

Ekram Hossain, Ph.D., P.Eng.

Professor

Department of Electrical and Computer Engineering

University of Manitoba

75A Chancellor's Circle

Winnipeg, MB, Canada R3T 5V6

Email: *ekram@ee.umanitoba.ca*

Tel: +1 204 474 8908, Fax: +1 204 261 4639

<http://www.ee.umanitoba.ca/~ekram>

Citizenship: **Canadian**

Curriculum Vitae

April 21, 2012

Contents

1	Education, Work Experience, Honours and Awards	4
1.1	Education	4
1.2	Work Experience	4
1.3	Honours and Awards	4
2	Research and Scholarly Works	5
2.1	Research Interests	5
2.2	Summary of Research Achievements	6
2.3	Research Publications	6
2.3.1	Radio Resource Management, Link and Medium Access Control, and Transport Protocols	6
2.3.2	Cognitive Radio and Dynamic Spectrum Access Networks	17
2.3.3	Performance Analysis and Optimization of Wire- less Communications Systems and Protocols	22
2.3.4	Wireless and Mobile Communications Services and Applications	29
2.3.5	Wireless Multimedia Communications and Net- working	32
2.3.6	Wired and Wireless Internetworking	33
2.4	Invention Disclosures	34
2.5	Books/Monographs	34
3	Teaching and Graduate Student Supervision	35
3.1	Courses Developed at the University of Manitoba	35
3.2	Courses Taught at the University of Manitoba	35
3.3	Undergraduate Thesis Supervised at the University of Manitoba	36
3.4	Graduate Students Supervised at the University of Man- itoba	36
3.4.1	Ph.D. Student Supervision	36
3.4.2	M.Sc. Student Supervision/Co-Supervision	37
3.5	Current Graduate Students	38
3.6	Post-Doctoral Research Associates	38
4	Professional Activities	38
4.1	Journal/Magazine Editorship	38
4.2	Journal/Magazine Guest Editorship	39
4.3	Professional Membership	40
4.4	Conference/Symposium/Workshop Chair/Co-Chair	40
4.5	Technical Program Committee Membership	42
4.6	Presentations	47
4.6.1	Tutorial Presentations	47
4.6.2	Invited Talks	48

5	University Services	50
5.1	Department/Faculty Committee	50
5.2	Graduate Thesis Examination	50
5.2.1	Ph.D. Thesis Examination Committee	50
5.2.2	M.Sc. Thesis Examination Committee	52
6	Projects and Research Grants	54
6.1	Research Projects	54
6.2	Research Grants	56

1 Education, Work Experience, Honours and Awards

1.1 Education

<i>Degree</i>	<i>Institution</i>	<i>Year</i>
Ph.D.	University of Victoria, Canada Department of Electrical and Computer Engineering (with full CGPA)	June 2001
M.Sc.	Bangladesh U. of Engineering and Technology (BUET) Department of Computer Science and Engineering (with distinction, highest CGPA)	Apr. 1997
B.Sc.	Bangladesh U. of Engineering and Technology (BUET) Department of Computer Science and Engineering (with distinction, 2nd position in the class)	Feb. 1995

Thesis Titles:

- *Ph.D. thesis*: “Radio link and transport layer protocol design issues in wireless IP networks”
- *M.Sc. thesis*: “Design and performance study of multistage space division packet switches”

1.2 Work Experience

- *Professor*, Department of Electrical and Computer Engineering, University of Manitoba, Winnipeg, Canada, since March 2010.
- *Associate Professor (with tenure)*, Department of Electrical and Computer Engineering, University of Manitoba, Winnipeg, Canada, April 2006 - March 2010 (**awarded early promotion and tenure**).
- *Assistant Professor*, Department of Electrical and Computer Engineering, University of Manitoba, Winnipeg, Canada, January 2001-March 2006.
- *Lecturer*, Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh, September 1995-September 1997.

1.3 Honours and Awards

- **IEEE Wireless Communications and Networking (WCNC) 2012 Best Paper Award**
- **The 2011 IEEE Communications Society Fred W. Ellersick Prize**, June 2011.
- **Visiting Research Scientist**, School of Computer Engineering, Nanyang Technological University, Singapore, February 2011.

- **Visiting Professor**, Tohoku University, Japan, November 2010.
- **Merit Award** for “Research and Scholarly Activities”, University of Manitoba, May 2010.
- **Visiting Research Scientist**, School of Computer Engineering, Nanyang Technological University, Singapore, August 2009.
- **Visiting Fellow**, School of Computer Science and Engineering, The University of New South Wales, Australia, June 2008.
- Finalist, *Best (Student) Paper Award, IEEE Global Communications Conference (Globecom’06)* (Category: Communication Systems), 27 Nov.-1 Dec. 2006, San Francisco, USA.
- *Best (Student) Paper Award, ACM International Wireless Communications and Mobile Computing Conference (IWCMC’06)*, 3-6 July 2006, Vancouver, Canada.
- Senior Member, IEEE.
- University of Victoria Fellowship, 1998-2001.
- Dr. M. A. Rashid Gold Medal (from BUET), 2001.
- Graduate Scholarship Award from the British Columbia Advanced Systems Institute (ASI), 1998.
- *Lucent Technologies Inc. Research Award* for contribution in the *IEEE International Conference on Personal Wireless Communications (ICPWC’97)*.
- IEEE Student Travel Grant Award, 1999.
- Bangladesh University of Engineering and Technology (BUET) Merit Scholarship.

2 Research and Scholarly Works

2.1 Research Interests

- Radio resource management, link and medium access control, and transport protocols for wireless networks
- Cognitive radio and dynamic spectrum access networks
- Performance analysis and optimization of wireless communications systems and protocols
- Vehicular communications and networking
- Wireless communications services and applications, and mobile computing

- Wired and wireless internetworking
- Wireless multimedia communications and networking

2.2 Summary of Research Achievements

Contribution	Number
No. of Refereed Journal Papers (published/accepted), J#	90
No. of Refereed Journal Papers (submitted), JS#	13
No. of Invention Disclosures, P#	2, US patents (filed)
No. of Refereed Magazine Papers (published/accepted), M#	20
No. of Refereed Magazine Papers (submitted), MS#	2
No. of Books (edited/co-edited volumes)	6
No. of Books (authored/co-authored)	2
No. of Book Chapters, BC#	15
No. of Refereed Conference Papers (published/accepted), C#	112
No. of Refereed Conference Papers (submitted), CS#	2

Total number of citations: 3834 (Google Scholar)
h-index: 31

2.3 Research Publications

2.3.1 Radio Resource Management, Link and Medium Access Control, and Transport Protocols

Journal Articles (Accepted/Published)

- J38. P. Phunchongharn, **E. Hossain**, L. Le, and S. Camorlinga, “Robust scheduling and power control for vertical spectrum sharing in STDMA wireless networks,” *IEEE Transactions on Wireless Communications*, to appear.
- J37. D. Ngo, L. B. Le, T. L.-Ngoc, **E. Hossain**, and D. I. Kim, “Distributed interference management in two-tier CDMA femtocell networks,” *IEEE Transactions on Wireless Communications*, to appear.

- J36. K. Akkarajitsakul, **E. Hossain**, and D. Niyato, "Coalition-based cooperative packet delivery under uncertainty: A dynamic Bayesian coalitional game," *IEEE Transactions on Mobile Computing*, to appear.
- J35. S. Chiochan and **E. Hossain**, "Channel assignment for throughput optimization in multi-channel multi-radio wireless mesh networks using network coding," submitted to the *IEEE Transactions on Mobile Computing*, to appear.
- J34. K. Akkarajitsakul, **E. Hossain**, D. Niyato, and D. I. Kim, "Game theoretic approaches for multiple access in wireless networks: A survey," *IEEE Communications Surveys and Tutorials*, vol. 13, no. 3, Third Quarter, 2011.
- J33. O. Duval, Z. Hasan, **E. Hossain**, F. Gagnon, and V. K. Bhargava, "Sub-carrier selection and power allocation for amplify-and-forward relaying over OFDM links," *IEEE Transactions on Wireless Communications*, vol. 9, no. 4, April 2010, pp. 1293-1297.
- J32. D. Niyato, **E. Hossain**, D. I. Kim, and Z. Han, "Relay-centric radio resource management and network planning in IEEE 802.16j mobile multihop relay networks," *IEEE Transactions on Wireless Communications*, vol. 8, no. 12, Dec. 2009, pp. 6115-6125.
- J31. D. Niyato, **E. Hossain**, and D. I. Kim, "Joint admission control and antenna assignment for multiclass QoS in spatial multiplexing MIMO wireless networks," *IEEE Transactions on Wireless Communications*, vol. 8, no. 9, Sept. 2009, pp. 4855-4865.
- J30. S. Chiochan, **E. Hossain**, and J. Diamond, "Channel assignment schemes for infrastructure-based 802.11 WLANs: A survey," *IEEE Communications Surveys and Tutorials*, vol. 12, no. 1, First Quarter 2010, pp. 124-136.
- J29. S. Chiochan and **E. Hossain**, "Adaptive radio resource allocation in OFDMA systems: A survey of the state-of-the-art approaches," *Wireless Communications and Mobile Computing Journal* (Wiley), vol. 9, no. 4, Apr. 2009, pp. 513-527.
- J28. D. Niyato and **E. Hossain**, "Dynamics of network selection in heterogeneous wireless networks: An evolutionary game approach," *IEEE Transactions on Vehicular Technology*, vol. 58, no. 4, May 2009, pp. 2008-1017.
- J27. I. A. Qaimkhani and **E. Hossain**, "Contention-free approaches for WiFi MAC design for VoIP services: Performance analysis and comparison," *Wireless Communications and Mobile Computing Journal* (Wiley), vol. 9, no. 8, Aug. 2009, pp. 1089-1101.

- J26. I. A. Qaimkhani and **E. Hossain**, "A novel QoS-aware MAC protocol for voice services over IEEE 802.11-based WLANs," *Wireless Communications and Mobile Computing Journal* (Wiley), vol. 9, no. 1, Jan. 2009, pp. 71-84.
- J25. A. Fallahi and **E. Hossain**, "A dynamic programming approach for QoS-aware power management in wireless video sensor networks," *IEEE Transactions on Vehicular Technology*, vol. 58, no. 2, Feb. 2009, pp. 843-854.
- J24. D. Niyato and **E. Hossain**, "A game theoretic analysis of service competition and pricing in heterogeneous wireless access networks," *IEEE Transactions on Wireless Communications*, vol. 7, no. 12, Dec. 2008, pp. 5150-5155.
- J23. D. Niyato and **E. Hossain**, "A noncooperative game-theoretic framework for radio resource management in 4G heterogeneous wireless access networks," *IEEE Transactions on Mobile Computing*, vol. 7, no. 3, March 2008, pp. 332-345.
- J22. M. M. Rashid, **E. Hossain**, and V. K. Bhargava, "Controlled channel access scheduling for guaranteed QoS in 802.11e-based WLANs," *IEEE Transactions on Wireless Communications*, vol. 7, no. 4, Apr. 2008, pp. 1287-1297.
- J21. D. Niyato and **E. Hossain**, "QoS-aware bandwidth allocation and admission control in IEEE 802.16 broadband wireless access networks: A noncooperative game theoretic approach," *Computer Networks* (Elsevier), vol. 51, no. 11, Aug. 2007, pp. 3305-3321.
- J20. D. Niyato, **E. Hossain**, and V. K. Bhargava, "Scheduling and admission control in power-constrained OFDM wireless mesh routers: Analysis and optimization," *IEEE Transactions on Wireless Communications*, vol. 6, no. 10, Oct. 2007, pp. 3738-3748.
- J19. D. Niyato and **E. Hossain**, "Service differentiation in broadband wireless access networks with scheduling and connection admission control: A unified analysis," *IEEE Transactions on Wireless Communications*, vol. 6, no. 1, Jan. 2007, pp. 293-301.
- J18. D. Niyato and **E. Hossain**, "Adaptive fair subcarrier/rate allocation in multi-rate OFDMA networks: Radio link level queuing performance analysis," *IEEE Transactions on Vehicular Technology*, vol. 55, no. 6, Nov. 2006, pp. 1897-1907.
- J17. D. Niyato and **E. Hossain**, "Queue-aware uplink bandwidth allocation and rate control for polling service in IEEE 802.16 broadband wireless networks," *IEEE Transactions on Mobile Computing*, vol. 5, no. 6, June 2006, pp. 668-679.

- J16. R. Palit, **E. Hossain**, and P. Thulasiraman, "MAPLE: A framework for channel-access-based mobility-aware pro-active low energy clustering in ad hoc mobile wireless networks," *Journal of Wireless Communications and Mobile Computing* (Wiley Interscience), vol. 6, no. 6, Sept. 2006, pp. 773-779.
- J15. T. Issariyakul and **E. Hossain**, "Channel-quality-based opportunistic scheduling with ARQ in multi-rate wireless networks: Modeling and analysis," *IEEE Transactions on Wireless Communications*, vol. 5, no. 4, Apr. 2006, pp. 796-806.
- J14. L. B. Le, **E. Hossain**, and A. S. Alfa, "Service differentiation in multi-rate wireless networks with weighted round-robin scheduling and ARQ-based error control," *IEEE Transactions on Communications*, vol. 54, no. 2, Feb. 2006, pp. 208-215.
- J13. T. Issariyakul and **E. Hossain**, "ORCA-MRT: An optimization-based approach for fair scheduling in multi-rate TDMA wireless networks," *IEEE Transactions on Wireless Communications*, vol. 4, no. 6, Nov. 2005, pp. 2823-2835.
- J12. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Dynamic rate and power adaptation for forward link transmission using high-order modulation and multicode formats in cellular WCDMA networks," *IEEE Transactions on Wireless Communications*, vol. 4, no. 5, Sept. 2005, pp. 2361-2372.
- J11. C. Q. Yang, **E. Hossain**, and V. K. Bhargava, "On adaptive hybrid error control in wireless networks using Reed-Solomon codes," *IEEE Transactions on Wireless Communications*, vol. 4, no. 3, May 2005, pp. 835-840.
- J10. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Dynamic rate and power adaptation for provisioning class-based QoS in cellular multi-rate WCDMA systems," *IEEE Transactions on Wireless Communications*, vol. 3, no. 5, Sept. 2004, pp. 1590-1601. (**Nominated for the IEEE Guglielmo Marconi Paper Prize Award in Wireless Communications, 2005**).
- J9. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Dynamic rate adaptation and integrated rate and error control in cellular WCDMA networks," *IEEE Transactions on Wireless Communications*, vol. 2, no. 6, Jan. 2004, pp. 35-49.
- J8. **E. Hossain** and T. Issariyakul, "On performance bound of dynamic forward link adaptation in cellular WCDMA networks using high-order modulation and multicode formats," *IEE Electronics Letters*, vol. 40, no. 2, Jan. 2004, pp. 132-133.
- J7. T. Issariyakul, **E. Hossain**, and D. I. Kim, "Medium access control protocols for wireless mobile ad hoc networks: Issues and approaches," *Wireless Communications and Mobile Computing* (Wiley Interscience), vol. 3, no. 8, Dec. 2003, pp. 935-958.

