

Curriculum Vitae

Ren-Hung Hwang

Personal Information

Sex Male
Date of birth October 25, 1963
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Address Department of Computer Science & Information Engineering
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Education

Sept. 1989 – May 1993 **Ph.D.** Department of Computer Science
University of Massachusetts
Amherst, MA, 01002
U.S.A.
(GPA=4.0)
Sept. 1987 – Aug. 1989 **Master** Department of Computer Science
University of Massachusetts
Amherst, MA, 01002
U.S.A.
(GPA=4.0)
Sept. 1981 – June 1985 **B.S.** Department of Computer Science
and Information Engineering,
National Taiwan University,
Taipei, Taiwan, R.O.C.
(Rank 3rd in the class)

Academic Employment

Jan. 2014 – present Dean
College of Engineering
National Chung Cheng University

March 2012 – present	Deputy Director-General College Admissions Committee
August 2009 – present	Distinguished Professor Department of Computer Science and Information Engineering National Chung Cheng University
March 2012 – Dec. 2013	Deputy Director Computer Center National Chung Cheng University
Feb. 2010 – Jan. 2011	Director Ching Jiang Learning Center National Chung Cheng University
August 2007 – Jan. 2008	Director e-Learning Center National Chung Cheng University
August 2006 – July 2009	Chairman Department of Computer Science and Information Engineering National Chung Cheng University
August 2005 – Jan. 2006	Visiting scholar Department of Electric Engineering University of Washington Seattle, WA, U.S.A.
August 2002 – July 2005	Chairman Department of Communications Engineering National Chung Cheng University
August 2001 – July 2009	Professor, Department of Computer Science and Information Engineering, National Chung Cheng University Chia-Yi, Taiwan, R.O.C.
May 2000 – July 2002	Division director Research and Development Division Internet Research Center National Chung Cheng University
August 1998 – July 2002	Division director Research and Development Division Computer Center

Dec. 1995 – July 1998 National Chung Cheng University
Division director
Video Technology Division
Video and Audio Center

August 1993 – June 2001 National Chung Cheng University
Associate Professor,
Department of Computer Science
and Information Engineering,
National Chung Cheng University
Chia-Yi, Taiwan, R.O.C.

Industrial Employment

Jan. 2008 – Dec. 2008 Consultant
BioLife Technology Co.,Ltd
Taipei, Taiwan, R.O.C.

May 2000 – August 2001 Consultant
UCome Information Technology Company
Kao-Hsiung, Taiwan, R.O.C.

July 2000 – June 2001 Consultant
JoyHub Information Technology Company
Taipei, Taiwan, R.O.C.

May 2000 – Dec. 2002 Consultant
Eastern Multimedia Group
Taipei, Taiwan, R.O.C.

Awards

IEEE Outstanding Paper Award, IEEE International Conference on Ubiquitous Intelligence and Computing, 2012

National Chung Cheng University Award for excellent performance for professor with administration work, 2008.

Outstanding contribution award on eLearning, TANET, 2008.

Best paper award, 2005 International conference on e-Learning, paper entitled “Design and Implementation of a Learning Object Repository for Heterogeneous e-Learning Portals,” co-authored with Jin-Wen Wang and Yu Lai, 2005.

Best paper award, the 6th HL7 International Affiliates Meeting and the 4th Asia-Pacific HL7 Conference on Healthcare Information Standards, paper entitled “A study on web services based CDA for medical information

exchange system,” co-authored with Jin-Chia Lin and Kuan-Ming Kuo, 2005.

Best paper award, the 10th Mobile Computing Workshop, paper entitled “MIP6-MANET: The Integration and Implementation of Mobile IPv6 and Mobile Ad Hoc Networks,” co-authored with Yuh-Shyan Chen and Yun-Hsuan Yang, 2004.

Outstanding Research Award from Engineering College, National Chung Cheng University, 2003.

Outstanding Teaching Award from National Chung Cheng University, 2002.

Research Awards from National Science Council, R.O.C. in 1993, 1995, 1998, 1999.

Awards for Networking related Course Materials from Ministry of Education, R.O.C., in 1997, 1998, 2000, 2010 (awarded courses: BISDN, Video-On-Demand, Next Generation Internet Technologies, Vehicle Positioning and its Applications on e-map)

Annual best paper award from Education and Information Magazine, 1997 (paper title: Design and Development of Virtual Classroom over High Speed Networks)

National Chung Cheng University Award for excellent performance for professor with administration work, 1998.

Young Engineer Award from Chinese Engineer Association, Kao-Hsiung chapter, 2000.

