

Curriculum Vitae

PERSONAL DATA

Name: **Jenq-Neng Hwang**
Department of Electrical and Computer Engineering
206-685-1603 (office), hwang@uw.edu
206-974-0832 (mobile), <https://people.ece.uw.edu/hwang/>

EDUCATIONAL RECORD

University of Southern California, 9/85-12/88, Ph.D. EE (Advisor: Sun-Yuan Kung)
National Taiwan University, 9/81-6/83, M.S. EE. (Advisor: Lin-Shan Lee)
National Taiwan University, 9/77-6/81, B.S. EE.

APPOINTMENTS

University of Washington

- Associate Chair for Global Affairs 9/15 -- present
- Associate Chair for Research 9/11 – 9/15
- Associate Chair for Research & Development, 9/03 – 10/05.
- Full Professor, 9/99 – present.
- Associate Professor, 9/94 – 8/99.
- Assistant Professor, 8/89 -- 8/94.
- Research Associate (Princeton University, Sun-Yuan Kung), 1/89 – 6/89

INDUSTRIAL COLLABORATIONS

- Technical Consultant, CMMB Vision, Beijing, 4/17 – 9/19
- Technical Consultant, Launch Bottle, Seattle, 9/15 – 3/17
- Technical Consultant, III, Taiwan, 6/12 – 6/14
- Technical Consultant, ITRI, Taiwan, 12/09 – 12/14
- Technical Consultant, HCITC, ITRI South, Taiwan, 3/10 – 12/10.
- Technical Consultant, SoC Center, ITRI, Taiwan, 01/06 – 12/06
- Technical Consultant, Chunghwa Telecomm. Lab. (CHTTL), Taiwan, 01/91 – 03/08
- Technical Consultant, ETRI Korea, 01/06 – 12/07
- Chief Scientist, Digital ERA Communication, Taiwan, 6/04 – 12/07.
- Technical Advisor Board, Voice Box, Redmond, 01/04 – 12/06.
- Technical Consultant, Acucela LLC, Seattle, 03/05 – 06/07.
- Technical Consultant, Nanostring LLC., Seattle, 03/06-12/07.
- Co-Founder and CTO, HomeMeeting Inc., Redmond, WA, 12/99 – 3/03
- Numerous Research Projects from: Microsoft, Intel, Siemens, ITRI, III, ETRI, NOAA, Boeing, T-Mobile, Redback/Ericsson, CHTTL, etc.

GRANTED PATENTS (US)

- “System and Methods for Analyzing Nanoreporters,” with Nanostring Inc. , Seattle, WA, Dec. 2006.
- “Link Layer Packet Loss Classification for Link Adaptation in WLAN,” with Siemens Research, Princeton, March 2008.
- “Cross-Layer QoS Design for Scalable Video over Multirate WLANs,” with Siemens Research, Princeton, July 2008.
- “System for Selecting Transmission Mode under MIMO based on Scheduling number and method,” with NSYSU, Taiwan, June 2015.

- “Cross Layer Power Allocation Methods for Scalable Video Transmission over MIMO Systems,” with NSYSU, Taiwan, July 2015.
- “Augmented Reality Interactive System and Dynamic Information Interactive Display Method,” with NTUT, Taiwan, April 2017.

HONORS AND AWARDS

Winner of Track 1 and Runner-Ups of Tracks 2,3 (AI City Challenge) at the 2019 IEEE Computer Vision and Pattern Recognition (CVPR), Long Beach CA, June 2019.

Winner of Tracks 1 and 3 (AI City Challenge) at the 2018 IEEE Computer Vision and Pattern Recognition (CVPR), Salt Lake City, June 2018.

Chair Professor, National Chiao Tung University, Hsinchu, Taiwan, April 2018 -- March 2021.

Winner of Track 2 (AI City Applications Track) at the 2017 IEEE Smart World NVIDIA AI City Challenge, San Francisco, August 2017.

Academic Master in International Guest Academic Talents: Beijing University of Post and Telecommunication, 111 Program, Beijing, China, Jan. 2017 – Dec. 2021.

Distinguished Foreign Lecturer: Shanghai University of Engineering Science, Shanghai, China, March 2016 -- present

Guest Professor: Shanghai Jiao Tong University, Shanghai, China, December 2015 – December 2018

Visiting Chair Professor: Chongqing University of Post and Telecommunication, Chongqing, China, 2015 – 2018

Visiting Chair Professor: National Sun-Yet-Sen University, Kaohsiung, Taiwan, 2014 -- 2017

International Honorary Chair Professor: National Taipei University of Technology, Taipei, Taiwan, 2012 -- 2015

Distinguished Foreign Lecturer: Shanghai University, Shanghai, China, Oct. 2012 -- September 2015

IEEE Computer Society Highlight: Our 2009 IEEE Multimedia Magazine article, "An Interactive Attention-Ranking System for Video Search," is highlighted by the Computer Society's monthly issue of Computing Now (<http://computingnow.computer.org>), which is a Web site featuring specially chosen content from the IEEE Computer Society's 13 magazines. This article is also referenced in the Computing Now newsletter (<http://computingnow.computer.org/newsletter>), which reaches more than 63,000 subscribers.