- J6. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Dynamic rate adaptation based on multidimensional multi-code DS-CDMA in cellular wireless networks," *IEEE Transactions on Communications*, vol. 51, no. 2, Feb. 2003, pp. 247-260.
- J5. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Dynamic random access code assignment for prioritized packet data transmission in WCDMA networks," *IEEE Transactions on Wireless Communications*, vol. 2, no. 5, Sept. 2003, pp. 911-925.
- J4. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Downlink joint power and rate allocation in cellular multi-rate WCDMA systems," *IEEE Transactions on Wireless Communications*, vol. 2, no. 1, Jan. 2003, pp. 69-80.
- J3. **E. Hossain** and V. K. Bhargava, "A centralized TDMA-based scheme for fair bandwidth allocation in wireless IP networks," *IEEE JSAC: Wireless Communications Series*¹, vol. 19, no. 11, Nov. 2001, pp. 2201-2214.
- J2. **E. Hossain** and V. K. Bhargava, "On higher layer protocol performance in CDMA S-ALOHA networks with packet combining in Rayleigh fading channels," *KICS/IEEE Journal on Communications and Networks (JCN)*, vol. 2, no. 3, Dec. 2000, pp. 249-259.
- J1. **E. Hossain** and V. K. Bhargava, "Binary feedback-based retransmission control for a multichannel S-ALOHA protocol in fading channels," Theme Issue of *Arabian Journal for Science and Engineering (AJSE)* on Wireless Communications, vol. 14, no. 2C, Dec. 1999, pp. 19-38.

Journal Articles (Submitted)

- JS6. M. Rasti and **E. Hossain**, "Distributed priority-based power and admission control in cellular wireless networks," submitted to the *IEEE Transactions on Communications*.
- JS5. H. ElSawy, **E. Hossain**, and S. Camorlinga, "Spectrum-efficient multi-channel design for coexisting IEEE 802.15.4 networks: A stochastic geometry approach," submitted to the *IEEE Journal on Selected Areas in Communications*.
- JS4. L. Le, D. Niyato, **E. Hossain**, D. I. Kim, and D. T. Hoang, "QoS-aware and energy-efficient resource management in OFDMA femtocells," submitted to the *IEEE Transactions on Wireless Communications*.

¹This journal has been renamed as *IEEE Transactions on Wireless Communications*.

- JS3. H. ElSawy and **E. Hossain**, “Capacity analysis of random CSMA wireless networks in general fading environments: A stochastic geometry approach,” submitted to the *IEEE Transactions on Mobile Computing*.
- JS2. K. M. Thilina and **E. Hossain**, “Optimal-switching adaptive modulation for multiuser relay networks with feedback delays,” submitted to the *IEEE Transactions on Wireless Communications*.
- JS1. S. Gurucharya, D. Niyato, D. I. Kim, and **E. Hossain**, “Hierarchical competition for downlink power allocation in OFDMA femtocell networks,” submitted to the *IEEE Transactions on Wireless Communications*.

Magazine Articles (Accepted/Published)

- M11. S. Chiochan and **E. Hossain**, “Cooperative relaying in Wi-Fi networks with network coding,” *IEEE Wireless Communications*, Special Issue on “User Cooperation in Wireless Networks”, to appear.
- M10. N. Saquib, **E. Hossain**, L. B. Le, and D. I. Kim, “Interference management in OFDMA femtocell networks: Issues and approaches,” *IEEE Wireless Communications*, to appear.
- M9. D. Niyato and **E. Hossain**, “Competitive pricing in heterogeneous wireless access networks: Issues and approaches,” *IEEE Network*, vol. 22, no. 6, Nov.-Dec. 2008, pp. pp. 4-11.
- M8. I. Qaimkhani and **E. Hossain**, “Efficient silence suppression and call admission control through contention-free medium access for VoIP in WiFi networks,” *IEEE Communications Magazine*, vol. 46, no. 1, Jan. 2008, pp. 90-99.
- M7. A. Fallahi and **E. Hossain**, “QoS provisioning in wireless video sensor networks: A dynamic power management framework,” *IEEE Wireless Communications*, vol. 14, no. 6, Dec. 2007, pp. 40-49.
- M6. L. B. Le and **E. Hossain**, “Multihop cellular networks: Potential gains, research challenges, and a resource allocation framework,” *IEEE Communications Magazine*, vol. 45, no. 9, Sept. 2007, pp. 66-73.
- M5. D. Niyato and **E. Hossain**, “Radio resource management in MIMO-OFDM based wireless infrastructure mesh networks: Issues and approaches,” *IEEE Communications Magazine*, vol. 45, no. 11, Nov. 2007, pp. 100-107.
- M4. D. Niyato, M. M. Rashid, **E. Hossain**, and V. K. Bhargava, “Wireless sensor networks with energy harvesting technologies: A game-theoretic approach to optimal energy management,” *IEEE Wireless Communications*, vol. 14, no. 4, Aug. 2007, pp. 90-96.

- M3. D. Niyato and **E. Hossain**, “Integration of IEEE 802.11 WLANs with IEEE 802.16-based multihop infrastructure mesh/relay networks: A game-theoretic approach to radio resource management,” *IEEE Network*, vol. 21, no. 3, May-June 2007, pp. 6-14 (**one among top 10 accessed articles in *IEEE Network*, July 2007**).
- M2. D. Niyato and **E. Hossain**, “Radio resource management games in wireless networks: An approach to bandwidth allocation and admission control for polling service in IEEE 802.16,” *IEEE Wireless Communications*, vol. 14, no. 1, Feb. 2007, pp. 27-35 (**one among top 10 accessed articles in *IEEE Wireless Communications*, July 2007**).
- M1. D. Niyato and **E. Hossain**, “Call admission control for QoS provisioning in 4G wireless networks: Issues and approaches,” Special Issue of *IEEE Network* on “4G Technologies for Mobile Telecommunications”, vol. 19, no. 5, Sept.-Oct. 2005, pp. 5-11.

Magazine Articles (Submitted)

- MS1. P. Phunchongharn, **E. Hossain**, and D. I. Kim, “Resource allocation for device-to-device communications underlying LTE-Advanced networks,” submitted to *IEEE Wireless Communications*.

Book Chapters

- BC4. D. Niyato and **E. Hossain**, “Subchannel allocation and connection admission control in IEEE 802.16/WiMAX-compliant OFDMA wireless mesh networks,” invited chapter in *Emerging Wireless LANs, Wireless PANs, and Wireless MANs*, Yang Xiao and Yi Pan (Eds.), Wiley, 2007.
- BC3. D. Niyato and **E. Hossain**, “Adaptive resource allocation in CDMA cellular wireless mobile networks under time-varying traffic: A transient analysis-based approach,” invited chapter in *Adaptive Networking and Cross-layer Design in Wireless Communications*, Mohamed Ibnkahla (Ed.), CRC Press, 2007.
- BC2. D. Niyato and **E. Hossain**, “Resource allocation and admission control using fuzzy logic for OFDMA-based IEEE 802.16-compliant broadband wireless networks,” invited chapter in *Handbook of WiMAX*, S. Ahson and Mohammad Ilyas (Eds.), Taylor and Francis Group, 2007.
- BC1. **E. Hossain**, R. Palit, and P. Thulasiraman, “Clustering in mobile wireless ad hoc networks: Issues and approaches,” invited chapter in *Wireless*

Conference Articles (Accepted/Published)

- C44. M. Moghaddari, **E. Hossain**, and L. B. Le, “Delay-optimal fair scheduling and resource allocation in multiuser wireless relay networks,” to be presented in *IEEE ICC 2012 Workshop on Cooperative and Cognitive Mobile Networks (CoCoNet)*, 11 June, 2012, Ottawa, Canada.
- C43. H. ElSawy and **E. Hossain**, “Modeling random CSMA wireless networks in general fading environments,” to be presented in *IEEE ICC 2012*, Ottawa, Canada, 10-15 June 2012.
- C42. K. M. Thilina and **E. Hossain**, “Selective relaying in multi-relay networks with feedback delays and adaptive modulation,” to be presented in *IEEE ICC 2012*, Ottawa, Canada, 10-15 June 2012.
- C41. H. ElSawy, **E. Hossain**, and S. Camorlinga, “Characterizing random CSMA wireless networks: A stochastic geometry approach,” submitted to *IEEE ICC 2012*, Ottawa, Canada, 10-15 June 2012.
- C40. L. B. Le, D. T. Hoang, D. Niyato, **E. Hossain**, and D. I. Kim, “Joint load balancing and admission control in OFDMA-based femtocell networks,” to be presented in *IEEE ICC 2012*, Ottawa, Canada, 10-15 June 2012.
- C39. **E. Hossain** and D. I. Kim, “Constrained weighted sum-rate maximization for multicast service in downlink OFDMA,” to be presented in *ACM Int. Conf. on Ubiquitous Information Management and Communication (ICUIMC) 2012*, Feb. 20-22, Kualalampur, Malaysia.
- C38. D. Niyato, P. Wang, **E. Hossain**, W. Saad, and Z. Han, “Game theoretic modeling of cooperation among service providers in mobile cloud computing environments,” to be presented in *IEEE WCNC 2012*, Paris, France, April 1-4, 2012.
- C37. M. Moghaddari, Y. Farazmand, and **E. Hossain**, “End-to-end queueing performance evaluation for multiuser wireless relay networks,” in *Proc. IEEE Global Communications Conference (Globecom 2011)*, 5-9 December, Houston, TX, USA, 2011.
- C36. K. G. Madushan Thilina and **E. Hossain**, “Adaptive modulation for multiuser amplify-and-forward relay networks with feedback delays,” in *Proc. IEEE Globecom 2011*, Houston, USA, 5-9 Dec. 2011.

- C35. D. T. Ngo, L. B. Le, T. L.-Ngoc, **E. Hossain**, and D. I. Kim, “Distributed interference management in femtocell networks,” to be presented in *2011 IEEE 74th Vehicular Technology Conference: VTC2011-Fall*, 5-8 September 2011, San Francisco, USA.
- C34. J. Kim, **E. Hossain**, and D. I. Kim, “Partial information relaying with multiple relays and destination nodes,” in *Proc. ACM ICUMC 2011*, Seoul, Korea, 21-23 February 2011.
- C33. Z. Hasan, **E. Hossain**, and V. K. Bhargava, “Resource allocation for multiuser OFDMA-based amplify-and-forward relay networks with selective relaying,” in *Proc. IEEE ICC 2011*, Kyoto, Japan, 5-9 June 2011.
- C32. J. Meng, J. A.-Shokouh, H. Li, E. J. Charlson, Z. Han, S. Noghianian, and **E. Hossain**, “Low speed compressive sampling ADC for 60GHz UWB communication,” in *43rd Asilomar Conference on Signals, Systems and Computers*, 30 Nov. 1-4, 2009, Asilomar Conference Grounds, Pacific Grove, CA, USA.
- C31. J. A. Shokouh, S. Noghianian, **E. Hossain**, M. Ostadrahimi, and J. Dietrich, “Reflection coefficient measurement for house flooring materials at 57-64 GHz,” in *Proc. IEEE Global Communications Conference (Globecom’09)*, 30 Nov. - 4 Dec. 2009, Honolulu, Hawaii, USA.
- C30. W. Ouyang, L. Fu, X. Wang, and **E. Hossain**, “One-hop cooperative call admission control in heterogeneous wireless networks: A queueing analysis,” in *Proc. IEEE Global Communications Conference (Globecom’09)*, 30 Nov. - 4 Dec. 2009, Honolulu, Hawaii, USA.
- C29. D. Niyato, **E. Hossain**, D. I. Kim, and Z. Han, “Joint optimization of placement and bandwidth reservation for relays in IEEE 802.16j mobile multihop networks,” in *Proc. IEEE Int. Conference on Communications (ICC’09)*, 14-18 June 2009, Dresden, Germany.
- C28. D. Niyato and **E. Hossain**, “Modeling user churning behavior in wireless networks using evolutionary game theory,” in *Proc. IEEE Wireless Communications and Networking Conference (WCNC’08)*, Las Vegas, Nevada, USA, 31 Mar. - 3 Apr. 2008.
- C27. M. M. Rashid, **E. Hossain**, and V. K. Bhargava, “HCCA scheduler design for guaranteed QoS in 802.11e-based WLANs,” in *Proc. IEEE Wireless Communications and Networking Conference (WCNC’07)*, Hong Kong, 11-15 Mar. 2007.
- C26. D. Niyato, **E. Hossain**, K. C. Wavegedara, and V. K. Bhargava, “Queue-aware power allocation for space-time block coded MIMO Systems,” in *Proc. IEEE WCNC’07*, Hong Kong, 11-15 Mar. 2007.

- C25. L. B. Le and **E. Hossain**, “Joint rate control and resource allocation in OFDMA wireless mesh networks,” in *Proc. IEEE WCNC’07*, Hong Kong, 11-15 Mar. 2007.
- C24. D. Niyato and **E. Hossain**, “A hierarchical model for bandwidth management and admission control in integrated IEEE 802.16/802.11 wireless networks,” in *Proc. IEEE WCNC’07*, Hong Kong, 11-15 Mar. 2007.
- C23. D. Niyato and **E. Hossain**, “Bandwidth allocation in 4G heterogeneous wireless access networks: A noncooperative game theory approach,” in *Proc. IEEE Global Communications Conference (Globecom’06)*, San Francisco, CA, USA, 27 Nov. - 1 Dec. 2006.
- C22. D. Niyato and **E. Hossain**, “Admission control in power constrained OFDM/TDMA wireless mesh networks,” in *Proc. IEEE Globecom’06*, San Francisco, CA, USA, 27 Nov.-1 Dec. 2006 (**one of the three finalists for the Best Student Paper Award in the area of Communication Systems**).
- C21. D. Niyato, **E. Hossain**, and A. Fallahi, “Solar-powered OFDM wireless mesh networks with sleep management and connection admission control,” in *Proc. ACM Int. Wireless Communications and Mobile Computing Conf. (IWCMC’06)*, 3-6 July 2006, Vancouver, Canada (won the **best student paper award** among 600 submissions).
- C20. D. Niyato and **E. Hossain**, “A game theoretic approach to bandwidth allocation and admission control for polling services in IEEE 802.16 broadband wireless networks,” in *Proc. Third International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine’06)*, Waterloo, Ontario, Canada, 7-9 Aug. 2006.
- C19. D. Niyato and **E. Hossain**, “A cooperative game framework for bandwidth allocation in 4G heterogeneous wireless networks,” in *Proc. IEEE International Conference on Communications (ICC’06)*, Istanbul, Turkey, 11-15 June 2006.
- C18. D. Niyato and **E. Hossain**, “A radio resource management framework for the IEEE 802.16-based OFDM/TDD wireless mesh networks,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June 2006.
- C17. D. Niyato and **E. Hossain**, “Joint bandwidth allocation and connection admission control for polling services in IEEE 802.16 broadband wireless networks,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June 2006.
- C16. D. Niyato and **E. Hossain**, “Delay-based admission control using fuzzy logic for OFDMA broadband wireless networks,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June 2006.

