Curriculum Vitae

Hari Kalva

Professor and Department Chair
Director, Multimedia Lab
Dept. of Electrical Engineering and Computer Science
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1. Education

Columbia University, New York, NY, USA
Ph.D. in Electrical Engineering — May 2000
Advisor: Alex Eleftheriadis

Columbia University, New York, NY, USA
M.Phil. in Electrical Engineering — May 1999

Florida Atlantic University, Boca Raton, FL, USA
M.S.C.E., Master of Science in Computer Engineering — Dec 1994

N.B.K.R. Institute of Science and Technology, S. V. University, Tirupati, India
B.Tech., Electronics and Communications Engineering — May 1991

2. Employment History

Florida Atlantic University, Boca Raton, FL, USA — Aug 2023 – present
Chair, Dept. of Electrical Engineering and Computer Science

Florida Atlantic University, Boca Raton, FL, USA — Aug 2014 – present
Professor, Dept. of Electrical Engineering and Computer Science

Florida Atlantic University, Boca Raton, FL, USA — Aug 2014 – 2023
Associate Chair, Dept. of Electrical Engineering and Computer Science

Videopura, Inc. — Jan 2016 – present
a video streaming company, Founder and CEO

Florida Atlantic University, Boca Raton, FL, USA — Jul 2008 – Jul 2014
Associate Professor, Dept. of Computer & Electrical Engineering and Computer Science

Florida Atlantic University, Boca Raton, FL, USA — Aug 2003 – Jun 2008

Assistant Professor, Dept. of Computer Science and Engineering

Mitsubishi Electric Research Labs, Murray Hill, NJ, USA — Nov 2001 – Aug 2003
Consultant, Video Processing Group

Flavor Software, New York, NY, USA — Jan 2000 – Oct 2001
V.P. of Engineering and Co-founder

I.B.M. T.J. Watson Research Center, Yorktown Heights, NY, USA — May 1998 – Aug 1998
Summer Internship, Image and Video Communications Group

Columbia University, New York, NY, USA — Jan 1995 – Aug 1996
Research Staff Associate, Image and Advanced Television Laboratory

Florida Atlantic University, Boca Raton, FL, USA — Aug 1993 – Dec 1994
Teaching Assistant, Dept. of Computer Science and Engineering

3. Awards and Honors

1. **Florida Inventors Hall of Fame.** A 2025 Inductee to the Florida Inventors Hall of Fame and recognized for "Significant contributions to international standards for video compression, communications, and analytics that have enabled video streaming technologies, fundamentally transforming education, entertainment, and the workplace."
2. **Fellow of the National Academy of Inventors**. The NAI Fellows Selection Committee inducts those who "***have demonstrated a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on the quality of life, economic development, and welfare of society***."
3. **Inventor of patented technology essential for the implementation of the Versatile Video Coding (VVC/H.266)**. 11 US patents essential to the VVC/H.266 standard are part of the Access Advance license pool. VVC based products are expected to see wider distribution in digital TVs, smart phones, and streaming services starting in 2024.
4. **Inventor of patented technology essential for the implementation of ATSC digital TV broadcast, Blu-ray, and MPEG AVC/H.264**. patents essential to these standards are part of multiple license pools licensed to manufacturers of digital TVs, smart phones, tablets, Bluray players, and cable set-top-boxes.
5. **Technology transfer**: Founder of Videopura, a technology startup commercializing research innovations in the area of perceptually optimized video compression.
6. **NSF I/UCRC Technology Breakthroughs 2014**, PI "Automated Asset Management in Data Centers" this project has been included in a National Science Foundation (NSF) publication on breakthrough technologies – *2014 Industry-Nominated Technology Breakthroughs of NSF Industry/University Cooperative Research Centers*
7. **NSF I/UCRC Technology Breakthroughs 2012**, FAU Lead, "Distributed Cloud Computing Study: 3-D Visualization Services for Climate Data on Demand" this project has been included in a National Science Foundation (NSF) publication on breakthrough technologies – *2012 Industry-Nominated Technology Breakthroughs of NSF Industry/University Cooperative Research Centers*

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8 **MPEG Standards Development** (1/97 – 12/99, 1/08 – 12/10): US delegate to the ISO (MPEG, SC29/WG11) standards committees and contributed to the development MPEG-4 Systems and MPEG-7 Visual Signature standards.

9 **Digital Audio Visual Council (DAVIC) Standards** (3/95 – 12/96): Made contributions to the DAVIC standards development with technical proposals, chairing sessions, and e-mail discussions. Participated in the Systems and Interoperability sub-group of DAVIC.

10 FAU 2008 Researcher of the Year (Asst. Professor)

11 ASEE Southeastern Section, 2009 New Faculty Research Award (2nd Place)

12 Best Student Papers Supervised

(i) Bhatt J., Pappusetty, D., Kalva, H., and Naik, M. (2016). "Image Retargeting for Wearable Devices" *In 2016 IEEE International Conference on Consumer Electronics (ICCE), pp.xx-xx, Jan. 2016*. ***Best Student Paper Award.***

(ii) Adzic, V., Hock, H. S., & Kalva, H. (2014, February). Visually lossless coding based on temporal masking in human vision. In *IS&T/SPIE Electronic Imaging* (pp. 90141C-90141C). International Society for Optics and Photonics. ***Best Student Paper Award.***

(iii) Van Leuven S, Kalva H, Van Wallendael G, De Cock J and Van de Walle R (2013). "Joint complexity and rate optimization for 3DTV depth map encoding" *In 2013 IEEE International Conference on Consumer Electronics (ICCE).* ***Special Merit Award.***

13 Lead Guest Editor, Multimedia Tools and Applications, Nov 2015 ***special issue on Visual Information Processing and Perception***

14 Lead Guest Editor, IEEE Transactions on Special Topics in Signal Processing, June 2014 ***special issue on Perception inspired Video processing***

15 Chair and Organizer of special session on Perception Inspired Video Processing at Human Vision and Electronic Imaging (HEVI), SPIE Electronic Imaging, Feb 2014

16 Chair and Organizer of Workshop on Perception Inspired Video Processing, collocated with ACM Multimedia 2014, Orlando, FL, November 2014.

4. Publications in Print

Articles (Journals)

1. Jan, M. T., Garbin, C., Ruetschi, J., Marques, O., & Kalva, H. (2024). Automated patient localization in challenging hospital environments. *Multimedia Tools and Applications*, *83*(23), 63439-63457.
2. Parikh, S. and Kalva, H. (2020). Feature Weighted Linguistics Classifier for Predicting Learning Difficulty Using Eye Tracking. *ACM Transactions on Applied Perception*, Volume 17 Issue 2, May 2020 Article No.: 5pp 1–25https://doi.org/10.1145/3380877
3. Parikh, S. S., Ruiz, D., Kalva, H., Fernández-Escribano, G., & Adzic, V. (2018). High bit-depth medical image compression with HEVC. *IEEE journal of biomedical and health informatics*, *22*(2), 552-560.
4. Prabhakaran, B., Jiang, Y. G., Kalva, H., & Chang, S. F. (2018). Editorial IEEE Transactions on Multimedia Special Section on Video Analytics: Challenges, Algorithms, and Applications. *IEEE Transactions on Multimedia*, *20*(5), 1037-1037.
5. Pappusetty, D., Kalva, H., & Hock, H. S. (2017). Pupil response to quality and content transitions in videos. *IEEE Transactions on Consumer Electronics*, *63*(4), 410-418.
6. Ruiz, D., Fernández-Escribano, G., Adzic, V., Kalva, H., Martínez, J. L., & Cuenca, P. (2017). Fast CU partitioning algorithm for HEVC intra coding using data mining. Multimedia Tools and Applications, 76(1), 861-894.