Best Ph.D. Thesis Award, 2009. My jointly supervised Ph.D. dissertation, by Dr. Huang-Chia Shih of the National Tsinghua University,

was selected to be one of the 2009 best Ph.D. thesis award from the Computer Vision, Graphics and Image Processing (CVGIP) Society in Taiwan.

Annual Faculty Service Award, University of Washington, Dept. of EE, 2006.

IEEE Fellow, "Contribution to Adaptive Learning Systems," 2001. IEEE Signal Processing Society

Annual Best Paper Award, 1995. (Only 3 papers were chosen out of all IEEE Signal Processing Society's Journal publications, T-SP, T-IP, and T-SAP, T-MI, in the years of 1993-1995).

RESEARCH INTERESTS Machine Learning, Computer Vision, Multimedia Networking, Pattern Recognition, Smart City/Smart Ocean,

PROFESSIONAL SOCIETY MEMBERSHIP AND SERVICE

1. **Editorial Board Member**, - ZTE Communications Journal, 2016--present.
2. **Editor**, - ETRI Journal, Information, Telecommunications & Electronics, 2009--present.
3. **Associate Editor**, - IEEE Trans. on Image Processing, 2008--2012.
4. **Editorial Board Member**, -- IEEE Signal Processing Magazine, 2009 - 2012.
5. **Editorial Board Member**, -- International Journal of Digital Multimedia Broadcasting, Hindawi, 2007 - Present.
6. **Editorial Board Member**, -- Journal of Signal Processing Systems for Signal, Image, and Video Technology, Kluwer Academic Publishers, 1995 - Present.
7. **Editor**, -- *Journal of Information Science and Engineering*, Academia Sinica, August 2005 – 2011
8. **Member**, -- Technical Committee on Multimedia Signal Processing, IEEE Signal Processing Society, 2014 --.
9. **Member**, -- Technical Committee on Multimedia, IEEE Communication Society, 2009 --.present
10. **Member**, -- Technical Committee on Multimedia Systems and Applications, IEEE Circuits and Systems Society, 2009 -- 2012.
11. **Guest Editor**, -- Multimedia over IP, IEEE Trans. on Multimedia, special issue, March 2001.
12. **Associate Editor**, - IEEE Trans. on Circuits and Systems for Video Technologies, 1998-2006.
13. **Associate Editor**, - IEEE Trans. on Neural Networks, 1992-2000.
14. **Associate Editor**, - IEEE Trans. on Signal Processing, 1992-1994.
15. **Member**, -- Technical Committee on Neural Networks for Signal Processing, IEEE Signal Processing Society, 1992-2008.
16. **Founding Member**, -- Technical Committee on Multimedia Signal Processing, IEEE Signal Processing Society, 1996-2000.
17. **Secretary**, -- Technical Committee on Neural Networks for Signal Processing, IEEE Signal Processing Society, 1995-1996.
18. **Chairman**, -- Technical Committee on Neural Networks for Signal Processing, IEEE Signal Processing Society, 1997-1998.
19. **Representative**, -- IEEE Neural Network Council from IEEE Signal Processing Society, 1997-2000.
20. **Member**, -- Technical Committee on Design and Implementation of Signal Processing Systems, IEEE Signal Processing Society, 1990-1996.

21. **Secretary**, -- Technical Committee on Neural Systems and Applications, IEEE Circuits and Systems Society, 1989-1991.