- C15. M. M. Rashid, **E. Hossain**, and V. K. Bhargava, “Energy-aware multipath routing in wireless ad hoc networks,” in *Proc. First Int. Conf. on Next-Generation Wireless Systems (ICNEWS’06)*, Dhaka, Bangladesh, 2-4 Jan. 2006.
- C14. D. Niyato and **E. Hossain**, “Adaptive bandwidth allocation in cellular mobile networks under Markov call arrival process and phase-type channel holding time distribution,” in *Proc. First Int. Conf. on Next-Generation Wireless Systems (ICNEWS’06)*, Dhaka, Bangladesh, 2-4 Jan. 2006.
- C13. A. Fallahi and **E. Hossain**, “GeRaF-H: Geographic random forwarding in wireless ad hoc and sensor networks with heterogeneous power nodes,” in *Proc. First Int. Conf. on Next-Generation Wireless Systems (ICNEWS’06)*, Dhaka, Bangladesh, 2-4 Jan. 2006.
- C12. M. M. Rashid, **E. Hossain**, M. Khabbazian, and V. K. Bhargava, “On access-based self-organized clustering in ad hoc mobile wireless networks,” in *Proc. First International Conference on Communication System Software and Middleware (COMSWARE’06)*, New Delhi, India, 8 Jan.-12 Jan. 2006 (**Invited Paper**).
- C11. R. Palit, **E. Hossain**, and P. Thulasiraman, “MAPLE: A framework for mobility-aware pro-active low energy clustering in ad hoc mobile wireless networks,” in *Proc. IEEE Globecom’04*, Dallas, Texas, USA, Dec. 2004.
- C10. **E. Hossain**, D. I. Kim and V. K. Bhargava, “Opportunistic scheduling under constrained frame error rate in cellular multicode CDMA networks,” in *Proc. IEEE Globecom’03*, San Francisco, California, USA, Dec. 2003.
- C9. D. I. Kim, **E. Hossain**, and V. K. Bhargava, “Dynamic rate and power adaptation for forward link transmission using high-order modulation and multicode formats in cellular WCDMA networks,” in *Proc. IEEE Globecom’03*, San Francisco, California, USA, Dec. 2003.
- C8. D. I. Kim, **E. Hossain**, and V. K. Bhargava, “Dynamic rate and power adaptation under multiple SIR constraints in cellular VSF WCDMA networks,” in *Proc. IEEE ICC’03*, Anchorage, Alaska, USA, May 2003.
- C7. T. Issariyakul and **E. Hossain**, “Optimal channel allocation for fair queuing in wireless data networks,” in *Proc. IEEE ICC’03*, Anchorage, Alaska, USA, May 2003.
- C6. T. Issariyakul and **E. Hossain**, “Designing wireless fair queuing MAC protocols using optimization techniques,” in *Proc. IEEE International Symposium on Advances in Wireless Communications (ISWC’02)*, Victoria, Canada, 23-24 Sept. 2002, pp. 185-186.
- C5. **E. Hossain**, D. I. Kim, and V. K. Bhargava, “Dynamic assignment of random access code channels in WCDMA networks,” in *Proc. IEEE Globecom’01*, San Antonio, TX, USA, Nov. 2001.

- C4. D. I. Kim, **E. Hossain**, and V. K. Bhargava, "Integrated rate and error control in variable spreading gain WCDMA systems," in *Proc. IEEE ICC'01*, Helsinki, Finland, June 2001.
- C3. **E. Hossain** and V. K. Bhargava, "Scheduling multiservice traffic for wireless ATM transmission over TDMA/TDD channels," in *Proc. IEEE Globecom'99*, Rio de Janeiro, Brazil, Dec. 1999, pp. 359-363.
- C2. **E. Hossain**, J. Faruque, and J. H. Sarker, "Three alternatives for multi-channel multi-copy S-ALOHA systems - A simulation study," in *Proc. Nat. Conf. on Computer and Information Systems (NCCIS'97)*, Dhaka, Bangladesh, Dec. 1997, pp. 226-230.
- C1. **E. Hossain**, M. S. Alam, and M. H. A. Khan, "Output queuing analysis in space division packet switching networks," in *Proc. Int. Conf. on Robotics, Vision and Parallel Processing for Industrial Automation (ROVPIA'96)*, Ipoh, Malaysia, Dec. 1996, pp. 329-334.

Conference Articles (Submitted)

- CS1. B. Shrestha, **E. Hossain**, and S. Camorlinga, "Hidden node collision mitigation in multihop CSMA/CA wireless sensor networks," submitted to *IEEE Globecom 2012*, Anaheim, CA, USA, 3-7 Dec. 2012.

2.3.2 Cognitive Radio and Dynamic Spectrum Access Networks

Journal Articles (Accepted/Published)

- J15. K. W. Choi and **E. Hossain**, "Opportunistic access to spectrum holes between packet bursts: A learning-based approach," *IEEE Transactions on Wireless Communications*, vol. 10, no. 8, pp. 2497-2509, August 2011.
- J14. K. W. Choi, **E. Hossain**, and D. I. Kim, "Downlink subchannel and power allocation in multi-cell OFDMA cognitive radio networks," *IEEE Transactions on Wireless Communications*, vol. 10, no. 7, pp. 2259-2271, July 2011.
- J13. K. W. Choi, **E. Hossain**, and D. I. Kim, "Cooperative spectrum sensing under random geometric primary user network model," *IEEE Transactions on Wireless Communications*, vol. 10, no. 6, pp. 1932-1944, June 2011.

- J12. J. Meng, W. Yin, H. Li, **E. Hossain**, and Z. Han, "Collaborative spectrum sensing from sparse observations in cognitive radio networks," *IEEE Journal on Selected Areas in Communications*, to appear.
- J11. H. Keshavarz, **E. Hossain**, S. Noghianian, and D. I. Kim, "Perturbation analysis for spectrum sharing in cognitive radio networks," *IEEE Transactions on Wireless Communications*, vol. 9, no. 5, May 2010, pp. 1564-1570.
- J10. Z. Li, L. Gao, X. Wang, X. Gao, and **E. Hossain**, "Pricing for uplink power control in cognitive radio networks," *IEEE Transactions on Vehicular Technology*, Special Section on "Achievements and the Road Ahead: The First Decade of Cognitive Radio", vol. 59, no. 4, May 2010.
- J9. D. Niyato and **E. Hossain**, "A microeconomic model for hierarchical bandwidth sharing in dynamic spectrum access networks," *IEEE Transactions on Computers*, vol. 59, no. 7, July 2010.
- J8. Z. Hasan, G. Bansal, **E. Hossain**, and V. K. Bhargava, "Energy-efficient power allocation in OFDM-based cognitive radio systems: A risk-return model," *IEEE Transactions on Wireless Communications*, vol. 8, no. 12, Dec. 2009, pp. 6078-6088.
- J7. M. M. Rashid, M. J. Hossain, **E. Hossain**, and V. K. Bhargava, "Opportunistic spectrum scheduling for multiuser cognitive radio: A queueing analysis," *IEEE Transactions on Wireless Communications*, vol. 8, no. 10, Oct. 2009, pp. 5259-5269.
- J6. D. Niyato, **E. Hossain**, and Z. Han, "Dynamics of multiple-seller and multiple-buyer spectrum trading in cognitive radio networks: A game theoretic modeling approach," *IEEE Transactions on Mobile Computing*, vol. 8, no. 8, Aug. 2009, pp. 1009-1022. (**Featured article in the August 2009 issue of the IEEE Trans. on Mobile Computing.**)
- J5. D. I. Kim, L. Le, and **E. Hossain**, "Joint rate and power allocation for cognitive radios in dynamic spectrum access environment," *IEEE Transactions on Wireless Communications*, vol. 7, no. 12, Dec. 2008, pp. 5517-5527.
- J4. L. Le and **E. Hossain**, "Resource allocation for spectrum underlay in cognitive wireless networks," *IEEE Transactions on Wireless Communications*, vol. 7, no. 12, Dec. 2008, pp. 5306-5315.
- J3. D. Niyato and **E. Hossain**, "Market-equilibrium, competitive, and cooperative pricing for spectrum sharing in cognitive radio networks: Analysis and comparison," *IEEE Transactions on Wireless Communications*, vol. 7, no. 11, Nov. 2008, pp. 4273-4283.

- J2. D. Niyato and **E. Hossain**, “Competitive spectrum sharing in cognitive radio networks: A dynamic game approach,” *IEEE Transactions on Wireless Communications*, vol. 7, no. 7, July 2008, pp. 2651-2660.
- J1. D. Niyato and **E. Hossain**, “Competitive pricing for spectrum sharing in cognitive radio networks: Dynamic game, inefficiency of Nash equilibrium, and collusion,” *IEEE Journal on Selected Areas in Communications*, Special Issue on “Cognitive Radio: Theory and Applications,” vol. 26, no. 1, Jan. 2008, pp. 192-202.

Journal Articles (Submitted)

- JS2. P. Phunchongharn and **E. Hossain**, “Distributed robust scheduling and power control for cognitive spatial-reuse TDMA networks,” submitted to the *IEEE Journal on Selected Areas in Communications*.
- JS1. K. W. Choi and **E. Hossain**, “Estimation of primary user parameters in cognitive radio systems via hidden Markov model,” submitted to the *IEEE Transactions on Wireless Communications*.

Magazine Articles (Accepted/Published)

- M6. K. Akkarajitsakul, **E. Hossain**, and D. Niyato, “Distributed resource allocation in wireless networks under uncertainty and application of Bayesian game,” *IEEE Communications Magazine*, Special Issue on “Game Theory in Wireless Networks”, vol. 49, no. 8, pp. 120-127, August 2011.
- M5. P. Phunchongharn, D. Niyato, **E. Hossain**, and S. Camorlinga, “A cognitive radio system for e-health applications in a hospital environment,” *IEEE Wireless Communications*, vol. 17, no. 2, Feb. 2010, pp. 20-28.
- M4. D. Niyato, **E. Hossain**, and Z. Han, “Dynamic spectrum access in IEEE 802.22-based cognitive wireless networks: A game theoretic model for competitive spectrum bidding and pricing,” *IEEE Wireless Communications*, vol. 16, no. 2, Apr. 2009, pp. 16-23.
- M3. D. Niyato and **E. Hossain**, “Spectrum trading in cognitive radio networks: A market-equilibrium-based approach,” *IEEE Wireless Communications*, vol. 15, no. 6, Dec. 2008, pp. 71-80.
- M2. D. Niyato and **E. Hossain**, “Cognitive radio for next generation wireless networks: An approach to opportunistic channel selection in IEEE 802.11-based wireless mesh,” *IEEE Wireless Communications*, vol. 16, no. 1, February 2009, pp. 46-54.

- M1. D. Niyato and **E. Hossain**, “Integration of WiMAX and WiFi: Optimal pricing for bandwidth sharing,” *IEEE Communications Magazine*, vol. 45, no. 5, May 2007, pp. 140-146 (**one of the top 100 articles accessed through IEEEEXPLORE in June 2007**).

Magazine Articles (Submitted)

Magazine Articles (Submitted)

- MS1. Z. Yang, D. Niyato, P. Wang, and **E. Hossain**, “Auction-based resource allocation in cognitive radio systems,” submitted to *IEEE Communications Magazine* (**Invited paper**).

Book Chapters

- BC3. **E. Hossain**, L. Le, N. Devroye, and M. Vu, “Cognitive radio: From theory to practical network engineering,” invited chapter in *New Directions in Wireless Communications*, V. Tarokh and I. Blake (Eds.), Springer, 2009.
- BC2. D. Niyato and **E. Hossain**, “Medium access control protocols for dynamic spectrum access in cognitive radio networks: A survey,” invited chapter in *Cognitive Radio Networks*, Y. Xiao and F. Hu (Eds.), Auerbach Publications, CRC Press, 2008.
- BC1. D. Niyato and **E. Hossain**, “Microeconomic models for dynamic spectrum management in cognitive radio networks,” invited chapter in *Cognitive Wireless Communication Networks*, E. Hossain and V. K. Bhargava (Eds.), Springer, 2007, ISBN 978-0-387-68830-5.

Conference Articles (Accepted/Published)

- C17. P. Phunchongharn, **E. Hossain**, and S. Camorlinga, “Distributed scheduling and power control for cognitive spatial-reuse TDMA networks,” to be presented in *IEEE 1st International Workshop on Small Cell Wireless Networks (SmallNets)* in conjunction with *IEEE ICC 2012*, Ottawa, Canada, 10-15 June 2012.

- C16. H. ElSawy, **E. Hossain**, and S. Camorlinga, “Improving coexistence of IEEE 802.15.4 networks based on distributed spectrum sharing,” in *Proc. IEEE Globecom 2011*, Houston, USA, 5-9 Dec. 2011.
- C15. B. Shrestha, **E. Hossain**, K. W. Choi, and S. Camorlinga, “A Markov decision process (MDP)-based congestion-aware medium access strategy for IEEE 802.15.4,” in *Proc. IEEE Globecom 2011*, Houston, USA, 5-9 Dec. 2011.
- C14. P. Phunchongharn, **E. Hossain**, K. W. Choi, and S. Camorlinga, “Robust transmission scheduling and power control for spectrum sharing in spatial reuse TDMA wireless networks,” in *Proc. IEEE Globecom 2011*, Houston, USA, 5-9 Dec. 2011.
- C13. D. Xue, X. Wang, and **E. Hossain**, “Optimization of periodic channel sensing by secondary users in a cognitive radio network,” in *Proc. IEEE Global Communications Conference (Globecom’10)*, Miami, Florida, USA, 6-10 Dec. 2010.
- C12. H. Wang, L. Gao, X. Gan, X. Wang, and **E. Hossain**, “Cooperative spectrum sharing in cognitive radio networks: A game-theoretic approach,” in *Proc. IEEE ICC’10*, Cape Town, South Africa, 23-27 May, 2010.
- C11. J. Meng, W. Yin, H. Li, **E. Hossain**, and Z. Han, “Collaborative spectrum sensing from sparse observations using matrix completion for cognitive radio networks,” in *Proc. IEEE ICASSP’10*, Dallas, TX, USA, 14-19 March, 2010.
- C10. Z. Hasan, **E. Hossain**, and V. K. Bhargava, “Power allocation for cognitive radios based on primary user activity in an OFDM system,” in *Proc. IEEE Globecom’08*, 30 Nov.-4 Dec. New Orleans, LA, USA.
- C9. D. I. Kim, L. B. Le, and **E. Hossain**, “Resource allocation for cognitive radios in dynamic spectrum access environment,” in *Proc. Third International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CrownCom’08)*, Singapore, May 15-17, 2008.
- C8. L. B. Le and **E. Hossain**, “OSA-MAC: A multi-channel MAC protocol for opportunistic spectrum access in cognitive wireless networks,” in *Proc. IEEE Wireless Communications and Networking Conference (WCNC’08)*, Las Vegas, Nevada, USA, 31 March-3 April 2008.
- C7. D. Niyato, **E. Hossain**, and L. B. Le, “Competitive spectrum sharing and pricing in cognitive wireless mesh networks,” in *Proc. IEEE Wireless Communications and Networking Conference (WCNC’08)*, Las Vegas, Nevada, USA, 31 March-3 April, 2008.
- C6. L. B. Le and **E. Hossain**, “QoS-aware spectrum sharing in cognitive wireless networks,” in *Proc. IEEE Globecom’07*, Washington, DC, USA, 26-30 Nov. 2007.

- C5. D. Niyato and **E. Hossain**, “Equilibrium and disequilibrium pricing for spectrum trading in cognitive radio: A control-theoretic approach,” in *Proc. IEEE Globecom’07*, Washington, DC, USA, 26-30 Nov. 2007.
- C4. M. M. Rashid, M. J. Hossain, **E. Hossain**, and V. K. Bhargava, “Opportunistic spectrum access in cognitive radio networks: A queueing analytic model and admission controller design,” in *Proc. IEEE Globecom’07*, Washington, DC, USA, 26-30 Nov. 2007.
- C3. D. Niyato and **E. Hossain**, “Optimal price competition for spectrum sharing in cognitive radio: A dynamic game-theoretic approach,” in *Proc. IEEE Globecom’07*, Washington, DC, USA, 26-30 Nov. 2007.
- C2. D. Niyato and **E. Hossain**, “Hierarchical spectrum sharing in cognitive radio: A microeconomic approach,” in *Proc. IEEE WCNC’07*, Hong Kong, 11-15 Mar. 2007.
- C1. D. Niyato and **E. Hossain**, “A game-theoretic approach to competitive spectrum sharing in cognitive radio networks,” in *Proc. IEEE WCNC’07*, Hong Kong, 11-15 Mar. 2007.

