun. 20-25, 2009, pp. 54-59.
 36. V. Venkataraman, G. Fan, X. Fan, and J.P. Havlicek, "Appearance learning by adaptive Kalman filters for FLIR tracking," in *Proc. 6th Joint IEEE Int'l. Workshop Object Tracking, Class., in and Beyond the Visible Spectrum*, in conjunction with the 2009 IEEE Computer Soc. Conf. Comput. Vision, Pattern Recog., Miami, FL, Jun. 20-25, 2009, pp. 46-53.
 37. C.T. Nguyen and J.P. Havlicek, "AM-FM image filters," in *Proc. IEEE Int'l. Conf. Image Process.*, San Diego, CA, Oct. 12-15, 2008, pp. 789-792.
 38. N.A. Mould, C.T. Nguyen, C.M. Johnston, and J.P. Havlicek, "Online consistency checking for AM-FM target tracks," in *Proc. SPIE/IS&T Conf. Computational Imaging VI*, C.A. Bouman, E.L. Miller, and I. Pollak, ed., *SPIE* v. **6814**, Jan. 26-31, 2008, pp. 681413-1 - 681413-12.
 39. C.T. Nguyen, R.A. Sivley, and J.P. Havlicek, "First results in perceptually-based AM-FM image filtering," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Mar. 24-26, 2008, pp. 77-80.
 40. N.A. Mould, C.T. Nguyen, and J.P. Havlicek, "Infrared target tracking with AM-FM con-

- sistency checks,” in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Mar. 24-26, 2008, pp. 5-8.
41. Y. Wang, L.S. DeBrunner, J.P. Havlicek, and D. Zhou, “Iterative radix-8 multiplier structure based on a novel real-time CSD recoding,” in *Proc. 41st IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Nov. 4-7, 2007, pp. 977-981.
 42. H. Thai, V. DeBrunner, L.S. DeBrunner, J. Havlicek, K. Mish, K. Ford, and A. Medda, “Deterministic-stochastic subspace identification for bridges,” in *Proc. 2007 IEEE Statistical Signal Process. Workshop*, Madison, WI, Aug. 26-29, 2007, pp. 749-753.
 43. C.T. Nguyen, J. Havlicek, and M. Yeary, “Modulation domain template tracking,” in *Proc. 4th Joint IEEE Int’l. Workshop Object Tracking, Class., in and Beyond the Visible Spectrum*, in conjunction with the *2007 IEEE Computer Soc. Conf. Comput. Vision, Pattern Recog.*, Minneapolis, MN, Jun. 17-22, 2007 (8 pages).
 44. R.A. Sivley and J.P. Havlicek, “Perfect reconstruction AM-FM image models,” in *Proc. IEEE Int’l. Conf. Image Process.*, Atlanta, GA, Oct. 8-11, 2006, pp. 2125-2128.
 45. C.T. Nguyen and J.P. Havlicek, “Modulation domain features for discriminating infrared targets and backgrounds,” in *Proc. IEEE Int’l. Conf. Image Process.*, Atlanta, GA, Oct. 8-11, 2006, pp. 3245-3248.
 46. Y. Zhai, M. Yeary, J. -C. Noyer, J. Havlicek, S. Nemati, and P. Lanvin, “Visual target tracking using improved and computationally efficient particle filtering,” in *Proc. IEEE Int’l. Conf. Image Process.*, Atlanta, GA, Oct. 8-11, 2006, pp. 1757-1760.