Supervise students to win following contests:

The second place in Mobile Application Contest held by Ministry of Education, 2013/1.

The second place in Mobile Application Contest held by Ministry of Education, 2012/6.

Excellent Honor (two teams) in Telecommunication Software Competition held by HiNet, 2011.

The second place in Telecommunication Software Competition held by HiNet, 2010.

Excellent Honor, Interuniversity Information Security Contest (hosted by Institute for Information Industry), 2008 and 2009.

Enter final 18 in the Telecommunication Software Competition held by HiNet, 2005-2008.

Ranked 4th in National IPv6 Programming Contest held by NICI (National Information and Communications Initiative Committee), 2004.

Best Technique award in the Mobile Entertainment Application Competition held by III, 2003.

Excellent award in the Open Source Software Development held by Software Liberty Association of Taiwan and III, 2003.

Ranked 5th in the Mobile Hero Competition (wireless software competition) held by Industrial Development Bureau, Ministry of Economic Affairs, 2003.

Selected Award in the 1st Sun Cobalt Innovative Solution Content, 2002.

Research Interests

Internet of Things (Cyber-Physical systems, Ubiquitous Computing)

Cloud Computing

4G/LTE/WiMAX

Cloud-based Large Scale e-Learning system

Selected Publication List

International Journals

1. **Ren-Hung Hwang**, “Routing in VP-based ATM Networks”, *Journal of Information Science and Engineering*, Vol. 11, No. 4, Dec. 1995, pp.595-624.
2. **Ren-Hung Hwang**, J. F. Kurose, and D. Towsley, “On Call Processing Delay in High-Speed Networks”, *IEEE/ACM Transaction on Networking*, Vol. 3, No. 6, Dec. 1995, pp.628-639.
3. **Ren-Hung Hwang**, and Ching-Houng Chou, “Scheduling in VOD Systems over CATV Networks,” *Journal of the Chinese Institute of Electrical Engineering*, Vol. 4, No. 2, 1997, pp. 119-128.
4. **Ren-Hung Hwang**, “On Multicast Routing in Single Rate Loss Networks,” *Journal of Information Science and Engineering.*, Vol. 13, No. 3, September 1997, pp.461-474.
5. **Ren-Hung Hwang**, and Youn-Chen Sun, “Optimal Video Placement for Hierarchical Video-on-Demand Systems,” *IEEE Transactions on Broadcasting*, Vol. 44, No. 4, Dec. 1998, pp.392-401.
6. **Ren-Hung Hwang**, “A Hierarchical Video-On-Demand System on ATM Networks,” *Proceedings of the NSC, Part A: Physical Science and Engineering*, Vol. 23, No. 3, May 1999.
7. **Ren-Hung Hwang**, J. F. Kurose, and D. Towsley, “MDP Routing for Multirate Loss Networks,” *Computer Networks*, Vol. 34, pp. 241-261, 1999.

8. **Ren-Hung Hwang**, "Adaptive Multicast Routing in Multirate Loss Networks," *Telecommunication Systems*, Vol. 12, pp.283-313, 1999.
9. **Ren-Hung Hwang**, and Pao-Ta Yu, "PROMS: A PRO-active Monitoring System for SS7 Networks," *International Journal of Network Management*, Vol. 10, No. 1, pp.17-27, 2000.
10. Jang-Jiin Wu, **Ren-Hung Hwang** and Hsueh-I Lu, "Multicast Routing with Multiple QoS Constraints in ATM Networks," *Information Sciences: an International Journal*, Vol. 124, pp. 29-57, 2000.
11. **Ren-Hung Hwang**, Wei-Yuan Do, and Shyi-Chang Yang, "Multicast Routing Based on Genetic Algorithms," *Journal of Information Science and Engineering*, Dec. 2000.
12. Huang-Leng Chang and **Ren-Hung Hwang**, "On LLR Routing in Circuit-Switched Networks," *IEICE Transactions on Communications*, Vol. E84-B, No. 5, May 2001, pp. 1397-1405.
13. Ben-Jye Chang and **Ren-Hung Hwang**, "Efficient Hierarchical QoS Routing in ATM Networks," *Computer Communications*, Vol. 24, No. 15-16, September 2001, pp. 1650-1662.
14. Ying-Dar Lin, Nai-Bin Hsu, **Ren-Hung Hwang**, "Granularity of QoS Routing in MPLS Networks," *Lecture Notes in Computer Science*, Vol. 2092 (Proceedings of IWQoS 2001), pp. 140-154, Springer, June 2001.
15. **Ren-Hung Hwang** and Pin-Hao Chi, "Fast Optimal Video Placement Algorithms for Hierarchical Video-On-Demand Systems," *IEEE Transactions on Broadcasting*, Vol. 47, Issue:4, Dec. 2001, pp. 357 –366.
16. Ben-Jye Chang, Hsien-Kang Chung, and **Ren-Hung Hwang**, "Reducing Overhead of Aggregated Information in Hierarchical Routing," *Computer Communications*, Vol. 25, Issue 5, March 2002, pp.534-543.
17. Ying-Dar Lin, Nai-Bin Hsu, and **Ren-Hung Hwang**, 2002, "QoS Routing Granularity in MPLS Networks," *IEEE Communication Magazine*, Vol. 40, No. 6, June 2002, pp. 58-65. (SCI, EI)
18. Jimmy Yang and **Ren-Hung Hwang**, 2002, "Performance of RSVP Controlled-Load Service over ATM ABR Service," *Journal of the Chinese Institute of Electrical Engineering*, Vol. 9, No. 4, 2002. (EI)
19. Ying-Dar Lin, Nai-Bin Hsu, **Ren-Hung Hwang**, 2002," RPIM-SM: Extending PIM-SM for RP Relocation," *Computer Communications*, Volume 25, Issue 18-1, December 2002, pp. 1774-1781. (SCI, EI)

