Atousa Hajshirmohammadi, Ph.D., PEng
Curriculum Vitae

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EDUCATION

Ph.D. Communication and Information Systems, 2001
Department of Electrical and Computer Engineering, University of Waterloo, Canada
Thesis: Application of Turbo-Codes in Digital Communications

M.Sc. Communications Engineering, 1994
Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan, Iran
Thesis: Application of Order Statistic (OS) Filters in Image Restoration

B.Sc. Electronics Engineering, 1991
Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan, Iran

WORK EXPERIENCE

1. *School of Engineering Science, Simon Fraser University, B.C., Canada,* Jan 2000-Dec 2000 and Jan 2004 – Present

   Positions held:

   Senior Lecturer (Sep 2009 – Present), Lecturer (Sep 2004 – Aug 2009), Limited Term Lecturer (Jan-Sep 2004), Limited Term Assistant Professor (Jan-Dec 2000)

   Study leave: Jan -May 2011 (4 months), Medical and Maternity leave: May 2011-Jul 2012 (14 months), Study leave: May 2014 - Dec 2014 (8 months)

   Teaching:

   ENSC-120: Introduction to electronics laboratory instruments operation & measurement techniques, 2 credit units.

   ENSC-150: Introduction to computer design, 3 credit units.

   ENSC-220: Electric Circuits I, 4 credit units.

   ENSC-280: Engineering measurement and data analysis, 4 credit units.

   ENSC-327 Communication systems, 4 credit units.

   ENSC-380 Linear systems, 3 credit units.

   ENSC-383 Feedback control systems, 4 credit units.

   ENSC-429 Digital signal processing, 4 credit units.

   ENSC-861 Source coding in digital communications (Now: Advanced multimedia compression), 3 credit units.

   (For complete details of Teaching Activities at SFU please refer to my Teaching Dossier.)

Service:

Committee Chair positions:

College Transfer Liaison, 2016-Present (Responsible for liaising with colleges for development of college transfer programs and related transfer issues)

- Oversaw the development and approval of the Transfer Pathway agreement between ENSC-SFU and Douglas College.

Chair, Undergraduate Curriculum Committee (UCC), January 2013-December 2013

- Passed (at Senate level) and rolled out the 1st year of Engineering Science's New Curriculum. This included the introduction of two new courses, and several modifications to existing courses and the curriculum.
- Successfully negotiated with Math and Physics departments the introduction of two new ENSC courses, which these departments deemed to have overlap with subjects under their jurisdiction.
- Oversaw the introduction and approval of four new courses for ENSC New Curriculum for 2nd and 3rd years of the ENSC programs.
- Passed the 2nd year of ENSC New Curriculum at ENSC-UCC and ENSC-Faculty levels.
- Reviewed students' UCC related cases.

Chair, Undergraduate Curriculum Committee (UCC), Sep 2008 – Sep 2010

- Prepared a 30-page report in response to CEAB's 2006 accreditation visit of the department. The program was granted accreditation for three additional years. (Jun & Sep 09)
- Prepared the "Undergraduate Program" chapter (40 pages) of the "Self Study Report", in preparation for the 2010 External Review of the department. Later, contributed in the preparation of the "External Review Action Plan" in response to the External Review report. (Mar & Aug 2010)
- Approved several curriculum revision and new course proposals for ENSC program in Burnaby and the developing Mechatronics program in Surrey.
- Reviewed students' UCC related cases.

Committee Membership positions:

- ENSC Tenure and Promotion Committee, May 2017-Present
- Faculty Work Load Committee, Sep 2008 – Present
- Committee on Teaching Load, 2015
- Electronics Options Committee, Jan 2013 – Apr 2014
- Undergraduate Curriculum Committee (UCC), Jan-Apr 2014
- Teaching Appointments Review Committee (TARC), School of Mechatronics, Sep'13 & Apr'14: Reviewed three MSE faculty members for salary reviews and promotions.
- Curriculum Reform Committee, Sep 2009-Aug 2010: Researched and prepared a report on ENSC first year curriculum in comparison with other Canadian first year engineering programs, Mar 2010
- External Review Committee, Sep 2009 - Aug 2010 (See UCC Chair)

Other Services:
- Undergraduate Advisor, 2004 – 2010: Advising undergraduate students in academic related matters such as course selection and academic progress
- Checking the academic record of graduation applicants to confirm their eligibility to graduate