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7. Garcia, R.; Adzic, V.; Kalva, H., (2017). Adapting Low Bit Rate Skip Mode in Mobile Environment, *Circuits and Systems for Video Technology, IEEE Transactions on*, Vol. 27, No. 2, pp. 352-365, doi: 10.1109/TCSVT.2014.2365653.
8. Kalva, H., Chen, H., Adzic, V., & Fernández-Escribano, G. (2015). Guest Editorial: Visual Information Processing and Perception. *Multimedia Tools and Applications*, *74*(22), 10053-10056.
9. Pantoja, M., Ling, N., Kalva, H., & Lee, J. B. (2015). An efficient VC-1 to H. 264 IPB-picture transcoder with pixel domain processing. Multidimensional Systems and Signal Processing, 26(3), 555-574.
10. Kalva, H., Bovik, A., Chen, H., Egiazarian, K., & Wang, Z. (2014). Introduction to the Issue on Perception Inspired Video Processing. *Selected Topics in Signal Processing, IEEE Journal of*, *8*(3), 355-357.
11. Garcia, R., & Kalva, H. (2014). Subjective evaluation of HEVC and AVC/H. 264 in mobile environments. *Consumer Electronics, IEEE Transactions on*, *60*(1), 116-123.
12. Friedel, R., Figuerola, O., Kalva, H., & Furht, B. (2014). Asset identification using image descriptors. *Multimedia Tools and Applications*, *73*(3), 2201-2221.
13. Adzic V, Kalva H and Furht B (2012). "Optimizing video encoding for adaptive streaming over HTTP" *IEEE Transactions on Consumer Electronics.* 58(2), 397-403.
14. Corrales-Garcia A, Martinez JL, Fernandez-Escribano G, Villalon JM, Kalva H and Cuenca P (2012). "Wyner-Ziv to Baseline H.264 Video Transcoder" *EURASIP Journal on Advances in Signal Processing.* December, 2012. 2012(1), 1-19.
15. Adzic V, Kalva H and Furht B (2011). "A survey of multimedia content adaptation for mobile devices" *Multimedia Tools and Applications.* January, 2011. 51(1), 379-396.
16. Kalva H, Colic A, Garcia A and Furht B (2011). "Parallel programming for multimedia applications" *Multimedia Tools and Applications.* January, 2011. 51(2), 801-818.
17. Fernandez-Escribano G, Kalva H, Martinez JL, Cuenca P, Orozco-Barbosa L and Garrido A (2010). "An MPEG-2 to H.264 Video Transcoder in the Baseline Profile" *IEEE Transactions on Circuits and Systems for Video Technology.* 20(5), 763-768.
18. Paula C, Hari K and Spyros M (2010). "Compression independent reversible encryption for privacy in video surveillance" *EURASIP Journal on Information Security.* 2009(Article {ID} 429581), 1-13.
19. Cuenca P, Kalva H, Fernandez-Escribano G and Martinez JL (2009). "Motion vector refinement in a Wyner-Ziv to H.264 transcoder for mobile telephony" *IET Image Processing.* December, 2009. 3(6), 335-339.
20. Jillani R and Kalva H (2009). "Low complexity intra MB encoding in AVC/H.264" *IEEE Transactions on Consumer Electronics.* 55(1), 277-285.
21. Martinez JL, Weerakkody WaRJ, Fernando WaC, Fernandez-Escribano G, Kalva H and Garrido A (2009). "Distributed Video Coding using Turbo Trellis Coded Modulation" *The Visual Computer.* January, 2009. 25(1), 69-82.
22. Martinez JL, Fernandez-Escribano G, Kalva H, Fernando WAC and Cuenca P (2009). "Wyner-Ziv to H.264 video transcoder for low cost video encoding" *IEEE Transactions on Consumer Electronics.* 55(3), 1453-1461.
23. Fernandez-Escribano G, Kalva H, Cuenca P, Orozco-Barbosa L and Garrido A (2008). "A Fast MB Mode Decision Algorithm for MPEG-2 to H.264 P-Frame Transcoding" *IEEE Transactions on Circuits and Systems for Video Technology.* 18(2), 172-185.
24. Fernandez-Escribano G, Bialkowski J, Gamez JA, Kalva H, Cuenca P, Orozco-Barbosa L and Kaup A (2008). "Low-Complexity Heterogeneous Video Transcoding Using Data Mining" *IEEE Transactions on Multimedia.* 10(2), 286-299.
25. Ferni¡ndez-Escribano G, Cuenca P, Orozco-Barbosa L, Garrido A and Kalva H (2008). "Simple intra prediction algorithms for heterogeneous MPEG-2/H.264 video transcoders" *Multimedia Tools and Applications.* May, 2008. 38(1), 1-25.
26. Kalva H and Kunzelmann P (2008). "Dynamic motion estimation for transcoding P frames in H.264 to MPEG-2 transcoders" *IEEE Transactions on Consumer Electronics.* 54(2), 657-662.

27. Culibrk D, Marques O, Socek D, Kalva H and Furht B (2007). "Neural Network Approach to Background Modeling for Video Object Segmentation" *IEEE Transactions on Neural Networks.* 18(6), 1614-1627.
28. Ferni¡ndez-Escribano G, Kalva H, Cuenca P and Orozco-Barbosa L (2007). "A first approach to speeding-up the inter mode selection in MPEG-2/H.264 transcoders using machine learning" *Multimedia Tools and Applications.* November, 2007. 35(2), 225-240.
29. Kalva H and Lee J-B (2007). "The VC-1 Video Coding Standard" *IEEE MultiMedia.* 14(4), 88-91.
30. Socek D, Magliveras S, Marques O, Kalva H, Furht B and others (2007). "Digital video encryption algorithms based on correlation-preserving permutations" *EURASIP Journal on Information Security.* 2007
31. Socek D, Kalva H, Magliveras SS, Marques O, Culibrk D and Furht B (2007). "New approaches to encryption and steganography for digital videos" *Multimedia Systems.* September, 2007. 13(3), 191-204.
32. Kalva H and Petljanski B (2006). "Exploiting the directional features in MPEG-2 for H.264 intra transcoding" *IEEE Transactions on Consumer Electronics.* 52(2), 706-711.
33. Kalva H (2006). "The H.264 Video Coding Standard" *IEEE MultiMedia.* 13(4), 86-90.
34. Praveenkumar S, Kalva H and Furht B (2006). "Error resilient video over multimedia broadcast multicast services (MBMS)" *Multimedia Tools and Applications.* February, 2006. 28(2), 187-201.
35. Kalva H, Petljanski B and Furht B (2005). "Complexity reduction tools for MPEG-2 to H. 264 video transcoding" *WSEAS Transactions on Information Science & Applications.* 2, 295–300.
36. Kalva H and Furht B (2005). "Complexity Estimation of the H.264 Coded Video Bitstreams" *The Computer Journal.* January, 2005. 48(5), 504-513.
37. Kalva H and Eleftheriadis A (2004). "Algorithms for multiplex scheduling of object-based audio-visual presentations" *IEEE Transactions on Circuits and Systems for Video Technology.* 14(12), 1283-1293.
38. Vetro A, Hata T, Kuwahara N, Kalva H and Sekiguchi S-I (2002). "Complexity-quality analysis of transcoding architectures for reduced spatial resolution" *IEEE Transactions on Consumer Electronics.* 48(3), 515-521.
39. Kalva H, Eleftheriadis A and Zamora J (1999). "Delivering object-based audio-visual services" *IEEE Transactions on Consumer Electronics.* 45(4), 1108-1111.
40. Kalva H, Tang L, Huard JF, Tselikis G, Zamora J, Cheok L-T and Eleftheriadis A (1999). "Implementing multiplexing, streaming, and server interaction for MPEG-4" *IEEE Transactions on Circuits and Systems for Video Technology.* 9(8), 1299-1311.
41. Chang S-F, Eleftheriadis A, Anastassiou D, Jacobs S, Kalva H and Zamora J (1997). "Columbia's VoD and Multimedia Research Testbed with Heterogeneous Network Support" *Multimedia Tools and Applications.* September, 1997. 5(2), 171-184.
42. Kalva H, Chang S-F and Eleftheriadis A (1997). "DAVIC and Interoperability Experiments" *Multimedia Tools and Applications.* September, 1997. 5(2), 119-132.

Articles (Conference Proceedings)

1 Merlos, J., Racapé, F., Choi, H., Ulhaq, M., & Kalva, H. (2025, March). Feature Compression for Machines with Range-Based Channel Truncation and Frame Packing. In *2025 Data Compression Conference (DCC)* (pp. 392-392). IEEE.

2 Eimon, M. E. H., Merlos, J., Perera, A., Kalva, H., Adzic, V., & Furht, B. (2025, January). Enabling Next-Generation Consumer Experience with Feature Coding for Machines. In *2025 IEEE International Conference on Consumer Electronics (ICCE)* (pp. 1-4). IEEE.

3 Jillani, R., Hussain, S.F., and Kalva, H., "Multi-View Clustering for Fast Intra Mode Decision in HEVC," *2020 IEEE International Conference on Consumer Electronics (ICCE)*, 2020, pp. 1-4, doi: 10.1109/ICCE46568.2020.9043106.

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4 Parikh, S., & Kalva, H. (2018, July). Predicting Learning Difficulty Based on Gaze and Pupil Response. In *Adjunct Publication of the 26th Conference on User Modeling, Adaptation and Personalization* (pp. 131-135). ACM.

5 Parikh, S., & Kalva, H. (2018). Eye Gaze Feature Classification for Predicting Levels of Learning. In *Proceedings of the 8th Workshop on Personalization Approaches in Learning Environments (PALE 2018). Kravcik, M., Santos, OC, Boticario, JG, Bielikova, M., Horvath, T. and Torre I.(Eds.). 19th International Conference on Artificial Intelligence in Education (AIED 2018), CEUR workshop proceedings, this volume*.

6 Pappusetty, D., & Kalva, H. (2018). Measuring Video Quality by Eye Response. *Electronic Imaging*, *2018*(14), 1-4.

7 Roheda, S., & Kalva, H. (2017). A multi-scale approach to skin pixel detection. *Electronic Imaging*, *2017*(4), 18-23.

8 Pappusetty, D., Chinta, V. V. R., & Kalva, H. (2017, January). Using pupillary response to assess video quality. In Consumer Electronics (ICCE), 2017 IEEE International Conference on (pp. 64-65). IEEE.

9 Díaz-Honrubia, A., Martínez, J.L., Cuenca, P., and Kalva, H. (2016). A Fast Splitting Algorithm for an H.264/AVC to HEVC Intra Video Transcoder, Data Compression Conference (DCC) 2016.

10 Bhatt J., Pappusetty, D., Kalva, H., and Naik, M. (2016). "Image Retargeting for Wearable Devices" *In 2016 IEEE International Conference on Consumer Electronics (ICCE), pp.xx-xx, Jan. 2016*. **Best Student Paper Award.**

11 Parikh, S., Kalva H., and Adzic, V. (2014). "Evaluation of HEVC Compression for High Bit Depth Medical Images" *In 2016 IEEE International Conference on Consumer Electronics (ICCE), pp.xx-xx, Jan. 2016*.

12 Parikh, S., Ruiz, D., Adzic, V., Kalva H., and Fernandez-Escribano, F. (2016). "Content Dependent Intra Mode Selection for Medical Image Compression Using HEVC" *In 2016 IEEE International Conference on Consumer Electronics (ICCE), pp.xx-xx, Jan. 2016*.

13 Pappusetty, D. & Kalva, H. (2016, March). Reducing inattentional blindness using subliminal cues in visual performance tasks. In *IS&T Electronic Imaging* (pp. XX-xx). **Best Student Paper Award.**

14 Elafoudi, G., Stankovic, V., Stankovic, L., Pappusetti, D., & Kalva, H. (2015, September). Evaluation of Signal Processing Methods for Attention Assessment in Visual Content Interaction. In *New Trends in Image Analysis and Processing--ICIAP 2015 Workshops* (pp. 580-588). Springer International Publishing.