20. Ching-Lin Wang, **Ren-Hung Hwang**, Tung-Shou Chen, and Huan-Ching Wang, "A Digital Image Watermarking System Based Upon Classification," *Imaging Science Journal* Vol 51, 2003, pp. 213-219. (SCI)
21. Ben-Jye Chang and **Ren-Hung Hwang**, 2003, "Analysis of Adaptive Cost Functions for Dynamic Update Policies for QoS Routing in Hierarchical Networks," *Information Sciences*, Volume 151, May 2003, pp. 1-26. (SCI, EI)
22. Heng-Chi Su and **Ren-Hung Hwang**, 2003, "Multicast Provision in a Differentiated Services Network," *Journal of Information Science and Engineering*, July 2003. (SCI, EI)
23. Ben-Jye Chang and **Ren-Hung Hwang**, 2004, "Distributed Cost-based Update Policies for QoS Routing on Hierarchical Networks," *Information Sciences*, Volume 159, Issues 1-2, Pages 87-108, January 2004. (SCI, EI)
24. Ben-Jye Chang and **Ren-Hung Hwang**, 2004, "Performance Analysis for Hierarchical Multirate Loss Networks," *IEEE Transactions on Networking*, Vol. 12, No. 1, Feb. 2004, pp. 187-199. (SCI, EI)
25. **Ren-Hung Hwang**, Ben-Jye Chang, Wen-Cheng Hsiao, and Jenq-Muh Hsu, "Scalable Distributed Multicast Routing with Multiple Classes of QoS Guarantee," *IEICE Transactions on Communications*, Vol.E 87-B, No.9, pp. 2682-2691, Sep. 2004. (SCI, EI)
26. Min-Xiou Chen, and **Ren-Hung Hwang**, "Fair and Efficient Packet Scheduling Algorithms for Multiple Classes of Service under QoS guarantee in UMTS," *Computer Communications*, Vol 28, No. 4, April 2005, pp. 379-392. (SCI, EI)
27. Min-Xiou Chen and **Ren-Hung Hwang**, "Fair and Efficient Scheduling for UMTS Forward Link," *International Journal of Communication Systems*, Vol. 18, No. 4 , pp. 409-426, 2005. (SCI)
28. Shao-Ming Lu, Min-Xiou Chen, and **Ren-Hung Hwang**, "Novel Location Management in IP-Based Cellular Networks," *International Journal of Mobile Communications*, Vol. 3, No. 2, pp. 150-164, 2005. (EI)
29. Ben-Jye Chang, Min-Xiou Chen, **Ren-Hung Hwang**, and Jun-Fan Juang, "MDP-based OVSF Code Assignment Scheme and Call Admission Control for Wideband-CDMA Communications," *Wireless Personal Communications*, Vol. 34, No.4, pp. 373-394, Sep. 2005. (SCI, EI)
30. **Ren-Hung Hwang**, Chiung-Ying Wang, Cheng-Ying Li, and Yuh-Shyan Chen, "Mobile IPv6-based Ad Hoc Networks: Its Development and