Graduate and Undergraduate Student Supervision:

Please refer to Teaching Dossier

2. *LSI Logic Inc., Milpitas, California*, 2001-2003

   Senior Design Engineer
   - System designed Multi-Rate Turbo-Codes employed in next generation LSI satellite communication FPGA prototype.
   - Developed system model for Multi-Rate Turbo-Codes to an efficient C toolbox used for simulations.
   - Proposed new methods for optimizing the puncturing and mapping patterns for the Turbo-code employed in the satellite system, leading to 15% SNR performance improvement.
   - Configured and integrated the C-Model satellite system modules into the end to end model.
   - Designed a novel implementation of the Turbo-Decoder leading to 30% reduction in memory requirements.
   - Implemented the "sliding window" algorithm for Turbo-decoding and optimized the window length for this algorithm.

3. *Department of Electrical and Computer Engineering, University of Waterloo, Waterloo, Ont., Canada*, 1996–1999

   Research Assistant
   - Solved the challenging problem of evaluation of the second order statistics of Turbo-code performance bound over all interleavers, resulting in very well received disseminations.
   - Developed an innovative coding scheme for unequal power allocation to Turbo-encoder output bits which improved the signal to noise ratio performance of the code by more than 15% .
   - Proposed a new labeling and puncturing method in combined Turbo-code and modulation for transmission over band limited channels, with significant performance improvement over conventional methods.

   Teaching Assistant
   - Conducted tutorials and labs for courses in Probability Theory, Numerical Methods, Communication Systems, and Electrical Circuits and Systems

4. *Department of Electrical and Computer Engineering, Isfahan University of Technology, Iran,* 1992-1994

   Research Assistant
   - Applied Order Statistic (OS) filters for image restoration.
   - Proposed an Adaptive Trimmed Mean (ATM) filter with variable window size, with more than 4 dB improvement over the performance of conventional fixed size ATM and Median filters
   - Developed software for simulating the performance of conventional and the proposed OS filters

RESEARCH INTERESTS

Technical: Multimedia Communication, Cognitive Radio Networks, JPEG2000, Unequal Error Protection (Please refer to list of publications)

Pedagogical: Teaching and learning, Engineering education, Experiential learning, Development of learning enhancement tools (Please refer to list of publications, as well as Teaching Dossier, for details of my pedagogical activities.)

FUNDING

- SFU Teaching and Learning Development Grant, Dec 2014, $9500 (reviewed application)
- SFU Teaching and Learning Development Grant, Apr 2011, $2800 (reviewed application)
- Nokia University Relations Finland, Mar 2010, $8000 (reviewed application)
- Faculty of Applied Sciences and School of Engineering Science, One Time Research Fund, Dec 2007, $10,000
- Faculty Startup Research Fund, Jan 2004, $20,000

PEER REVIEWED PUBLICATIONS:

- Golara Javadi, Atousa Hajshirmohammadi, Jie Liang, "Power and Sub-Channel Optimization of JPEG 2000 Image Transmission over OFDM-Based Cognitive Radio Networks," *Signal Processing: Image Communication,* Vol. 58, pp. 157-164, Aug 2017.
- Atousa Hajshirmohammadi, "Incorporating Experiential Learning in Engineering Courses*", IEEE Communications Magazine,* Vol. 55, No. 11, pp. 166-169, Nov 2017.
- Golara Javadi, Atousa Hajshirmohammadi, Jie Liang, "JPEG2000 Image Transmission Over OFDM-Based Cognitive Radio Network*", 6th International Conference and Workshop on Computing and Communication, IEMCON 2015*, Vancouver, BC, Oct 2015.
- Atousa Hajshirmohammadi, Nilgoon Zarei, "Incorporating Experiential Learning In Lower Division Engineering Courses*", Canadian Engineering Education Association Conference (CEEA'15)*, Hamilton, Ont., May-Jun 2015.
- M. Shayegannia, A. Hajshirmohammadi, S. Muhaidat, and M. Torki, "Transmission of JPEG2000 Images over Frequency Selective Channels with Unequal Power Allocation," *IET Image Processing,* Vol. 7, Issue 1, 2013, pp. 33 – 41.
- M. Shayegannia, S. Muhaidat, and A. HajShirMohammadi, "Transmission of JPEG2000 Images in an Uplink Cellular Network with UPA and SCFDE: A System Description," *Eighth International Conference on Wireless and Mobile Communications (ICWMC 2012*), Venice, Italy, June 2012.
- M. Shayegannia, A. Hajshirmohammadi, S. Muhaidat, "Using an Adaptive UPA scheme with a Channel-Aware OFDM technique for Wireless Transmission of JPEG2000 Images*," IEEE CCECE 2012*, Montreal, Canada, Apr 2012.
- M. Shayegannia, A. HajShirMohammadi, S. Muhaidat, and M. Torki, "An OFDM Based System for Transmission of JPEG2000 Images Using Unequal Power Allocation," *IEEE Wireless Communications and Networking Conference* (*WCNC 2012*), Paris, France.