 47. G. Fan, V. Venkataraman, L. Tang, and J. Havlicek, “A comparative study of boosted and adaptive particle filters for affine-invariant target detection and tracking,” in *Proc. 3rd Joint IEEE Int’l. Workshop Object Tracking, Class., in and Beyond the Visible Spectrum*, in conjunction with the *2006 IEEE Computer Soc. Conf. Comput. Vision, Pattern Recog.*, New York, NY, Jun. 17-22, 2006, p. 138 (8 pages).
 48. J.P. Havlicek, C.T. Nguyen, and M. Yeary, “Modulation domain infrared target models,” in *Targets and Backgrounds XII: Characterization and Representation*, W.R. Watkins and D. Clement, ed., *SPIE v. 6239*, May 4, 2006, pp. 62390D-1 – 62390D-11.
 49. J.P. Havlicek, C.T. Nguyen, G. Fan, and V.B. Venkataraman, “Integration of a dual-band IR data acquisition system using low-cost PV320 cameras,” in *Infrared Technology and Applications XXXII*, B.F. Andersen, G.F. Fulop, and P.R. Norton, ed., *SPIE v. 6206*, May 18, 2006, pp. 62061U-1 – 62061U-9.
 50. K. Suri and J.P. Havlicek, “Phase algorithm for blocking artifact reduction in reconstructions from analysis-only AM-FM models,” in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Denver, CO, Mar. 26-28, 2006, pp. 6-10.
 51. R.A. Sivley and J.P. Havlicek, “A spline-based framework for perfect reconstruction AM-FM models,” in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Denver, CO, Mar. 26-28, 2006, pp. 198-202.
 52. Y. Wang, L.S. DeBrunner, J.P. Havlicek, and D. Zhou, “Signal exclusive adaptive average filter for impulse noise suppression,” in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Denver, CO, Mar. 26-28, 2006, pp. 51-55.
 53. R.C. Huck, J.P. Havlicek, J.J. Sluss, Jr., and A.R. Stevenson, “A low-cost distributed control architecture for intelligent transportation systems deployment in the State of Oklahoma,” in *Proc. 8th Int’l. IEEE Conf. Intel. Transportation Syst.*, Vienna, Austria, Sep. 13-16, 2005, pp. 919-924.
 54. P.C. Tay and J.P. Havlicek, “JPEG 2000 scalar quantization using an optimally frequency localized modulated lapped transform,” in *Proc. IEEE Int’l. Conf. Image Process.*, Genoa, Italy, Sept. 11-14, 2005, vol. I, pp. 93-96.
 55. R.A. Sivley and J.P. Havlicek, “Multidimensional phase unwrapping for consistent APF estimation,” in *Proc. IEEE Int’l. Conf. Image Process.*, Genoa, Italy, Sept. 11-14, 2005, vol. II, pp. 458-461.
 56. Y. Zhai, M. Yeary, J.P. Havlicek, J.-C. Noyer, and P. Lanvin, “Visual tracking using sequential importance sampling with a state partition technique,” in *Proc. IEEE Int’l. Conf. Image Process.*, Genoa, Italy, Sept. 11-14, 2005, vol. III, pp. 876-879.
 57. Y. Zhai, M. Yeary, V. DeBrunner, J.P. Havlicek, and O. Alkhouli, “Image restoration using a hybrid combination of particle filtering and wavelet denoising,” in *Proc. IEEE Int’l. Conf. Image Process.*, Genoa, Italy, Sept. 11-14, 2005, vol. II, pp. 790-793.