ORGANIZATION ACTIVITIES OF INTERNATIONAL CONFERENCES AND FORUMS

1. **General Co-Chair**, -- the 21st IEEE Multimedia Signal Processing (MMSP) Workshop, Kuala Lumpur, Malaysia, September 27-29, 2019.
2. **Technical Co-Chair**, -- the 9th IEEE Annual Information Technology, Electronics, and Mobile Communication (IEMCON) Conference, Vancouver, Canada, Nov. 1-3, 2018.
3. **Conference Co-Chair**, -- The 3rd IEEE International Conference on Image, Vision and Computing (ICIVC), June 27-29, 2018, Chongqing, China.
4. **Conference Program Co-Chair**, IEEE International Conference on Multimedia Expo (ICME), July 2016.
5. **Conference General Co-Chair**, IEEE/IET the 4th International Conference on Audio, Language and Image Processing, Shanghai, China, July 2014.
6. **Conference Executive General Co-Chair**, IET Second International Conference on Smart and Sustainable City, Shanghai, China, August 2013.
7. **Conference Special Session Chair**, -- IEEE Int'l Symposium on Circuits and Systems, Beijing, China, May 2013
8. **Conference Co-Chair**, -- IEEE International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS 2012), Taipei, Taiwan Nov. 2012
9. **Conference Tutorial Chair**, - IEEE Midwest Symposium on Circuits and Systems, Seattle, WA, August 2010
10. **Conference Technical Program Co-Chair**, - IEEE Int'l Symposium on Circuits and Systems, Taipei, May 2009.
11. **Conference Technical Program Co-Chair**, - Int'l Computer Symposium (ICS), Taipei, Nov. 2008.
12. **Conference Special Session Co-Chair**, - IEEE Int'l Symposium on Circuits and Systems, Seattle, May 2008.
13. **Conference Chair**, - IASTED Signal & Image Processing Conference, Hawaii, August 2006.
14. **Conference Chair**, - IASTED Internet Multimedia Systems and Applications, Hawaii, August 2006.
15. **Conference Program Co-Chair**, - IEEE Int'l Conference on Acoustic, Speech and Signal Processing, Seattle, WA, May 1998.
16. **Conference Tutorial Chair**, - IEEE Int'l Conference on Neural Networks, Washington D.C., June 1996.
17. **Conference General Co-Chair**, - Int'l Symposium on Artificial Neural Networks, Hsinchu Taiwan, December 1995.
18. **Conference Publication Chair**, - Int'l Symposium on Circuits and Systems, Seattle WA, May 1995.
19. **Conference Program Co-Chair**, - Int'l Symposium on Artificial Neural Networks, Tainan Taiwan, December 1994.
20. **Conference Program Chair**, - IEEE Workshop on Neural Networks for Signal Processing, Ermioni Greece, September 1994.

INVITED INTERNATIONAL SHORT COURSES

1. "Machine Learning for Big Visual Data," 16-hour short course, Beijing University of Posts and Telecommunication, July 2019.

2. "Machine Learning for Big Visual Data," 16-hour short course, Beijing University of Posts and Telecommunication, July 2018.
3. "Multimedia Networking and Services," 16-hour short course, Beijing University of Posts and Telecommunication, July 2017.
4. "Machine Learning for Big Visual Data," 18-hour short course, IEEE International Elite School, March 2017.
5. "Machine Learning for Big Visual Data," 4-week short course, Shanghai University of Engineering Science, Shanghai, China, December 2016.
6. "Wireless Multimedia and IPTV," 3-week short course, Shanghai Jiao Tong University, Shanghai, China, December 2015.
7. "Multimedia over Internet," 2-week short course, The Shanghai University, Shanghai, China, June 2013 and 2014.
8. "Critical Components of Multimedia Networking," 2-week short course, The National Taipei University of Technology, Taipei, Taiwan, July 2012.
9. "Multimedia Compression and Networking," 2-week short course, The Asia University, Taichung, Taiwan, June 2010.
10. "Multimedia Compression and Networking," 2-week short course for Advanced Program in Electronic and Communication Engineering, The University of Danang, Vietnam, Dec. 2009.
11. "Multimedia Networking: A Comprehensive Perspective of the Overall System," 3-day course for National Taiwan University, Taipei, Taiwan, July 2008.
12. "Embedded Real-Time DSP Applications," 5-day course for University IT professors, ministry of IT, Seoul, Korea, August 2007.
13. "Multimedia Networking and Applications: from Theory to Practice," 3-day short course for PCNASE, National Cheng-Kung University, Sept. 2006.
14. "Multimedia Applications," 5-day course for University IT professors, ministry of IT, Seoul, Korea, July 2006.
15. "Multimedia Networking: from Theory to Practice," 4-week short course, national Tsinghua University, Hsinchu, Taiwan, June 2006.
16. "Multimedia Coding and Networking," 54-hour (3 credit) summer course, National Chiao-Tung University, Hsinchu, Taiwan, July-August, 2004.
17. "Multimedia Coding and Networking," 5-day course for University IT professors, ministry of IT, Seoul, Korea, August 2004.
18. "Multimedia Networking," 32-hour intensive course, one-month visiting chair professor, Tsinghua University, Beijing, December 2003.
19. "Multimedia Signal Processing and Networking," Distinguished Lecture Series (5 days), Shanghai Jiao-Tong University, Oct. 2002.
20. "Neural Networks for Signal Processing: From Theory to Practice," 4-day short course (one day per week), sponsored by Technical University of Denmark, Lyngby, Denmark, 8/14/96-9/16/96.
21. "Neural Networks for Signal Processing: From Theory to Practice," 4-day short course, sponsored by Shanghai Jiao-Tong University, China, 3/14/96-3/17/96.
22. "Advanced Neural Network Techniques for Signal/Image Processing: Algorithms, Applications, and Architectures," 3-day short course, sponsored by Systems Engineering Research Institute (SERI) of Korean Institute of Science and Technology (KIST) and Electronics and Telecommunications Research Institute (ETRI) of Korean Government, Taejeon, Korea, 8/25-8/27, 1993.
23. "Neural Network Techniques for Temporal Signal Processing," 4-hour tutorial lecture for International Symposium on Artificial Neural Networks, Hsinchu Taiwan, December 14-16, 1993.

INVITED LECTURES AND SEMINARS

1. "Neural Networks in Remote Sensing and Image Processing Applications," NASA Goddard Space Flight Center, Greenbelt MD, September 1993.