15 Roheda, S., Kalva, H., & Naik, M. (2015, March). Detecting and extracting identifiable information from vehicles in videos. In *IS&T/SPIE Electronic Imaging* (pp. 940705-940705). International Society for Optics and Photonics.

16 Fremuth, A., Adzic, V., & Kalva, H. (2015, March). Parameterized framework for the analysis of visual quality assessments using crowdsourcing. In *IS&T/SPIE Electronic Imaging* (pp. 93940C-93940C). International Society for Optics and Photonics.

17 Pappusetty, D., & Kalva, H. (2014, November). Effect of Subliminal Cueing on In-attentional Blindness. In *Proceedings of the 1st International Workshop on Perception Inspired Video Processing* (pp. 39-40). ACM.

18 Ruiz-Coll, D., Adzic, V., Fernandez-Escribano, G., Kalva, H., Martinez, J. L., & Cuenca, P. (2014, October). Fast partitioning algorithm for HEVC Intra frame coding using machine learning. In *Image Processing (ICIP), 2014 IEEE International Conference on* (pp. 4112-4116). IEEE.

19 Garcia R and Kalva H (2014). "HEVC Inter-frame Skip Enhancement at Low Bit Rates" *In 2014 IEEE International Conference on Consumer Electronics (ICCE), pp.59-60, Jan. 2014*.

20 Torres, F., & Kalva, H. (2014, February). Influence of audio triggered emotional attention on video perception. In *IS&T/SPIE Electronic Imaging* (pp. 901408-901408). International Society for Optics and Photonics.

21 Adzic, V., Hock, H. S., & Kalva, H. (2014, February). Visually lossless coding based on temporal masking in human vision. In *IS&T/SPIE Electronic Imaging* (pp. 90141C-90141C). International Society for Optics and Photonics. **Best Student Paper Award.**

22 Figuerola O, Kalva H, Escudero A, and Agarwal, A. (2014). "Role-based adaptation for video conferencing in healthcare applications" *In Proc. SPIE, Vol.-, Visual Information Processing and Communication V, IS&T/SPIE Electronic Imaging 2014*, Feb. 2014, Accepted.

23 Justo, F., Kalva, H., & Raviv, D. (2014, March). Automatic parking lot occupancy computation using motion tracking. In *IS&T/SPIE Electronic Imaging* (pp. 90260Q-90260Q). International Society for Optics and Photonics.

24 Figuerola Salas, O., Adzic, V., & Kalva, H. (2013, December). Computer & Electrical Engineering and Computer Science, Florida Atlantic University, Boca Raton, USA. In *Picture Coding Symposium (PCS), 2013* (pp. 418-421). IEEE.

25 Mihnea, A., & Kalva, H. (2013, December). An improved algorithm for video compression. In *Picture Coding Symposium (PCS), 2013* (pp. 33-36). IEEE.

26 Adzic, V., Kalva, H., & Furht, B. (2013, December). Temporal visual masking for HEVC/H. 265 perceptual optimization. In *Picture Coding Symposium (PCS), 2013* (pp. 430-433). IEEE.

27 Figuerola Salas, Ó., Adzic, V., Shah, A., & Kalva, H. (2013, October). Assessing internet video quality using crowdsourcing. In *Proceedings of the 2nd ACM international workshop on Crowdsourcing for Multimedia* (pp. 23-28). ACM.

28 Figuerola O and Kalva H (2013). "Architecting Social TV" *In Proc. SPIE. 8856, Applications of Digital Image Processing XXXVI.* 8856, In Press.

29 Garcia R, Ruiz-Coll D, Kalva H and Fernandez-Escribano G (2013). "HEVC Decision Optimization for Low Bandwidth in Video Conferencing Applications in Mobile Environments" *In 2013 IEEE International Conference on Multimedia and Expo (ICME).* , In Press.

30 Garcia R and Kalva H (2013). "Subjective evaluation of HEVC in mobile devices" In *Proc. SPIE. 8667, Multimedia Content and Mobile Devices*, 8667:86670L–86670L–9, 2013. doi:10.1117/12.2003988.

31 Kalva H, Parikh A and Srinivasan A (2013). "Accelerating video carving from unallocated space" In *Proc. SPIE. 8665, Media Watermarking, Security, and Forensics 2013*, 8665:86650H–86650H–4, 2013. doi:10.1117/12.2005743.

32 Adzic V, Kalva H and Furht B (2013). "Exploring visual temporal masking for video compression" *In Proc. 2013 IEEE International Conference on Consumer Electronics (ICCE).* , 590-591.

33 Garcia R and Kalva H (2013). "Human mobile-device interaction on HEVC and H.264 subjective evaluation for video use in mobile environment" *In 2013 IEEE International Conference on Consumer Electronics (ICCE).* , 639-640.

34 Van Leuven S, Kalva H, Van Wallendael G, De Cock J and Van de Walle R (2013). "Joint complexity and rate optimization for 3DTV depth map encoding" *In 2013 IEEE International Conference on Consumer Electronics (ICCE).* , 191-192.

35 Adzic V, Kalva H and Cheok L-T (2012). "Adapting video delivery based on motion triggered visual attention" *In Proc. SPIE. 8499, Applications of Digital Image Processing XXXV.* 8499, 84991L-84991L-6.

36 Adzic V, Kalva H and Furht B (2012). "Content aware video encoding for adaptive HTTP streaming" *In 2012 IEEE International Conference on Consumer Electronics (ICCE).* , 92-93.

37 Justo F, Kalva H and Raviv D (2012). "Health Indicators from Flickr Photos – A Color Based Image Analysis" August, 2012.

38 Kalva H, Adzic V and Furht B (2012). "Comparing MPEG AVC and SVC for adaptive HTTP streaming" *In 2012 IEEE International Conference on Consumer Electronics (ICCE).* , 158-159.

39 Adzic V, Kalva H and Furht B (2011). "Optimized adaptive HTTP streaming for mobile devices" *In Proc. SPIE. 8135, Applications of Digital Image Processing XXXIV 81350T.* 8135, 81350T-81350T-10.

40 Garcia A and Kalva H (2011). "Cloud transcoding for mobile video content delivery" *In 2011 IEEE International Conference on Consumer Electronics (ICCE).* , 379-380.

41 Kalva H, Marques O, Aghera S, Reza W, Giusti R and Rahman A (2011). "Design and Development of a System for Aerial Video Survey of Large Marine Animals" August, 2011.

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42 Kalva H and Cheok L-T (2011). "Enabling Mobile Multimedia with the Cloud" *Multimedia Communications Technical Committee (MMTC), E-Letter.* 6(10), 34-37.
43 Martinez JL, Villalon JM, Parreno JH, Cuenca P and Kalva H (2011). "Ensuring privacy in a Distributed Video Coding surveillance scenario" *In 2011 IEEE International Conference on Consumer Electronics - Berlin (ICCE-Berlin).* , 100-103.
44 Carrillo P, Pin T and Kalva H (2010). "Low complexity H.264 video encoder design using machine learning techniques" *In 2010 Digest of Technical Papers International Conference on Consumer Electronics (ICCE).* , 461-462.
45 Castellanos R, Kalva H, Marques O and Furht B (2010). "Event detection in video using motion analysis" *In Proceedings of the first ACM international workshop on Analysis and retrieval of tracked events and motion in imagery streams. New York, NY, USA* , 57–62.
46 Colic A, Kalva H and Furht B (2010). "Exploring NVIDIA-CUDA for video coding" *In Proceedings of the first annual ACM SIGMM conference on Multimedia systems. New York, NY, USA* , 13–22.
47 Garcia A, Kalva H and Furht B (2010). "A study of transcoding on cloud environments for video content delivery" *In Proceedings of the 2010 ACM multimedia workshop on Mobile cloud media computing. New York, NY, USA* , 13–18.
48 Jillani R, Joshi U, Bhattacharya C, Kalva H and Ramakrishnan RK (2010). "Video coding mode decision as a classification problem" 7543, 75430X-75430X-8.
49 Joshi U, Jillani R, Bhattacharya C, Kalva H and Ramakrishnan KR (2010). "Speedup macroblock mode decision in H.264/SVC encoding using cost-sensitive learning" *In 2010 Digest of Technical Papers International Conference on Consumer Electronics (ICCE).* , 469-470.
50 Marques O, Kalva H, Aghera S, Reza W, Giusti R, Rahman A, McMichael E and Wyneken J (2010). "Automating Aerial Surveys for Sea Turtle Distribution Estimation in Florida East Coast" *Fort Lauderdale, FL, USA*
51 Possos S, Kalva H, Schwartz J and Mendolla M (2010). "Content auditing using video signatures" *In 2010 Digest of Technical Papers International Conference on Consumer Electronics (ICCE).* , 73-74.
52 Reza W, Kalva H and Kaufman R (2010). "Remote gaming on resource-constrained devices" 7798, 77981Q-77981Q-7.
53 Sebastian P and Kalva H (2010). "Accuracy and stability improvement of tomography video signatures" *In 2010 IEEE International Conference on Multimedia and Expo (ICME).* , 133-137.
54 Carrillo P, Kalva H and Pin T (2009). "Low complexity H.264 video encoding" 7443, 74430A-74430A-7.
55 Castellanos R, Kalva H and Shankar R (2009). "Low power DCT using highly scalable multipliers" *In 2009 16th IEEE International Conference on Image Processing (ICIP).* , 1925-1928.
56 Christodoulou L, Kasparis T and Kalva H (2009). "Performance evaluation of the Hypercube based Prediction Algorithm for Multi-View Video Coding" *In 2009 16th International Conference on Digital Signal Processing.* , 1-4.
57 Holder C, Pin T and Kalva H (2009). "Improved machine learning techniques for low complexity MPEG-2 to H.264 transcoding using optimized codecs" *In Digest of Technical Papers International Conference on Consumer Electronics, 2009. ICCE '09.* , 1-2.
58 Kalva H, Fernandez-Escribano G and Kunzelmann K (2009). "Reduced resolution MPEG-2 to H.264 transcoder" 7257, 72571V-72571V-4.
59 Leon G, Kalva H and Furht B (2009). "Video identification using video tomography" *In IEEE International Conference on Multimedia and Expo, 2009. ICME 2009.* , 1030-1033.
60 Martinez JL, Kalva H, Fernando WAC, Cuenca P and Quiles FJ (2009). "Effiecient WZ-to-H264 transcoding using motion vector information sharing" *In IEEE International Conference on Multimedia and Expo, 2009. ICME 2009.* , 1394-1397.
61 Martinez JL, Kalva H, Fernandez-Escribano G, Fernando WAC and Cuenca P (2009). "Wyner-Ziv to H.264 video transcoder" *In 2009 16th IEEE International Conference on Image Processing (ICIP).* , 2941-2944.

