

Curriculum Vitae

Wallapak Tavanapong
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Google Scholar H-index: 25, Google Scholar i10-index : 59

Education

Ph.D. (1999), Computer Science, University of Central Florida, FL, USA
M.S. (1995), Computer Science, University of Central Florida, FL, USA
B.S. (1992), Computer Science, Thammasat University, Thailand

Recent Professional Experiences

- Professor (Aug. 2015 – present), Department of Computer Science, Iowa State University
- Chief Technology Officer (Oct. 2006 - present), EndoMetric Corporation, Ames, Iowa
- Associate Professor (Aug. 2005 - July 2015), Department of Computer Science, Iowa State University
- Associate Chair (Aug. 2013 -July 2016), Department of Computer Science, Iowa State University
- Sabbatical leave (Aug. 2012 - Aug. 2013)
- Associate Chair (Aug. 2009 - Jul. 2012), Department of Computer Science, Iowa State University
- Director of Graduate Education (Aug. 2007 - Jul. 2009), Department of Computer Science, Iowa State University
- Visiting Professor (Dec. 2006 – May 2007), Department of Radiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
- Visiting Scientist (Aug. – Nov. 2006), Division of Gastroenterology and Hepatology, Department of Internal Medicine, Mayo Clinic, Rochester
- Assistant Professor (Aug. 1999 - Jul. 2005), Department of Computer Science, Iowa State University

Current Research Interests

Artificial Intelligence in healthcare, data mining, data science, applied machine learning, multimedia analysis and retrieval, database systems, computational social sciences

Grants (25 grants total)

▪ Current Grants (2 grants)

1. **Real-Time Feedback to Improve Colonoscopy.** National Institutes of Health. Piet C. de Groen (PI, University of Minnesota Twin Cities), Felicity Boyd Enders (Co-investigator, Mayo Clinic, Rochester), **W. Tavanapong (Co-investigator, Iowa State University)**, Johnny Wong (Co-investigator, Iowa State University), JungHwan Oh (Co-investigator, University of North Texas), John Inadomi (Co-investigator, University of Washington), and Mark Lazarev (Co-investigator, Johns Hopkins University) 12/01/2016-6/30/2020. Total budget: \$2,827,593 with ISU budget of \$460,896. Grant No. 1R01DK106130-01A1.
2. **Automated collection and coding of online campaign ads.** National Science Foundation, SBE. David Peterson (PI, Political Science), W. Tavanapong (Co-PI), and Adisak Sukul (Co-PI), Olga Chyzh (Co-PI) 09/15/2017-08/31/2021. \$529,776. Award ID: 1729775.

▪ **Expired Research and Technology Transfer Grants (22 grants)**

Fundamental Research Grants (3 grants)

3. **Improving Colonoscopy Quality through Automated Monitoring.** National Institutes of Health/National Institute of Diabetes and Digestive and Kidney Diseases. 1R01DK083745. **W. Tavanapong (Co-investigator, Iowa State University)**, Piet C. de Groen (PI, Mayo Clinic, Rochester), JungHwan Oh (Co-investigator, University of North Texas), Jonny Wong (Co-investigator, Iowa State University). 09/01/2009-05/31/2011. \$238,105 (additional funding for the AHRQ HS17537).
4. **Improving Colonoscopy Quality through Automated Monitoring.** Agency for Healthcare Research and Quality (AHRQ). Award No. HS17537. **W. Tavanapong (Co-investigator, Iowa State University)**, Piet C. de Groen (PI, Mayo Clinic, Rochester), Doug Rex (Co-investigator, Indiana University), and Johnny Wong (Co-investigator, Iowa State University). 9/30/2008-9/29/2011. \$899,354.
5. **SEI: Collaborative Research: Endoscopic Multimedia Information Systems (EMIS).** National Science Foundation. Award No. 0513809, 051377, 0513582. **W. Tavanapong (PI, Iowa State University)**, Johnny Wong (Co-PI, Iowa State University), JungHwan Oh (PI, University of North Texas), and Piet C. de Groen (PI, Mayo Clinic, Rochester). 08/01/2005-12/31/2008. \$578,850.

Research, Development, and Technology Transfer Grants (19 grants)

6. **Building Research Community in Computational Communication & Journalism and Political Informatics, LAS Signature Research Initiatives,** College of Liberal Arts and Sciences, **W. Tavanapong (PI, Iowa State University)**, David Andersen, Michael J. Bugeja, Ying Cai, Michael F. Dahlstrom, Tessa Ditonto, Daniela Dimitrova, Gang Han, Jay Newel, David Peterson, Mack Shelley, Johnny Wong, and Wensheng Zhang. 07/01/2014-12/31/2017. \$247,719.
7. **Gentle Colonoscopy with Computer-Guided Navigation,** Regents Innovation Fund. **W. Tavanapong (PI, Iowa State University)** and Johnny Wong. 08/01/2014-05/31/2015. \$100,000 (50% of this was the matching fund from EndoMetric).
8. **Automated Labeling of Unseen Mucosa Areas during Colonoscopy,** ISU IPRT, **W. Tavanapong (Co-PI)**, Carl Chang (PI), Johnny Wong. 01/01/2012-12/31/2014. \$61,885.
9. **NSF Net-Center I/UCRC Membership,** **W. Tavanapong (PI, EndoMetric)**, Dec. 2010-2012. \$50,000.
10. **NSF-STTR REU Supplement: Real-time Analysis and Feedback during Colonoscopy to improve Quality.** US National Science Foundation. **W. Tavanapong (PI, EndoMetric)**. 07/11/2011-07/31/2012. \$16,000.
11. **NSF-STTR Phase II: Real-time Analysis and Feedback during Colonoscopy to improve Quality.** US National Science Foundation. Award No. IIP-0956847. **W. Tavanapong (PI, EndoMetric)**, JungHwan Oh (Co-PI, University of North Texas), and Johnny Wong. 08/15/2010-07/31/2012. \$499,735. Acceptance rate: 24% (55/230)
12. **Demonstration Fund Grant,** Iowa Department of Economic Development. **W. Tavanapong (Key personnel, EndoMetric)**. 08/2008-07/2011. \$150,000.
13. **STTR Phase IB: Video Analysis Techniques for Computer-Aided Quality Control for Colonoscopy.** National Science Foundation. Award No. 0740596. **W. Tavanapong (PI, EndoMetric)** with Johnny Wong (Co-PI). 01/01/2009-06/30/2009. \$49,997.
14. **STTR Phase I: Video Analysis Techniques for Computer-Aided Quality Control for Colonoscopy.** National Science Foundation. Award No. 0740596. **W. Tavanapong (PI, EndoMetric)** and Johnny Wong (Co-PI). 01/01/2008-12/31/2008. \$149,882. Acceptance rate: 17% (230/1353)
15. **GPU-based Implementation of Terminal Ileum Detection for Colonoscopy Quality.** Iowa State Research Foundation. **W. Tavanapong (Co-PI, Iowa State University)** with Johnny Wong (PI). 03/01/2009-02/29/2010. \$25,000.
16. **Evaluation of Quality Assessment Tools for Colonoscopy.** Grow Iowa Values Fund. Iowa State University. **W. Tavanapong (Co-PI, Iowa State University)** and Johnny Wong (PI). 07/01/2007-06/30/2009. \$100,397.
17. **Enhancement of a Quality Control System for Colonoscopy.** Iowa State University Research Foundation. **W. Tavanapong (Co-PI, Iowa State University)** and Johnny Wong (PI). 03/01/2007 – 02/28/2008. \$25,000.
18. **Automated Reporting System for Colonoscopy.** Mayo Clinic, Rochester. **W. Tavanapong (PI, Iowa State University)** and Johnny Wong (Co-PI). 01/1/2007-12/31/2007. \$50,000.
19. **Evaluation of a Quality Assessment System for Colonoscopy at Iowa Digestive Disease Center (IDDC).** Iowa State University Technology Commercialization Acceleration Program. **W. Tavanapong (Co-PI, Iowa State University)** and Johnny Wong (PI). 01/01/2007-06/30/2007. \$10,000.
20. **Quality Measurement Software for Colonoscopy.** Mayo Clinic, Rochester. **W. Tavanapong (PI, Iowa State University)** and Johnny Wong (Co-PI). 09/01/2005 – 08/31/2006. \$25,000.
21. **Quality Assessment Tools for Colonoscopy.** Grow Iowa Values Fund, Iowa State University. **W. Tavanapong (Co-PI, Iowa State University)** and Johnny Wong (PI). 01/2006-05/2007. \$75,405.