2. ``Neural Networks in Medical Imaging Applications," Siemens Corporate Research, Princeton NJ, September 1993.
3. ``Neural Network Techniques for Intelligent Image Processing," corporate lecture series, Meidensha Inc., Tokyo, Japan, October 1993.
4. ``What's Beyond the Back-Propagation Learning," School of Business, Dept. of Management, Univ. of Washington, Weekly Dept. Seminar, Feb. 1994.
5. ``What's Beyond The Standard Back-Propagation Learning Networks For Image And Vision Processing," distinguished lecture series, Lawrence Livermore National Laboratory, March, 1994.
6. ``Bayesian Inference Techniques for Remote Sensing Inverse Problem Solving," NASA Remote Sensing Workshop, Goddard Space Flight Center, February 27 - March, 1995.
7. ``Solving Inverse Problems by Bayesian Iterative Neural Network Inversion," plenary talk in International Workshop on Theoretical Aspects of Neural Computation (TANC-97), Hong Kong, May 1997.
8. ``Digital Speech and Audio Coding Techniques," Tutorial talk in International Symposium on Multimedia Information Processing (ISMIP), Academic Sinica, Taipei, Taiwan, Dec. 1997.
9. "Intelligent Multimedia Signal Processing," Tutorial talk in Int'l Conf. On Image Processing, Kobe, Japan, Oct. 1999.
10. "Advances in Multimedia Signal Processing and Communication," Siemens special workshop for next generation broadband multimedia communication, Beijing, China, Dec. 1999.
11. "Advances in Multimedia Signal Processing and Communication," Microsoft Research Center, Beijing, China, Dec. 1999.
12. "Multimedia over IP – Is Broadband WAN Ready?" Plenary talk, Cotec 2000, Oct. 2000, Taipei, Taiwan.
13. "Multimedia over IP and Global Communication Infrastructure," Keynote speech, Industry IT Symposium, Kangwon University, Korea, Dec. 2000.
14. "Multimedia Networking over IP and Quality of Service," 3-hour Tutorial, Pacific Rim Conference on Multimedia (PCM2002), Hsinchu, Taiwan, December 2002.
15. "Multimedia Technologies for Distance Learning," 3-hour Tutorial, Int'l Symposium on Communication (ISCOM), Taipei, Taiwan, December 2003.
16. "Ubiquitous Sensor Network and Next Generation Communication," invited talk, ICIST-Kaist 2005 Conference, Korea, July 2005.
17. "Wireless Broadband Communication Systems and Applications," invited keynote speech, 17th VLSI Design/CAD Symposium, Hualien, Taiwan, August 2006.
18. "Are We Ready for the Multimedia over Wireless Broadband: A Challenge of Cross-Layer QoS Optimization," invited keynote speech, Multimedia Networking Systems Conference, Kaohsiung, Taiwan, Dec. 2006.
19. "QoS Challenges of Multimedia over Wireless Broadband," plenary talk for IEEE Mobile WiMax Symposium, Orlando, FL, March 2007.
20. "Multimedia Networking: from Theory to Practice," keynote speech for IASTED Circuits and Systems Conference, Banff, Canada, July 2-4, 2007.
21. "From Intelligent Video Analysis to Video Understanding," keynote speech for the 20th IPPR Conference on Computer Vision, Graphics and Image Processing, Miaoli, Taiwan, Aug.19-21, 2007.
22. "From Video Semantic Interpretation toward Human Behavior Understanding," Keynote speech for IEEE/IET International Conference on Audio, Language and Image Processing, Shanghai, China, July 7-9, 2008
23. "Cross-Layer QoS Optimization for Video over Heterogeneous Wireless Broadband," Keynote speech for First IEEE International Conference on Ubi-Media Computing, Lanzhou, China, July 15-16, 2008
24. "Future Perspective of Intelligent Community Security System," Plenary speech for 22nd Modern Engineering & Technology Seminar (METS), Taipei, Taiwan, November 17-19, 2008