62 Martinez JL, Fernandez-Escribano G, Kalva H, Fernando WAC and Garrido A (2009). "Wyner-Ziv to H.264 video transcoder for mobile telephony" *In Digest of Technical Papers International Conference on Consumer Electronics, 2009. ICCE '09.* , 1-2.

63 Possos S, Garcia A, Mendolla M, Schwartz J and Kalva H (2009). "An analysis of independence of video signatures based on tomography" *In IEEE International Conference on Multimedia and Expo, 2009. ICME 2009.* , 698-701.

64 Agarwal A, Iskander C-D, Kalva H and Shankar R (2008). "System-Level Modeling of a NoC-Based H.264 Decoder" *In 2008 2nd Annual IEEE Systems Conference.* , 1-7.

65 Carrillo P, Kalva H and Magliveras S (2008). "Compression independent object encryption for ensuring privacy in video surveillance" *In 2008 IEEE International Conference on Multimedia and Expo.* , 273-276.

66 Escribano GF, Jillani R, Holder C, Kalva H, Martinez JLM and Cuenca P (2008). "Video encoding and transcoding using machine learning" *In Proceedings of the 9th International Workshop on Multimedia Data Mining: held in conjunction with the ACM SIGKDD 2008. New York, NY, USA* , 53–62.

67 Holder C and Kalva H (2008). "H.263 to VP6 video transcoder" 6822, 68222B-68222B-4.

68 Jillani R and Kalva H (2008). "Exploiting spatio-temporal characteristics of human vision for mobile video applications" 7073, 70730N-70730N-15.

69 Kalva H and Furht B (2008). "Architecting ambient intelligence systems" *In Proceedings of the 3rd ACM international workshop on Human-centered computing. New York, NY, USA* , 57–60.

70 Kalva H, Kunzelmann P, Jillani R and Pandya A (2008). "Low Complexity H.264 Intra MB Coding" *In International Conference on Consumer Electronics, 2008. ICCE 2008. Digest of Technical Papers.* , 1-2.

71 Kalva H and Holder C (2008). "Multi-view Video Navigation Using Motion Sensing Remote Controllers" *In International Conference on Consumer Electronics, 2008. ICCE 2008. Digest of Technical Papers.* , 1-2.

72 Leon G, Kalva H and Furht B (2008). "3D Video Quality Evaluation with Depth Quality Variations" *In 3DTV Conference: The True Vision - Capture, Transmission and Display of 3D Video, 2008.* , 301-304.

73 Martinez JL, Holder C, Fernandez GE, Kalva H and Quiles F (2008). "DVC using a half-feedback based approach" *In 2008 IEEE International Conference on Multimedia and Expo.* , 1125-1128.

74 Martinez JL, Fernandez-Escribano G, Kalva H, Weerakkody WARJ, Fernando WAC and Garrido A (2008). "Feedback Free DVC Architecture Using Machine Learning" *In 15th IEEE International Conference on Image Processing, 2008. ICIP 2008.* , 1140-1143.

75 Fernandez-Escribano G, Bialkowski J, Kalva H, Cuenca P, Orozco-Barbosa L and Kaup A (2007). "H.263 to H.264 Transconding using Data Mining" *In IEEE International Conference on Image Processing, 2007. ICIP 2007.* 4, IV - 81-IV - 84.

76 Fernandez-Escribano G, Kalva H, Cuenca P and Orozco-Barbosa L (2007). "Reducing Motion Estimation Complexity in MPEG-2 TO H.264 Transcoding" *In 2007 IEEE International Conference on Multimedia and Expo.* , 440-443.

77 Kalva H, Christodoulou L and Furht B (2007). "Evaluation of 3DTV Service using Asymmetric View Coding Based on MPEG-2" *In 3DTV Conference, 2007.* , 1-4.

78 Kalva H, Shankar R, Patel T and Cruz C (2007). "Resource estimation methodology for multimedia applications" 6504, 65040L-65040L-8.

79 Kalva H and Christodoulou L (2007). "Using machine learning for fast intra MB coding in H.264" 6508, 65082U-65082U-4.

80 Kunzelmann P and Kalva H (2007). "B-Frame Transcoding in H.264 to MPEG-2 Transcoders" *In Proceedings of the IEEE International Symposium on Broadband Multimedia Systems and Broadcasting 2007. Orlando, FL*

81 Kunzelmann P and Kalva H (2007). "Reduced Complexity H.264 to MPEG-2 Transcoder" *In International Conference on Consumer Electronics, 2007. ICCE 2007. Digest of Technical Papers.* , 1-2.

82 Pantoja M, Kalva H and Lee J-B (2007). "P-Frame Transcoding in VC-1 to H.264 Transcoders" *In IEEE International Conference on Image Processing, 2007. ICIP 2007.* 5, V - 297-V - 300.
83 Shankar R, Kalva H, Agarwal A and Jain A (2007). "Annotation Methods and Application Abstractions" *In IEEE International Conference on Portable Information Devices, 2007. PORTABLE07.* , 1-4.
84 Christodoulou L, Mayron LM, Kalva H, Marques O and Furht B (2006). "3D TV using MPEG-2 and H.264 view coding and autostereoscopic displays" *In Proceedings of the 14th annual ACM international conference on Multimedia. New York, NY, USA* , 505–506.
85 Culibrk D, Marques O, Socek D, Kalva H and Furht B (2006). "A neural network approach to bayesian background modeling for video object segmentation." *In VISAPP (1).* , 474–479.
86 Fernandez G, Cuenca P, Barbosa LO and Kalva H (2006). "Very low complexity MPEG-2 to H.264 transcoding using machine learning" *In Proceedings of the 14th annual ACM international conference on Multimedia. New York, NY, USA* , 931–940.
87 Fernandez-Escribano G, Kalva H, Cuenca P and Orozco-Barbosa L (2006). "RD-Optimization for MPEG-2 to H.264 Transcoding" *In 2006 IEEE International Conference on Multimedia and Expo.* , 309-312.
88 Fernandez-Escribano G, Kalva H, Cuenca P and Orozco-Barbosa L (2006). "Speeding-Up the Macroblock Partition Mode Decision in MPEG-2/H.264 Transcoding" *In 2006 IEEE International Conference on Image Processing.* , 869-872.
89 Fernandez-Escribano G, Cuenca P, Orozco-Barbosa L, Garrido A and Kalva H (2006). "Transcodificacion Heterogenea de Video MPEG-2/H. 264. Prediccion Intra-Frame." *In Proceedings of XVII Jornadas de Paralelismo, Albacete, Spain.* September, 2006. , 497-502.
90 Kalva H, Christodoulou L, Mayron L, Marques O and Furht B (2006). "Challenges and Opportunities in Video Coding for 3D TV" *In 2006 IEEE International Conference on Multimedia and Expo.* , 1689-1692.
91 Kalva H, Christodoulou L, Mayron LM, Marques O and Furht B (2006). "Design and evaluation of a 3D video system based on H.264 view coding" *In Proceedings of the 2006 international workshop on Network and operating systems support for digital audio and video. New York, NY, USA* , 12:1–12:6.
92 Lee J-B and Kalva H (2006). "An Efficient Algorithm for VC-1 to H.264 Video Transcoding in Progressive Compression" *In 2006 IEEE International Conference on Multimedia and Expo.* , 53-56.
93 Petjanski B and Kalva H (2006). "DCT domain intra MB mode decision for MPEG-2 to H.264 transcoding" *In International Conference on Consumer Electronics, 2006. ICCE '06. 2006 Digest of Technical Papers.* , 419-420.
94 Sanigepalli P, Kalva H and Furht B (2006). "Adaptive group based intrablock refresh technique for MBMS systems" *In International Conference on Consumer Electronics, 2006. ICCE '06. 2006 Digest of Technical Papers.* , 451-452.
95 Sanigepalli P, Kalva H and Furht B (2006). "Using P2P Networks for Error Recovery in MBMS Applications" *In 2006 IEEE International Conference on Multimedia and Expo.* , 1685-1688.
96 Socek D, Culibrk D, Kalva H, Marques O and Furht B (2006). "Permutation-Based Low-Complexity Alternate Coding in Multi-View H.264/AVC" *In 2006 IEEE International Conference on Multimedia and Expo.* , 2141-2144.
97 Socek D, Kalva H, Magliveras SS, Marques O, Culibrk D and Furht B (2006). "A Permutation-Based Correlation-Preserving Encryption Method for Digital Videos" *In Image Analysis and Recognition.* January, 2006. (4141), 547-558.
98 Kalva H and Furht B (2005). "Hypercube based inter-view prediction for multi-view video coding" *In Proceedings of the 2nd Workshop on Immersive Communication and Broadcast Systems (ICOB).*
99 Sanigepalli P, Kalva H and Furht B (2005). "A improved video codec supporting error resilience and resource adaptation" *In International Conference on Consumer Electronics, 2005. ICCE. 2005 Digest of Technical Papers.* , 311-312.