- W. Zhang, X. Shao, M. Torki, A. HajShirMohammadi, and I. V. Bajić, "Unequal error protection of JPEG2000 images using short block length turbo codes," *IEEE Communications Letters*, vol. 15, no. 6, pp. 659-661, Jun. 2011.

- Sohail Bahmani, Ivan Bajic, Atousa Hajshirmohammadi, "Joint Decoding of Unequally Protected JPEG2000 Bitstreams and Reed-Solomon Codes," *IEEE Transactions on Image Processing,* vol. 19, no. 10, pp. 2693 - 2704, Oct. 2010.

- Mahin Torki, Atousa Hajshirmohammadi, "Unequal Power Allocation for Transmission of JEPG2000 Images Over Wireless Channels," *IEEE Global Communications Conference, Globecom'09,* Nov. 2009.

- Sohail Bahmani, Ivan Bajic, Atousa Hajshirmohammadi, **"**Improved Joint Source-Channel Decoding of JPEG2000 Images and Reed-Solomon Codes**",** *Proceedings of IEEE International Conference on Communications, ICC'09*, Sept. 2008.

- Mahin Torki, Atousa Hajshirmohammadi, "Multicasting JPEG2000 Images Over MIMO Systems," *Proceedings of IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC'08*, Sept. 2008.

- Sohail Bahmani, Ivan Bajic, Atousa Hajshirmohammadi, "Joint Source-Channel Decoding of JPEG2000 Images with Unequal Loss Protection", *Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, ICASSP'08,* pp.1365-1368, Apr. 2008.

- Atousa Hajshirmohammadi and Weihua Zhuang, "Variance of the Turbo-Code Performance Bound Over the Interleavers", *IEEE Transactions on Information Theory,* vol. 48, no. 7, pp.2078-2086, July 2002.

- Atousa Hajshirmohammadi and Weihua Zhuang, "Effect of the Interleaver on the Contribution of Different Error Patterns in Turbo-Code Performance," *Proceedings of the 2nd International Symposium on Turbo Codes & Related Topics*, pp. 51-54, Sept. 2000.

- Atousa Hajshirmohammadi and A.K. Khandani, "Unequal Power Allocation to the Turbo-Encoder Output Bits with Application to CDMA Systems," *IEEE Transactions on Communications*, vol. 47, no. 11, pp. 1609-1611, Nov. 1999.

- Atousa Hajshirmohammadi and Weihua Zhuang, "Variance of the Turbo-Code Performance Bound Over the Interleavers," *Proceedings of the 49th IEEE Vehicular Technology Conference, VTC'99*, May 1999.

- Atousa Hajshirmohammadi and Weihua Zhuang, "Statistical Study of the Effect of the Interleaver on Turbo-Code Performance*", Proceedings of the 1998 International Symposium on Information Theory, ISIT'98*, p.422, Aug. 1998.

- Atousa Hajshirmohammadi and Weihua Zhuang, "Combined Turbo-Code and Modulation for CDMA Wireless Communications", *IEEE Vehicular Technology Conference*, *VTC'98*, pp. 1920-1924, May 1998.

- Atousa Hajshirmohammadi and A.K. Khandani, "Unequal Error Protection on the Turbo-Encoder Output Bits," *IEEE International Conference on Communications, ICC'97*, pp. 730-734, Jun. 1997.

- Atousa Hajshirmohammadi and A.K. Khandani, "Unequal Error Protection of Turbo-Encoder Output Bits," *Electronics Letters*, Vol. 33, No. 4, pp. 273-274, Feb. 1997.