- Application,” *IEEE Journal on Selected Area in Communications (JSAC)*, Vol. 23(11), Nov. 2005, pp. 2161- 2171. (SCI,EI)
31. Ben-Jye Chang and **Ren-Hung Hwang**, "Modeling and Analyzing the Performance of Adaptive Hierarchical Networks," *Information Sciences*, Vol. 176, Issue 5, pp. 522-549, March 6, 2006. (SCI,EI)
 32. Min-Xiou Chen, and **Ren-Hung Hwang**, “Efficient OVSF code assignment and reassignment strategies in UMTS,” *IEEE Transactions on Mobile Computing*, Vol. 5, No. 7, pp. 769-783, 2006.
 33. Ching-Lin Wang, Yung-Kuan Chan, Sheng-Chu Wu, and **Ren-Hung Hwang**, “A Quadtree and Statistical Model Based Lossless Binary Image Compression Method,” *Image Science Journal*, Vol. 69, No. 3, 2006, pp. 251-358. (SCI)
 34. De-Kai Liu and **Ren-Hung Hwang**, “P2broadcast: a Hierarchical Clustering Live Video Streaming System for P2P Networks,” *International Journal of Communication Systems*, Vol. 19(6), August 2006, pp. 619-637. (SCI)
 35. Yuh-Shyan Chen, Yun-Hsuan Yang, and **Ren-Hung Hwang**, "SIP-based MIP6-MANET: Design and Implementation of Mobile IPv6 and SIP-based Mobile Ad Hoc Networks," *Computer Communications*, Vol. 29(8), May 2006, pp. 1226-1240. (SCI)
 36. Ben-Jye Chang, Min-Xiou Chen, **Ren-Hung Hwang** and Kun-Chan Tsai, "Single Code-Based Dynamic Grouping with Cycle Interleaving Algorithm for Reducing Waste Rate in WCDMA Cellular Networks," *IEICE Transactions on Communications*, Vol. E89-B, No. 12, Dec. 2006, pp. 3306-3318. (SCI)
 37. Chi-Jen Wu, De-Kai Liu and **Ren-Hung Hwang**, “A Location-Aware Peer-to-Peer Overlay Network,” *International Journal of Communication Systems*, Vol. 20(1), Jan. 2007, pp. 83-102. (SCI)
 38. De-Kai Liu, Chaiporn Jaikaeo, Chien-Chung Shen and **Ren-Hung Hwang**, “Querying time indexed information in mobile Ad hoc networks,” *Elsevier Ad Hoc Networks Journal*, Volume 5, Issue 7, September 2007, pp. 1090-1112.
 39. **Ren-Hung Hwang**, Min-Xiou Chen, and Chen-Jui Peng, “SSIP: Split a SIP Session over Multiple Devices,” *Computer Standards & Interfaces*, 29 (5), JUL 2007, pp. 531-545. (SCI)
 40. **Ren-Hung Hwang**, Chiung-Ying Wang, and Guan-Nan Chen, "MTSP: Multi-hop Time Synchronization Protocol for IEEE 802.11 Wireless Ad Hoc Network", *Journal of Information Science and Engineering (JISE)*, 23 (4), JUL

2007, pp. 969-983. (SCI)

41. **Ren-Hung Hwang**, Shan-Yi Tsai and Chiung-Ying Wang, "UbiPhone: Human-centered Ubiquitous Phone System," *IEEE Pervasive Computing*, vol. 8, no. 2, pp.40-47, April-June 2009. (SCI)
42. De-Kai Liu, Chaiporn Jaikaeo, Chien-Chung Shen, and **Ren-Hung Hwang**, "Timely Information Discovery in MANETs," *Computers and Mathematics with Applications*, Vol. 57, No. 11-12, June 2009, pp. 1808-1821. (SCI impact factor =1.192)
43. **Ren-Hung Hwang** and Cheng-Chang Hoh, "Cross-Layer Design of P2P File Sharing over Mobile Ad Hoc Networks," *Telecommunication Systems*, Vol. 42, Issue 1, 2009, Page 47. (SCI impact factor =0.286)
44. **Ren-Hung Hwang**, Cheng-Chang Hoh, and Chiung-Ying Wang, "Swarm Intelligence based Anycast Routing Protocol in Ubiquitous Networks," *Wireless Communications and Mobile Computing*, Volume 10, Issue 7, pages 875-887, July 2010. (SCI impact factor =1.106)
45. Chiung-Ying Wang, **Ren-Hung Hwang***, and Chuan-Kang Ting, "UbiPaPaGo: Context-aware Path Planning," *Expert Systems With Applications*, Vol. 38(4), April 2011, pp. 4150-4161. (SCI)
46. Hsiao-Yun Huang, Chiung-Ying Wang, and **Ren-Hung Hwang***, "Mobility Management in Ubiquitous Environments," *Journal of Personal and Ubiquitous Computing*, special issue on Context-Aware Middleware and Applications, Volume 15, Issue 3, 2011, pp. 235-251. (SCI)
47. Kuan-Lin Chiu, **Ren-Hung Hwang**, and Yuh-Shyan Chen, "Seamless Session Mobility Scheme in Heterogeneous Wireless Networks," *International Journal of Communication Systems*, Volume 24, Issue 6, June 2011, pp. 789-809. (SCI)
48. Kuan-Lin Chiu, **Ren-Hung Hwang**, and Yuh-Shyan Chen, "Cross-layer design vehicle-aided handover scheme in VANETs," *Wireless Communications and Mobile Computing*, Volume 11 Issue 7, July 2011, pp. 916-928. (SCI)
49. Hung-Yi Teng, Hui-Ching Huang, and **Ren-Hung Hwang**, "Peer-to-Peer Video-on-Demand Service in NUWeb," *International Journal of Ad Hoc and Ubiquitous Computing (IAHUC)*, special issue on Cloud Computing - Technologies and Services, Vol. 9, No. 1, January, 2012, pp.1-11. (SCI, IF=0.848, 47/79)