100 Sanigepalli P, Kalva H and Furht B (2005). "A modified video codec for MBMS applications" *In Proceedings of the 4th international conference on Mobile and ubiquitous multimedia. New York, NY, USA* , 150–157.
101 Socek D, Culibrk D, Marques O, Kalva H and Furht B (2005). "A hybrid color-based foreground object detection method for automated marine surveillance" *In Advanced Concepts for Intelligent Vision Systems.* , 340–347.
102 Asaduzzaman A, Mahgoub I, Sanigepalli P, Kalva H, Shankar R and Furht B (2004). "Cache optimization for mobile devices running multimedia applications" *In IEEE Sixth International Symposium on Multimedia Software Engineering, 2004. Proceedings.* , 499-506.
103 Basso A and Kalva H (2004). "Beyond 3G video mobile conversational services: an overview of 3G-324M based messaging and streaming" *In IEEE Sixth International Symposium on Multimedia Software Engineering, 2004. Proceedings.* , 474-481.
104 Furht B, Kalva H and Marques O (2004). "Wireless Multimedia - Challenges and Applications"
105 Kalva H (2004). "Designing object-based audio-visual content representation format for mobile devices" *In The 2004 47th Midwest Symposium on Circuits and Systems, 2004. MWSCAS '04.* 3, iii-479-82 vol.3.
106 Kalva H (2004). "Error Resilient Transmission of H.264 Video" *Boca Raton, FL, USA*
107 Kalva H (2004). "Issues in H.264/MPEG-2 video transcoding" *In First IEEE Consumer Communications and Networking Conference, 2004. CCNC 2004.* , 657-659.
108 Praveenkumar S, Kalva H and Furht B (2004). "Application of video error resilience techniques for mobile broadcast multicast services (MBMS)" *In IEEE Sixth International Symposium on Multimedia Software Engineering, 2004. Proceedings.* , 507-512.
109 Kalva H, Vetro A and Sun H (2003). "Performance optimization of the MPEG-2 to MPEG-4 video transcoder" 5117, 341-350.
110 Eleftheriadis A, Hong DS and Kalva H (2002). "MPEG-4 systems" 4861, 38-42.
111 Kong H-S, Vetro A, Kalva H, Fu D, Zhang X, Guo J and Sun H (2002). "A Platform for Real-Time Content Adaptive Video Transmission Over Heterogeneous Networks" 4861, 43-49.
112 Vetro A, Hata T, Kuwahara N and Kalva H (2002). "Complexity-quality analysis of MPEG-2 to MPEG-4 transcoding architectures" *In International Conference on Consumer Electronics, 2002. ICCE. 2002 Digest of Technical Papers.* , 130-131.
113 Kalva H and Eleftheriadis A (1999). "Delivering MPEG-4 content" *In Packet Video Workshop. New York, NY, USA*
114 Kalva H, Zamora J and Eleftheriadis A (1999). "Delivering object-based audio visual services" *In International Conference on Consumer Electronics, 1999. ICCE.* , 294-295.
115 Kalva H, Cheok L-T and Eleftheriadis A (1999). "MPEG-4 systems and applications" *In Proceedings of the seventh ACM international conference on Multimedia (Part 2). New York, NY, USA* , 192–.
116 Kalva H, Eleftheriadis A and Chang S-F (1997). "Columbia's Video on Demand Testbed" *In Workshop on Video on Demand, IEEE International Conference on Communications. Montreal, Canada*
117 Kalva H and Furht B (1996). "Techniques for improving the capacity of video-on-demand systems" *In System Sciences, 1996, Proceedings of the Twenty-Ninth Hawaii International Conference on,.* 2, 308–315.
118 Furht B and Kalva H (1995). "Network Architectures for Interactive Television" *In Proceedings of the Third ORSA Telecommunications Conference. Boca Raton, FL*

Books

1 J.B. Lee and H. Kalva, "The VC-I and H.264 Video Compression Standards: For Broadband Video Service", Springer, October 2008.
2 H. Kalva, "Object based Audio Visual Services", Kluwer Academic, 2000.

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Book Chapters

1 Agarwal A, Henehan N, Somashekarappa V, Pandya AS, Kalva H and Furht B (2010). "A Cloud Computing Based Patient Centric Medical Information System" *In Handbook of Cloud Computing.* , 553–573.
2 Joshi KP, Yesha Y, Ozok AA, Yesha Y, Lahane A, Kalva H, Agarwal A and Furht B (2010). "User-centric smart services in the cloud" *In The smart internet.* , 234–249.
3 Carrillo P and Kalva H (2008). "Privacy and Video Surveillance" *In Encyclopedia of Multimedia.* January, 2008. , 732-736.
4 Jillani R and Kalva H (2008). "Scalable Video Coding Standard" *In Encyclopedia of Multimedia.* January, 2008. , 775-781.
5 Kalva H and Furht B (2008). "Hypercube-Based Multi-view Video Coding" *In Encyclopedia of Multimedia.* January, 2008. , 294-299.
6 Kalva H, Christodoulou L, Mayron L, Marques O and Furht B (2008). "Three Dimensional Television Services" *In Encyclopedia of Multimedia.* January, 2008. , 864-868.
7 Praveenkumar S, Kalva H and Furht B (2008). "Mobile Broadcast Multicast Services" *In Encyclopedia of Multimedia.* January, 2008. , 426-428.
8 Praveenkumar S, Kalva H and Furht B (2008). "Video Error Resilience Techniques for MBMS" *In Encyclopedia of Multimedia.* January, 2008. , 918-922.
9 Lee J-B and Kalva H (2006). "Video Coding Techniques and Standards" *In Encyclopedia of Multimedia.* January, 2006. , 872-881.
10 Socek D, Kalva H, Magliveras SS, Marques O, Culibrk D and Furht B (2006). "A permutation-based correlation-preserving encryption method for digital videos" *In Image Analysis and Recognition.* , 547–558.
11 Socek D, Culibrk D, Marques O, Kalva H and Furht B (2005). "A hybrid color-based foreground object detection method for automated marine surveillance" *In Advanced Concepts for Intelligent Vision Systems.* , 340–347.
12 Kalva H, Okuda H, Chang S-F and Eleftheriadis A (1999). "DAVIC and multimedia standards" *In Handbook of Internet and Multimedia: Systems and Applications.* (6), 37.
13 Furht B and Kalva H (1996). "Multimedia Networks" *In Multimedia Systems and Techniques.* , 145–175.

US Patents (Granted)

1	US Patent 12,219,139	Video signal processor for block-based picture processing
2	US Patent 12,192,441	Methods and systems of video coding using reference regions
3	US Patent 12,177,476	Video coding with motion model constrained inter prediction
4	US Patent 12,167,010	Video coding and decoding interprediction using differing spatial resolutions
5	US Patent 12,132,890	Encoder for interprediction in geometric partitioning with an adaptive number of regions
6	US Patent 12,132,921	Block-based adaptive resolution management
7	US Patent 12,108,066	Adaptive resolution management prediction rescaling
8	US Patent 12,101,497	Adaptive resolution management signaling
9	US Patent 12,075,046	Shape adaptive discrete cosine transform for geometric partitioning with an adaptive number of regions
10	US Patent 11,985,343	Global motion models for motion vector inter prediction

11	US Patent 11,985,318	Encoding video with extended long term reference picture retention
12	US Patent 11,943,461	Adaptive resolution management signaling
13	US Patent 11,930,163	Methods and systems for combined lossless and lossy coding
14	US Patent 12,219,139	Video signal processor for block-based picture processing
15	US Patent 11,889,090	Methods and systems for adaptive cropping
16	US Patent 11,889,055	Methods and systems for combined lossless and lossy coding
17	US Patent 11,825,075	Online and offline selection of extended long term reference picture retention
18	US Patent 11,818,390	Decoder for coded pictures having regions with common motion models
19	US Patent 11,812,054	Signaling of global motion vector in picture header
20	US Patent 11,812,053	Adaptive motion vector prediction candidates in frames with global motion
21	US Patent 11,812,044	Signaling of global motion relative to available reference frames
22	US Patent 11,800,137	Efficient coding of global motion vectors
23	US Patent 11,800,125	Block-based adaptive resolution management
24	US Patent 11,792,417	Global motion for merge mode candidates in inter prediction
25	US Patent 11,785,252	Global motion constrained motion vector in inter prediction
26	US Patent 11,785,238	Candidates in frames with global motion
27	US Patent 11,706,410	Methods and systems for combined lossless and lossy coding
28	US Patent 11,695,967	Block level geometric partitioning
29	US Patent 11,695,922	Inter prediction in geometric partitioning with an adaptive number of regions
30	US Patent 11,671,611	Global motion models for motion vector inter prediction
31	US Patent 11,622,105	Adaptive block update of unavailable reference frames using explicit and implicit signaling
32	US Patent 11,611,768	Implicit signaling of adaptive resolution management based on frame type
33	US Patent 11,595,652	Explicit signaling of extended long term reference picture retention
34	US Patent 11,546,597	Block-based spatial activity measures for pictures
35	US Patent 11,516,502	Selective motion vector prediction candidates in frames with global motion
36	US Patent 11,477,469	Adaptive resolution management prediction rescaling
37	US Patent 11,451,810	Merge candidate reorder based on global motion vector
38	US Patent 11,451,800	Methods and systems for adaptive cropping
39	US Patent 11,438,620	Efficient coding of global motion vectors
40	US Patent 11,438,604	Methods and systems for adaptive cropping
41	US Patent 11,438,603	Methods and systems for adaptive cropping
42	US Patent 11,438,594	Block-based picture fusion for contextual segmentation and processing
43	US Patent 11,375,183	Methods and systems for combined lossless and lossy coding
44	US Patent 11,356,660	Methods and systems of video coding using reference regions
45	US Patent 11,284,104	Global motion constrained motion vector in inter prediction