58. N. Kitiyanan and J.P. Havlicek, "Modulation domain reference point detection for fingerprint recognition," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Lake Tahoe, NV, Mar. 28-30, 2004, pp. 147-151.
59. D. Zhou, V. DeBrunner, and J.P. Havlicek, "A spatially selective filter based on the undecimated wavelet transform that is robust to noise estimation error," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Lake Tahoe, NV, Mar. 28-30, 2004, pp. 162-166.
60. P.C. Tay and J.P. Havlicek, "Frequency implementation of discrete wavelet transforms," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Lake Tahoe, NV, Mar. 28-30, 2004, pp. 167-171.
61. H. Wen, J. Havlicek, and J. Fagan, "B-value research for FAA LAAS station integrity and fault detection," in *Proc. ION 2004 Nat. Tech. Meeting*, San Diego, CA, Jan. 26-28, 2004, pp. 817-822.
62. G. Mu, J.P. Havlicek, and J. Fagan, "A new position domain algorithm to improve WAAS availability and continuity while maintaining integrity," in *Proc. ION 2004 Nat. Tech. Meeting*, San Diego, CA, Jan. 26-28, 2004, pp. 145-156.
63. J.P. Havlicek, J. Tang, S.T. Acton, R. Antonucci, and F.N. Ouandji, "Modulation domain texture retrieval for CBIR in digital libraries," in *Proc. 37th IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Nov. 9-12, 2003, vol. 2, pp. 1580-1584.
64. P.C. Tay and J.P. Havlicek, "Joint uncertainty measures for maximally decimated M-channel prime factor cascaded wavelet filter banks," in *Proc. IEEE Int'l. Conf. Image Process.*, Barcelona, Spain, Sept. 14-17, 2003, vol. 1, pp. 1033-1036.
65. P. Tay, J.P. Havlicek, and V. DeBrunner, "Discrete wavelet transform with optimal joint localization for determining the number of image texture segments," in *Proc. IEEE Int'l. Conf. Image Process.*, Rochester, NY, Sept. 22-25, 2002, vol. 3, pp. 281-284.
66. M.J. Lipsey and J.P. Havlicek, "On the Teager-Kaiser energy operator 'low frequency error'", in *Proc. 45th IEEE Midwest Symp. Circuits, Syst.*, Tulsa, OK, Aug. 4-7, 2002, vol. 3, pp. 53-56.
67. P. Tay, J.P. Havlicek, and V. DeBrunner, "Image watermarking using wavelets," in *Proc. 45th IEEE Int'l. Symp. Circuits, Syst.*, Tulsa, OK, Aug. 4-7, 2002, vol. 3, pp. 258-261.
68. P. Tay, J.P. Havlicek, and V. DeBrunner, "A novel translation and modulation invariant discrete-discrete uncertainty measure," in *Proc. IEEE Int'l. Conf. Acoust., Speech, Signal Process.*, Orlando, FL, May 13-17, 2002, vol. 2, pp. 1461-1464.
69. P. Tay, J.P. Havlicek, and V. DeBrunner, "A wavelet filter bank which minimizes a novel translation invariant discrete uncertainty measure," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Santa Fe, NM, Apr. 7-9, 2002, pp. 173-177.
70. T.B. Yap, J.P. Havlicek, and V. DeBrunner, "Bayesian segmentation of AM-FM texture images," in *Proc. 35th IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Nov. 4-7, 2001, vol. 2, pp. 1156-1160, (invited paper).
71. C. Zhong and J.P. Havlicek, "LDPC codes for robust transmission of images over wireless channels," in *Proc. 35th IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Nov. 4-7, 2001, vol. 1, pp. 797-800.
72. N. Ray, J. Havlicek, S. Acton, and M. Pattichis, "Active contour segmentation guided by AM-FM dominant component analysis," in *Proc. IEEE Int'l. Conf. Image Process.*, Thessaloniki, Greece, Oct. 7-10, 2001, vol. 1, pp. 78-81.
73. T.B. Yap, T. Tangsukson, P.C. Tay, N.D. Mamuya, and J.P. Havlicek, "Unsupervised texture segmentation using dominant image modulations," in *Proc. 34th IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Oct. 29-31, 2000, vol. 2, pp. 911-915 (invited paper).
74. V. DeBrunner, L. DeBrunner, J. Havlicek, and M. Tull, "Introduction to digital signals and filtering: implementing DSP First at the University of Oklahoma," in *Proc. 9th IEEE DSP Workshop*, Hunt, TX, Oct. 15-18, 2000, 6 pp., (invited paper).
75. J.P. Havlicek, P.C. Tay, and J.J. Sluss, Jr., "Signals and systems: a consistent, unified approach," in *Proc. 30th ASEE/IEEE Frontiers in Education Conf.*, Kansas City, MO, Oct. 18-21, 2000, , vol. 2 pp. F4E/1-F4E/6.
76. T. Tangsukson and J.P. Havlicek, "AM-FM image segmentation," *Proc. IEEE Int'l. Conf. Image Process.*, Vancouver, Canada, Sep. 10-13, 2000, vol. 2, pp. 104-107.
77. V. DeBrunner, M. Özeydin, T. Przebinda, and J. Havlicek, "The optimal solutions to the continuous- and discrete-time versions of the Hirschman uncertainty principle," in