50. Yu-Chien Chen, **Ren-Hung Hwang***, Cheng-Yu Wang, "Development And Evaluation Of A Web 2.0 Annotation System As A Learning Tool In An E-Learning Environment," *Computer & Education*, vol. 58, 2012, pp.1094-1105. (SSCI , IF=2.621, 7/206)
51. **Ren-Hung Hwang**, Jun-Hong Lu, and Chiung-Ying Wang "Open Framework for Distributed Context Management in Ubiquitous Environments," *International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC)*, Volume 9, Issue 4, April, 2012. (SCI , IF=0.848, 47/79)
52. Kuan-Lin Chiu and **Ren-Hung Hwang**, "Communication Framework for Vehicle Ad Hoc Network on Freeways," *Telecommunication Systems*, August 2012, Volume 50, Issue 4, pp 243-256. (SCI, IF=0.689, 51/79)
53. **Ren-Hung Hwang**, Ben-Jye Chang, Yan-Min Lin and Ying-Hsin Liang, "Adaptive Load-balancing Association Handoff Approach for Increasing Utilization and Improving GoS in Mobile WiMAX Networks," *Wireless Communications and Mobile Computing*, Vol. 12(4), October 2012, pp. 1251-1265. (SCI, IF=0.884, 43/79)
54. Hung-Yi Teng, Chung-Chih Kuo, and **Ren-Hung Hwang**, " Downlink Packet Scheduling and Resource Allocation in EPON-WiMAX Hybrid Access Networks," *EURASIP Journal on Wireless Communications and Networking*, November 2012. (SCI, IF=0.873, 46/79) (doi:10.1186/1687-1499-2012-333, <http://jwcn.erasipjournals.com/content/2012/1/333>)
55. Hung-Yi Teng, Hung-Chi Lai and **Ren-Hung Hwang**, "Energy Efficiency Power Control of Cell Breathing in EPON-WiMAX Hybrid Access Network," *Journal of Interconnection Networks*, Vol. 13, Nos. 3&4, 2012, pp. 1250012-1 - 1250012-24.
56. **Ren-Hung Hwang**, Chiung-Ying Wang, Chi-Jen Wu, and Guan-Nan Chen, "A Novel Efficient Power-Saving MAC Protocol for Multi-Hop MANETs," *International Journal of Communication Systems*, January 2013, Volume 26, Issue 1, pp. 34-55. (SCI)
57. Yuan-Hao Chang, Ming-Chang Yang, Tei-Wei Kuo, and **Ren-Hung Hwang**, "A Reliability Enhancement Design under the Flash Translation Layer for Flash-Memory Storage Systems," *ACM Transactions on Embedded Computing Systems (TECS)*, Vol. 13, Issue 1, August 2013. (SCI)
58. Hung-Yi Teng, Chien-Nan Lin, and **Ren-Hung Hwang***, "A Self-Similar Super-Peer Overlay Construction Scheme for Super Large-Scale P2P Application," *Information Systems Frontiers*, Vol. 16, No. 1, March 2014, pp

45-58. (SCI)