22. **Next Generation Picture Archiving Systems for Endoscopy (enPACS)**. ISU Research Foundation, Iowa State University. **W. Tavanapong (Co-PI, Iowa State University)** and Johnny Wong (PI). 2006-2007. \$25,000.
23. **Efficient Processing for Continuous Queries for Spatial Cue**. Technology Commercialization Acceleration Program, Iowa State University. **W. Tavanapong (Co-PI, Iowa State University)** and Ying Cai (PI). 02/2005-12/2005. \$21,700.
24. **Strategies for Caching Information on Distributed Systems**. US National Science Foundation CAREER 0092914. **W. Tavanapong (PI, Iowa State University)**. 02/01/2001-01/31/2006. \$253,930.

- **Education/outreach related grants (1 grant)**

25. Inspiring Undergraduate Women Students in Computer Science. Women Diversity Grant, Iowa State University, Les Miller and **W. Tavanapong (Co-PI, Iowa State University)**. 07/01/2014-06/30/2015. \$2,000.

Awards/Patents (5)

1. Top Teaching Award, Advertising Division. The Association of Education in Journalism and Mass Communication 2017 Conference.
2. United States Patent No. 7,894,648 “Colonoscopy Video Processing for Quality Metrics Determination,” February 22, 2011.
3. One of the three finalists for the 2009 Iowa Women of Innovation in Research Innovation and Leadership award.
4. LAS Early Achievement in Research Award 2008, College of Liberal Arts and Sciences (LAS), Iowa State University.
5. Objective Quality Control for Colonoscopy: Automated Extraction of Endoscopic Metrics from Video Files. 2006 American College of Gastroenterology Governors Award for Excellence in Clinical Research for “The Best Scientific Paper,” with P. C. de Groen (first author), J. Oh, and J. Wong, October 2006.

Refereed Journal Publications (27 articles)

1. HH Chang, TK Shih, CK Chang, **W. Tavanapong**. “CMIR: Content and mask-aware image retargeting,” *Multimedia Tools and Applications* 78, 21731–21758 (2019). <https://doi.org/10.1007/s11042-019-7462-2>.
2. J. Newell, **W. Tavanapong**, S. Berghefer. “*Teaching Ad Tech: Assessing Collaborative Teaching in an Advertising, Computer Science, and Design Course*,” *Journal of Advertising Education*: 21(2):45-53, November 2017.
3. Y. Wang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Polyp-Alert: Near Real-time Feedback during Colonoscopy. *Computer Methods and Programs in Biomedicine*. 120(3):164-179, 2015.
4. R. Nawarathna, J. Oh, J. Muthukudage, **W. Tavanapong**, J. Wong, P. C. de Groen, and S. Tang. Abnormal Image Detection in Endoscopy Videos Using a Filter Bank and Local Binary Patterns. *Advanced Computing for Image-Guided Intervention Special issue on Elsevier Neurocomputing*:144:70-91, Nov. 2014. (2013 impact factor: 2.005)
5. D. Hong, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. 3D Reconstruction of Virtual Colon Structures from Colonoscopy Images. *Computerized Medical Imaging Graphics Journal*. 38(1):22-33, Jan. 2104. (2013 impact factor: 1.496)
6. Y. Wang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Part-based Multi-derivative Edge Cross-Section Profiles for Polyp Detection in Colonoscopy. *IEEE Journal of Biomedical and Health Informatics*: PP(99):1-11, Oct. 2013. (2012 impact factor: 1.978)
7. S. Stanek, **W. Tavanapong**, J. Wong, J. Oh, R. D. Ruwan, and J. Muthukudage, and P. C. de Groen. SAPPHERE: A Toolkit for Building Stream Programs for Medical Video Analysis, *Computer Methods and Programs in Biomedicine*, 112(3):407-421, Dec. 2013. <http://www.sciencedirect.com/science/article/pii/S0169260713002630>. (2013 impact factor: 1.093)
8. Y. Wang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Near Real-time Retroflexion Detection in Colonoscopy. *IEEE Journal of Biomedical and Health Informatics*, 17(1):143-152, January 2013. (2012 impact factor: 1.978)
9. S. Stanek, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Automatic Real-Time Detection of Endoscopic Procedures Using Temporal Features. *Computer Methods and Programs in Biomedicine*, 108(2):524-535, November 2012. (2013 impact factor: 1.093)
10. Y. Wang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Detection of Quality Visualization of Appendiceal Orifices using Local Edge Cross-Section Profile Features and Near Pause Detection. *IEEE Transactions on Biomedical Engineering*, 57(3): 689-695, March 2010. (2013 impact factor: 2.233)
11. J. Oh, S. Hwang, Y. Cao, **W. Tavanapong**, J. Wong, and P. C. de Groen. Measuring Objective Quality of Colonoscopy. *IEEE Transactions on Biomedical Engineering*, 56(9):2190-2196, September 2009. (2013 impact factor: 2.233)
12. M. Zhang, J. Wong, **W. Tavanapong**, J. Oh, and P. C. de Groen. Deadline-Constrained Media Uploading System. *Multimedia Tools and Applications*, 36(1):51-74, May 2008. (2013 impact factor: 1.058)