46	US Patent 11,284,100	Candidates in frames with global motion
47	US Patent 11,265,566	Signaling of global motion relative to available reference frames
48	US Patent 11,259,014	Inter prediction in geometric partitioning with an adaptive number of regions
49	US Patent 11,252,433	Signaling of global motion vector in picture header
50	US Patent 11,178,416	Global motion models for motion vector inter prediction
51	US Patent 11,102,498	Block-based adaptive resolution management
52	US Patent 11,055,437	Systems and methods for ensuring privacy in online information sharing applications
53	US Patent 11,006,132	Methods and systems for adaptive cropping
54	US Patent 10,210,907	Systems and methods for adding content to video/multimedia based on metadata
55	US Patent 9,235,917	Systems and methods for video/multimedia rendering, composition, and user-interactivity
56	US Patent 8,922,717	Object-based audio-visual terminal and bitstream structure
57	US Patent 8,917,357	Object-based audio-visual terminal and bitstream structure
58	US Patent 8,782,713	Systems and methods for encoding multimedia content
59	US Patent 8,531,608	Object-based audio-visual terminal and bitstream structure
60	US Patent 8,421,923	Object-based audio-visual terminal and bitstream structure
61	US Patent 8,363,716	Systems and methods for video/multimedia rendering, composition, and user interactivity
62	US Patent 8,189,664	Methods for encrypting and compressing video
63	US Patent 8,115,873	Object-based audio-visual terminal and bitstream structure
64	US Patent 8,046,338	System and method of organizing data to facilitate access and streaming
65	US Patent 7,428,547	System and method of organizing data to facilitate access and streaming
66	US Patent 7,199,836	Object-based audio-visual terminal and bitstream structure
67	US Patent 7,149,770	Method and system for client-server interaction in interactive communications using server routes
68	US Patent 6,751,623	Flexible interchange of coded multimedia facilitating access and streaming
69	US Patent 6,292,805	System and method for processing object-based audiovisual information
70	US Patent 6,092,107	System and method for interfacing MPEG-coded audiovisual objects permitting adaptive control
71	US Patent 6,079,566	System and method for processing object-based audiovisual information

Foreign Patents (Granted)

1 CA 2257577 C System and method for interfacing mpeg-coded audiovisual objects permitting adaptive control
2 CA 2257578 C System and method for processing object-based audiovisual information
3 CA 2281538 C Object-based audio-visual terminal and bitstream structure
4 DE 69835039 D1 Object-based audiovisual terminal and corresponding bitstream structure

5 DE 69835039 T2 Object-based audiovisual terminal and corresponding bitstream structure
6 EP 1209915 B1 Object-based audio-visual terminal and corresponding bitstream structure
7 EP 2338278 B1 Method for presenting an interactive video/multimedia application using content-aware metadata
8 ES 2266396 T3 Audio terminal – visual based on objects and flow structure of corresponding bits
9 JP 4393591B2 Object-based audio-visual terminal and corresponding bitstream structure
10 JP 4194240 Method and system for client-server interaction in conversational communication
11 LI 1209915 Object-based audio-visual terminal and corresponding bitstream structure
12 SE 1209915 Object-based audio-visual terminal and corresponding bitstream structure
13 IT 1209915 Object-based audio-visual terminal and corresponding bitstream structure
14 GB 1209915 Object-based audio-visual terminal and corresponding bitstream structure
15 FR 1209915 Object-based audio-visual terminal and corresponding bitstream structure
16 FI 1209915 Object-based audio-visual terminal and corresponding bitstream structure
17 CH 1209915 Object-based audio-visual terminal and corresponding bitstream structure
18 EP-2338278-B1 Method for presenting an interactive video/multimedia application using content-aware metadata

Contributions to International Standards Development (Un-refereed)

ISO Document #	Meeting	Title	Authors
1. m1619	38 - Sevilla	A Proposed Architecture for an Object-Based Audio-Visual Bitstream and Terminal	A. Eleftheriadis, H. Kalva
2. m2062	39 - Bristol	Stored File Format for MPEG-4	H. Kalva, A. Eleftheriadis, A. Puri, R. Schmidt
3. m2133	39 - Bristol	APIs for MPEG-4 Systems	A. Puri, R. L. Schmidt, A. Eleftheriadis, H. Kalva, Y. Fang
4. m2536	40 - Stockholm	Stored File Format for MPEG-4 (Rev. 2.0)	A. Eleftheriadis, H. Kalva, A. Puri, R. Schmidt
5. m2978	42 - San Jose, CA	MPEG-4 Integrated Intermedia Fomat(IIF): Basic specification	A. Basso, A. Eleftheriadis, R. L. Schmidt, H. H. Kalva, A. Puri
6. m2979	42 - San Jose, CA	Flexible-IIF: A Conceptual Framework for Intermedia Development in MPEG-4	A. Basso, A. Eleftheriadis, A. Puri, R. L. Schmidt, H. Kalva

ISO Document #	Meeting	Title	Authors
7. m3188	42 - San Jose, CA	AL Packetized Elementary Stream Format	H. Kalva, A. Eleftheriadis, A. Basso, A. Puri, R. Schmidt
8. m3189	42 - San Jose, CA	Syntax and Semantics of Control Messages for User Interaction	H. Kalva, A. Eleftheriadis
9. m3190	42 - San Jose, CA	Software Implementation of the MPEG-4 Intermedia Format Proposal from Columbia University and AT&T Research	H. Kalva, A. Eleftheriadis
10. m3455	43 - Tokyo	Input for development of MP4 File Format	A. Eleftheriadis, A. Basso, H. Kalva, A. Puri, R. L. Schmidt
11. m4092	45 - Atlantic City, NJ	MPEG-4 Remote Interactive Application through IP Networks: Demonstration Outline	Javier Zamora, Lai-Tee Cheok, Alexandros Eleftheriadis, Hari Kalva, Li Tang
12. m4269	46 - Rome	Using Command Descriptors	Hari Kalva, Alexandros Eleftheriadis
13. m4270	46 - Rome	Implementation/Demonstration of Command Descriptor Framework	Hari Kalva, Lai-Tee Cheok, Aizaz Akhtar, Javier Zamora, Alexandros Eleftheriadis
14. m4431	47 - Seoul	Implementation of Command Descriptor and CommandDescriptorNode	H. Kalva, A. Akhtar, A. Eleftheriadis, J. Zamora
15. m4905	48 - Vancouver, BC	Command Node Implementation	Hari Kalva, Aizaz Akhtar, Alexandros Eleftheriadis
16. m5687	51 - Noordwijkerhout	Implementation of ServerCommand Node in the IM1 Framework	Aizaz Akhtar, Hari Kalva, Alexandros Eleftheriadis
17. m16480	88 - Maui, HI	Evaluation of Video Signature Based on Tomography	Hari Kalva, Sebastian Possos
18. m16494	88 - Maui, HI	Verification of the Proposed MPEG-7 Video Signature Tools	Sebastian Possos, Hari Kalva

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19. m58871	137 - OnLine	VCM Anchors Generation Using a Faster VVC Encoder (VVEnC)	Md Eimran Hossain Eimon (FAU), Ashan Perera (FAU), Hari Kalva (FAU), Velibor Adzic (OPS), Borko Furht (FAU)
20. m60743	140 - Mainz	[VCM] Response to VCM CfP from the Florida Atlantic University and OP Solutions	Hari Kalva, Velibor Adzic, Borko Furht, Alena Krause, Md Eimran Hossain Eimon, Ashan Perera
21. m60776	140 - Mainz	[VCM] Additional results using the FAU/OPS solution for VCM	Hari Kalva, Velibor Adzic, Borko Furht, Alena Krause, Md Eimran Hossain Eimon, Ashan Perera
22. m61448	140 - Mainz	[VCM] Response to VCM CfP from the Florida Atlantic University and OP Solutions	Hari Kalva, Velibor Adzic, Borko Furht, Alena Krause, Md Eimran Hossain Eimon, Ashan Perera
23. m61449	140 - Mainz	[VCM] Additional results using the FAU/OPS solution for VCM	Hari Kalva, Velibor Adzic, Borko Furht, Alena Krause, Md Eimran Hossain Eimon, Ashan Perera
24. m64443	143 - Geneva	[VCM] Containerized VCM Reference Software	Ashan Perera, Hari Kalva, Velibor Adzic
25. m64444	143 - Geneva	[VCM] Study of DCT-Based Filtering for Improving Machine Task Performance	Juan Merlos, Hari Kalva, Velibor Adzic, Borko Furht
26. m65435	144 - Hannover	[FCVCM] Low complexity and Vision Model agnostic response to the FCVCM Call for Proposal	E. Eimon, F. Racapé, H. Choi (InterDigital), H. Kalva (FAU), V. Adzic (OP Solutions)

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27. m65436	144 - Hannover	[FCVCM] Comments on FCVCM standard requirements	F. Racapé, H. Choi, E. Eimon (InterDigital), H. Kalva (FAU), V. Adzic (OP Solutions),
28. m65468	144 - Hannover	[FCVCM] Content Adaptive Multi-Scale Feature Layer Filtering - Response to the FCVCM Call for Proposal	H. Kalva (FAU), B. Furht (FAU), J. Merlos (FAU), R. Kalahasthi Chenchu, A. Perera (FAU), M. Ahmadi (FAU), V. Adzic (OP Solutions), F. Racapé (InterDigital)
29. m65469	144 - Hannover	[VCM] Study of DCT-Based Filtering for Improving Machine Task Performance	H. Kalva (FAU), B. Furht (FAU), J. Merlos (FAU), V. Adzic (OP Solutions)
30. m65710	144 - Hannover	[FCVCM] Content Adaptive Multi-Scale Feature Layer Filtering - Response to the FCVCM Call for Proposal	H. Kalva, B. Furht, J. Merlos, R. Kalahasthi Chenchu, A. Perera, M. Ahmadi, V. Adzic, F. Racapé
31. m65711	144 - Hannover	[FCVCM] Low complexity and Vision Model agnostic response to the FCVCM Call for Proposal	E. Eimon, F. Racapé, H. Choi (InterDigital), H. Kalva (FAU), V. Adzic (OP Solutions)
32. m65713	144 - Hannover	[FCVCM] Comments on FCVCM standard requirements	F. Racapé, H. Choi, E. Eimon (InterDigital), H. Kalva (FAU), V. Adzic (OP Solutions),
33. m66688	145 - OnLine	[FCM] Report for CE2.3.2 – Layer Scaling	A. Perera, J. Merlos, R. Kalahasthi Chenchu, H. Kalva, V. Adzic, B. Furht
34. m66689	145 - OnLine	[FCM] Report for CE2.2.1 – Size-based Layer Removal	J. Merlos, A. Perera, H. Kalva, V. Adzic, B. Furht
35. m67498	146 - Rennes	[FCM] CE2-Related: Reconstruction Refinement	Md Eimran Hossain Eimon, Hari Kalva, Velibor Adzic, Borko Furht