25. " Human Centric Video Event and Behavior Understanding," Keynote speech for Pacific-Rim Conference on Multimedia, Tainan, Taiwan, Dec. 9-13, 2008
26. "Embedded Intelligence for Video Surveillance over Camera Networks," Plenary speech for the 4th International Symposium on Embedded Technology (ISET 2009), Daegu, South Korea, May. 21-22, 2009
27. "Embedded Intelligence for Large Scale Distributed Camera Networks," Invited talk for the 2009 VLSI Design/CAS Symposium, Hualien Taiwan, August 4-7, 2009
28. "Video QoS over Wireless Broadband -- WLAN, Wireless Ad Hoc and WiMAX Infrastructures," Keynote speech for the 5th Workshop on Wireless, Ad hoc, and Sensor Networks (WASN 2009), NTHU Hsinchu, Taiwan. September 10-11, 2009.
29. "Automated tracking and behavior understanding of human video objects for large scale distributed camera networks," Invited talk on Automated Image Processing Workshop, NOAA, Sept. 7-9, 2010.
30. "Wireless MediaNets: Application Driven Next Generation Wireless IP Networks," 3.5-hour Tutorial talk in IEEE Globecom, Miami Florida, Dec. 2010.
31. " Large Scale Real-Time Video Surveillance over Wireless Broadband Networks," opening keynote speech for International Computer Symposium, Tainan, Taiwan, Dec. 16-18, 2010
32. "Video Uplinking and downlinking over 4G Wireless Networks," invited talk by Qualcomm Research Center, San Diego, March 18, 2011.
33. " Automated Understanding of Video Object Events in a Distributed Smart Camera Network," keynote speech for IEEE International Conference on Advanced Technologies for Communication, Danang Vietnam, Aug. 2-4, 2011.
34. " Real-Time Mobile Video Surveillance over Wireless Broadband Networks," Plenary speech for the 7th International Conference on Wireless Communication, Networking and Computing, Wuhan, China, Sept. 23-25, 2011.
35. "Distributed and Centralized Information Management of Wireless Smart Camera Networks," Keynote speech, The 7th ACM* Workshop on Wireless Multimedia Networking and Computing (WMUNEP), October 31 – November 4, 2011, Miami, USA
36. "Robust Video Object Tracking in Distributed Camera Networks," Distinguished Lecture of EE, KAIST, May 8, 2012, Daejeon, Korea
37. "Intelligent Video Analytics over Large Scale Camera Networks," keynote speech for the 2012 UK-VN Advanced Surveillance Systems Workshop Danang City, Vietnam, September 10th, 2012
38. " Self-Calibrated and Scalable Camera Networks for Consistent Tracking and Activity Recognition of Humans," keynote speech for the 2013 IET Second International Conference on Smart and Sustainable City, Shanghai, China, August 19-20, 2013
39. "Embedded and Coordinated Intelligence for A Large Array of Smart Cameras ," keynote speech for the 8th International Conference on Embedded and Multimedia Computing , Taipei, Taiwan, August 23-25, 2013
40. "Image and Video Processing for Fishery Applications," keynote speech for the 4th IEEE/IET International Conference on Audio, Language and Image Processing , Shanghai, China, July 7-9, 2014
41. "Big Visual Data for Dynamic Monitoring of Physical World ," Plenary talk for the 25th International Conference on Electronics, Communications and Computers (CONIELECOMP'2015) , Cholula, Puebla, Mexico, Feb. 25-28, 2015.
42. "Automated Image/Video Analyses for Fishery Science ," Invited talk for the MCS Emerging Technologies Workshop 3 March to 4 March 2016, Auckland, New Zealand
43. "Cross-Layer QoE and QoC Optimization for Wireless Video Networking ," Keynote Speech for the 11th EAI International Conference on Communications and Networking in China (Chinacom 2016), Chongqing, China, September 24-26, 2016.

44. "Self-Calibration and Online Learning among Multiple Static and Moving Cameras for Real-Time Human Tracking," Keynote speech for the 2016 International Symposium on Information Technology Convergence (ISITC 2016), Oct. 13-15, 2016, Shanghai, China.
45. "Next Generation Mobile Video Networking," Keynote Speech for the 10th EAI International Conference on Mobile Multimedia Communications (Mobimedia 2017), Chongqing, China, July 13-14, 2017.
46. "Machine Learning for Big Fishery Visual Data," Keynote Speech for the Symposium on Emerging Technologies in Fisheries-Dependent Science and Catch Monitoring (147th Annual Meeting of the American Fisheries Society Meeting), Tampa, Florida, August 18-24, 2017.
47. "From Electronic Monitoring of Fishery to Smart Ocean," Keynote speech for the 2017 International Symposium on Information Technology Convergence, Oct. 19-21, 2017, Shijiazhuang, China.
48. "Coordinated Mining of Big Visual Data for Smart City," Keynote speech for the 8th IEEE Annual Computing and Communication Workshop and Conference (CWCC), Jan. 8-10, 2018, Las Vegas, USA.
49. "Coordinated 3D-Information Mining of Big Visual Data for Smart City," Keynote speech for the 10th International Conference on Digital Image Processing (ICDIP), May 11-14, 2018, Shanghai, China.
50. "Dynamic 3D Inference of Big Visual Data for Smart City," Keynote speech for the IEEE 20th International Workshop on Multimedia Signal Processing (MMSP), August 29-31, 2018, Vancouver, Canada.
51. "Electronic Visual Monitoring for the Smart Ocean," Keynote speech for the 11th International Conference on Digital Image Processing (ICDIP), May 10-13, 2019, Guangzhou, China.
52. "Coordinated 3D World Exploration for Smart Surveillance and Autonomous Driving," Keynote speech for 16th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS), September 18-21, 2019, Taipei.
53. "Multiple Object Tracking in Videos," Tutorial talk, IEEE ICIP, September 22-29, 2019, Taipei.
54. "Electronic Visual Monitoring for the Smart Ocean," Keynote speech for 10th IEEE Annual Information Technology, Electronics and Mobile Communication Conference, Vancouver BC Canada, October 17-19, 2019.