59. **Ren-Hung Hwang**, Yu-Ling Hsueh, and Hao-Wei Chung, "A Novel Time-Obfuscated Algorithm for Trajectory Privacy Protection," *IEEE Transactions on Services Computing*, Vol. 7, Issue 2, pp. 126-139, Apr.-June 2014. (SCI)
60. Da-Jing Zhang-Jiana, Chung-Nan Leea, and **Ren-Hung Hwang**, "An Energy Saving Algorithm for Cloud Resource Management Using a Kalman Filter," *International Journal of Communication Systems*, Vol. 27, Issue 12, pp. 4078-4091, Dec. 2014. (SCI)
61. **Ren-Hung Hwang**, Chung-Nan Lee, Yi-Ru Chen, and Da-Jing Zhang-Jian, "Cost Optimization of Elasticity Cloud Resource Subscription Policy," *IEEE Transactions on Services Computing*, Vol. 7, Issue 4, pp. 561-574, Oct.-Dec. 2014. (SCI)
62. Chin-Feng Lai, **Ren-Hung Hwang**, Han-Chieh Chao, Mohammad Mehedi Hassan, "A Buffer-Aware HTTP Live Streaming Approach for SDN-enabled 5G Wireless Networks," *IEEE Network Magazine*, accepted, Sep. 11, 2014.
63. Cheng-Hsien Lin, **Ren-Hung Hwang**, Jang-Jiin Wu, Jeng-Farn Lee, and Ying-Dar Lin, "Integration of Spatial Reuse and Allocation for Downlink Broadcast in LTE-Advanced and WiMAX Relay Networks," *IEEE Transactions on Vehicular Technology*, Nov. 18, 2014.

Conferences

1. Ren-Hung Hwang, J. F. Kurose, "On Virtual Circuit Routing and Rerouting in Packet-Switched Networks", *IEEE International Conference on Communication*, pp.1318-1323, June. 1991.
2. Ren-Hung Hwang, J. F. Kurose, and D. Towsley, "The Effect of Processing Delay and QOS Requirements in High-Speed Networks", *Proceeding of the Eighth Annual Joint Conference of the IEEE Computer and Communication Societies (INFOCOM'92)*, pp.160-169, May. 1992.
3. Ren-Hung Hwang, J. F. Kurose, and D. Towsley, "State Dependent Routing for Multirate Loss Networks", *IEEE Global Telecommunications Conference (GLOBECOM'92)*, pp.565-570, Dec. 1992.
4. A. E. Conway, D. Dimitrijevic, and Ren-Hung Hwang, "Hierarchical Simulation of Multi-Layered Communication Network Protocols", *Sixth International Conference on Data Communication Systems and their Performance*, Oct. 1993.

5. Ren-Hung Hwang, J. F. Kurose, and D. Towsley, "MDP Routing in ATM Networks Using the Virtual Path Concept", *IEEE INFOCOM'94*, pp.1509-1518, June 1994.
6. Ren-Hung Hwang, "LLR Routing in VP-based ATM Networks", *ICS'94*, Hsinchu, pp.707-712, Dec 1994.
7. Ren-Hung Hwang, "Adaptive Multicast Routing in Single Rate Loss Networks", *IEEE INFOCOM'95*, pp. 571-578, April 1995.
8. Ren-Hung Hwang, "LLR Routing in Homogeneous VP-based ATM Networks", *IEEE INFOCOM'95*, pp. 587-593, April 1995.
9. Ren-Hung Hwang, "Multicast Routing in Signal Rate Loss Networks Based on Markov Decision Process", *ISCOM'95*, Taipei, pp. 995-1001, Dec. 1995.
10. H-S Huang, and Ren-Hung Hwang, "Self-Healing ATM Networks Based on Virtual Path Restoration", *Proceeding of National Computer Symposium, 1995*, pp. 259-266, Chung-Li, Taiwan, Dec 1995.
11. P-T Yu, and Ren-Hung Hwang, "Fuzzy Rank Ordering", *1995 AI Workshop*, Taipei, Dec. 1995.
12. Ren-Hung Hwang, et al., "A Hierarchical Video-On-Demand System on ATM Networks", *1996 Workshops on Communication Networks*, pp.311-332, March 1996.
13. Ren-Hung Hwang, and Tai-Wei Kuo, "System Capacity Approximation for Multimedia Servers," *RAMS'96*, Taipei, pp.85-89, July 1996.
14. B-L Suey, H-J Chang, and Ren-Hung Hwang, "The Design and Implementation of Transport Protocol for a Video On Demand System on ATM Networks," *RAMS'96*, Taipei, pp.161-168, July 1996.
15. Ren-Hung Hwang, and Hwa-Shing Huang, "Multicast Routing in VP-based ATM Networks," *ICCCN'96*, Rockville, Maryland, USA, pp. 329-333, Oct. 1996.
16. Wei-Yuan Do and Ren-Hung Hwang, "Multicast Routing Based on Genetic Algorithms," *ICS'96*, Kao-Hsiung, pp. 211-218, Dec. 1996.
17. Huang-Leng Chang, and Ren-Hung Hwang, "LLR Routing in Circuit-Switched Networks," *1996 National Symposium on Telecommunications*, Chung-Li, pp. 141-147, Dec. 1996.