13. Kihwan Kim, Ying Cai, **Wallapak Tavanapong**, Efficient Broadcasting in Homogeneous and Heterogeneous Wireless Ad Hoc Network, *Int'l Journal of Computer Science and Network Security (IJCSNS)*, 8(7):187-196, July 2008.
14. D. Liu, Y. Cao, K. Kim, S. Stanek, B. Doungratanaex-chai, K. Lin, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Arthemis: Annotation Software in an Integrated Capturing and Analysis System for Colonoscopy. *Computer Methods and Programs in Biomedicine*, 88(2):152-163, November 2007. (2013 impact factor: 1.093)
15. Y. Cao, D. Liu, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Computer-aided Detection of Diagnostic and Therapeutic Operations in Colonoscopy Videos. *IEEE Transactions on Biomedical Engineering*, 54(7):1268-1279, July 2007. (2013 impact factor: 2.233)
16. S. Hwang, J. Oh, J. Lee, **W. Tavanapong**, P. C. de Groen, and J. Wong. Informative Frame Classification for Endoscopy Video. *Medical Image Analysis*, 11(2):110-127, April 2007. (2013 impact factor: 3.681; SLJR:1.9777)
17. M. Tran and **W. Tavanapong**. On the Design, Analysis, and Implementation of a Generalized Periodic Broadcast Server, *IEEE Transactions on Broadcasting*, 52(4):515-528, December 2006. (2013 impact factor: 2.652)
18. W. Putthividya, **W. Tavanapong**, and J. Wong. Core-based Routing with QoS Support for Distributed Interactive Multimedia Applications. *Int'l Journal of Computer Science and Network Security (Special issues)*, 6(1B):47-57, January 2006.
19. M. Tran, **W. Tavanapong**, and W. Putthividhya. OCS: An effective caching scheme for video streaming on overlay networks. *Multimedia Tools and Applications Journal*, 34(1):25-56, July 2007.
20. Y. Cai, **W. Tavanapong**, and K. A. Hua. A Double Patching Technique for Efficient Bandwidth Sharing in Video-on-Demand Systems. *Multimedia Tools and Applications Journal*, 32(1):115-136, Jan. 2007.
21. S. Sheu, **W. Tavanapong**, and K. A. Hua. A Scalable Cost Effective Video Broadcasting System for On-Demand Video Services. *Journal of Multimedia Tools and Applications*, 8(3):321-345, March 2006.
22. **W. Tavanapong** and J. Zhou. Shot Clustering Techniques for Story Browsing. *IEEE Transactions on Multimedia*, 6(4):517-527, August 2004.
23. K. A. Hua, M. A. Tantaoui, and **W. Tavanapong**. Video Delivery Technologies for Large-Scale Deployment of Multimedia Applications. *Proceedings of the IEEE*, 92(9):1439-1451, September 2004.
24. K. Vu, K. A. Hua, and **W. Tavanapong**. Image Retrieval Based on Regions of Interest. *IEEE Transactions on Knowledge and Data Engineering*, 15(4):1045-1049, July/August 2003.
25. **W. Tavanapong** and K. A. Hua. Design and Implementation of a Video Browsing System for the Internet. *Journal of Software: Practice and Experience*, 31(5): 471-503, April 2001.
26. K. A. Hua, **W. Tavanapong**, and J. Z. Wang. 2PSM: An Efficient Framework for Searching Video Information in a Limited Bandwidth Environment. *ACM Multimedia Systems*, 7(5): 396-408, September 1999.
27. K. A. Hua, **W. Tavanapong**, and Y. Lo. Performance of Load Balancing Techniques for Join Operations in Shared-nothing Database Management Systems. *Journal of Parallel and Distributed Computing*, 56:17-46, 1999.

Refereed Conference Publications (77 articles)

I. Multimedia Analysis & Databases & Data Science

1. Md Farhad Mokter, J. Oh, **W. Tavanapong**, J. Wong, P. C. de Groen. Classification of Ulcerative Colitis Severity in Colonoscopy Videos Using Vascular Pattern Detection. *MICCAI Workshop on Machine Learning in Medical Imaging (MLMI 2020)* in conjunction with the 23rd International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2020), pp. 552-562. October 4-8, 2020, Lima, Peru (virtual).
2. L. Qi, M. Khaleel, **W. Tavanapong**, A. Sukul, and D. Peterson. A Framework for Deep Quantification Learning. In *Proc. of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases*, Ghent, Belgium, September 2020. Acceptance rate for full papers: 19% (131/687)
3. **W. Tavanapong**, J. Oh, G. Kijkul, J. Pratt, J. Wong, and P. C. de Groen. Real-time Feedback for Colonoscopy in a Multi-center Clinical Trial. In *Proc. of IEEE Int'l Symp. on Computer Based Medical Systems*, Rochester, MN, July 28-30, 2020. Acceptance rate for full papers: 43% (83/189), unusually high for the conference with 34% acceptance rate in 2017.
4. S. V. L. L. Tejaswini, B. Mittal, J. Oh, **W. Tavanapong**, J. Wong and P. C. de Groen. Enhanced Approach for Classification of Ulcerative Colitis Severity in Colonoscopy Videos using CNN. In *Proc. of Int'l Symp. on Visual Computing (ISVC)*, October 2019.
5. C. Zhang, G. Kijkul, **W. Tavanapong**, J. Wong, P. C. de Groen, and J. Oh. Active Similarity Learning for Image Classification under Class Imbalance. In *Proc. of IEEE Int'l Conf. on Data Mining Series (ICDM)*, pp. 1422-1427, Singapore, 2018. Acceptance rate (short paper): ~11% out of 948 submissions
6. A. Alammari, A. B. M Rezbaul Islam, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Non-informative Frame Classification in Colonoscopy Videos using CNNs. In *Proc. of Int'l Conf. on ICBS 2018*, pp. 35-42, 2018, Bari, Italy, October 2018.
7. A. Sukul, B. Gopalakrishnan, **W. Tavanapong**, and D. A.M. Peterson. Online Video Ad Measurement for Political Science Research. *Special Session on Intelligent Data Mining, IEEE Bigdata 2017*, Boston, MA, USA, 2017.