PUBLICATIONS

Books Authored/Edited

1. Yu-Hen Hu, Jenq-Neng Hwang, **Neural Networks for Signal Processing Handbook**, CRC Press, July 2001 (edited reference book).
2. Jenq-Neng Hwang, **Multimedia Networking: from Theory to Practice**, Cambridge University Press, April. 2009 (authored textbook).

Book Chapters Authored

1. L. Tsang, D. Davis, R. West, Z. Chen, J. N. Hwang, and D. Winebrenner, "Passive Microwave Remote Sensing of Snow: Scattering in Snow Based On Dense Media Theory and Parametric Inversion of Snow Parameters with An Artificial Neural Networks" ESA-NASA Workshop on Passive Microwave Remote Sensing of Land-Atmosphere Interaction, pp. 295-314, VSP Press, Utrecht, The Netherlands, 1995.
2. S.Y. Kung and J.N. Hwang, "Neural Network Architectures for Robotic Applications," Neuro-Control Systems: Theory & Applications, edited by M. M. Gupta and D. H. Rao, pp. 554-570, IEEE Press, 1995.

3. J. N. Hwang, "Textured Images Modeling and Segmentation," *The Handbook of Brain Theory and neural Networks*, ed. Michael A. Arbib, pp. 971-976, MIT Press, 1995.
4. Jenq-Neng Hwang, "Neural Network Techniques for Inverse Problems Solving," in *Theoretical Aspects of Neural Computation: A Multidisciplinary Perspective*, ed. by K. Y. Wang, I. King, and D. Y. Yeung. Springer, 1997.
5. Ming-Ting Sun, Sachin Deshpande, Jenq-Neng Hwang, "Lossless Coders," *Digital Signal Processing for Multimedia Systems*, ed. K.K.Parhi, T.Nishitani, Marcel Dekker Inc., NY., 1998.
6. Chien-Jen Wang and Jenq-Neng Hwang, "Joint Model- and Feature-Space Adaptation Techniques for Continuous Robust Speech Recognition," *Computational Intelligence Paradigms in Speech Recognition*, CRC Press, 1999.
7. Tzong-Der Wu, Jenq-Neng Hwang, and Ming-Ting Sun, "Advances in Video Transcoding," *Multimedia Signal Processing Handbook*, ed. L. Guan, S. Y. Kung, and J. Larsen, McGraw Hill, 2000.
8. Sachin Deshpande, Jenq-neng Hwang, and Ming-Ting Sun, "Multimedia Distance Learning," *Multimedia Signal Processing Handbook*, ed. L. Guan, S. Y. Kung, and J. Larsen, McGraw Hill, 2000.
9. Ying Luo, Jenq-Neng Hwang, Tzong-Der Wu, "Object Based Video Analysis and Interpretation, a book chapter in *Multimedia Systems and Content-based Image Retrieval*, ed. Sagarmay Deb., Idea Group Inc., 2003.
10. Jiqiang Song, Michael R. Lyu, and Jenq-Neng Hwang, "Framework for Indexing Personal Videoconference Archives," a book chapter in *Video Data Management and Information Retrieval*, ed. Sagarmay Deb., Idea Group Inc., 2003.
11. Jenq-Neng Hwang, Chih-Wei Huang, David Chang, "Cross-Layer End-to-End QoS for Scalable Video over WiMAX," a book chapter in *Advances in Mobile WiMAX*, John Wiley and Sons, 2007.
12. Victor Gao, Peng-Jung Wu, Yi-Hsien Wang, Jenq-Neng Hwang, "Peer-to-Peer Streaming Systems," a book chapter in *Ubiquitous Multimedia Computing*, ed. Qing Li, Timothy Shih, CRC, 2010.
13. Jenq-Neng Hwang, Victor Gau, "Tracking of Multiple Objects Over Camera Networks with Overlapping and Non-Overlapping Views," a book chapter for *Distributed Video Sensor Networks*, edited by Bir Bhanu, et al, Springer, 2010.
14. Hongxiang Li, Guanying Ru, Siqian Liu, Hui Liu, Jenq-Neng Hwang, "Introduction to Wireless Communications and Digital Broadcasting," in *Wireless Communications and Broadcasting: Circuits and Signal Processing*, Fa-Long Luo (Ed.), Cambridge University Press, 2011
15. Kuan-Hui Lee, Chun-Te Chu, Younggun Lee, Zhijun Fang, and Jenq-Neng Hwang, "Consistent Human Tracking over Self-Organized and Scalable Multiple-Camera Networks," in *Distributed Embedded Smart Cameras: Architectures, Design and Applications*, Christophe Bobda et al, (ed.), Ch. 9, pp. 189-210, Springer, March 2014.
16. Meng-Che Chuang, Jenq-Neng Hwang, Kresimir Williams, " Supervised and Unsupervised Feature Extraction Methods for Pattern Recognition, " in *Handbook of Pattern Recognition and Computer Vision*, 5th ed., C. H. Chen et al. (ed.), Ch. 1.9, pp. 159-174, 2016.
17. M.-C. Chuang, J.-N. Hwang, K. Williams, "Automatic Live Fish Segmentation and Recognition for Trawl-Based Cameras," *Computer Vision and Pattern Recognition in Environmental Informatics*, IGI Global, 2015