18. Chwan-Jye Liou, and Ren-Hung Hwang, "Desktop Virtual Classroom on ATM Networks," 1996 National Symposium on Telecommunications, Chung-Li, pp. 41-47, Dec. 1996.
19. Ren-Hung Hwang, "Adaptive Multicast Routing in Multirate Loss Networks," Eleventh International Conference on Information Networking (ICOIN-11), Taipei, pp. 3C-3.1-10, 1997.
20. Ren-Hung Hwang, and Mei-Sheng Chao, "A New On-line Paradigm for Developing courses, Teaching, and Learning: A Project in the Asynchronous Learning Environment at National Chung Cheng University," Ausweb '97, Austria, 1997.
21. Jian-Shing Lin, and Ren-Hung Hwang, "The Performance of Transport Protocols for Transmitting Video Data on ATM Networks," RAMS'97, Taipei, pp. 11-16, 1997.
22. Jian-Shing Lin, and Ren-Hung Hwang, "Piecewise Constant Bit Rate Transmission of MPEG Video on ATM Networks," RAMS'97, Taipei, pp. 49-56, 1997.
23. June-Wei Chen, Ren-Hung Hwang, and Sing-Ling Lee, "QoS Allocation of Multicast Connection in ATM," the IEEE Fourth International workshop on Real-Time Computing Systems and Applications (RTCSA), Taipei, pp. 215-222, 1997.
24. Ren-Hung Hwang, and Jang-Jiin Wu, "Scheduling Policies for an VOD System over CATV Networks," IEEE GLOBECOM'97, Phoenix, pp. 13.2.1-5, 1997.
25. Huang-Leng Chang, and Ren-Hung Hwang, "On LLR Routing in Circuit-Switched Networks," ICOIN-12, Japan, pp.456-461, 1998.
26. Shyi-Chang Yang, and Ren-Hung Hwang, "Adaptive Multicast Routing in ATM Networks," IEEE GLOBECOM'98, pp. 1018 -1023, 1998.
27. Ren-Hung Hwang, and Youn-Chen Sun, "Adaptive Multicast Routing in Broadband Networks," SPIE conference of Performance and Control of Network System II, pp.369-381, 1998.
28. Ren-Hung Hwang, and Youn-Chen Sun, "Optimal Video Placement for Hierarchical Video-on-Demand Systems," ICCCN'98, pp. 454-461, 1998.
29. Ming-Show Chen, and Ren-Hung Hwang, "Design and Implementation of Fault Tolerant Protocols for Hierarchical VOD Systems," RAMS'98, pp. 181-188, 1998.

30. Jang-Jiin Wu, and Ren-Hung Hwang, "Multicast Routing with Multiple QoS Constraints Based on Genetic Algorithms," ICS'98, Workshop on Computer Networks, Internet, and Multimedia, pp.237-244, 1998.
31. De-Kai Liu and Ren-Hung Hwang, "Scalable Multicasting with Information Classification and Quality of Service Guarantee," ISCOM'99, Nov. 1999.
32. Ben-Jye Chang and Ren-Hung Hwang, "Hierarchical QoS Routing in PNNI Networks," ICOIN-14, Jan. 2000.
33. Ben-Jye Chang and Ren-Hung Hwang, "Hierarchical QoS Routing in ATM Networks Based on MDP Cost Function," IEEE ICON, Sept., 2000.
34. Ren-Hung Hwang and Chun-Min Hsu, "Routing in ATM Networks with Multiple Classes of QoS," IEEE GLOBECOM 2000, Nov. 2000.
35. Hung-Chi Su and Ren-Hung Hwang, "Multicast Provision in a Differentiated Services Network," ICOIN-15, Japan, Jan. 2001.
36. Ying-Dar Lin, Nai-Bin Hsu, Ren-Hung Hwang, RP Relocation Extension to PIM-SM Multicast Routing, IETF Internet-Draft, draft-ydlin-pim-sm-rp-00.txt, April 2001.
37. Hsien-Kang Chung, Ben-Jye Chang and Ren-Hung Hwang, 2001, "Reducing Crankback Overhead in Hierarchical Routing in ATM Networks," IEEE ICC 2001, Helsinki, Finland.
38. Ren-Hung Hwang and Pin-Hao Chi, 2001, "Fast Optimal Video Placement Algorithms for Hierarchical Video-On-Demand Systems," IEEE ICC 2001, Helsinki, Finland.
39. Ben-Jye Chang and Ren-Hung Hwang, "MDP-based Dynamic Update of Aggregated Information for Hierarchical QoS Routing in ATM Networks," The Joint 4th International Conference on ATM and Highspeed Intelligent Internet (ICATM 2001), Seoul, Korea.
40. Ben-Jye Chang and Ren-Hung Hwang, "Dynamic Update of Aggregated Information for Hierarchical QoS Routing in ATM Networks," IEEE ICPADS 2001.
41. Ying-Dar Lin, Nai-Bin Hsu, Ren-Hung Hwang, "Granularity of QoS Routing in MPLS Networks," IEEE IWQoS 2001, Karlsruhe, Germany, 2001.
42. Yan-Wen Chen, Ren-Hung Hwang, and Yin-Dar Lin, "Scalable QoS Routing with Bandwidth Guarantee Using Routing Marks," IEEE GLOBECOM 2001.