- Proc. IEEE Int'l. Conf. Acoust., Speech, Signal Process.*, Istanbul, Turkey, Jun. 5-9, 2000, vol. 1, pp. 81-84.
78. T. Tangsukson and J.P. Havlicek, "Modulation domain image segmentation," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Austin, TX, Apr. 2-4, 2000, pp. 46-50.
 79. S.D. Sloan, R.W. Saw, J.J. Sluss, M.P. Tull, and J.P. Havlicek, "Genetic algorithm forecasting for telecommunications products," in *Smart Engineering Systems: Neural Networks, Fuzzy Logic, Evolutionary Programming, Data Mining and Complex Systems, Proc. ANNIE 1999*, St. Louis, MO, Nov. 7-10, 1999, ed. C.H. Dagli, *et al.*, ASME Press, Fairfield, NJ, 1999, pp. 361-368.
 80. G. Lezos, M. Tull, J. Havlicek, and J. Sluss, "Predicting the future with the appropriate embedding dimension and time lag," in *Proc. Int'l. Joint Conf. Neural Networks*, Washington, DC, Jul. 10-16, 1999, vol. 4, pp. 2509-2513.
 81. J.P. Havlicek, J.W. Havlicek, N.D. Mamuya, and A.C. Bovik, "Skewed 2D Hilbert transforms and computed AM-FM models," in *Proc. IEEE Int'l. Conf. Image Process.*, Chicago, IL, Oct. 4-7, 1998, vol. 1, pp. 602-606.
 82. J.P. Havlicek, D.S. Harding, N.D. Mamuya, and A.C. Bovik, "Wideband frequency excursions in computed AM-FM image models," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, Tucson, AZ, Apr. 6-7, 1998, pp. 211-216.
 83. J.P. Havlicek, J.W. Havlicek, and A.C. Bovik, "The analytic image," in *Proc. IEEE Int'l. Conf. Image Process.*, Santa Barbara, CA, Oct. 26-29, 1997, vol. 2, pp. 446-449.
 84. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Extracting Essential Modulated Image Structure," in *Proc. 30th IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Nov. 3-6, 1996, vol. 2, pp. 1014-1018 (*invited paper*).
 85. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Discrete quasi-eigenfunction approximation for AM-FM image analysis," in *Proc. IEEE Int'l. Conf. Image Process.*, Lausanne, Switzerland, Sep. 16-19, 1996, vol. 1, pp. 633-636.
 86. J.P. Havlicek, M.S. Pattichis, D.S. Harding, A.C. Christofides, and A.C. Bovik "AM-FM Image Analysis Techniques," in *Proc. IEEE Southwest Symp. Image Anal. & Interp.*, San Antonio, TX, Apr. 8-9, 1996, pp. 195-200.
 87. D.S. Harding, J.P. Havlicek, and A.C. Bovik, "Recent advances in multi-component AM-FM image modeling," in *Proc. 9th IEEE Int'l. Workshop Image, Multidimensional Signal Process.*, Belize City, Belize, March 3-6, 1996, pp. 68-69.
 88. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Reconstruction from the multi-component AM-FM image representation," in *Proc. IEEE Int'l. Conf. Image Process.*, Washington, DC, Oct. 22-25, 1995, vol. 2, pp. 280-283.
 89. J.P. Havlicek, A.C. Bovik, M.D. Desai, and D.S. Harding, "The discrete quasi-eigenfunction approximation", in *Proc. Int'l. Conf. on Digital Signal Process.*, Limassol, Cyprus, June 26-28, 1995, pp. 747-752.
 90. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Multi-component signal demodulation and reconstruction using AM-FM modulation models", in *Proc. 1995 IEEE Workshop Nonlin. Signal and Image Process.*, Neos Marmaras, Halkidiki, Greece, June 20-22, 1995, pp. 41-45.
 91. J.P. Havlicek and A. C. Bovik, "Multi-component AM-FM image models and wavelet-based demodulation with component tracking", in *Proc. IEEE Int'l. Conf. Image Process.*, Austin, TX, Nov. 13-16, 1994, vol. 1, pp. 41-45.
 92. A.C. Bovik, J.P. Havlicek, and M.D. Desai, "Theorems for discrete filtered modulated signals", in *Proc. IEEE Int'l. Conf. Acoust., Speech, Signal Process.*, Minneapolis, MN, Apr. 27-30, 1993, vol. 3, pp. 153-156.
 93. J.P. Havlicek, A.C. Bovik, and P. Maragos, "Modulation models for image processing and wavelet-based image demodulation," in *Proc. 26th IEEE Asilomar Conf. Signals, Syst., Comput.*, Pacific Grove, CA, Oct. 26-28, 1992, vol. 2, pp. 805-810.
 94. T.L. Arnow, B. Pierce, J. Havlicek, and H.G. Longbotham, "Comparison of four methods of image decomposition," in *Proc. Canadian Conference on Electrical and Computer Engineering*, Toronto, Ont., Canada, Sept. 13-16, 1992.
 95. M. Pauli, M. Cordray, J. Havlicek, G. Katz, M. Kruer, K. Sarkady, M. Satyshur, J. Caulfield, J. Hunt, S. Michaels, E. Wilder, R. York, and G. Stamm, "Analysis of recent Fly's Eye IR threat warning sensor measurements," in *Proceedings of the IRIS Symposium on Passive Sensors*, March 1990.