ISO Document #	Meeting	Title	Authors
36. m67499	146 - Rennes	[FCM] CE2-Related: Feature Map Targeted Region of Interest Encoding	Juan Merlos, Hari Kalva, Velibor Adzic, Borko Furht
37. m67500	146 - Rennes	[FCM] Crosscheck of CE 2.1.2	Ashan Perera, Hari Kalva, Borko Furht
38. m67973	146 - Rennes	[FCM] Crosscheck of m67766	Md Eimran Hossain Eimon, Hari Kalva, Borko Furht
39. m68657	147 - Sapporo	[VCM] Redundancy Removal Method	Ashan Perera, Hari Kalva, Velibor Adzic, Borko Furht
40. m68658	147 - Sapporo	[FCM] Crosscheck of Channel Removal method	Ashan Perera, Hari Kalva, Velibor Adzic, Borko Furht
41. m68662	147 - Sapporo	[FCM] CE 4.2a Report: Reconstruction Refinement (ReRef) on Input Feature Tensor	Md Eimran Hossain Eimon, Velibor Adzic, Hari Kalva, Borko Furht
42. m68663	147 - Sapporo	[FCM] CE 4.2b Report: Reconstruction Refinement (ReRef) on Fused Feature Tensor	Md Eimran Hossain Eimon, Velibor Adzic, Hari Kalva, Borko Furht
43. m68664	147 - Sapporo	[FCM] CE 4.2c Report: Reconstruction Refinement (ReRef) on Input & Fused Feature Tensor	Md Eimran Hossain Eimon, Velibor Adzic, Hari Kalva, Borko Furht
44. m68665	147 - Sapporo	[FCM] Crosscheck Report of CE 4.1a: Energy Compensation Scaling (ECS)	Md Eimran Hossain Eimon, Velibor Adzic, Hari Kalva, Borko Furht
45. m69367	147 - Sapporo	[FCM] Crosscheck Report of Simplified Refinement - m68391 (Test A & Test B)	Md Eimran Hossain Eimon, Velibor Adzic, Hari Kalva, Borko Furht
46. m70006	148 - Kemer	[FCM] Crosscheck of FCM/VCM comparison	Juan Merlos, Ashan Perera, Hari Kalva, Velibor Adzic, Borko Furht
47. m70008	148 - Kemer	[FCM] Comments on the comparisons between FCM and VCM	Juan Merlos, Ashan Perera, Hari Kalva,

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ISO Document #	Meeting	Title	Authors
			Velibor Adzic, Borko Furht
48. m70009	148 - Kemer	[VCM] Study of VCM performance with Vision Transformer	Vaishnavi Dhulipudi, Juan Merlos, Hari Kalva, Velibor Adzic, Borko Furht,
49. m70011	148 - Kemer	[VCM] Redundancy Removal Method updated	Ashan Perera, Hari Kalva, Velibor Adzic, Borko Furht,
50. m70012	148 - Kemer	[VCM] Preliminary comparison of VCM and AhG8	Ashan Perera, Hari Kalva, Velibor Adzic, Borko Furht,
51. m70013	148 - Kemer	[VCM] Reduction-only performance of VCM	Ashan Perera, Hari Kalva, Velibor Adzic, Borko Furht,
52. m70016	148 - Kemer	[FCM] [CE4-related] Temporally Consistent Feature Conversion (TCFC)	Md Eimran Hossain Eimon, Hari Kalva, Velibor Adzic, Borko Furht
53. m70017	148 - Kemer	[FCM] Cross-check Report on Selective Temporal Upsampling Activation Method	Md Eimran Hossain Eimon, Hari Kalva, Velibor Adzic, Borko Furht,
54. m70018	148 - Kemer	[FCM] Cross-check Report on Updated CTTC PPs for TVD and HiEVE	Md Eimran Hossain Eimon, Hari Kalva, Velibor Adzic, Borko Furht,
55. m70435	148 - Kemer	[FCM] Crosscheck of m70200; CE4.2.3 with Refresh Period set to Intra Period	Juan Merlos, Hari Kalva, Velibor Adzic, Borko Furht
56. m70579	148 - Kemer	FCM:Cross-check of fallback mode in FCTM (m70048)	Md Eimran Hossain Eimon, Hari Kalva, Velibor Adzic, Borko Furht

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ISO Document #	Meeting	Title	Authors
57. m71045	149 - Geneva	[FCM] CE4.3.3 Report: Temporally Consistent Feature Conversion (TCFC)	Md Eimran Hossain Eimon (FAU), Hari Kalva (FAU), Velibor Adzic (OP Solutions), Borko Furht (FAU)
58. m71543	149 - Geneva	[FCM] FCM project timeline	C. Rosewarne (Canon), Y. Zhang (China Telecom), S. Y. Jeong (ETRI), H. Kalva (Florida Atlantic Univ.), H. Han (Hanbat National Univ.), F. Racape (InterDigital), H. Yong (Kyung Hee Univ.), V. Adzic (OP Solutions), T. Ji (Sharp)
59. m71603	149 - Geneva	[VCM] Comparison of VCM and AhG8	Ashan Perera (Florida Atlantic University), Juan Merlos (Florida Atlantic University), Hari Kalva (Florida Atlantic University), Velibor Adzic (OP Solutions), Borko Furht (Florida Atlantic University)

5. Litigation Consulting

1 Samsung (petitioner) vs. M&K Holdings (patent owner), IPR2018-00696, IPR2018-00697, IPR2018-00698, expert witness for the patent owner

2 Unified Patents vs Korean Broadcasting System ("KBS") and Korea Advanced Institute of Science and Technology ("KAIST") (patent owners), May 2019, expert witness for the patent owners

3 DivX, LLC v. Harman International Industries, Inc. (defendants), Case No. 656816/2021 (Supreme Court of New York, County of New York: Commercial Division) – filed December 6, 2021. Expert witness for the defendants.

4 Advance Coding Technologies LLC (patent owners) v. Bytedance Ltd., Case No. 2:22-cv-00129-JRG (E.D. Tex.) – filed April 29, 2022 (dismissed/settled), Expert witness for the patent owners.

5 Advance Coding Technologies LLC (patent owners) v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., Case No. 2:22-cv-00499-JRG (E.D. Tex.) – filed December 30, 2022, Expert witness for the patent owners.

6 Advance Coding Technologies LLC (patent owners) v. LG Electronics Inc. and LG Electronics U.S.A., Inc., Case No. 2:22-cv-00501-JRG (E.D. Tex.) – filed December 30, 2022, Expert witness for the patent owners.
7 JAMS Arbitration No. 5240000886, DivX, LLC (Claimant) vs. Mitsubishi Electric Corporation (Respondent). Expert witness for the respondent.
8 Consulting for Fenwick & West on a patent litigation matter, regarding DivX, LLC v. Amazon.com, Inc. and Amazon Web Services, Inc., 1:24-cv-02061-CMH-LRV.

6. Graduate Student Supervision

Ph.D. Dissertations Supervised to Completion

1 Parikh, S (2017). "Predicting Levels of Learning with Eye Tracking". *Dissertation at: Florida Atlantic University. United States – Florida*
2 Pappusetty, D (2017). "Analysis of Eye Response to Video Quality and Structure". *Dissertation at: Florida Atlantic University. United States – Florida*
3 Adzic, V (2014). "Perceptual Methods for Video Coding". *Dissertation at: Florida Atlantic University. United States – Florida*
4 Garcia, R. (2014). "HEVC Optimization in Mobile Environments". *Dissertation at: Florida Atlantic University. United States – Florida*
5 Jillani RM (2011). "Low complexity Scalable Video Encoding". *Dissertation at: Florida Atlantic University. United States – Florida*
6 Sanigepalli P (2005). "Innovative video error resilient techniques for MBMS systems". *Dissertation at: Florida Atlantic University. United States -- Florida*

Ph.D. Dissertations Currently Supervising

1 Eimran Eimon
2 Juan Merlos
3 Suvosree Chatterjee
4 Hadise Pishdast
5 Paulina Devito
6 Vishnu Chinta

M.S. Theses Supervised to Completion

1 Chinta, V. (2017). "Multimedia Big Data Processing Using HPCC Systems". *Thesis at: Florida Atlantic University. United States -- Florida*
2 Escudero, A (2014). "People counting and density estimation using public cameras". *Thesis at: Florida Atlantic University. United States -- Florida*
3 Justo F (2013). "Automatic parking lot occupancy calculations using motion tracking". *Thesis at: Florida Atlantic University. United States -- Florida*
4 Torres F (2013). "Exploiting audio-visual attention for video coding". *Thesis at: Florida Atlantic University. United States -- Florida*
5 Friedel RU (2012). "Asset identification using image descriptors". *Thesis at: Florida Atlantic University. United States -- Florida*

6 Aghera S (2011). "Design and development of video acquisition system for aerial surveys of marine animals". *Thesis at: Florida Atlantic University. United States -- Florida*
7 Castellanos Jimenez RA (2010). "Event detection in surveillance video". *Thesis at: Florida Atlantic University. United States -- Florida*
8 Possos Medellin S (2010). "Signature system for video identification". *Thesis at: Florida Atlantic University. United States -- Florida*
9 Reza W (2010). "Remote gaming on resource constrained devices". *Thesis at: Florida Atlantic University. United States -- Florida*
10 Carrillo P (2008). "Low complexity H.264 video encoder design using machine learning techniques". *Thesis at: Florida Atlantic University. United States -- Florida*
11 Holder C (2008). "Video transcoding using machine learning". *Thesis at: Florida Atlantic University. United States -- Florida*
12 Leon GA (2008). "Content identification using video tomography". *Thesis at: Florida Atlantic University. United States -- Florida*