Conference Articles (Submitted)

- CS1. K. M. Thilina, K. Choi, N. Saquib, and **E. Hossain**, “Pattern classification techniques for cooperative spectrum sensing in cognitive radio networks: SVM and W-KNN approaches,” submitted to *IEEE Globecom’12*, Anaheim, CA, USA, 3-7 Dec. 2012.

2.3.3 Performance Analysis and Optimization of Wireless Communications Systems and Protocols

Journal Articles (Accepted/Published)

- J17. M. M. Rashid, **E. Hossain**, and V. K. Bhargava, “Cross-layer analysis of downlink V-BLAST MIMO transmission exploiting multiuser diversity,” *IEEE Transactions on Wireless Communications*, vol. 8, no. 9, Sept. 2009, pp. 4568-4579.
- J16. L. B. Le and **E. Hossain**, “Tandem queue models with applications to QoS routing in multihop wireless networks,” *IEEE Transactions on Mobile Computing*, vol. 7, no. 8, Aug. 2008, pp. 1025-1040.

- J15. L. B. Le and **E. Hossain**, “Cross-layer optimization frameworks for cooperative diversity multihop wireless networks,” *IEEE Transactions on Wireless Communications*, vol. 7, no. 7, July 2008, pp. 2592-2602.
- J14. L. B. Le, **E. Hossain**, and T. L.-Ngoc, “Interaction between radio link level truncated ARQ and TCP in multi-rate wireless networks: A cross-layer performance analysis,” *IET Communications* (formerly known as *IEE Proceedings on Communications*), vol. 1, no. 5, Oct. 2007, pp. 821-830.
- J13. L. B. Le and **E. Hossain**, “An analytical model for ARQ cooperative diversity in multihop wireless networks,” *IEEE Transactions on Wireless Communications*, vol. 7, no. 5, May 2008, pp. 1786-1791.
- J12. L. B. Le, **E. Hossain**, and M. Zorzi, “Queueing analysis for GBN and SR ARQ protocols under non-instantaneous feedback and dynamic radio link adaptation,” *IEEE Transactions on Wireless Communications*, vol. 6, no. 9, Sept. 2007, pp. 3418-3428.
- J11. A. Fallahi and **E. Hossain**, “Distributed and energy-aware MAC for differentiated services wireless packet networks: A general queueing analytical framework,” *IEEE Transactions on Mobile Computing*, vol. 6, no. 4, Apr. 2007, pp. 381-394.
- J10. D. Niyato and **E. Hossain**, “A novel analytical framework for integrated cross-layer study of call-level and packet-level QoS in wireless mobile multimedia networks,” *IEEE Transactions on Mobile Computing*, vol. 6, no. 3, Mar. 2007, pp. 322-335.
- J9. D. Niyato, **E. Hossain**, and A. Fallahi, “Sleep and wakeup strategies in solar-powered wireless sensor/mesh networks: Performance analysis and optimization,” *IEEE Transactions on Mobile Computing*, vol. 6, no. 2, Feb. 2007, pp. 221-236.
- J8. T. Issariyakul and **E. Hossain**, “Performance modeling and analysis of a class of ARQ protocols in multi-hop wireless networks,” *IEEE Transactions on Wireless Communications*, vol. 5, no. 12, Dec. 2006, pp. 3460-3468.
- J7. D. Niyato and **E. Hossain**, “Call-level and packet-level quality of service and user utility in rate-adaptive cellular CDMA networks: A queueing analysis,” *IEEE Transactions on Mobile Computing*, vol. 5, no. 12, Dec. 2006, pp. 1749-1763.
- J6. L. B. Le, **E. Hossain**, and A. S. Alfa, “Delay statistics and throughput performance for multi-rate wireless networks under ARQ and multiuser diversity,” *IEEE Transactions on Wireless Communications*, vol. 5, no. 11, Nov. 2006, pp. 3234-3243.

- J5. D. Niyato and **E. Hossain**, “A queueing theoretic and optimization-based model for radio resource management in IEEE 802.16 broadband wireless networks,” *IEEE Transactions on Computers*, vol. 55, no. 11, Nov. 2006, pp. 1473-1488.
- J4. L. B. Le, **E. Hossain**, and A. S. Alfa, “Radio link level performance evaluation in wireless networks using multi-rate transmission with ARQ-based error control,” *IEEE Transactions on Wireless Communications*, vol. 5, no. 10, Oct. 2006, pp. 2647-2653.
- J3. T. Issariyakul, **E. Hossain**, and A. S. Alfa, “End-to-end batch transmission in a multi-hop and multi-rate wireless network: Latency, reliability and throughput analysis,” *IEEE Transactions on Mobile Computing*, vol. 5, no. 9, Sept. 2006, pp. 1143-1155.
- J2. A. Fallahi, **E. Hossain**, and A. S. Alfa, “QoS and energy tradeoff in distributed energy-limited mesh/relay networks: A queueing analysis,” *IEEE Transactions on Parallel and Distributed Systems*, vol. 17, no. 6, June 2006, pp. 576-592.
- J1. **E. Hossain**, D. I. Kim, and V. K. Bhargava, “Analysis of TCP performance under joint rate and power adaptation in multi-cell multi-rate WCDMA packet data systems,” *IEEE Transactions on Wireless Communications*, vol. 3, no. 3, May 2004, pp. 865-879.

Journal Articles (Submitted)

- JS1. D. Niyato, N. Kayastha, **E. Hossain**, and Z. Han, “Smart grid sensor data collection, communication, and networking: A tutorial,” submitted to the *IEEE Communications Surveys and Tutorials*.

Magazine Articles (Published/Accepted)

- MS1. N. Saquib, **E. Hossain**, and D. I. Kim, “Fractional frequency reuse for interference management in LTE-Advanced HetNets,” *IEEE Wireless Communications*, to appear.

Book Chapters

- BC3 M. Moghaddari and **E. Hossain**, “Cooperative communications in OFDM and MIMO cellular relay networks: Issues and approaches,” book chapter in *Cooperative Cellular Wireless Networks*, (Eds. E. Hossain, D. I. Kim, and V. K. Bhargava), Cambridge University Press, 2011.
- BC2. D. Niyato and **E. Hossain**, “Connection admission control in OFDMA-based WiMAX networks: Performance modeling and analysis,” invited chapter in *WiMax/MobileFi: Advanced Research and Technology*, Yang Xiao (Ed), Auerbach Publications, CRC Press, 2007.
- BC1. **E. Hossain** and V. K. Bhargava, “Cross-layer performance in cellular WCDMA/3G networks: Modelling and analysis,” invited chapter in *Emerging Location Aware Broadband Wireless Ad Hoc Networks*, R. Ganesh, S. Kota, K. Pahlavan, and R. Augusti (Eds.), Kluwer Academic/Plenum Publishers, ISBN 0-387-23070-X, Sept. 2004.

Conference Articles (Accepted/Published)

- C41. S. Chiochan and E. Hossain, “iCORE: Implementation of multi-channel multi-radio repeater-aided network coded WiFi,” in *Proc. 13th International Symposium on Wireless Personal Multimedia Communications (WPMC 2010)*, Recife, Brazil, 11-14 Oct. 2010.
- C40. D. Niyato, P. Wang, **E. Hossain**, and Y. Li, “Optimal content transmission policy in publish-subscribe mobile social networks,” in *Proc. IEEE Globecom 2010*, Miami, Florida, USA, 6-10 Dec. 2010.
- C39. D. Niyato, S. Guruacharya, **E. Hossain**, and D. I. Kim, “Hierarchical competition in femtocell-based cellular networks,” in *Proc. IEEE Globecom 2010*, Miami, Florida, USA, 6-10 Dec. 2010.
- C38. S. Chiochan, **E. Hossain**, T. Issariyakul, and D. Niyato, “Opportunistic network coding and dynamic buffer allocation in a wireless butterfly network,” in *Proc. IEEE Global Communications Conference (Globecom'09)*, 30 Nov. - 4 Dec. 2009, Honolulu, Hawaii, USA.
- C37. D. Niyato, **E. Hossain**, K. C. Wavegedara, and V. K. Bhargava, “Radio link level performance in multi-rate MIMO wireless networks: Analysis and optimization,” in *Proc. IEEE WCNC'07*, Hong Kong, 11-15 Mar. 2007.

- C36. L. B. Le, A. Nguyen, and **E. Hossain**, “A tandem queue model for performance analysis in multihop wireless networks,” in *Proc. IEEE WCNC’07*, Hong Kong, 11-15 Mar. 2007.
- C36. L. B. Le, **E. Hossain**, and T. L.-Ngoc, “Effects of link-level queueing and truncated ARQ on TCP throughput in multi-rate wireless networks,” in *Proc. Third International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine’06)*, Waterloo, Ontario, Canada, 7-9 Aug. 2006.
- C35. Mohammad M. Rashid, **E. Hossain**, and V. K. Bhargava, “Queueing analysis of 802.11e HCCA with variable bit rate traffic,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June 2006.
- C34. T. Issariyakul, **E. Hossain**, and V. Krishnamurthy, “Packet-level statistics in a wireless network using amplify-and-forward cooperative diversity,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June 2006.
- C33. A. Fallahi and **E. Hossain**, “Queueing analysis of distributed MAC in wireless ad hoc networks with differentiated services,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June, 2006.
- C32. D. Niyato and **E. Hossain**, “Analysis of different sleep and wakeup strategies in solar powered wireless sensor networks,” in *Proc. IEEE ICC’06*, Istanbul, Turkey, 11-15 June, 2006.
- C31. L. B. Le and **E. Hossain**, “Queueing analysis of go-back-N ARQ protocol in multi-rate wireless networks with feedback delay,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C30. T. Issariyakul, D. Niyato, **E. Hossain**, and A. S. Alfa, “Exact distribution of access delay in IEEE802.11 DCF MAC,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C29. L. B. Le and **E. Hossain**, “Delay statistics for selective repeat ARQ protocol in multi-rate wireless networks with non-instantaneous feedback,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C28. D. Niyato, R. Palit, S. Kota, and **E. Hossain**, “Call-level and packet-level performance analysis of call admission control and adaptive channel allocation in mobile wireless networks,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C27. D. Niyato and **E. Hossain**, “Queue-aware uplink bandwidth allocation for polling services in 802.16 broadband wireless networks,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C26. D. Niyato and **E. Hossain**, “Call-level and packet-level performance modeling in cellular CDMA networks,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.

- C25. D. Niyato and **E. Hossain**, “Connection admission control algorithms for OFDMA wireless networks,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C24. D. Niyato and **E. Hossain**, “Queueing analysis of OFDM/TDMA systems,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C23. D. Niyato, J. Diamond, and **E. Hossain**, “On optimizing token bucket parameters at the network edge under generalized processor sharing (GPS) scheduling,” in *Proc. IEEE Globecom’05*, St. Louis, MO, USA, 28 Nov.-2 Dec. 2005.
- C22. L. B. Le, **E. Hossain**, and A. S. Alfa, “Delay statistics in multi-rate wireless networks with ARQ and weighted round-robin scheduling,” in *Proc. IEEE VTC’05 (Fall)*, Dallas, TX, USA, 25-28 Sept. 2005.
- C21. D. Niyato and **E. Hossain**, “Analysis of fair scheduling and connection admission control in differentiated services wireless networks,” in *Proc. IEEE ICC’05*, Seoul, Korea, 15-19 May 2005.
- C20. L. B. Le, **E. Hossain**, and A. S. Alfa, “Queueing analysis and admission control for multi-rate wireless networks with opportunistic scheduling and ARQ-based error control,” in *Proc. IEEE ICC’05*, Seoul, Korea, 15-19 May 2005.
- C19. D. Niyato, **E. Hossain**, and A. S. Alfa, “Performance analysis and adaptive call admission control in cellular mobile networks with time-varying traffic,” in *Proc. IEEE ICC’05*, Seoul, Korea, 15-19 May 2005.
- C18. T. Issariyakul, **E. Hossain**, and A. S. Alfa, “Markov-based analysis of end-to-end batch transmission multi-hop wireless networks,” in *Proc. IEEE ICC’05*, Seoul, Korea, 15-19 May 2005.
- C17. T. Issariyakul, **E. Hossain**, and A. S. Alfa, “Analysis of latency for reliable end-to-end batch transmission in multi-rate multi-hop wireless networks,” in *Proc. IEEE ICC’05*, Seoul, Korea, 15-19 May 2005.
- C16. D. Niyato, **E. Hossain**, and A. S. Alfa, “Performance analysis of multi-service wireless cellular networks for time-dependent call arrival patterns,” in *Proc. IEEE Globecom’04*, Dallas, Texas, USA, Dec. 2004.
- C15. L. B. Le, **E. Hossain**, and A. S. Alfa, “Queueing analysis for radio link level scheduling in a multi-rate TDMA wireless network,” in *Proc. IEEE Globecom’04*, Dallas, Texas, USA, Dec. 2004.
- C14. T. Issariyakul and **E. Hossain**, “Analysis of end-to-end performance in a multi-hop wireless network for different hop-level ARQ policies,” in *Proc. IEEE Globecom’04*, Dallas, Texas, USA, Dec. 2004.

- C13. **E. Hossain** and V. K. Bhargava, "Cross-layer performance in cellular WCDMA/3G networks: Modelling and analysis," in *Proc. 15th IEEE Int. Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'04)*, Barcelona, Spain, 5-8 Sept. 2004 (**Invited Paper**).
- C12. T. Issariyakul and **E. Hossain**, "Throughput and temporal fairness optimization in multi-rate TDMA wireless networks," in *Proc. IEEE ICC'04*, Paris, France, June 2004.
- C11. L. B. Le and **E. Hossain**, "On the performance of spatial multiplexing MIMO cellular systems with adaptive modulation and scheduling," in *Proc. IEEE WCNC'04*, Atlanta, USA, Mar. 2004.
- C10. **E. Hossain**, D. I. Kim, and V. K. Bhargava, "TCP performance under dynamic link adaptation in cellular multi-rate WCDMA networks," in *Proc. IEEE ICC'02*, New York, NY, USA, Apr. 2002.
- C9. **E. Hossain**, D. I. Kim, and V. K. Bhargava, "Modeling and analysis of TCP performance under joint rate and power adaptation in multi-cell multi-rate WCDMA systems," in *Proc. IEEE Military Communications Conference (Milcom'01)*, McLean, VA, USA, Oct. 2001.
- C8. **E. Hossain** and V. K. Bhargava, "TCP performance in WCDMA-based cellular wireless networks," in *Proc. IEEE ICPWC'00*, Jaipur, India, Dec. 2000.
- C7. **E. Hossain** and V. K. Bhargava, "On higher layer protocol performance in CDMA S-ALOHA networks with packet combining in Rayleigh fading channels," in *Proc. IEEE Globecom'00*, San Francisco, USA, Nov. 2000.
- C6. **E. Hossain** and J. H. Sarker, "On throughput performance of single and multichannel S-ALOHA with exponential backoff retransmission schemes for packet transmissions in multiple power levels," in *Proc. IEEE Int. Conference on Personal Wireless Communications (ICPWC'97)*, Mumbai, India, Dec. 1997, pp. 152-156.
- C5. M. S. Alam and **E. Hossain**, "Throughput analysis of a multichannel slotted-ALOHA protocol in short-haul communication environment for an exponential backoff retransmission scheme," in *Proc. Int. Conf. on Information, Communications and Signal Processing (ICICS'97)*, Singapore, Sept. 1997, pp. 1034-1038.
- C4. **E. Hossain**, M. Z. Rahman, and M. M. Islam, "On the performance of a multichannel R-ALOHA protocol for voice and data transmission in short-haul wireless communication environments," in *Proc. IEEE Int. Conf. on Personal Wireless Communications (ICPWC'97)*, Mumbai, India, Dec. 1997, pp. 465-469.