96. G. Katz, M. Kruer, M. Pauli, M. Satyshur, D. Scribner, E. Takken, J. Havlicek, S. Michaels, K. Sarkady, E. Wilder, R. York, J. Caulfield, J. Hunt, K. Norwood, and G. Stamm, "Recent measurements and processed imagery from a dual-band 128x128 mid-wave infrared staring data measurement sensor (Fly's Eye)," in *Proceedings of the IRIS Symposium on Passive Sensors*, March 1989.
97. D.A. Scribner, I.B. Schwartz, D. Ilg, J. Havlicek, M. Pauli, G. Katz, and R. Priest, "3-D LMS filtering techniques for detection of moving targets against clutter backgrounds," in *Proceedings of the IRIS Symposium on Targets, Backgrounds, and Discrimination*, February 1989.

D. Technical Reports:

1. J.P. Havlicek, D.S. Harding, and A.C. Bovik, "Computation of the multi-component AM-FM image representation," Tech. Rept. TR-96-001, Center for Vision and Image Sciences, The University of Texas at Austin, May, 1996.
2. J.P. Havlicek and A. C. Bovik, "AM-FM models, the analytic image, and nonlinear demodulation techniques", Tech. Rept. TR-95-001, Center for Vision and Image Sciences, The University of Texas at Austin, March, 1995.
3. J.P. Havlicek, J.H. Polaha, C.W. Bostian, and J.C. McKeeman, "IBM/Virginia Tech Joint Development Project Final Report on Low-Earth-Orbit Communications Satellites," Doc. Num. 8/05/88, Bradley Dept. Elect. Engr., Virginia Polytechnic Institute and State University, July, 1988.

E. Theses:

1. J.P. Havlicek, "AM-FM image models", *Ph.D. dissertation, The University of Texas at Austin*, 1996.
2. J.P. Havlicek, "Median filtering for target detection in an airborne threat warning system," *M.S. thesis, Virginia Tech*, 1988.

► Short Vita:

Joseph P. Havlicek is the Gerald Tuma Presidential Professor of Electrical & Computer Engineering and the former Williams Companies Foundation Presidential Professor of Electrical & Computer Engineering at the University of Oklahoma. He is director of the OU Center for Intelligent Transportation Systems and is a full member of the OU Institute for Biomedical Engineering, Science, and Technology. He received the B.S. degree in 1986 and the M.S. degree in 1988 in Electrical Engineering from Virginia Tech, Blacksburg, VA, and the Ph.D. degree in Electrical and Computer Engineering in 1996 from the University of Texas at Austin.

From 1984 to 1987, he was with Management Systems Laboratories, Blacksburg, VA, as a software engineer developing decision support software for US DoE nuclear materials management. From 1987 to 1989, he was affiliated with SFA, Inc., Landover, MD, and from 1987 to 1997 he was with the Naval Research Laboratory, Washington, DC, where he worked on infrared missile warning receivers for Navy aircraft, including the Navy's first two-color infrared system. In 1990 he was a recipient of the Department of the Navy Award of Merit for Group Achievement for this work which led to production military systems deployed in both Afghanistan and Iraq. Throughout 1993 he was a programmer-analyst with Ralph Kirkley Associates, Austin, TX, developing image CODECS on-site in the multimedia division of IBM, Austin. He joined the University of Oklahoma as an assistant professor in January, 1997, where he currently holds

the rank of Professor and the Gerald Tuma Presidential Professorship. His research interests include signal, image, and video processing, modulation domain signal processing, target tracking, medical imaging, and intelligent transportation systems. He is author or co-author of over 120 scholarly publications in these areas. Since joining the University of Oklahoma in 1997, he has been PI or co-PI on more than 90 externally funded grants and contracts totaling over \$18M.

Dr. Havlicek is a senior member of the IEEE. He served as a Senior Area Editor of IEEE TRANSACTIONS ON IMAGE PROCESSING from Nov. 2015 through Feb. 2018. Prior to that, he served as an Associate Editor for five years. He is also a past Associate Editor of IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS. He served as Publications Chair on the Organizing Committee of the 2007 IEEE International Conference on Image Processing (ICIP), as a Technical Area Chair for ICIP 2012 and ICIP 2013, and as a Technical Area Chair for the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) in 2012 and 2013. He was a member of the Technical Program Committee of the IEEE Southwest Symposium on Image Analysis and Interpretation from 1998 to 2016 and was a member of the Organizing Committee from 2000 to 2010, serving as General Co-Chair (2010), Technical Program Co-Chair (2004, 2006, 2008), and Publicity Chair (2000, 2002). He was chairman of the Electrical and Computer Engineering Graduate Studies Committee at the University of Oklahoma from 2008 to 2013.

He was recipient of the University of Oklahoma College of Engineering Outstanding Faculty Advisor Award in 2006, the University of Oklahoma College of Engineering Brandon H. Griffith Faculty Award in 2003, the University of Oklahoma IEEE Favorite Instructor Award in 1998 and 2000, and the 1992 University of Texas Engineering Foundation Award for Exemplary Engineering Teaching while Pursuing a Graduate Degree. Dr. Havlicek is a member of Tau Beta Pi, Phi Kappa Phi, and Eta Kappa Nu.

► **Document Last Updated:** 1 July 2018