8. A. Alammari, A. B. M Rezbaul Islam, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Classification of Ulcerative Colitis Severity in Colonoscopy Videos using CNN. In Proc. of Int'l Conf. on Information Management and Engineering (ICIME 2017), pp. 232-237, Barcelona, Spain, Oct. 9-11, 2017.
9. C. Zhang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Real Data Augmentation for Medical Image Classification. In Proc. of MICCAI Large-scale Annotation of Biomedical Data and Expert Label Synthesis Workshop, LNCS 10552, pp. 67-76, Quebec, Canada, Sept. 2017.
10. J. Newell, **W. Tavanapong**, and S. Berghefer. Teaching Ad Tech: Assessing Collaborative Teaching in an Advertising, Computer Science, and Design Course. Association for Education in Journalism and Mass Communication. In Proc. of Association for Education in Journalism and Mass Communication, Chicago, USA, August 2017. (Selected as the "Top Teaching Paper" for AEJMC Advertising Division)
11. R. Iyer, J. Wong, **W. Tavanapong**, and D. Peterson. Identifying Policy Agenda Sub-Topics in Political Tweets based on Community Detection. Proc. of SNAA 2017 workshop col-located with ACM/IEEE Conf. on Advances in Social Networks Analysts and Mining (ASONAM 2017), Sydney, Australia, August 2017. Acceptance rate: ~40%
12. L. Qi, R. Li, J. Wong, **W. Tavanapong**, and D. Peterson. Social Media in State Politics: Mining Policy Agenda Topics (Short paper). In Proc. of ACM/IEEE Conf. on Advances in Social Networks Analysts and Mining (ASONAM 2017), pp. 274-277, Sydney, Australia, August 2017. Acceptance rate: 26%
13. C. Zhang, J. Wong, **W. Tavanapong**, J. Oh, and P. C. de Groen, Real-time Instrument Scene Detection in Screening GI Endoscopic Procedures. In Proc. of IEEE Int'l Symp. on Computer Based Medical Systems 2017, pp. 720-725, Thessaloniki, Greece, June 2017. Acceptance rate: 34%
14. L. Qi, C. Zhang, **W. Tavanapong**, A. Sukul, and D. Peterson. Automated Coding of Political Video Ads for Political Science Research. In Proc. of IEEE Int'l Symposium on Multimedia (ISM 2016), pp. 7-13, San Jose, CA, USA, Dec. 2016. Acceptance rate: 26%; one of the top ten papers invited for submission to IEEE Multimedia Magazine.
15. M. Riegler, M. Lux, C. Griwodz, C. Spampinato, T. de Lange, S. L. Eskeland, K. Pogorelov, **W. Tavanapong**, P. T. Schmidt, C. Gurrin, D. Johansen, H. Johansen, P. Halvorsen. Multimedia and Medicine: Teammates for Better Disease Detection and Survival. In Proc. of ACM Multimedia, pp. 968-977, Silicon Valley, CA, USA, October 2016.
16. A. Dahal, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Detection of Ulcerative Colitis Severity in Colonoscopy Video Frames. Proc. of Int'l Workshop on Content-Based Multimedia Indexing (CBMI), pp. 1-6, Prague, Czech Republic, June 2015.
17. C. Zhang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Cable Footprint History: Spatio-Temporal Technique for Instrument Detection in Gastrointestinal Endoscopic Procedures. In Proc. of WorldComp Int'l Conf. on Image Processing, Computer Vision & Pattern Recognition, pp. 308-314, Las Vegas, NE, USA, July 2015. Acceptance rate: 25%~27%.
18. A. Dahal, J. Oh, **W. Tavanapong**, J. Wong, P. C. De Groen. Enhancing Informative Frame Filtering by Water and Bubble Detection in Colonoscopy Videos. In Proc. of Int'l Conf. on Health Informatics & Medical Systems. Las Vegas, USA, pp. 24-30, July 27-30, 2015. (Acceptance rate: 26%~28%)
19. S. Kaul, **W. Tavanapong**, J. Wong, and D. Peterson. Agenda Detector: Labeling Tweets with Political Policy Agenda. In Proc. of ASE Int'l Conf. on Social Computing, Stanford University, Stanford, USA, August 18-19, 2015*.
20. P. C. de Groen, **W. Tavanapong**, J. Oh, and J. Wong. Challenges Associated with Introduction of Real-time Quality monitoring and Feedback during Colonoscopy within a Secure, Tightly Regulated Health Care Network. Int'l KES Conf. on Smart Technology based Education and Training, Chania, Greece, June 2014*.
21. J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Detection of Temporal Events in Colonoscopy Videos Using Motion Vector Templates. In Proc. of IEEE Medical Imaging Conf. (MIC2013), Seoul, South Korea, 2013*.
22. R. Nawarathna, J. Oh, J. Muthukudage, **W. Tavanapong**, J. Wong, and P. C. de Groen. Real-time Phase Boundary Detection for Colonoscopy Videos using Motion Vector Templates. In Springer Lecture Notes in Computer Science (MICCAI Workshop on Computational Abdominal Imaging, Computational and Clinical Applications), Vol. 7601, pp. 116-125, France, 2012. Acceptance rate: 31/37
23. J. Muthukudage, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Color Based Stool Region Detection in Colonoscopy Videos for Quality Measurements. In Proc. of Pacific Rim Symp. on Image and Video Technology Part I, pp. 61-72, South Korea, Nov. 2011*.
24. Y. Wang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Computer-Aided Detection of Retroflexion in Colonoscopy. In Proc. of IEEE Int'l Symp. on Computer-based Medical Systems, pp. 1-6, Bristol, UK, June 2011. Acceptance rate: ~35%
25. S. R. Stanek, **W. Tavanapong**, J. Wong, J. Oh, R. Nawarathna, J. Muthukudag, and P. C. de Groen. SAPPHERE Middleware and Software Development Kit for Medical Video Analysis. In Proc. of IEEE Int'l Symp. on Computer-based Medical Systems, pp. 1-6, Bristol, UK, June 2011. Acceptance rate: ~35%
26. D. Hong, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Colon Fold Contour Estimation for 3D Visualization of Colon Structure from 2D Colonoscopy Images. In Proc. of IEEE Int'l Symp. on Biomedical Imaging: From Nano to Macro (ISBI 2011), pp. 121-124, Chicago, IL, USA, March 2011*.