Referred Archival Journals

1. J. N. Hwang and L. S. Lee, "Dynamic Data Compression Algorithms in Speech Coding," *Journal of the Chinese Institute of Engineers*, 8(3):261-270, August 1985

2. S. Y. Kung, S. C. Lo, S. N. Jean and J. N. Hwang, "Wavefront Array Processors: from Concept to Implementation," IEEE, Computer Magazine, special issue on systolic array, 20(7):18-33, July 1987.
3. S.Y. Kung, J.N. Hwang, "A Unified Systolic Architecture for Artificial Neural Networks," Journal of Parallel and Distributed Computing, special issue on Neural Networks, 6(2):358-387, April 1989.
4. J.N. Hwang, S.Y. Kung, "Parallel Algorithms/Architectures for Artificial Neural Networks," Journal of VLSI Signal Processing, 1(3):221-251, November 1989.
5. S.Y. Kung and J.N. Hwang, "Neural Network Architectures for Robotic Applications," IEEE Trans. on Robotics and Automation, special issue on Computational Algorithms and Architectures in Robotics and Automation, 5(5):641-657, October, 1989.
6. J.N. Hwang, J.A. Vlontzos, and S.Y. Kung, "A Systolic Neural Network Architecture for Hidden Markov Model," IEEE Trans. on Acoustics, Speech, and Signal Processing, 37(12):1967-1979, December 1989.
7. S.Y. Kung, J.A. Vlontzos, and J.N. Hwang, "VLSI Array Processors for Neural Network Simulation," Journal of Neural Network Computing, 1(4):5-20, Spring 1990.
8. S. Y. Kung and J. N. Hwang, "Systolic Architectures for Kalman Filtering," IEEE Trans. on Acoustics, Speech, and Signal Processing, 39(1):171-182, January 1991.
9. J. N. Hwang, J. J. Choi, S. Oh, and R. J. Marks II, "Query Based Learning Applied to Partially Trained Multilayer Perceptrons," IEEE Trans. on Neural Networks, 2(1):131-136, January 1991.
10. J.N. Hwang and J. A. Ritcey, "Systolic Architectures for Radar CFAR Detectors," IEEE Trans. on Acoustics, Speech, and Signal Processing, 39(10):2286-2295, October 1991.
11. D. Hoskins, J. N. Hwang, J. Vagners, "Iterative Inversion of Neural Networks and Its Application to Adaptive Control," IEEE Trans. on Neural Networks, 3(2):292-301, March 1992.
12. J. N. Hwang, H. Li, M. Maechler, D. Martin, J. Schimert, "Projection Pursuit Learning Networks for Regression," Int'l Journal of Engineering Applications of Artificial Intelligence, special issue on "Neural Networks and Parallel Processing," 5(3):193-204, May 1992.
13. J. Holt and J. N. Hwang, "Finite Precision Error Analysis for Neural Network Hardware Implementations," IEEE Trans. on Computers, 42(3):281-290, March 1993.
14. K. Yoshitomi, A. Ishimaru, J. N. Hwang, and J. S. Chen, "Surface Roughness Determination Using Spectral Correlations of Scattered Intensities and Artificial Neural Network Technique," IEEE Trans. on Antennas and Propagation, 41(4):498-502, April 1993.
15. D. T. Davis, Z. Chen, L. Tsang, J. N. Hwang, and A.T.C. Chang, "Retrieval of Snow Parameters by Iterative Inversion of a Neural Network," IEEE Trans. on GeoScience and Remote Sensing, 31(4):842-852, July 1993.
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241. Yizhou Wang, Yen-Ting Huang, Jenq-Neng Hwang, "[Monocular Visual Object 3D Localization in Road Scenes](#)," ACM Multimedia Conference (ACMMM), Nice, France, October 21-25, 2019
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244. Yanting Zhang, Yonggang Qi, Jie Yang, Jenq-Neng Hwang, "Improved Traffic Sign Detection in Videos through Reasoning Effective RoI Proposals," IEEE International Conf. on Multimedia Expo (ICME), London UK, July 2020
245. Chia-Chi Tsai, Yong-Hsiang Yang, Hung-Wei Lin, Bo-Xun Wu, En Chih Chang, Hung Yu Liu, Jhih-Sheng Lai, Po Yuan Chen, Jia-Jheng Lin, Jen Shuo Chang, Li-Jen Wang, Ted T. Kuo, Jenq-Neng Hwang, and Jiun-In Guo, "The 2020 Embedded Deep Learning Object Detection Model Compression Competition for Traffic in Asian Countries," IEEE International Conf. on Multimedia Expo (ICME), London UK, July 2020