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Books and Book Chapters

1. Ren-Hung Hwang and Chung-Ming Huang, Innovations 2004: World Innovations in Engineering Education and Research, chapter 7: An Innovative Teaching Program for Network Applications and Services, ed. by W. Aung, R. Altenkrich, T. Cermak, R. W. King, L. M. S. Ruiz, pp.63-71.
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Patents

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2. Virtual network environment for P2P on-line game in wireless mobile networks, Japan Patent number 4219366, 2006.1.20-2026.1.20.

Program Committee Member, Program Chair, Session Chair

Dr. Hwang has served in several program committees of international conferences and workshops.

- **Directors Board, IEEE Tainan Section (2014-2016)**
- **Editor: Journal of Information Science and Engineering (2009-2015)**
- **Editor: The Scientific World Journal**

- **Guest Editor: IEEE Network, special issue on “Open Source for Networking: Development and Experimentation.”**
- **Guest Editor: IET Communications, special issue on WiMAX Integrated Communications (2009)**
- **Program Vice Chair of the International Conference on Ubiquitous Intelligence and Computing, 2011.**
- **Program Chair of the 10th International Symposium on Pervasive Systems, Algorithms and Networks (I-SPAN 2009)**
- **Track Co-Chair of the Mobile Satellite & Positioning Systems Track for VTC 2010-Spring**
- **Session chair: 2005 IASTED CIIT**
- **Technical Program committee (TPC):** Globecom 2005-2014, Symposium on Toward an Autonomic Internet, AINA 2005-2007, IEE mobility conference 2005, IEEE International Workshop on Pervasive Computing and Ad Hoc Communications (PCAC'06), The 2006 IFIP International Conference on Embedded And Ubiquitous Computing (EUC 2006), First International Conference on Communications and Networking in China - Advances in Internet (ChinaCom2006-2009), CloudCom 2009-2014, CPI 2009, WASN 2005-2009, IWCMC 2009, IEEE/IEICE/KICS APNOMS 2009,
- **General chair:** 2001 National Network and Communication Workshop.
- **Invited Tutorial:** Workshop on Distributed System Technologies & Applications, 1999.

Professional Memberships

IEEE (The Institute of Electrical and Electronics Engineers)

IEICE (The Institute of Electronics, Information, and Communication Engineers)

Paper Refereeing

Dr. Hwang has been taking an active part in reviewing papers for international conferences and journals for quite a few years.

International Conferences

IEEE INFOCOM,

IEEE GLOBECOM,

IEEE ICC,

ICOIN,

WCNC,

IWCMC,

International Conference on Real-Time Computing Systems and Applications (RTCSA),

International Computer Symposium,

ISMIP,

RAMS,

Wimob,

ChinaCom,

UIC,

EUC

International Journals

IEEE/ACM Transactions on Networking,

IEEE Network,

IEEE Computer,

IEEE Communications Magazine,

IEEE Transactions on Parallel and Distributed Systems,

IEEE Transactions on Computers,

IEEE Transactions on Broadcasting,

IEEE Transactions on Transactions on Learning Technologies,

IEEE MultiMedia,

IEEE Computational Intelligence Magazine,

Computer Communications,

Information Sciences,

Wireless Communications and Mobile Computing,

Journal of Information Science and Engineering,

Journal of the Chinese Institute of Engineers,

International Journal of Communication Systems,

Mobile Networks and Applications,

Computer&Education,

Educational Technology & Society journal,

Journal of Interactive Learning Environment

The Scientific World Journal