27. V. P Karri, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Effective and Accelerated Informative Frame Filtering in Colonoscopy Videos using Graphics Processing Unit, Proc. of Int'l Conf. on Bio-inspired Systems and Signal Processing (Biosignals 2011), pp. 119-124, Rome, Italy, Jan 2011.(Acceptance rate: ~8% for full papers)
28. X. Liu, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Automated Measurement of Quality of Mucosa Inspection for Colonoscopy. In Proc. of Int'l Conf. on Computational Science. Vol. 1, Issue 1, pp. 951-960, Amsterdam, Netherlands, June 2010. (Acceptance rate: 38%)
29. J. Oh, M. A. Rajbal, J. K. Muthukudag, **W. Tavanapong**, J. Wong, P. C. deGroen. Real-Time Phase Boundary Detection in Colonoscopy. In Proc. of Int'l Symp. On Image and Signal Processing and Analysis (ISPA 2009), pp. 724-729, Salzburg, Austria, Sept. 2009. (Acceptance rate: ~26%)
30. D. Hong, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. 3D Reconstruction of Colon Segments from Colonoscopy Images. In Proc. of IEEE Int'l Conf. on Bioinformatics and Bioengineering, pp. 53-60, Taiwan, June 2009. (Acceptance rate for regular papers: 32%)
31. Y. Wang, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Edge Cross-Section Features for Detection of Appendiceal Orifice Appearance in Colonoscopy Videos. In Proc. of Int'l Conf. of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 3000-3003, Vancouver, British Columbia, Canada, August 2008*.
32. S. Hwang, J. Oh, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Stool Detection in Colonoscopy Videos. In Proc. of Int'l Conf. of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 3004-3007, Vancouver, British Columbia, Canada, August 2008*.
33. S. R. Stanek, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Automatic Real-Time Capture and Segmentation of Endoscopy Video. PACS and Imaging Informatics. In Proc. of SPIE Medical Imaging, Vol. 6919, pp. 69190X-69190X-10, February 2008*.
34. S. Hwang, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen. Polyp Detection in Colonoscopy Video Using Elliptical Shape Feature. In Proc. of IEEE Int'l Conf. on Image Processing, pp. 465-468, San Antonio, Texas, September 2007. (Acceptance rate for all paper types: 49%)
35. D. Liu, Y. Cao. **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen, Quadrant Coverage Histogram: A New Method for Measuring Quality of Colonoscopy Procedures. In Proc. of IEEE EMBC 2007, pp. 3470-3473, Lyon, France, August 2007*.
36. S. Hwang, J. Oh, **W. Tavanapong**, P. C. de Groen, and J. Wong. Automatic Polyp Segmentation for Colonoscopy Image using Watershed Algorithm and Ellipse Fitting Method. In Proc. of SPIE Medical Imaging, Vol. 6514, pp. 65141D-1-12, San Diego, CA, USA, February 2007*.
37. D. Liu, Y. Cao. **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Mining Colonoscopy Videos to Measure Quality of Colonoscopic Procedures. In Proc. of IASTED Int'l Conf. on Biomedical Engineering (BioMed), pp. 409-414, Innsbruck, Austria, February 2007*.
38. Y. Cao, D. Liu, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Automatic Classification of Images with Appendiceal Orifice in Colonoscopy Videos. In Proc. of IEEE Engineering in Medicine and Biology Conference (EMBC), pp. 2349-2352, New York City, New York, August 2006*.
39. S. Hwang, J. Oh, J. Lee, Y. Cao, **W. Tavanapong**, D. Liu, J. Wong, and P. C. de Groen. Automatic Measurement of Quality Metrics for Colonoscopy Videos. In Proc. of ACM Multimedia 2005, pp. 912-921, Singapore, November 2005. (Acceptance rate: 16%)
40. Y.-H. An, S. Hwang, J. Oh, **W. Tavanapong**, P. C. de Groen, J. Wong, and J. Lee. Informative Frame Filtering in Endoscopy Videos. In Proc. of SPIE 5747 Medical Imaging 2005, Image Processing, 291, San Diego, CA, USA, February 2005.
41. Y. Cao, D. Li, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. Parsing and Browsing Tools for Colonoscopy videos. In Proc. of ACM Multimedia 2004, pp. 844-851, New York, NY, USA, October 2004. (Acceptance rate: 17%)
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43. Y. Cao, **W. Tavanapong**, K.-H. Kim, J. Wong, J. Oh, and P. C. de Groen. A Framework for Parsing Colonoscopy Videos for Semantic Units. In Proc. of IEEE Int'l Conf. on Multimedia and Expo, pp. 1879-1882, Taipei, Taiwan, June 2004.
44. J. Bao, Y. Cao, **W. Tavanapong**, and V. Honavar. Integration of Domain-Specific and Domain-Independent Ontologies for Colonoscopy Video Database Annotation. In Proc. of Int'l Conf. on Knowledge and Information Engineering, pp. 82-88, Las Vegas, Nevada, USA, June 2004.
45. J. Oh, S. Hwang, **W. Tavanapong**, P. C. de Groen, and J. Wong. Blurry Frame Detection and Shot Segmentation for Colonoscopy Videos. In Proc. of IS&T/SPIE Conf. on Storage and Retrieval and Applications for Multimedia, pp. 531-542, San Jose, CA, USA, January 2004.
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47. Y. Cao, **W. Tavanapong**, K. Kim, and J. Oh. Audio Assisted Scene Segmentation for Story Browsing. In Proc. of Int'l Conf. on Image and Video Retrieval (LNCS 2728), pp. 446-455, Urbana-Champaign, IL, USA, July 2003.

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50. J. Zhou and **W. Tavanapong**. Effect of Global Visual Features on Scene Segmentation for Videos. In Proc. of Int'l Symposium on Software Engineering, Databases, and Application, pp. 491-496, Innsbruck, Austria, February 2002.
51. **W. Tavanapong** and J. Zhou. A Noise-Reduction Approach to Scene Segmentation for Large Video Databases. In Proc. of IEEE Int'l Conf. on Information Technology: Coding and Computing, pp. 253-257, Las Vegas, Nevada, USA, April 2001.
52. **W. Tavanapong** and S. Krishnamohan. A Characteristics-Based Bandwidth Reduction Technique for Pre-recorded Videos. In Proc. of IEEE Int'l Conf. on Multimedia and Expo, pp. 1751-1754, New York City, NY, USA, July 2000.
53. **W. Tavanapong**, S. Krishnamohan, and K. A. Hua. A Noise Reduction Multimedia Presentation Assembler for Sensor-Based Videos. In Proc. of World Multiconference on Systemics, Cybernetics and Informatics and Int'l Conf. on Information Systems, Analysis and Synthesis. Volume II, pp. 707-712, Orlando, FL, USA, July 2000 (Invited paper).
54. Y. L. Lo, K. A. Hua, and **W. Tavanapong**. Scheduling Queries for Parallel Execution on Multicomputer Database Management Systems. In Proc. of Int'l Conf. on Database and Expert Systems Applications, pp. 698-707, Zurich, Switzerland, September 1996.
55. K. A. Hua, **W. Tavanapong**, and H. Young. Performance Evaluation of Load Balancing Techniques for Multicomputer Database Systems. In Proc. of Int'l Conf. on Data Engineering, pp. 44-51, Taipei, Taiwan, March 1995.