- C3. J. H. Sarker, M. M. Hassan, and **E. Hossain**, “On the statistical modeling of correlated and independent factors together in packet data transmission systems,” in *Proc. IEEE Int. Conf. on Personal Wireless Communications (ICPWC’97)*, Mumbai, India, Dec. 1997, pp. 499-504.
- C2. G. Rasul and **E. Hossain**, “Performance analysis of multi-channel S-ALOHA systems with constant probability and truncated exponential backoff retransmission control schemes,” in *Proc. Nat. Conf. on Computer and Information Systems (NCCIS’97)*, Dhaka, Bangladesh, Dec. 1997, pp. 179-185.
- C1. **E. Hossain**, M. S. Alam, and M. H. A. Khan, “Output queueing analysis in space division packet switching networks,” in *Proc. Int. Conf. on Robotics, Vision and Parallel Processing for Industrial Automation (ROVPIA’96)*, Ipoh, Malaysia, pp. 329-334.

2.3.4 Wireless and Mobile Communications Services and Applications

Journal Articles (Accepted/Published)

- J13. K. Akkarajitsakul, **E. Hossain**, and D. Niyato, “Cooperative packet delivery in hybrid wireless mobile networks: A coalitional game approach,” *IEEE Transactions on Mobile Computing*, to appear.
- J12. N. Kayastha, D. Niyato, P. Wang, and **E. Hossain**, “Applications, architectures, and protocol design issues for mobile social networks: A survey,” *Proceedings of the IEEE*, vol. 99, no. 12, Dec. 2011, pp. 2130-2158.
- J11. P. Phunchongharn, **E. Hossain**, and S. Camorlinga, “Electromagnetic interference-aware joint scheduling and power control for dynamic wireless access in a hospital environment,” *IEEE Transactions on Information Technology in BioMedicine*, vol. 15, no. 6, December 2011, pp. 890-899.
- J10. B. Shrestha, **E. Hossain**, and S. Camorlinga, “IEEE 802.15.4 MAC with GTS transmission for heterogeneous devices with application to wheelchair body-area sensor networks,” *IEEE Transactions on Information Technology in BioMedicine*, vol. 15, no. 5, pp. 767-777, September 2011.
- J9. D. Niyato, P. Wang, **E. Hossain**, W. Saad, and A. Hjørungnes, “Exploiting mobility diversity in wireless access: A game-theoretic approach,” *IEEE Transactions on Wireless Communications*, vol. 9, no. 12, pp. 3866-3877, October 2010.
- J8. W. Saad, Z. Han, A. Hjørungnes, D. Niyato, and **E. Hossain**, “Coalition formation games for distributed roadside units cooperation in vehicular

- networks,” *IEEE Journal on Selected Areas in Communications*, Special Issue on “Vehicular Communications Networks”, vol. 29, no. 1, pp. 48-60, December 2010.
- J7. D. Niyato, **E. Hossain**, and P. Wang, “Optimal channel access management with QoS support for cognitive vehicular networks,” *IEEE Transactions on Mobile Computing*, vol. 10, no. 4, pp. 573-591, February 2011.
- J6. D. Niyato and **E. Hossain**, “A unified framework for optimal wireless access for data streaming over vehicle-to-roadside communications,” *IEEE Transactions on Vehicular Technology*, vol. 59, no. 6, July 2010, pp. 3025-3035.
- J5. P. Phunchongharn, D. Niyato, **E. Hossain**, and S. Camorlinga, “An EMI-aware prioritized wireless access scheme for e-Health applications in hospital environments,” *IEEE Transactions on Information Technology in BioMedicine*, vol. 14, no. 5, pp. 1247-1258, Sept. 2010.
- J4. **E. Hossain**, G. Chow, V. Leung, B. McLeod, J. Mistic, V. Wong, and O. Yang, “Vehicular telematics over heterogeneous wireless networks: A survey,” *Computer Communications Journal (Elsevier)*, vol. 33, no. 7, May 2010, pp. 775-793.
- J3. K. Zhu, D. Niyato, P. Wang, **E. Hossain**, and D. I. Kim, “Mobility and handoff management in vehicular networks: A survey,” *Wireless Communications and Mobile Computing Journal (Wiley)*, vol. 11, no. 4, pp. 459476, April 2011.
- J2. D. Niyato, **E. Hossain**, and S. Camorlinga, “Remote patient monitoring service using heterogeneous wireless access networks: Architecture and optimization,” *IEEE Journal on Selected Areas in Communications*, vol. 27, no. 4, May 2009, pp. 412-423.
- J1. A. A. Alexander, R. Taylor, V. Vairavanathan, Y. Fuo, **E. Hossain**, and S. Noghianian, “Solar powered ZigBee-based wireless motion surveillance: A prototype development and experimental results,” *Wireless Communications and Mobile Computing Journal (Wiley)*, vol. 8, no. 10, Dec. 2008, pp. 1255-1276.

Journal Articles (Submitted)

- JS1. D. Niyato, D. Qiumin, P. Wang, and **E. Hossain**, “Power consumption and supply optimizations in smart grid: Analysis of the impact of data communication reliability,” submitted to the *IEEE Transactions on Smart Grid*.

Magazine Articles (Accepted/Published)

- M2. D. Niyato, P. Wang, and **E. Hossain**, “Reliability analysis and redundancy design of smart grid wireless communications system for demand side management,” *IEEE Wireless Communications*, to appear.
- M1. D. Niyato, **E. Hossain**, and J. Diamond, “IEEE 802.16/WiMAX-based broadband wireless access and its application for telemedicine/e-health services,” *IEEE Wireless Communications*, vol. 14, no. 1, Feb. 2007, pp. 72-83 (one of top 10 accessed articles in *IEEE Wireless Communications*, July 2007).

Book Chapters

- BC4. D. Niyato, **E. Hossain**, and T. Issariyakul, “An adaptive WiFi/WiMAX networking platform for cognitive vehicular networks,” invited chapter in *Cognitive Radio Mobile Ad Hoc Networks (CR-MANETs)*, (Eds. F. R. Yu and H. Tang), Springer, 2011.
- BC3. D. Niyato, **E. Hossain**, and M. Hassan, “Game theory models for vehicular networks,” invited chapter in *Game Theory for Wireless Communications and Networking*, (Eds. Y. Zhang and M. Guizani), Auerbach Publications, CRC Press, Taylor & Francis Group, 2010.
- BC2. P. Phunchongharn, **E. Hossain**, and S. Camorlinga, “Cognitive radio for pervasive healthcare,” invited chapter in *Cognitive Radio Networks*, (Eds. Y. Zhang, J. Zheng, and H. H. Chen), Auerbach Publications, CRC Press, Taylor & Francis Group, 2009.
- BC1. D. Niyato, **E. Hossain**, and J. Diamond, “Fourth generation heterogeneous wireless access networks for eHealth Services: Architecture and radio resource management,” invited chapter in *Mobile Telemedicine: A Computing and Networking Perspective*, (Eds. Y. Xiao and H. Chen), Auerbach Publications, 2007.

Conference Articles (Accepted/Published)

- C7. P. Phunchongharn, D. Niyato, **E. Hossain**, and S. Camorlinga, “Robust joint scheduling power control for dynamic wireless access in a hospital environment,” in *Proc. IEEE ICC 2011*, Kyoto, Japan, 5-9 June 2011.
- C6. D. Niyato, P. Wang, Z. Han, and **E. Hossain**, “Impact of packet loss on power demand estimation and power supply cost in smart grid,” in *Proc. IEEE WCNC 2011*, Quintana-Roo, Mexico, 28-31 March 2011.
- C5. B. Shrestha, **E. Hossain**, and S. Camorlinga, “A Markov model for IEEE 802.15.4 MAC with GTS transmissions and heterogeneous traffic in non-saturation mode,” in *Proc. IEEE International Conference on Communication Systems (ICCS 2010)*, 17-20 November, Singapore, 2010.
- C4. B. Shrestha, **E. Hossain**, S. Camorlinga, R. Krishnamoorthy, and D. Niyato, “An optimization-based GTS allocation scheme for IEEE 802.15.4 MAC with application to wireless body area sensor networks,” in *Proc. IEEE ICC’10*, Cape Town, South Africa, 23-27 May, 2010.
- C3. D. Niyato, **E. Hossain**, and P. Wang, “Competitive wireless access for data streaming over vehicle-to-roadside communications,” in *Proc. IEEE Global Communications Conference (Globecom’09)*, 30 Nov. - 4 Dec. 2009, Honolulu, Hawaii, USA.
- C2. K. Akkarajitsakul and **E. Hossain**, “An auction mechanism for channel access in vehicle-to-roadside communications,” in *Proc. 2nd International Workshop on Multiple Access Communications*, held in conjunction with *IEEE Int. Conference on Communications (ICC’09)*, 14-18 June 2009, Dresden, Germany (**Invited Paper**).
- C1. B. Shrestha, D. Niyato, Z. Han, and **E. Hossain**, “Wireless access in vehicular environments using BitTorrent and bargaining,” in *Proc. IEEE Globecom’08*, New Orleans, LA, USA, 30 Nov.-4 Dec., 2008.

2.3.5 Wireless Multimedia Communications and Networking

Journal Articles (Accepted/Published)

- J4. S. Chiochan and **E. Hossain**, “Downlink media streaming with wireless fountain code in wireline-cum-WiFi networks,” *Wireless Communications and Mobile computing Journal* (Wiley), to appear (published online on 18 January 2011, DOI: 10.1002/wcm.1092).

- J3. S. Chiochan and **E. Hossain**, “Wireless fountain coding for multimedia streaming over a wireline-cum-WiFi network: A cross-layer performance study,” *IEEE Transactions on Mobile Computing*, to appear.
- J2. **E. Hossain** and V. K. Bhargava, “Link-level traffic scheduling for providing predictive QoS in wireless multimedia networks,” *IEEE Transactions on Multimedia*, vol. 6, no. 1, Feb. 2004, pp. 199-217.
- J1. **E. Hossain** and V. K. Bhargava, “Link-state aware dynamic traffic scheduling for providing predictive QoS in wireless mobile multimedia networks,” *Special Issue of Journal of Interconnection Networks (JOIN) on Mobile Computing*, Sept. 2000, pp. 221-245.

Journal Articles (Submitted)

- JS1. S. Chiochan and **E. Hossain**, “Network coding for unicast in a WiFi hotspot: Promises, challenges, and testbed implementation,” submitted to the *Computer Networks* (Elsevier).

Conference Articles (Accepted/Published)

- C2. **E. Hossain** and V. K. Bhargava, “Link-state aware traffic scheduling for providing predictive QoS in wireless mobile multimedia networks,” in *Proc. ACM HiPC’99*, Kolkata, India, Dec. 1999, pp. 219-228.
- C1. **E. Hossain** and K. F. Li, “End-system architecture for distributed networked multimedia applications: Issues, trends and future directions,” in *Proc. IEEE PACRIM’99*, Victoria, Canada, Aug. 1999, pp. 452-455.

2.3.6 Wired and Wireless Internetworking

Journal Articles (Accepted/Published)

- J3. N. N. Xiong, A. V. Vasilakos, L. T. Yang, and **E. Hossain**, “An adaptive and predictive approach for autonomic multi-rate multicast networks,” *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, vol. 6, no. 3, Article 22, Publication date: September 2011.

- J2. M. M. Rashid, A. S. Alfa, **E. Hossain**, and M. Maheswaran “An analytical approach to providing controllable differentiated quality of service in web servers,” *IEEE Transactions on Parallel and Distributed Systems*, vol. 16, no. 11, Nov. 2005, pp. 1022-1033.
- J1. N. Parvez and **E. Hossain**, “*TCP Prairie*: A sender-only TCP modification based on adaptive bandwidth estimation in wired-wireless networks,” *Computer Communications* (Elsevier), vol. 28/2, Feb. 2005, pp. 246-256.

Book Chapters

- BC1. **E. Hossain** and N. Parvez, “Enhancing TCP performance in wide-area cellular wireless networks: Transport level approaches,” invited chapter in *Wireless Communications Systems and Networks*, M. Guizani (Ed), Kluwer Academic/Plenum Publishers, ISBN: 0-306-48190-1, Apr. 2004.

Conference Articles (Accepted/Published)

- C1. N. Parvez and **E. Hossain**, “Improving TCP performance by using a novel adaptive bandwidth estimation mechanism in wired-wireless networks,” in *Proc. IEEE Globecom'04*, Dallas, Texas, USA, Dec. 2004.

Technical Report

- TR1. **E. Hossain**, T. Hwang, B. Jensen, and V. K. Bhargava, “GPRS-based wireless IP networks: Transmission control and multimedia call control signaling issues,” Technical Report ECE-00-1, University of Victoria, prepared for Motorola Wireless Data Systems, June 2000.

2.4 Invention Disclosures

- P2. B. Shrestha, **E. Hossain**, S. Camorlinga, Raja Krishnamurthy, and D. Niyato, “A method for allocation of guaranteed time slots for efficient transmission of time-critical data in IEEE 802.15.4 wireless personal area networks,” US Patent (filed).
- P1. D. Niyato, **E. Hossain**, and S. Camorlinga, “Remote and mobile patient monitoring service using heterogeneous wireless access networks,” US Patent (filed).

2.5 Books/Monographs

- B8. **E. Hossain**, V. K. Bhargava, and G. Fettweis, *Green Radio Communication Networks*, (edited volume), Cambridge University Press, 2012.
- B7. **E. Hossain**, Z. Han, and H. V. Poor, *Smart Grid Communications and Networking*, (edited volume), Cambridge University Press, 2012.
- B6. **E. Hossain**, V. K. Bhargava, and D. I. Kim, *Cooperative Cellular Wireless Networks*, (edited volume) Cambridge University Press, 2011.
- B5. **E. Hossain**, D. Niyato, and Z. Han, *Dynamic Spectrum Access in Cognitive Radio Networks*, Cambridge University Press, ISBN-13: 9780521898478.
- B4. **E. Hossain**, *Heterogeneous Wireless Access Networks: Architectures and Protocols*, (edited volume), ISBN: 978-0-387-09776-3, Springer, 2008.
- B3. T. Issariyakul and **E. Hossain**, *Introduction to Network Simulator - NS2*, ISBN: 978-0-387-71760-9, Springer, 2008.
- B2. **E. Hossain** and K. K. Leung, *Wireless Mesh Networks: Architectures and Protocols*, (edited volume), ISBN: 978-0-387-68839-8, Springer, 2007.
- B1. **E. Hossain** and V. K. Bhargava, *Cognitive Wireless Communication Networks*, (edited volume), ISBN: 978-0-387-68830-5, Springer, 2007.

3 Teaching and Graduate Student Supervision

3.1 Courses Developed at the University of Manitoba

- Wireless Networks (ECE 4540)
- Advanced Wireless Communication Networks (ECE 7200)
- Cognitive Wireless Communication Networks (ECE 7202)

3.2 Courses Taught at the University of Manitoba

- **Electric Circuits (ECE2262)**: Summer 2010.
- **Digital Logic Systems (ECE 2220)**: Fall 2001, Fall 2002, Summer 2003, Fall 2003, Summer 2004, Summer 2005, Summer 2007, Fall 2009, Fall 2011.
- **Signal Processing-II (ECE 4830)**: Fall 2004, Fall 2005, Fall 2006, Fall 2007, Fall 2008.
- **Telecommunications Network Engineering (ECE 3700/ECE 7590)**: Spring 2002, Spring 2003.