Advisor to Visiting Scholars

1 Gerardo Fernandez, University of Castilla La Mancha, Albacete, Spain, Sept. 2005 to Nov. 2006.
2 Jose Luis Martinez, University of Castilla La Mancha, Albacete, Spain, Aug. 2007 to May. 2008.
3 Chunyan Dou, Beijing University of Post and Telecommunications, Beijing, China, Oct. 2007 to April 2008.
4 Trushal Thakar, Nirma University, Ahmadabad, India, Sept. 2007 to May 2008.
5 Sebastian Van Leuven, University of Ghent, Belgium, Sept to Dec 2011.
6 Damian Ruiz Coll, University of Castilla La Mancha, Spain, June to Sept 2012
7 Damian Ruiz Coll, University of Castilla La Mancha, Spain, June to Sept 2012
8 Georgia Elfoudi, University of Starthclyde, Glasgow, Scotland, Sept to Dec 2014
9 Antonio Jesus Diaz Honrubia, University of Castilla La Mancha, Spain, Sept to Dec 2015

Member of Ph.D. Committees

1 Edin Muharemagic (Nov 2004)
2 Nyeongkyu Kwon (External examiner, Aug 2005, University of Victoria, Victoria, Canada)
3 Daniel Socek (Aug 2006)
4 Hyun-Ho Jeon (External examiner, June 2007, University of Victoria, Victoria, Canada)
5 Liam Mayron (May 2008)
6 Branko Petljanski (May 2010)
7 Ivana Ilic (Nov 2010, Dept. of Mathematical Sciences, Florida Atlantic University)
8 Amy Mihnea (Dec 2011, Dept. of Mathematical Sciences, Florida Atlantic University)
9 Diego Pava (May 2015)
10 David Jaramillo (Dec 2014)
11 Joel Gibson (May 2015)
12 Esfandiar Zolghadr
13 Gary Croucher
14 Walter Britton
15 Carlos Garrafa
16 Oscar Lopez (Dept. of Mathematical Sciences, FAU)

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Member of MS Thesis Committees

1 Pierre Baillargeon (Aug 2005)
2 Chetan Thakker (Aug 2005)
3 Joel Gibson (Dec 2008)
4 Jens Mangs (Dec 2008)
5 Chris Thoman (June 2009)
6 Adriana Garcia (July 2010)
7 Francisco Amador (July 2010)

7. Professional Service

Conference and Workshop Organization

1 Chair, Special Session on Perception Inspired Video Processing, Human Vision and Electronic Imaging Conference, SPIE Electronic Imaging, Feb 2014.

2 Chair, *Image and Video Codecs track, International Conference on Consumer Electronics (ICCE)*, Las Vegas, NV, USA, Jan 2010.

3 Finance Chair, *International Workshop on Multimedia Signal Processing (MMSP)*, Rio de Janeiro, Brazil, Oct. 2009.

4 Co-chair, *Image and Video Codecs track, International Conference on Consumer Electronics (ICCE)*, Las Vegas, NV, USA, Jan 2009.

5 Co-chair, *Image and Video Codecs track, International Conference on Consumer Electronics (ICCE)*, Las Vegas, NV, USA, Jan 2008.

6 Finance Co-chair, *International Workshop on Multimedia Signal Processing (MMSP)*, Crete, Greece, Oct 2007.

7 Co-chair, *Image and Video Codecs track, International Conference on Consumer Electronics (ICCE)*, Las Vegas, NV, USA, Jan 2007.

8 Program Vice Co-Chair, *Image and Video Processing Track, IEEE International Symposium on Multimedia (ISM)*, San Diego, CA, USA, Dec 2006.

9 Chair, *Special Session on X to H.264 Transcoding*, *International Conference on Multimedia and Expo (ICME)* 2006, Toronto, Canada, Jul 2006.

10 Co-chair, Image and Video Processing track, *International Conference on Consumer Electronics (ICCE)*, Las Vegas, NV, USA, January 2006 .

11 Tutorials Chair, *Image and Video Processing Track, IEEE International Symposium on Multimedia (ISM)*, Irvine, CA, USA, Dec 2005.

12 Co-chair, *Workshop on Mobile Multimedia*, collocated with the *Sixth International Symposium on Multimedia Software Engineering*, Miami, FL, USA, Dec 2004.

13 Co-Organizer, *The First DAVIC Interoperability Event*, Columbia University, New York, NY, USA, Jun 1996.

14 Demos chair, *Workshop on Video On Demand Systems*, Columbia University, New York, NY, USA, Jun 1996.

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Editorship of Journals and Books

1. Lead Guest Editor, Multimedia Tools and Applications, Nov 2015 ***special issue on Visual Information Processing and Perception***
2. Lead Guest Editor, IEEE Journal on Selected Topics in Signal Processing, Special Issue on Perception Inspired Video Processing.
3. Member of the Editorial Board, *Multimedia Tools and Applications Journal* (Springer), 2009 - present.
4. Member of the Editorial Board of Hindawi's *Advances in Multimedia* Oct. 2008 – 2018.
5. Member of the Editorial Board of Elsevier's *Signal Processing: Image Communication* journal Oct. 2006 – 2010.
6. Member of the Editorial Board of *Recent Patents on Electrical Engineering*, Bentham Science Publishers Ltd. Aug 2007 – 2018.
7. Guest Editor, Special Issue on H.264 Transcoding, *Multimedia Tools and Applications Journal* (Springer), 2007.
8. Member of the Editorial Board of *Encyclopedia of Multimedia*, Springer, 2006.
9. Member of the Editorial Board, *Journal of Multimedia*, Academy Publishers, 2006 - present.
10. Guest Editor, Special Issue on Mobile Multimedia, *Multimedia Tools and Applications Journal* (Springer), 2006.
11. Member of the Editorial Board of the *Communications Interactive*, the online publication of the IEEE Communication Society. 1999-2000.

Member of Technical Program Committee of Conferences

1. IEEE International Conference on Consumer Electronics (ICCE), 2003-present
2. SIGMAP 2009, the International Conference on Signal Processing and Multimedia Applications
3. MUE 2009, The 3rd International Conference on Multimedia and Ubiquitous Engineering
4. UNESST 2008, First International Conference on u- and e- Service, Science and Technology, December 13 ~ 15, 2008, Hainan Island, China.
5. SIGMAP 2008, the International Conference on Signal Processing and Multimedia Applications
6. MUE 2008, The 2nd International Conference on Multimedia and Ubiquitous Engineering
7. SIGMAP 2007, the International Conference on Signal Processing and Multimedia Applications
8. First International Workshop on Multimedia Analysis and Processing (IMAP 2007)
9. IEEE International Conference on Multimedia and Expo (ICME), 2000 – 2010
10. IEEE Consumer Communications and Networking Conference (CCNC), 2004 – 2006
11. IEEE International Conference on Communications (ICC), 2004-2005
12. IEEE International Conference on Image Processing (ICIP), 2003 – 2005
13. IEEE International Symposium on Multimedia (ISM), 2005-2008.
14. Workshop on Parallel and Distributed Multimedia (PDM), 2007.
15. IEEE INFOCOM, 2004 – 2005.
16. IEEE GLOBECOM 2007.

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Referee of Journal Papers

1 ACM Transactions on Multimedia Computing, Communications and Applications, ACM/Springer Verlag Multimedia Systems Journal, ETRI Journal, EURASIP Image Communications Journal, EURASIP Journal on Advances in Signal Processing, IEEE Communications Magazine, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Multimedia, IEEE Transactions on Image Processing, International Journal of Computers and Applications, Journal of Communications and Networks, Journal of Multimedia Tools and Applications, Journal of the Indian Institute of Science, Journal of Information Science and Engineering

Membership of and Service to Professional Organizations

1 Chair, IEEE Palm Beach Section, 2015-Present
2 Chair of the IEEE Communications Society Chapter, Palm Beach Section, 2004 - present
3 Membership Development Officer, IEEE Palm Beach Section, 2010 - 2015
4 Member of the Multimedia Technical Committee of the IEEE Communications Society
5 Senior Member of the IEEE
6 Member of Vision Sciences Society (VSS)
7 Member of IEEE Circuits and Systems Society
8 Member of the IEEE Communications Society
9 Member of the IEEE Consumer Electronics Society
10 Member of the IEEE Signal Processing Society
11 Member of the ACM

8. University Service

University Committees

1	Academic Planning and Budget Committee	2021-2023
2	Senator, University Faculty Senate	2012-2014; 2020-2022
3	College Representative, Faculty Advisory Committee, OIT	2012 –2015
4	Senate Steering Committee Member, University Faculty Senate	2013-2015

College Committees

1	Member of the College Research Committee	2012-2015

Departmental Committees

1	Chair of the Computer Engineering undergraduate committee	2012-2013
2	Member of the Dept. Research Committee	2011-2014

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3	Member of the Personnel Committee	2009-2010, 2012-
4	Member of the Ad-hoc Committee to Create Department's Bylaws	2009-2010
5	Member of the Computer Engineering undergraduate committee	2003-2014
6	Member of the TA/GA Selection Committee	2008- 2009

Other University Service

1. Co-organizer MakeFAU Annual Hackathon, 2016-2019
2. Co-Organizer, CEECS Department Open House, 2012
3. Organizing an annual IEEE sponsored research poster competition for the graduate students in the Dept. of Electrical Engineering and the Dept. of Computer Science and Engineering, 2005 and 2006.
4. Faculty advisor to the FAU IEEE Student Branch, Engineering Entrepreneurship Club, PACE Club

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