*Acceptance rate not available

II. Multimedia Systems & Networking

56. W. Putthividhya, A. Ghosh, and **W. Tavanapong**. Modeling of End-to-End Available Bandwidth in Wide Area Network. In Proc. of Int'l Symp. on Parallel and Distributed Processing with Applications (ISPA), pp. 27-34, Sydney, Australia, December 2008. (Acceptance rate: 33%)
57. K. Kim, Y. Cai, and **W. Tavanapong**. Safe Time: Distributed Real-time Monitoring of cKNN in Mobile Peer-to-Peer Networks. In Proc. of Int'l Conf. on Mobile Data Management 2008, pp. 124-131, Beijing, China, April 2008. (Acceptance rate: 21.8%)
58. S. Shetty, P. Galdames, **W. Tavanapong**, and Y. Cai. Detecting Malicious Peers in Overlay Multicast Streaming. In Proc. of IEEE Conf. on Local Area Networks (LCN), pp. 499-506, Tampa, Florida, USA, Aug. 2006. (Acceptance rate: 35%)
59. M. Tran and **W. Tavanapong**. Peer-assisted Content Distribution Networks. In Proc. of IEEE Conf. on Local Computer Networks (LCN), pp. 123-131, Sydney, Australia, November 2005. (Acceptance rate: 27%)
60. M. Tran and **W. Tavanapong**. On Using a CDN's Infrastructure to Improve File Transfer among Peers. In Proc. of IEEE/IFIP Int'l Conf. on Management of Multimedia Networks and Services (MMNS), pp. 289-301, Barcelona, Spain, October 2005. (Acceptance rate: 50%)
61. Z. Chen, Y. Cai, and **W. Tavanapong**. Video Management in Peer-to-Peer Systems. In Proc. of IEEE Int'l Conf. on Peer-to-Peer Computing (P2P'05), pp. 217-224, Konstanz, Germany, August 2005. (Acceptance rate: 18%)
62. K. Kim, Y. Cai, and **W. Tavanapong**. A Priority Forwarding Technique for Efficient Fast Flooding in Wireless Adhoc Networks. In Proc. of Int'l Conf. on Computer Communications and Network (IC3N), pp. 223-228, San Diego, CA, October 2005. (Acceptance rate: 30%)
63. M. Zhang, J. Wong, **W. Tavanapong**, J. Oh, and P. C. de Groen. Media Uploading Systems with Hard Deadlines. In Proc. of IASTED Int'l Conf. on Internet & Multimedia Systems & Applications, pp. 305-310, Hawaii, USA, August 2004.
64. Y. Cai, Z. Chen, **W. Tavanapong**, J. Wong. Providing Scalable On-Demand Video Services for Heterogeneous Receivers. In Proc. of IEEE Int'l Conf. on Multimedia and Expo, Vol. 1, pp. 643-646, Taipei, Taiwan, June 2004.
65. W. Putthividhya, **W. Tavanapong**, M. Tran, and J. Wong. Distributed Core Selection with QoS Support. In Proc. of IEEE Int'l Conf. on Communications (ICC), pp. 2132 – 2137, Paris, France, June 2004. (Acceptance rate: 29% out of 2,946 submissions)
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71. **W. Tavanapong** and M. Tran. Buffer Management for Periodic Broadcast Servers. In Proc. of Int'l Symposium on Computer and Information Sciences, pp. 59-63, Orlando, FL, USA, October 2002 (Invited paper).
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74. S. Sheu, K. A. Hua, and **W. Tavanapong**. Chaining: A Generalized Batching Technique for Video-on-Demand Systems. In Proc. of IEEE Int'l Conf. on Multimedia Computing and Systems, pp. 110-117, Ottawa, Canada, June 1997.
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76. **W. Tavanapong**, K. A. Hua, and J. Z. Wang. A Framework for Supporting Previewing and VCR Operations in a Low Bandwidth Environment. In Proc. of ACM Multimedia'97, pp. 303-312, Seattle, WA, USA, November 1997.
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III. Book Chapters and Other Publications (27 articles)

1. **W. Tavanapong**, D. Hong, J. Wong, P. C. de Groen, and J. Oh. Reconstruction of a 3D Virtual Colon Structure and Camera Motion for Screening Colonoscopy. *Medical Research Archives*:5(6), June 2017.
2. P.C. de Groen. M. Szewczynski, F. Enders. **W. Tavanapong**, J. Oh, and J. Wong. Real-time Feedback during Colonoscopy to Improve Quality: How Often to Improve Inspection? KES Int'l Conf. on Smart Education and E-Learning, Sorrento, Italy, June 2015.
3. J. Muthukudage, J. Oh, R. Nawarathna, **W. Tavanapong**, J. Wong, and P. C. de Groen, "Fast Object Detection using Color Features for Colonoscopy Quality Measurements," in *Abdomen and Thoracic Imaging: An Engineering & Clinical Perspective*, A.S. El-Baz, L. Saba, J. Suri. Eds. Springer, 2014, pp 365-388.
4. P. C. de Groen, F. Enders, M. Szewczynski, D. Katzka, J. Wong, J. Oh, and **W. Tavanapong**. Awareness of Routine, Anonymous Video Recording Does Not Improve Quality of Colonoscopy. *American Journal of Gastroenterology*, Vol. 109, S600-S600, 2014.
5. F. Enders, **W. Tavanapong**, M. Szewczynski, J. Oh, J. Wong, P. C. de Groen. Objective Evaluation of Colonoscopy: Development and Validation of an Automated Score. *Gastroenterology*, Vol. 146. Pages S-728-S-729, 2014.
6. P. C. de Groen, N. Srinivasan, S. Stanek, M. J. Szewczynski, F. Enders, **W. Tavanapong**, J. Oh, and J. Wong. Automated, Objective Measurements of Colonoscopy Technique: A Comparison Between Trainees and Staff *Gastroenterology*, Volume 144, Issue 5, Supplement 1, May 2013, Pages S-15-S-16.
7. S. Nandakumar, S. Stanek, M. J. Szewczynski, F. Enders, **W. Tavanapong**, J. Oh, J. Wong, P. C. de Groen. Automated real-time feedback during colonoscopy improves endoscopist technique as intended: a controlled clinical trial. DDW 2013 (Poster presentation, Orlando, FL). *Gastrointestinal Endoscopy* 2013:77:AB500.
8. N. Srinivasan, M. J. Szewczynski , F. T. Enders, **W. Tavanapong**, J. Oh , J. Wong , and P. C. de Groen. Real-time feedback improves the quality of colonoscopy by trainees: a controlled clinical trial. Abstract. ACG/AstraZeneca Fellow Awards. Oral presentation at American College of Gastroenterology, Annual Meeting, 2012.
9. N. Srinivasan, J. League, S. R. Stanek, D. Hong, **W. Tavanapong**, J. Wong, J. Oh, and P. C. de Groen. A Novel System Able to Provide Real-Time Feedback During Colonoscopy. Abstract. Digestive Disease Week 2012, San Diego, CA, USA, May 2012.
10. G. Kolar, F. Enders, M. Szewczynski, **W. Tavanapong**, J. Oh, J. Wong, and P. C. de Groen. Principal Component Analysis defines Two Sets of Endoscopic Features for Ulcerative Colitis, Abstract. Digestive Disease Week 2012, San Diego, CA, USA, May 2012.
11. E. W. Thackeray, J. E. Varayil, M. J. Szewczynski, F. T. Enders, **W. Tavanapong**, J. Oh, J. Wong, and P. C. de Groen. Endoscopist Quality can be Determined by Automated Assessment of Quality Metrics. Abstract, Oral presentation at Digestive Disease Week 2012, San Diego, CA, USA, May 2012.
12. N. Srinivasan, M. Szewczynski, F. Enders, **W. Tavanapong**, J. Oh, J. Wong, and P. C. de Groen. Will Real-Time Feedback Systems Adversely Affect Colonoscopy Practice, *Gastroenterology*. Vol. 142, No. 5, S-218, May 2012.