- **Wireless Networks (ECE 4540)** - (introduced and developed by **E. Hossain**): Fall 2003, Fall 2004, Fall 2006, Fall 2007, Fall 2008, Fall 2011.
- **Advanced Wireless Communication Networks (ECE 7200)** - (introduced and developed by **E. Hossain**): Fall 2001, Fall 2002, Fall 2003, Spring 2004, Spring 2005, Spring 2007, Spring 2008, Spring 2009, Winter 2011.
- **Cognitive Wireless Communication Networks (ECE 7202)** - (introduced and developed by **E. Hossain**): Summer 2008, Summer 2009, Winter 2011.

3.3 Undergraduate Thesis Supervised at the University of Manitoba

- Sanchuan Liu and Ye Sun, *Development of a ZigBee Based Wireless ECG Signal Transceiver*, Mar. 2009.
- Jordan Sylvestre and Sean Smith, *Wireless Smart Home on Gumstix*, Mar. 2007.
- Andell Anees Alexander, Raymond Taylor, Vinujan Vairavanathan, and Yao Fu, *Solar Powered ZigBee-Based Wireless Motion Surveillance*, Mar. 2007.
- Ace Abrenica, Rezan Almojuela, Roger Dalupang, and Rhodelle Magnayon, *The Control of an Outdoor Device by Implementing a ZigBee Wireless Connection with Solar Energy as a Primary Power Source*, Mar. 2006.
- Mark Dodd and Benjamin Windsor, *A ZigBee-Based Wireless Smart Home*, Mar. 2006.
- Jingjing Wang and Yabin Sun, *Remote Control of Home Appliances over the Internet Using Bluetooth Wireless Network*, Mar. 2006.
- Jay Sethi, Matthew, and Ryan Supeene, *Design of a Practical Mesh Network Using Available Consumer Hardware*, Mar. 2006.
- Scott McCamis and Voytek Plawny, *Simulation of Adaptive Error Control in a Link-Level Wireless Protocol*, Apr. 2003.
- Dinen Subramaniam, *Simulation of TCP over 3G Cellular Wireless Networks*, Aug. 2002.
- Troy Dale Dolyniuk and Darryl David Shpak, *Fair Queuing and Energy Efficiency in Wireless MAC Protocols*, Apr. 2002.
- Kar Mun Cheng, Ping Tai Cheuk, Lowell Miller, and Qing Rong Zhen, *Modeling and Simulation of 3G Cellular Wireless Networks*, Apr. 2002.
- Norman Figueroa, *Error Control for Multimedia Wireless LAN*, Aug. 2001.

3.4 Graduate Students Supervised at the University of Manitoba

3.4.1 Ph.D. Student Supervision

- Surachai Chieochan, Completed Ph.D. in September 2011, Thesis Title: *Network Coded Media Distribution in Infrastructure Wireless Mesh Networks*
- Dusit Niyato, Completed Ph.D. in July 2008, Thesis Title: *Radio Resource Management in Broadband Wireless Networks*, Recipient of the University of Manitoba Graduate Fellowship (**UMGF**).
- Afshin Fallahi, Completed Ph.D. in Dec. 2007, Thesis Title: *Dynamic Power Management for QoS-Aware Wireless Multimedia Sensor Networks*.
- Long Bao Le, Completed Ph.D. in April 2007, Thesis Title: *Cross-Layer Design and Analysis of Wireless Networks*, Recipient of the University of Manitoba Graduate Fellowship (**UMGF**).
- T. Issariyakul, Completed Ph.D. in August 2005, Thesis Title: *Scheduling and Error Control in Cellular and Multi-Hop Wireless Networks: Analysis and Optimization*, Recipient of University of Manitoba Graduate Fellowship (**UMGF**).

3.4.2 M.Sc. Student Supervision/Co-Supervision

- A. T. Nguyen, Completed M.Sc. in Sept. 2008, Thesis Title: *MIMO-Based Wireless Mesh Networks: Resource Allocation and Performance Evaluation*.
- I. A. Qaimkhani, Completed M.Sc. in Dec. 2007, Thesis Title: *QoS Enhancements in IEEE 802.11 Wireless LANs to Support Real-Time Services*.
- B. Pawlak, Completed M.Sc. in August 2007, Thesis Title: *Positron Emission Tomography (PET) Image Reconstruction by Density Estimation* (Co-supervised).
- D. Niyato, Completed M.Sc. in August 2005, Thesis Title: *Call Admission Control, Bandwidth Adaptation, and Scheduling in Cellular Wireless Internet: Analytical Models and Performance Evaluation*.
- M. M. Rashid, Completed M.Sc. in July 2004, Thesis Title: *Provisioning and Controlling Differentiated Quality of Service in Web Servers: An Analytical Approach*, Recipient of the University of Manitoba Graduate Fellowship (**UMGF**), co-supervised with Prof. M. Maheswaran, McGill University, Canada.

- K. N. Parvez, Completed M.Sc. in April 2004, Thesis Title: *Enhancing TCP Performance in Wide-Area Wireless Networks Using End-to-End Bandwidth Estimation*.
- R. Palit, Completed M.Sc. in Apr. 2004, Thesis Title: *Mobility-Aware Access-Based Clustering in Mobile Wireless Ad hoc Networks*, Recipient of the University of Manitoba Graduate Fellowship (UMGF).

3.5 Current Graduate Students

- Amr Nasr, Ph.D. student (expected to complete by December 2015)
- Madushan Thilina, Ph.D. student (expected to complete by December 2014)
- Hesham ElSawy, Ph.D. student (expected to complete by August 2014)
- Mohammad Moghaddari, Ph.D. student (expected to complete by August 2013)
- Bharat Shrestha, Ph.D. student (expected to complete by Dec. 2012)
- Khajonpong Akkarajitsakul, Ph.D. student (expected to complete by Apr. 2012)
- Phond Phunchongharn, Ph.D. student (expected to complete by Dec. 2011)
- Nazmus Saquib, M.Sc. student (expected to complete by August 2012)

3.6 Post-Doctoral Research Associates

- Mohammad Mamunur Rashid, Ph.D. (The University of British Columbia, Canada), May 2011 – August 2011
- Kaewon Choi, Ph.D. (Seoul National University, Korea), July 2009 – August 2010
- Hengameh Keshavarz, Ph.D. (University of Waterloo, Canada), Nov. 2008 – Oct. 2009
- Javad Ahmadi-Shokouh, Ph.D. (University of Waterloo, Canada), Nov. 2008 – Oct. 2009
- Teerawat Issariyakul, Ph.D. (University of Manitoba, Canada), Feb. 2008 – June 2008

4 Professional Activities

4.1 Journal/Magazine Editorship

- Editor-in-Chief, *IEEE Communications Surveys and Tutorials* (appointed for the term 2012-2013)
- Editor, *IEEE Journal on Selected Areas in Communications: Cognitive Radio Series* (since 2011)
- Editor, *IEEE Transactions on Mobile Computing* (since 2007)
- Editor, *IEEE Transactions on Wireless Communications* (2001-2009)
- Area Editor, Resource Management and Multiple Access, *IEEE Transactions on Wireless Communications* (since 2010)
- Associate Editor, *IEEE Transactions on Vehicular Technology* (2006-2009)
- Editor, *IEEE Wireless Communications* (since 2006)
- Editor, *IEEE Communications Surveys and Tutorials* (since 2009)
- Editor, *Ad Hoc Networks* (Elsevier) Journal (since 2009)
- Editor, *Wireless Communications and Mobile Computing* (Wiley Interscience) (2004-2009)
- Editor, *KICS/IEEE Journal of Communications and Networks* (2003-2009)
- Editor, *International Journal of Vehicular Technology (IJVT)* (Hindawi Publishing) (2006-2009)

4.2 Journal/Magazine Guest Editorship

- Guest Editor, Special Issue of *IEEE Journal on Selected Areas in Communications* on “Economics of Communication Networks and Systems”, Fourth Quarter, 2012.
- Guest Editor, Special Issue of the *Journal of Communications* (<http://www.academypublisher.com/jcm/>) on “Cognitive Radio Enabled Communications and Networking”, November 2009.
- Guest Editor, Special Issue of the *IEEE Transactions on Systems, Man and Cybernetics-PartB* on “Game Theory,” 2009.
- Guest Editor, Special Issue of the *Computer Communications Journal* (Elsevier) on “Cognitive Radio and Dynamic Spectrum Sharing Systems,” 2009, <http://www.elsevier.com/locate/comcom>.

- Guest Editor, Special Issue of the *EURASIP Journal on Wireless Communications and Networking*, on “Fairness in Radio Resource Management for Wireless Networks,” 2009.
- Guest Editor, Special Issue of the *Computer Communications Journal* (Elsevier) on “Quality, Reliability, Security and Robustness for Heterogeneous Wireless Networks,” 2009.
- Guest Editor, Special Issue of the *Mobile Networks and Applications Journal* (Springer) on “New Advances in Heterogeneous Networking for Quality, Reliability, Security and Robustness,” 2008.
- Guest Editor, Special Issue of the *KICS/IEEE Journal of Communications and Networks (JCN)* on “Cognitive Radio - A Path in the Evolution of Public Wireless Networks,” December 2008.
- Guest Editor, Special Issue of the *IEEE Communications Magazine* on “Advances in Mobile Multimedia Networking and QoS,” Aug. 2007.
- Guest Editor, Special Issue of the *IEEE Wireless Communications* on “Radio Resource Management and Protocol Engineering in IEEE 802.16,” Feb. 2007.
- Guest Editor, Special Issue of the *IEEE Communications Magazine* on “Cross-Layer Protocol Engineering for Wireless Mobile Networks - Part I,” Jan. 2006.
- Guest Editor, Special Issue of the *IEEE Communications Magazine* on “Cross-Layer Protocol Engineering for Wireless Mobile Networks - Part II,” Dec. 2005.
- Guest Editor, Special Issue of the *Wireless Communications and Mobile Computing (WCMC)* on “Radio Link and Transport Protocol Engineering for Future-Generation Wireless Mobile Data Networks,” Apr. 2005.
- Guest Editor, Special Issue of the *Canadian Journal of Electrical and Computer Engineering (CJECE)* on “Advances in Wireless Communications and Networking,” Jan./Apr. 2004.

4.3 Professional Membership

- Member, Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM)
- Senior Member, IEEE
- Member, IEEE Communications Society
- Member, IEEE Vehicular Technology Society
- Chair, IEEE Communications Society Chapter, IEEE Winnipeg Section

4.4 Conference/Symposium/Workshop Chair/Co-Chair

- Technical Program Co-Chair, “Cognitive Radio and Networks” Symposium, *IEEE International Conference on Communications (ICC’12)*, Ottawa, Canada, June 10-15, 2012.
- Technical Program Co-Chair, “Mobile and Wireless Networks” Track, *IEEE Wireless Communications and Networking Conference (WCNC’12)*, Paris, France, April 1-4, 2012.
- Technical Program Co-Chair, “Cognitive Radio and Spectrum Management” Track, *22nd IEEE Symposium on Personal, Indoor, Mobile and Radio Communications (PIMRC’11)*, Toronto, Canada, Sept. 11-14, 2011.
- Technical Program Chair, *Cognitive Radio and Cooperative Communications* Track, *IEEE 72nd Vehicular Technology Conference (VTC’10-Fall)*, Ottawa, Canada, Sept. 6-9, 2010.
- Technical Program Chair, *Cognitive and Cooperative Communications* Track, *IEEE 71th Vehicular Technology Conference (VTC’10-Spring)*, Taipei, Taiwan, May 16-19, 2010.
- Publicity Chair for the America Region, *IEEE Wireless Communications and Networking Conference (WCNC’10)* (<http://www.ieee-wcnc.org/2010/>), Sydney, Australia, Apr. 18-21, 2010.
- Technical Program Chair, *Symposium on Next-Generation Mobile Networks* held in conjunction with *International Wireless Communication and Mobile Computing Conference (IWCMC’10)*, Caen, France, 28 June - 2 July, 2010.
- Technical Program Chair, *Workshop on Cognitive Wireless Communications and Networking* to be held in conjunction with the *IEEE International Conference on Ultra Modern Telecommunications* (<http://www.icumt.org/>), Saint Petersburg (Russia), Oct. 12-14, 2009.
- Technical Program Chair, *Symposium on Next-Generation Mobile Networks* held in conjunction with *International Wireless Communication and Mobile Computing Conference (IWCMC’09)*, Leipzig, Germany, 21-24 June, 2009.
- Technical Program Chair, *Workshop on Cognitive Radio and Networks*, held in conjunction with *19th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)*, Cannes, French Riviera, France, 15-18 September, 2008.
- Technical Program Co-Chair, *Wireless Networks and Cognitive Radio* Track, *IEEE 68th Vehicular Technology Conference (VTC2008-Fall)*, Calgary, Canada, 21-24 September 2008.

- Technical Program Co-Chair, *Fifth International ICST Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine'08)*, Hong Kong, 28-31 July, 2008.
- Technical Program Co-Chair, *Symposium on Next-Generation Mobile Networks* held in conjunction with *International Wireless Communication and Mobile Computing Conference (IWCMC'08)*, Maris Conference Centers, Chania, Crete Island, Greece, 6-8 August, 2008.
- Technical Program Co-Chair, *Symposium for Communications and Networking*, held in conjunction with *21st Canadian Conference on Electrical and Computer Engineering (CCECE'08)*
(<http://www.ewh.ieee.org/reg/7/ccece08/>).
- Technical Program Co-Chair, *IEEE Wireless Communications and Networking Conference (WCNC'08)*, 31 Mar.-3 Apr. 2008, Las Vegas, USA.
- Technical Program Co-Chair, Symposium on “Wireless Networking”, *IEEE Globecom'07*, 26-30 Nov. 2007, Washington, DC, USA.
- Technical Program Chair, Workshop on “Cognitive Wireless Networks (CWNets)” held in conjunction with *QShine: International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness*, 14-17 Aug. 2007, Vancouver, British Columbia, Canada.
- Technical Program Chair, Workshop on “Wireless Networking for Intelligent Transportation Systems (WiN-ITS)” held in conjunction with *QShine: International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness*, 14-17 Aug. 2007, Vancouver, British Columbia, Canada.
- Poster Chair, *QShine: International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness*, 14-17 Aug. 2007, Vancouver, British Columbia, Canada.
- Technical Program Co-Chair, *Symposium on Next-Generation Mobile Networks* held in conjunction with *International Wireless Communication and Mobile Computing Conference (IWCMC'07)*, 12-16 Aug. 2007, Turtle Bay Resort, Honolulu, Hawaii, USA.
- Technical Program Co-Chair, *Int. Conference on Next-Generation Wireless Systems (ICNEWS'06)*, 2-4 Jan. 2006, Dhaka, Bangladesh.

4.5 Technical Program Committee Membership

- *Wireless Networking* Symposium, *IEEE International Conference on Communications (ICC'12)*, Ottawa, Canada, June 10-15, 2012.