Ph.D. SUPERVISION

Graduated Ph.D. Students

- 1) Shyh-Rong Lay, "Projection Pursuit Learning for Regression, Classification and Density Estimation - A Neural Network Perspective," March 1994.
- 2) Yen-hao Tseng, "A Neural Network Technique for Invariant Recognition and Motion Estimation of Three-Dimensional Objects Using Range Data," March 1995.
- 3) Seokyoung Moon, "Robust Speech Recognition via Inversion of Hidden Markov Models," March 1995.
- 4) Daniel T. Davis, "Solving Inverse Problems Using Bayesian Modeling to Incorporate Information Sources," June 1995.
- 5) Greg. I. Chiou, "Active Contour Models for Distinct Contour Tracking and Lipreading," September 1995.
- 6) Shih-Shien You, "The Growing and Pruning of Neural Network Learning: An Optimization Perspective," (joint advising with Prof. Wen-Wei Lin of National Tsinghua University, Taiwan) March 1996.
- 7) Chein-Jen Wang, "Joint Model- and Feature-Space Adaptation Techniques for Continuous Robust Speech Recognition," March 1997.
- 8) Tzong-Der Wu, "Dynamic Bit-Rate Conversion and Re-Allocation in Multipoint Video Transcoding," May 1999.
- 9) Eugene Lin, "Fuzzy Reasoning of Three Dimensional Snake Tracking of Medical Images," November 1999.
- 10) Sachin Deshpande, "Systems for Interactive Multimedia Distance Learning," November 1999.
- 11) Rosas-Romero Roberto, "Morphing and Motion Tracking of 3-D Objects," December 1999.
- 12) Wu-hsiang Jonas Chen, "Error Resilient and Concealment Video Coding," December 2000.
- 13) Changlck Kim, "Framework for Video Object Segmentation and Abstraction," December 2000.
- 14) Dongxiang Xu, "Markov Random Field based Contour Segmentation for MR Image Sequences," April 2001.
- 15) Tony Nguyen, "Human Perception Based Dynamic Frame Selection in Time Lapsed Video," March 2002.
- 16) Sanpachai Huvanandana, "Biometric Signal Classification: An Enhanced Fingerprint Identification System," April 2002.
- 17) Kyoung-Ho Choi, "Framework for 3-D Audio to Visual Conversion in MPEG-4," June 2002.

- 18) Serchen Chang, “A Novel Rate Predictor and its Rate Control for Video Coding,” (joint advising with Prof. Jar-Ferr Yang of National Cheng-Kung University, Taiwan) May 2003.
- 19) Qiang Liu, “Available Bandwidth Estimation and Rate-Based Congestion Control in Multimedia Communication,” May 2004
- 20) Ying Luo, “Statistical Semantic Analysis of Spatio-Temporal Image Sequences,” Oct. 2004.
- 21) Hsu-Feng Hsiao, “Multimedia Streaming Congestion Control over Heterogeneous Networks: From Distributed Computation to End-to-End Perspective,” June 2005.
- 22) Hsu-Yung Cheng, “Multi-Object Tracking via Particle Sampling and Enhanced Probabilistic Data Association for Event Detection in Intelligent Video Systems,” June 2008.
- 23) Chih-Wei Gary Huang, “Cross-Layer Resource Management for Multimedia over Wireless Networks,” June 2009.
- 24) Victor Gau, “Throughput Maximization and Latency Minimization in Dense Wireless Ad Hoc Networks,” June 2010.
- 25) Ibrahim Karliga, “A Framework for Human Body Video Object Segmentation and Body Parts Tracking,” March 2011.
- 26) Chun-Te Chu, "Robust and Consistent Human Tracking within Camera and Across Multiple Cameras," June 2013
- 27) Shian-Ru Ke, “Recognition of Human Actions based on 3D Pose Estimation via Monocular Video Sequences,” March 2014.
- 28) Po-Han Wu, " Visual-Quality-Driven Video Networking over 4G Wireless Broadband, " May 2014.
- 29) Meng-Che David Chuang, " Automatic Video Analysis for Fishery Survey Systems, " June 2015.
- 30) Kuan-Hui Lee, "On-Road Pedestrian Tracking across Multiple Driving Recorders," December 2015.
- 31) Xiang Chen, " Scalable Video Networking over MIMO and Multi-RAT Systems," December 2015.
- 32) Younggun Lee, “Robust Video Object Tracking in Distributed Camera Network,” December 2017.
- 33) Jounsup Park, "Cross-Layer Optimization of Wireless Video Multicast Systems " June 2018
- 34) Zheng Tang, “Robust Video Object Tracking via Camera Self-Calibration,” June 2019
- 35) Gaoang Wang, “Vision based Analysis in Fishery Applications,” June 2019
- 36) Tsung-Wei Huang, “Automatic Video Analysis for Electronic Monitoring of Fishery Activities,” September 2019