13. P. C. de Groen, **W. Tavanapong**, J. H. Oh, and J. Wong. Requirements and Benefits of System that Automatically Records All Endoscopic Procedures. Abstract, AMA-IEEE Medical Technology Conference 2011, Boston, MA, Oct. 2011.
14. E. V. Jithinraj, F. Enders, **W. Tavanapong**, J. Oh, J. Wong, and P. C. de Groen. Colonoscopy: What endoscopists inspect under optimal conditions. Abstract, Digestive Disease Week 2011, McCormic Place, Chicago, USA, May 2011.
15. P. C. de Groen, M. Szewczynski, F. Enders, J. Oh, **W. Tavanapong**, J. Wong, and P. C. de Groen: Do endoscopists who participate in de-identified monitoring provide higher quality than those who do not? Abstract, Digestive Disease Week 2011, McCormic Place, Chicago, USA, May 2011.
16. P. C. de Groen, E. Thackeray, V. J. Edakkanambeth, M. Szewczynski, J. Bakken, **W. Tavanapong**, J. Oh, J. Wong, F. Enders. An automated score of quality of colonoscopy that reflects the entire procedure. *Am J Gastroenterol.* 2011 Oct; 106:S523.
17. J. C. Bakken, M. van Leerdam, F. Enders, **W. Tavanapong**, J. Oh, J. Wong, and P. C. de Groen. Colonoscopy Peer Review utilizing Automated Video Capture Allows Assessment of Endoscopist Performance. Abstract, Digestive Disease Week 2010, McCormick Place, Chicago, USA, 2010.
18. P. C. de Groen, J. Bakken, M. van Leerdam, L. Szarka, F. Enders, **W. Tavanapong**, J. Oh, and J. Wong. Blind Peer Review to Measure Colonoscopy Performance of an Individual Endoscopist. Abstract, Digestive Disease Week 2010, McCormick Place, Chicago, USA, 2010.
19. P. C. de Groen, M. Szewczynski, F. Enders, **W. Tavanapong**, J. Oh, and J. Wong. Incomplete and Low Quality Inspection of the Stomach during Upper Endoscopy. Abstract, American College of Gastroenterology Scientific Meeting 2010, San Antonio, TX, USA, October 2010.
20. J. C. Bakken, M. van Leerdam, F. Enders, **W. Tavanapong**, J. Oh, J. Wong, and P. C. de Groen. Colonoscopy Peer Review utilizing Automated Video Capture. Abstract, American College of Gastroenterology Scientific Meeting 2010, San Diego, USA, October 2010.
21. K. A. Hua and **W. Tavanapong**. Parallel Database Management Systems. *Encyclopedia of Computer Science and Engineering* (Benjamin W. Wah ed). ISBN 978-0-471-38393-2. Vol. 4. Pages 2119-2126. Hoboken, NJ, January 2009 (Book chapter).
22. D. Hong, **W. Tavanapong**, J. Oh, J. Wong, P. C. de Groen. A New Technology to Visualize What the Endoscopist does not See during Colonoscopy. Digestive Disease Week 2009. Poster Session, McCormic Place, Chicago, USA, June 2009.
23. P. C. de Groen, **W. Tavanapong**, J. Oh, J. Wong. Computer-aided Quality Control for Colonoscopy: Automatic Documentation of Cecal Intubation. Digestive Disease Week 2007. ASGE Poster Session Endoscopic Technology Endoscopy: New Image Technology, Washington DC, USA, May 2007.
24. P. C. De Groen, S. R. Stanek, **W. Tavanapong**, J. Oh, and J. Wong. Automated Video Capture for Quality Control during Colonoscopy: Real-Time Recognition of "Inside-the-Patient" Status. *AM. J. Of Gastroenterol* (2007) 102, S517-S548.
25. P. C. de Groen, J. Oh, **W. Tavanapong**, and J. Wong. Objective quality control for colonoscopy: automated extraction of endoscopic metrics from video files. *Am J Gastroenterol.* 2006; 101:S206.
26. P. C. de Groen, **W. Tavanapong**, J. Oh, and J. S. Wong. Computer-Aided Detection Of Biopsies and Therapeutic Operations in Colonoscopy Videos. Digestive Disease Week 2005. ASGE Poster Session NEW TECHNOLOGY ASGE, McCormic Place, Chicago, USA, May 2005.
27. P. C. de Groen, J. Oh, **W. Tavanapong**, and J. Wong. Computer-generated, Digital, Multimedia Database for Colonoscopy. Digestive Disease Week 2004. ASGE Poster Session NEW TECHNOLOGY ASGE, New Orleans, USA, May 2004.