- *7th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (IEEE WiMob)*, Shanghai, China, 10-12 October, 2011.
- *8th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS 2011)*, Valencia, Spain, 17-22 October, 2011.
- *6th International ICST Conference on Cognitive Radio Oriented Wireless Networks (CrownCom 2011)*, Yokohama, Japan, 31 May-3 June, 2011.
- *Workshop on Cognitive and Cooperative Networks*, IEEE Infocom 2011, Shanghai, China, April 10-15, 2011.
- *IEEE WoWMoM 2011*, Lucca, Italy, June 20-24, 2011.
- *IEEE DySPAN 2011*, Aachen, Germany, May 3-6, 2011.
- *Wireless Networking Symposium*, IEEE ICC 2011, Kyoto, Japan, June 5-9, 2011.
- *Wireless Networking Symposium*, IEEE Globecom 2010, Miami, FL, USA, December 6-10, 2010.
- *Wireless Communications Symposium*, IEEE Globecom 2010, Miami, FL, USA, December 6-10, 2010.
- *The 13th International Symposium on Wireless Personal and Multimedia Communications (WPMC'10)*, 11-14 October 2010, Recife, Brazil.
- *IEEE Vehicular Networks and Applications Workshop (VehiMobi'10)*, collocated with *IEEE International Conference on Communications (ICC'10)*, 23-27 May 2010, Cape Town, South Africa.
- *IEEE INFOCOM'10 Workshop on Cognitive Wireless communications and Networking*, 15-19 March 2010, San Diego, CA, USA.
- *IEEE Workshop on Networking Intelligent Vehicles and Infrastructures (NiVi'09)* (<http://snac.eas.asu.edu/workshop/NIVI09>), in conjunction with *IEEE Global Communications Conference (Globecom'09)*, Honolulu, Hawaii, USA, Nov 30-Dec. 4, 2009.
- “Wireless Networking Symposium”, *IEEE Global Communications Conference (Globecom'09)*, Honolulu, Hawaii, USA, Nov 30-Dec. 4, 2009.
- Symposium on “Selected Areas in Communications”, *IEEE Global Communications Conference (Globecom'09)*, Honolulu, Hawaii, USA, Nov 30-Dec. 4, 2009.
- “Wireless Communications Symposium”, *IEEE Global Communications Conference (Globecom'09)*, Honolulu, Hawaii, USA, Nov 30-Dec. 4, 2009.

- “*The International Workshop on Scalable Ad Hoc and Sensor Networks (SASN’09)* held in conjunction with the *IEEE International Conference on Ultra Modern Telecommunications* (<http://www.icumt.org/>), Saint Petersburg (Russia), Oct. 12-14, 2009
- “IEEE Vehicular Networks and Applications Workshop”, co-located with *IEEE International Conference on Communications*, 14-18 June 2009, Dresden, Germany.
- “Cognitive Radio” track, *IEEE VTC2009-Spring*, 26-29 Apr. 2009, Barcelona, Spain.
- Symposium on “Selected Areas in Communications”, *IEEE Int. Conference on Communications (ICC’09)*, Dresden, Germany, June 14-18, 2009.
- Symposium on “Ad Hoc, Sensor and Mesh Networking”, *IEEE Global Communications Conference (Globecom’08)*, New Orleans, LA, USA, 30 Nov.- 4 Dec. 2008.
- Symposium on “Wireless Networking”, *IEEE Global Communications Conference (Globecom’08)*, New Orleans, LA, USA, 30 Nov.- 4 Dec. 2008.
- “Cognitive Radio Networks” track, *17th Int. Conference on Computer Communication and Networks (ICCCN 2008)*, St. Thomas U.S. Virgin Islands, USA, 3 - 7 Aug. 2008.
- 4th ACM International Workshop on *Wireless Multimedia Networking and Performance Modeling (WMuNeP 2008)*, co-located with the *11th ACM International Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2008)*, Vancouver, Canada, 27-31 October 2008.
- Workshop on *Machine Learning in Cognitive Networks: Theory, Application, and Future (MLCN’08)*, co-located with the *IEEE World Congress on Computational Intelligence (WCCI 2008)*, HongKong, China, 1-6 June, 2008.
- *IEEE Vehicular Networks and Applications Workshop (Vehi-Mobi 2008)*, co-located with IEEE ICC 2008, Beijing, China, 19-23 May 2008.
- *First IEEE International Workshop on Cognitive Radio and Advanced Spectrum Management (CogART 2008)*, Aalborg, Denmark, 14 February 2008.
- *3rd International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CrownCom’08)*, Singapore, 14-17 May 2008.
- *IEEE Communications Conference (ICC’08)*, Beijing, China, 19-23 May 2008.

- *IEEE Wireless Communications and Networking Conference (WCNC'08)*, Las Vegas, USA, 31 Mar.-3 Apr., 2008.
- *IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM'07)*, University of Victoria Victoria, B.C., Canada, 22-24 August, 2007.
- *QShine: International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness*, 14-17 Aug. 2007, Vancouver, British Columbia, Canada.
- *2nd IEEE International Workshop on Heterogeneous Wireless Networks: Resource Management and QoS (HWN-RMQ'07)*, Las Vegas, Nevada, USA, 11-13 Jan. 2007.
- *International Symposium on Broadband Access Technologies in Metropolitan Area Networks 2006*, 16-18 Oct. 2006, Niagara Falls, Canada.
- *IEEE Wireless Communications and Networking Conference (WCNC'07)*, Hong Kong, 11-17 Mar. 2007.
- Workshop on *Multi-Layer Modeling and Design of Multi-Hop Wireless Networks (MLMD'06)* held in conjunction with *The Twelfth International Conference on Parallel and Distributed Systems (ICPADS'06)*, Minneapolis, Minnesota, 12-15 July 2006.
- *64th IEEE Vehicular Technology Conference (VTC'06 Fall)*, Mobile Wireless Networks Track, Montreal, Canada, 25-28 Sept. 2006.
- *Third International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine'06)*, Waterloo, Ontario, Canada, 7-9 Aug. 2006.
- *IEEE Global Communications Conference (Globecom'06) Wireless Communications Symposium*, San Francisco, CA, USA, Dec. 2006.
- *Symposium on Next-Generation Mobile Networks* held in conjunction with *International Wireless Communication and Mobile Computing Conference (IWCMC'06)*, 3-6 July 2006, Vancouver, Canada.
- *Symposium on Wireless Local and Personal Area Networks* held in conjunction with *International Wireless Communication and Mobile Computing Conference (IWCMC'06)*, 3-6 July 2006, Vancouver, Canada.
- *First Wireless Euro-Mediterranean International Conference (WEMIC'06)*, Amman, Jordan, 27-29 Mar. 2006
(<http://www.just.edu.jo/wireless/WEMIC/>).

- *First International Workshop on Security and Pervasive Multimedia Environments (MultiSec'05)*
(<http://coitweb.uncc.edu/zhliu/MultiSec'05>) held in conjunction with IEEE International Symposium on Multimedia (ISM'05), 12-14 Dec. 2005, Irvine, California, USA
(<http://ISM2005.eecs.uci.edu/>).
- *International Symposium on Wireless Pervasive Computing 2006 (ISWPC'06)*, Phuket, Thailand, 16-18 Jan. 2006 (<http://www.iswpc.org/2006>).
- *ACM International Workshop on Wireless Multimedia Networking and Performance Modeling (WMuNeP'05)*, Montreal, Canada, 13 Oct. 2005
(<http://www.dcc.ufmg.br/~loureiro/wmunep05.html>)
held in conjunction with the *8th ACM/IEEE Int'l Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM'05)*.
- *Broadband Wireless Networking Symposium* held in conjunction with *Second Annual International Conference on Broadband Networks (BROAD-NETS'05)*, Boston, Massachusetts, USA, 3-7 Oct. 2005.
- *IEEE WirelessCom'05 Symposium on Wireless LANs and Wireless PANs*, Hawaii, USA, 13-16 June 2005.
- *IEEE WirelessCom'05 Symposium on Radio Resource Management*, Hawaii, USA, 13-16 June 2005.
- *International Conference on Networking (IFIP NETWORKING'05)*, University of Waterloo, Waterloo, Ontario, Canada, May 2005.
- *IEEE International Conference on Communications (ICC'05)*, Seoul, Korea, May 2005.
- *IEEE Wireless Communications and Networking Conference (WCNC'05)*, New Orleans, LA, USA, Mar. 2005.
- *International Conference on Computer and Information Technology (IC-CIT'04)*, Dhaka, Bangladesh, Dec. 2004.
- *IEEE Global Communications Conference (Globecom'04)*, Dallas, Texas, USA, Dec. 2004
- *IEEE Wireless Communications and Networking Conference (WCNC'04)*, Atlanta, GA, USA, Mar. 2004.
- *Workshop on Multihop Wireless Networks (WMN'04)*, in conjunction with *23rd IEEE International Performance, Computing and Communications Conference (IPCCC'04)*, Phoenix, Arizona, USA, 14-17 Apr. 2004.
- *International Conference on Computer and Information Technology (IC-CIT'03)*, Dhaka, Bangladesh, Dec. 2003.

- *IEEE Global Communications Conference (Globecom'03)*, San Francisco, USA, Dec. 2003.
- *IEEE Vehicular Technology Conference (VTC'03) (Fall)*, Orlando, Florida, USA, Sept. 2002.
- *IEEE Vehicular Technology Conference (VTC'02) (Fall)*, Vancouver, Canada, Sept. 2002.
- *International Conference on Computer and Information Technology (IC-CIT'02)*, Dhaka, Bangladesh, Dec. 2002.

4.6 Presentations

4.6.1 Tutorial Presentations

- T14. **E. Hossain** and L. B. Le, "Radio resource management in femtocell networks," half-day tutorial to be presented in *IEEE Conference on Communications (ICC'12)*, Ottawa, Canada, 10-15 June 2012.
- T13. D. Niyato, R. Q. Hu, **E. Hossain**, and Y. Qian, "Communications and networking for smart grid systems," half-day tutorial presented in *IEEE Global Communications Conference (Globecom'11)*, Houston, Texas, USA, 5-9 December 2011.
- T12. **E. Hossain** and Long B. Le, "Interference management in femtocell networks," half-day tutorial presented in *IEEE Int. Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC'11)*, 11-14 Sept., Toronto, Canada.
- T11. **E. Hossain** and D. Niyato, "Game theory for multiple access and resource allocation in wireless networks," half-day tutorial in *IEEE Wireless Communications and Networking Conference (WCNC'11)*, Quintana-Roo, Mexico, 28 March 2011.
- T10. **E. Hossain** and Z. Han, "Application of game theory for designing cognitive radio networks," half-day tutorial presented in *IEEE Communications Conference (ICC'10)*, Cape Town, South Africa, 23 May 2010.
- T9. **E. Hossain** and Z. Han, "Game theory for cognitive radio networks," half-day tutorial presented in *IEEE Global Communications Conference (Globecom'09)*, Honolulu, Hawaii, USA, 30 Nov.-4 Dec. 2009.
- T8. **E. Hossain**, "Cognitive radio networks: Key concepts, challenges, and practical approaches," half-day tutorial, *IEEE Int. Conference on Communications (ICC'09)*, Dresden, Germany, June 14-18, 2009.
- T7. **E. Hossain**, "Cognitive radio networks based on dynamic spectrum access," half-day tutorial, *IEEE Vehicular Technology Conference (VTC'08-Fall)*, Calgary, AB, Canada, 21 Sept. 2008.

- T6. **E. Hossain**, “Dynamic spectrum management in cognitive radio networks,” half day tutorial, *IEEE International Conference on Communications (ICC08)*, Beijing, China, May 23, 2008 (<http://www.ieee-icc.org/tutorials.html>)
- T5. **E. Hossain** and W. Xiang, “Key topics in cognitive radio networks: Challenges, tasks, algorithms, and testbed,” half-day tutorial, *IEEE Global Communications Conference (Globecom’07)*, Washington, DC, USA, 26 Nov. 2007.
- T4. **E. Hossain**, “IEEE802.16/WiMAX-based broadband wireless networks: Protocol engineering, applications, and services,” half-day tutorial, *Fifth Annual Conference on Communication Networks and Services Research (CNSR’07)*, Fredericton, New Brunswick, Canada, 14 May 2007.
- T3. **E. Hossain**, “Cognitive wireless communication networks: An introduction,” half-day tutorial, *IEEE WCNC’07*, Hong Kong, 11 Mar. 2007.
- T2. **E. Hossain**, “Wireless Internet: Issues in protocols and architectures and enabling technologies,” half-day tutorial, *IEEE Vehicular Technology Conference (VTC’02), (Fall)*, Vancouver, Canada, Sept. 2002.
- T1. V. K. Bhargava and **E. Hossain**, “Wireless personal communications - from analog cellular radio services to wireless Internet access,” half-day tutorial, *International Conference on Communications, Computers and Devices (ICCCD’00)*, Kharagpur, India, Dec. 2000.

4.6.2 Invited Talks

- **E. Hossain**, “Interference modeling in random carrier-sense multiple access (CSMA) wireless networks: A stochastic geometry approach,” Department of Computer Science, University of Manitoba, Canada, 20 October 2011.
- **E. Hossain**, “A modified hard core point process for interference modeling in random carrier-sense multiple access networks,” Cooperative Wireless Communications Research Center, Sungkyunkwan University (SKKU), Korea, 03 June, 2011.
- **E. Hossain**, “Channel assignment for throughput optimization in multi-channel multi-radio wireless mesh networks using network coding,” Carleton University, Canada, 10 January, 2011.
- **E. Hossain**, “Dynamic spectrum access in cognitive radio networks: Part II,” Tohoku University, Sendai, Japan, 15 November, 2010.
- **E. Hossain**, “Dynamic spectrum access in cognitive radio networks: Part I,” Tohoku University, Sendai, Japan, 15 November, 2010.

- **E. Hossain**, “Resource allocation and perturbation analysis for cognitive radios in dynamic spectrum access environment,” School of Computer Engineering, Nanyang Technological University, Singapore, August 24, 2009.
- **E. Hossain**, “Resource allocation and perturbation analysis for cognitive radios in dynamic spectrum access environment,” Institute of Infocomm Research (I2R), Singapore, August 22, 2009.
- **E. Hossain**, “A game theoretic modeling of multiple-seller and multiple-buyer spectrum trading in cognitive radio networks,” Department of Electrical and Computer Engineering, McGill University, Montreal, Canada, July 22, 2009.
- **E. Hossain**, “Radio technologies for wireless personal area networks,” TRILabs Focus Group Meeting, Canada, Mar. 11, 2009.
- **E. Hossain**, “Resource allocation for cognitive radios in a dynamic spectrum access environment,” Department of Electrical and Computer Engineering, University of Utah, UT, USA, 8 Apr. 2009.
- **E. Hossain**, “Resource allocation for cognitive radios in a dynamic spectrum access environment,” Department of Electrical and Computer Engineering, University of Houston, TX, USA, 23 Feb. 2009.
- **E. Hossain**, “Resource allocation for cognitive radios in a dynamic spectrum access environment,” Department of Electrical and Computer Engineering, University of Western Ontario, ON, Canada, 14 Jan. 2009.
- **E. Hossain**, “Cognitive radio MAC: Practical issues, potential approaches, and open problems,” *Int. Workshop on Advances in Communications*, Victoria, BC, Canada, 21-23 Sept., 2008.
- **E. Hossain**, “Vehicle-to-infrastructure and vehicle-to-vehicle communications in ITS: Game theory models,” University of Sydney, Australia, June 23, 2008.
- **E. Hossain**, “An adaptive communication platform based on WiFi and WiMAX for vehicle-to-roadside communications,” University of New South Wales, Sydney, Australia, June 22, 2008.
- **E. Hossain**, “Cognitive radio based on dynamic spectrum access,” University of Queensland, Brisbane, Australia, June 16, 2008.
- **E. Hossain**, “e-Health services based on heterogeneous wireless access,” TRILabs Technology Showcase, Winnipeg, Canada, 20 November, 2007.
- **E. Hossain**, “Spectrum trading: An economics of radio resource sharing in cognitive radio networks,” Queen’s University, Kingston, Ontario, Canada, 11 Sept. 2007.