News & Articles by Others About W. Tavanapong's Research and Education Initiatives (8 articles)

1. Iowa State students combine data and creativity to engage audience with advertising. <http://www.news.iastate.edu/news/2015/04/28/advertisingcode>.
2. Big Opportunity for Big Impact. Forward, Iowa State Foundation. Winter 2014, pages 13.
3. Two businesses with ISU ties win statewide Pappajohn Business Plan Competition. Iowa State University News Service. <http://www.iastate.edu/~nscentral/news/2007/oct/bizplan.shtml>, October 16, 2007.
4. New Technology Aims to Improve Colonoscopy by Automatically & Objectively Analyzing Efficacy. *Oncology Times.* No 1, pages 24-25, Jan 10, 2007.
5. Danna Voth. Toward More Intelligent Healthcare. *IEEE Intelligent Systems.* March/April 2007, pages 5-7.
6. Steve Frandzel. New Digital Recording System Measures Colonoscopy Performance Metrics. *Gastroenterology & Endoscopy News.* Volume 58, issue 3, March 2007.
7. Best of ACG. *Gastroenterology & Hepatology.* Volume 3, issue 1, Jan 2007, pages 41-48.
8. Iowa State researchers developing software to improve colon exams, Iowa State University News Service. 11-30-06. *ACM Tech News.* 12-04-06.

Professional Services

- **Editorial board member** for ACM SIGMOD Digital Symposium Collection (2002, 2004-2005)
- **Proposal reviewer** for National Science Foundation (2008, 2014, 2015), Kentucky Science & Engineering Foundation for R& D Excellent awards
- **Proposal panel member** for National Science Foundation (2001)
- **Member of steering committee** for IEEE Int'l Conf. on Multimedia (ICME) (2004-2006)
- **Member of organizing committee** as Proceedings Chair for ACM Multimedia 2014 (2014), Area Chair for ACM Multimedia 2014
- **Program committee:** BIOSIGNALS 2021, ACM Multimedia (2019-2020, 2014, 2002, 2001), IEEE Int'l. Symp. on Computer-Based Medical Systems (2019, 2020, 2005-2008), The Web conference 2019 (2018), Int'l Workshop on Content-based Multimedia Indexing (CBMI 2016), Int'l Conf. on Physiological Computing Systems (PhyCS 2014-2015), U-Media 2014, Int'l Workshop on Multimedia Technologies for Distance Learning 2011 (2011), Int'l Conf. on Bio-Inspired Systems and Signal Processing 2011-2014, e-Health (2010), Advanced Information Networking and Applications 2011-2012 (2010-2011), Int'l Conf. on Ubi-media Computing (2008), Int'l Conf. on Multimedia and Expo (2006), Int'l Conf. on Web-Age Information Management (2004), Int'l Conf. on Multimedia Services Access Networks (2005), Int'l Conf. on Information Society (2000)
- **Session chair** for ACM Multimedia'2014, SAINT-2004, Int'l Workshop on Multimedia Data Document Engineering (2002), Int'l Workshop on Intelligent Multimedia Computing (2000)
- **Session organizer** for Int'l Jour. of Computer Assisted Radiology and Surgery (2020), IEEE Symp. on Computer-Based Medical Systems (2005) Special track on Medical Multimedia Analysis and Content-based Retrieval, Multimedia Data Mining Session, Int'l Conf. on Information and Knowledge Engineering (2004), Int'l Workshop on Intelligent Multimedia Computing (2000)
- **Referee** for International Journal of Computer Assisted Radiology and Surgery (2020), IEEE EMBC (2009, 2011-2018), Multimedia Tools and Applications Journal (2003-2020), npj Digital Medicine journal (2020), IEEE Transactions on Neural Networks and Learning Systems (2019), IEEE CBMS (2018), World Wide Web Journal (2018), Software: Practice and Experience (2017), Journal of Healthcare Engineering (2017), Biomedical Engineering Online (2016), Transactions on Multimedia Computing Communication and Applications (2016), Int'l Journal for Computer Assisted Radiology and Surgery (2016), ACM Computing Surveys (2016), IEEE ISBI (2015-2016), IEEE Biomedical and Health Informatics (BHI-2016), Journal of Information Processing Society of Japan (2012), Computers in Biology and Medicine Journal (2012), Int'l Conf. on Advanced Information and Networking and Applications (2011-2012), IEEE Transactions on Medical Imaging (2010), IEEE Transactions on Biomedical Engineering (2010, 2005, 2012-2013), Journal of Medical Media Analysis (2009), IEEE Transactions on Circuits and Systems for Video Technology (2001, 2008-2009), Int'l Conf. on Computer Communications and Networks (2008), Int'l Conf. on Ubi-media Computing (2008), IEEE Signal Processing Letters (2008), Computer Methods and Programs in Biomedicine (2008), IEEE Transactions on Multimedia (2001-2008, 2016), Computers in Biology and Medicine (2007), ICCCN (2008), Int'l Journal of Computers and Applications (2007-2008), IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology (2007), Int'l Conf. on Distributed Computing and Networking (2006), ACM Multimedia Systems (2005), IEEE Transactions on Broadcasting (2004), IEEE Transactions on Knowledge and Data Engineering (2003-2004, 2001), ACM Computer Communication Review (2001-2003), Int'l Network Optimization Conference (2003), Symposium on Applications and the Internet (SAINT-2003), ACM Symposium on Applied Computing (2003), ACM Multimedia (1999-2002, 2005), IEEE Transactions on Parallel and Distributed Systems (2001), Encyclopedia of Information Systems (2001), Computer Networks Journal (2000), Journal on Computer Communications (2000), Journal of Parallel and Distributed Computing (1999), VLDB Journal (1999)
- **Invited speaker** for OsloMet Research Center, Oslo, Norway (2020), Int'l Conf. on Computer Science and Software Engineering as a keynote speaker (2018), VISTEC Data Science Engineering Seminar (2018), LAS Dean's Council Meeting Presentation, Iowa State University (Fall 2015), DigSys Workshop, Simula Research Laboratory, Oslo, Norway (Spring 2016), Department of Computer Engineering, Kasetsart University (Jan. 2013), King Mongkut's Institute of Technology Ladkrabang, Thailand (June 2013), Int'l Conf. on Advanced Information Technologies, Chaoyang University of Technology, Chienkuo Technology University, National Chung Hsing University, National Taichung University, Taiwan (April 2013), School of Computer Science, Georgia Tech., (March 2012), Department of Computer Science, Kasetsart University (Dec. 2012), the Main Stream Enabling Computing Technologies Awareness and Training: Medical IT/Science (August 8-9, 2011, Bangkok, Thailand), Thai Professional Conference 2008, Mayo Clinic Grand Round Lecture Series (2005), the 17th Int'l Symp. on Computer and Information Science (2002), Department of Computer Science, Thammasat University, Thailand (2002, 2004, 2013), School of Information Technology, King Mongkut's University of Technology Thonburi, Thailand (2004, 2011, 2012)
- **Invited interview** for SIGMM record (2016)

- **Evaluator for tenure and promotion:** (2 candidates in 2015)
- **Accreditation Member for AI and Digital Media Master program, Hong Kong Baptist University (2018)**
Computing Organization Membership: Member of ACM, Senior Member of IEEE