- **E. Hossain**, “Fourth generation heterogeneous wireless access networks for e-health services: Architecture and radio resource management,” *TR Labs Open House*, Winnipeg, Canada, 29 Nov. 2006.
- **E. Hossain**, “Sleep and wakeup strategies in solar-powered wireless sensor networks: Performance analysis and optimization,” Department of Computer Science, University of Alberta, 27 Apr. 2006.
- **E. Hossain**, “End-to-end performance in a multi-hop wireless network for different hop-level ARQ policies,” Department of Electrical and Computer Engineering, University of Toronto, 6 Aug. 2004.
- **E. Hossain**, “End-to-end performance in a multi-hop wireless network for different hop-level ARQ policies,” Department of Electrical and Computer Engineering, University of Waterloo, 5 Aug. 2004.
- **E. Hossain**, “Teaching and research on “wireline” and “wireless” communication networks in Computer Engineering at UoM: An approach towards building a complete telecommunications program,” *Canadian Conference on Computer & Software Engineering Education (C3SEE’2002)*, 16-17 May 2002, University of Manitoba, Winnipeg, Manitoba, Canada.

5 University Services

5.1 Department/Faculty Committee

- Member, Curriculum Development Committee for Computer Engineering
- Member, Engineering Library Committee

5.2 Graduate Thesis Examination

5.2.1 Ph.D. Thesis Examination Committee

- Amir Hossein Meghdadi, *Fuzzy Tolerance Neighborhood Approach to Image Similarity in Content-Based Image Retrieval*, Ph.D. thesis, Electrical and Computer Engineering, University of Manitoba, 2012.
- Mohammad Faisal Uddin, *Design Methods for Optimal Resource Allocation in Wireless Networks*, Ph.D. thesis, Electrical and Computer Engineering, Concordia University, Canada, January 2012 (**external examiner**).
- Muhammad Ibrahim Channa, *A Reliable Routing Scheme for Post-Disaster Ad Hoc Communication Networks*, Ph.D. thesis, School of Engineering and Technology, Asian Institute of Technology, Thailand, October 2011 (**external examiner**).

- Bashar Jabbar Hamza, *A Seamless Vertical Handover Between UMTS and WLAN by Using mSCTP*, Ph.D. thesis, Department Computer and Communication Systems Engineering, Universiti Putra Malaysia, Malaysia, July 2011 (**external examiner**).
- Muhammad Mohsin Nazir, *Ecosystem Modeling for Self-Organizing Cooperative Cognitive Wireless Communication Networks*, Ph.D. thesis, School of Engineering and Technology, Asian Institute of Technology, Thailand, May 2011 (**external examiner**).
- Mohamed Salem, *Radio Resource Management in OFDMA-Based Cellular Relay Networks*, " Ph.D. thesis, Carleton University, Canada, January 2011 (**external examiner**).
- Changqin Huo, *Downlink Radio Resource Allocation Schemes in OFDMA-Based Cellular Systems*, Ph.D. thesis, University of Calgary, Canada, August 2010 (**external examiner**).
- Eng Hwee Ong, *A Generalized Cooperative and Cognitive Radio Resource Management Architecture for Future Wireless Networks*, Ph.D. thesis, The University of Newcastle, Australia, April 2010 (**external examiner**).
- M. Shamim Kaiser, *Neuro-Fuzzy Based Relay Selection and Fair Resource Allocation in Cognitive Cooperative Networks*, Ph.D. thesis, School of Engineering and Technology, Asian Institute of Technology, Thailand, April 2010 (**external examiner**).
- Arash Abadpour, *QoS-Constrained Information Theoretic Capacity Maximization in CDMA Systems*, Ph.D. thesis, Department of Electrical and Computer Engineering, University of Manitoba, Canada, 2009.
- Xiaofeng Bai, *Quality-of-Service and Performance Optimization in Broadband Wireless Access Networks – A Cross-Layer Study*, Ph.D. thesis, Department of Electrical and Computer Engineering, University of Western Ontario, Ontario, Canada, 2009 (**external examiner**).
- Xiao Qin Chen, *Accommodating Congestion and Fading in Mobile AD HOC Networks: Routing Protocol Design and Optimization*, Ph.D. thesis, College of Engineering and Computer Science, Australian National University, Australia, 2009 (**external examiner**).
- Kumudu S. Munasinghe, *A Unified Mobility Management Architecture for Interworked Heterogeneous Mobile Networks*, Ph.D. thesis, School of Electrical and Information Engineering, University of Sydney, Australia, 2008 (**external examiner**).
- Abdul Hasib, *Radio Resource Management in Multiservice Heterogeneous Wireless Networks*, Ph.D. thesis, Department of Electrical and Computer Engineering, University of Calgary, Canada, 2008 (**external examiner**).

- Mohammed Ziaur Rahman, *Paired Measurement Localization for Wireless Sensor Networks*, Ph.D. thesis, Department of Electrical and Computer Systems Engineering Monash University, Australia, 2008 (**external examiner**).
- Song Tao Mea Wang, *A Quest for High-Performance Peer-to-Peer Live Multimedia Streaming*, Ph.D. thesis, Edward S. Rogers Sr. Department of Electrical and Computer Engineering, University of Toronto, Canada, 2008 (**external appraiser**).
- Pratik Das, *A Quality of Heterogeneous Services with Distributed Resource Management for a WCDMA Uplink*, Ph.D. thesis, The University of Newcastle, Australia, April 2010 (**external examiner**).
- Abdelhamid Taha, *A Framework for Radio Resource Management in Heterogeneous Wireless Networks*, Ph.D. thesis, School of Computing & Department of Electrical and Computer Engineering, Queen's University, Canada, 2007 (**external examiner**).
- Ashikur Rahman, *A Controlled Flooding Approach to Efficient Routing in Ad Hoc Wireless Networks*, Ph.D. thesis, Department of Computing Science, University of Alberta, 2006 (**external examiner**).
- Jinfang Zhang, *Soft Handoff in MC-CDMA Cellular Networks Supporting Multimedia Services*, Ph.D. Thesis, Department of Electrical and Computer Engineering, University of Waterloo, 2004 (**external examiner**).
- Sajid Hussain, *Investigating iSCSI for IP Storage and Transport Protocols*, Ph.D. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2004.
- Chaim Hart Poskar, *Computational Intelligence in Rate Based Control for Data Networking*, Ph.D. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2002.

5.2.2 M.Sc. Thesis Examination Committee

- Shabnam Shahfar, *Near Images: A Tolerance Based Approach to Image Similarity and Its Robustness to Noise and Lightening*, Department of Electrical and Computer Engineering, University of Manitoba, 2011.
- Rouzbeh Maani, *Transforming Medical Imaging Applications into Collaborative PACS-based Telemedical Systems*, Department of Computer Science, University of Manitoba, 2010.
- Moazzam Khan, *Performance Evaluation of Security Implementation in IEEE 802.15.4 Beacon Enabled Networks*, Department of Computer Science, University of Manitoba, 2009.

- Muhi Khair, *Adaptive Bandwidth Allocation for Bridge Downlink Operation*, Department of Computer Science, University of Manitoba, 2008.
- Jianping Wang, *HOPNET: A Hybrid Ant Colony Optimization Routing Algorithm for Mobile Ad Hoc Network*, Department of Computer Science, University of Manitoba, 2008.
- Mohamed Y. A. Salem, *Evaluation of a Cartesian-Grid Based Numerical Method for Flow over Sphere*, M.Sc. thesis, Department of Mechanical and Manufacturing Engineering, University of Manitoba, 2008.
- Venkateswara Reddy, *Operator Controlled Obstacle Avoidance Telecontrolled Robotic Platform*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2007.
- Aseosa Stephanie Osagie, *Evaluation of an Ant Colony Optimization Algorithm for Routing in MANETs*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2007.
- Ranjith Udayshankar, *Design of an IEEE 802.15.4 Compliant Slave/Slave Bridge to Support Inter-WPAN Communication Using CSMA-CA*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2007.
- Jun Fung, *Performance Evaluation on IEEE 802.15.4 Scatternet Sensor Networks*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2007.
- Fei Gao, *Analysing Mobile Software Systems: Modeling and Performance Comparison*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2006.
- Arghavan Emami Forooshani, *Multiple Input Multiple Output (MIMO) Systems Channel Modeling and Analysis*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2006.
- Rajasekaran Venugopal, *Modeling and Performance Analysis of TCP Traffic in a Bluetooth Scatternet*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2006.
- Todd Michael Phillips, *An Experimental Study of the Effects of Asymmetric Fuel Nozzles on the Stability of Turbulent Diffusion Flames*, M.Sc. thesis, Department of Mechanical and Manufacturing Engineering, University of Manitoba, 2006.
- Usha Chengan, *Traffic Matrix Estimation of an IP Network*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2006.
- Xiao Huan Liu, *A Delay Pricing Scheme for Real-Time Delivery in Deadline-Based Networks*, M. Sc. thesis, Department of Computer Science, University of Manitoba, 2006.

- Shirley Mayadewi, *Dynamic Scheduling and Resource Allocation in the Forward Link of CDMA2000 1xEv-DV*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2005.
- Qian Wang, *Reverse Link Scheduling and Rate Allocation Scheme for CDMA2000 1xEV-DV: An Alternative Approach*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2005.
- Yuhong Li, *Improved Distributed File Transfer (DFT) on Internet*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2005.
- Michael William Rennie, *Synthesis of a Service-Based Architecture Description Language*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2005.
- Gonapati Rajashekar Reddy, *Congestion Control by Sleep Management in Wireless Sensor Networks Using Bluetooth Technology*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2005.
- Kia Seong Teng, *QoS-Based Unicast Routing Algorithms for High Speed Internetworks*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2005.
- Shairmina Shafi, *Performance of a Beacon Enabled IEEE 802.15.4-Compliant Network*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2005.
- Hung Manh Dao, *The QoS-Capable DSLAM for Broadband Services Over the DSL Access Networks*, M.Sc. thesis, Department of Electrical and Computer Engineering, University of Manitoba, 2004.
- Shony Abraham, *Efficient Load Balancing Strategies on a Network of Computers: A Case Study with Two Scientific Computing Problems*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2004.
- Md Mostafizur Rahman, *A Multithreaded Algorithm for the Maximum Flow Problem*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2004.
- Lei Liang, *Mobile Agent-Based Routing in Ad-Hoc Mobile Networks*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2004.
- Kumaran Subramoniam, *Dynamic Multilateral Peering: An Efficient Mechanism for Controlled Resource Sharing*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2004.
- Ramandeep Bhinder, *Design and Evaluation of Request Distribution Schemes for Web-Server Clusters*, M.Sc. thesis, Department of Computer Science, University of Manitoba, 2002.

6 Projects and Research Grants

6.1 Research Projects

- *Design and engineering of “green” cellular wireless networks*, Sponsored by the University of Manitoba Research Grants Program (**ongoing**).
- *Co-existence and integration of wireless body-area sensor networks*, Sponsored by Telecommunications Research Labs (TRLabs), Winnipeg, and NSERC of Canada (**ongoing**).
- *Advanced transmission and resource management techniques for cooperative cellular wireless networks*, Sponsored by Natural Sciences and Engineering Research Council of Canada (NSERC) Strategic Grant Program (**ongoing**).
- *Dynamic spectrum access and management in next generation heterogeneous wireless access networks*, Sponsored by NSERC (**ongoing**).
- *Wireless body-area sensor networking platform for pervasive healthcare services*, Sponsored by TR Labs, Winnipeg, and NSERC (**ongoing**).
- *Vehicular telematics over WiFi and WiMax multihop networks*, Sponsored by AUTO21 Network of Centres of Excellence, University of Windsor, Canada (**ongoing**).
- *Experimental testbed for protocol engineering in infrastructure wireless mesh networks*, Sponsored by NSERC (**completed**).
- *Cognitive radio for biomedical devices and e-Health services*, Sponsored by TR Labs, Winnipeg, and NSERC (**ongoing**).
- *Dynamic channel allocation entity for in home wireless multimedia distribution*, Sponsored by TR Labs, Winnipeg, and NSERC (**completed**).
- *Protocol Engineering for the future generation broadband wireless mobile networks*, Sponsored by NSERC (**completed**).
- *Telemedicine and health services based on broadband wireless access*, Sponsored by TR Labs, Winnipeg, Canada (**completed**).
- *Protocol architectures for high-performance and scalable wireless backbone for IEEE 802.11-based mesh networking*, Sponsored by TR Labs, Winnipeg, Canada (**completed**).
- *Heterogeneous wireless networking platform for vehicular communications*, Sponsored by the University of Manitoba Research Grants Program (**completed**).
- *Radio access systems design for future generation wireless networks*, Sponsored by NSERC (**completed**).

- *Cross-layer protocol optimization in wireless data networks*, Sponsored by *TRLabs*, Winnipeg, Canada (**completed**).
- *Call admission control in Diffserv wireless IP networks*, Sponsored by *TRLabs*, Winnipeg, Canada (**completed**).
- *Modeling and analysis of TCP performance in wireless networks*, Sponsored by *TRLabs*, Winnipeg, Canada (**completed**).
- *Congestion control in multi-hop wireless networks*, Sponsored by the University of Manitoba Research Grants Program (**completed**).
- *Radio link adaptation techniques for broadband wireless networks*, Sponsored by the University of Manitoba Research Grants Program (**completed**).

6.2 Research Grants

- University of Manitoba Research Grant amounting to CND \$7,500, from the University of Manitoba, as Primary Investigator, 2011.
- Project Grants (as student scholarships) from *TRLabs*, Winnipeg, and Industrial Postgraduate Scholarship (IPS) from NSERC, Canada, for 3 projects, amounting to CND \$72,000, as Primary Investigator, 2010.
- Project Grants (as student scholarships) from *TRLabs*, Winnipeg, and Industrial Postgraduate Scholarship (IPS) from NSERC, Canada, for 3 projects, amounting to CND \$72,000, as Primary Investigator, 2010.
- Strategic Research Grant amounting to CND \$114,000 (spanned over 3 years, 2009-2011) from NSERC, as Co-Investigator.
- Discovery Grant amounting to CND \$230,000 (spanned over 5 years, 2009-2013) from NSERC, as Primary Investigator, 2009.
- Project Grants (as student scholarship and fellowship) amounting to CND \$60,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2009.
- Project Grants (as student scholarships and fellowships) amounting to CND \$36,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2008.
- Project Grant of CND \$59,334 from AUTO21, as Co-Investigator, 2008-2009.
- Research Tools and Instruments (RTI) Grant of CND \$40,439 from NSERC, as Primary Investigator, 2007.
- Project Grants (as student scholarships and fellowship) amounting to CND \$33,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2007.
- Project Grant of CND \$7,500 from University of Manitoba (URGP), 2007.

- Project Grants (as student scholarships) amounting to CND \$24,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2006.
- NSERC Discovery Grant amounting to CND \$1,78,500 (spanned over 5 years, 2006-2010) from NSERC, as Primary Investigator, 2006.
- Project Grants (as student scholarships) amounting to CND \$24,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2005.
- University of Manitoba Research Grant amounting to CND \$7,500, from the University of Manitoba, as Primary Investigator, 2004.
- Project Grants (as student scholarships) amounting to CND \$24,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2004.
- Project Grants (as student scholarships) amounting to CND \$36,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2003.
- University of Manitoba Research Grant amounting to CND \$7,500, from the University of Manitoba, as Primary Investigator, 2003.
- NSERC Discovery Grant amounting to CND \$84,000 (spanned over 4 years, 2002-2005) from NSERC, as Primary Investigator, 2002.
- Project Grants (as student scholarships) amounting to CND \$24,000 from *TRLabs*, Winnipeg, Canada, as Primary Investigator, 2002.