- Atousa Hajshirmohammadi and A.K. Khandani, "Effect of the Labeling the Constellation Points in a Combined Turbo-code and Modulation," *30th Conference on Information Sciences and Systems, CISS'96*, pp. 67-69, Mar. 1996.

PRESENTATIONS:

- Invited interview SFU Teaching and Learning Center for "Experiential Learning Snapshots" project, SFU, Burnaby, BC. Apr 2016.
  Un-edited video: https://www.youtube.com/watch?v=MoFxl0yQn2o

- Atousa Hajshirmohammadi, "Capitalizing on Digital Distraction in the Classroom: Use of a Free Online Student Response System," Symposium on Scholarly Inquiry into Teaching & Learning Practice, Vancouver, BC, Nov. 2015.

- Fabio Campi, Atousa Hajshirmohammadi, "Support Technical learning using short Audio/Video Tutorials", *Canadian Engineering Education Association Conference (CEEA'15)*, Format: 1.5-hour workshop, Presenter: Atousa Hajshirmohammadi, Hamilton, Ont., May-Jun 2015.

- "Implementation of UPA algorithm for transmission of Images on Nokia smartphone handsets", Presented at the Nokia University Relations Forum, Vancouver, Nov 2010.

- "JPEG 2000 Transmission over Wireless Channels", Presented at the Nokia University Relations Forum, Vancouver, Dec 2009.

SERVICE TO ACADEMIC COMMUNITY

- Developed and executed a 1.5-hour STEM workshop for grade 6-7 students visiting FAS-SFU, Mar 2017
- Mentor at "Stem Mentoring café", organized by Open Science Network, May 2017
- Faculty Mentor on Student's Orientation day, Sep 2009 and Sep 2010
- Manuscript Reviewer for IEEE International Conference on Communications, ICC, 2007
- Manuscript Reviewer for EURASIP Journal on Wireless Communications and Networking, 2007
- Manuscript Reviewer for Wireless Personal Communications Journal, 2007
- Project Leader, Life of an Engineer; A Woman's Perspective, since 2006. Received total funding of $4000 from Jade Project , ENSC, and FAS
- Registered Professional Engineer with APEGBC, Since Nov 2006
- Chair, IEEE Industrial Application Society, Vancouver Section, 2004-
- IEEE Member, 1995-Present
- Officer of Publication for the Society of Iranian Professionals (SIP) in Bay Area, 2001- 2003
- Member of the International Graduate Students Committee (IGSC),University of Waterloo, 1995-1997
- Conducted Tutorial Assistant training workshops at University of Waterloo, 1997 - 1999

PROFESSIONAL DEVELOPMENT (selection)

- Attendance and presentation at various local and national teaching and learning conferences and symposiums. (Please refer to Publications)
- Classroom Observation Protocol for Undergraduate STEM (COPUS) Workshop, SFU, May 2017.
- Participation in FAS Pairwise Teaching Exchange program, and follow up meetings, 2015-2016.
- "EdMedia Protégé Program", SFU, Apr-Jun 2015.
- "Clear Speech Workshop", SFU, Feb 13 and Mar 4, 2013.
- Rethinking Teaching: A Course Design Workshop for Faculty,SFU, April 24-29, 2014.

  This four-day workshop focused on course development and implementing new teaching strategies. I attended this workshop as part of my course development efforts for ENSC-280.

- Teaching Matters Seminar Series, Fall 2014, SFU, Burnaby

  These biweekly seminar series focused on reading and discussing a mixture of theoretical and conceptual articles, papers on research studies, and papers on practical teaching strategies. Each seminar was facilitated by one of the participants. I facilitated the October 9th, meeting.

- Teaching and Learning Grant Development Workshops, Fall 2014.
- "Teaching Large Classes" workshop, LIDC, SFU, Feb. 28, 2011.
- "Honey Comb Project Retreat", Brew Creek Lodge, April 28-29, 2011.
- Online Webinar: "Tech Insider: Engage Students Using Interactive Modeling and Simulation Tools", October 5, 2010
- IEEE Webinar: "Tech Insider: Advances in Mobile Device Design", Nov. 17, 2010
- Webinar, "ENGAGE - Everyday Examples in Engineering", by WEPAN, Dec 2, 2010
- Voice Enhancement Lessons, Instructor: Sarah Luise Turner, SFU, July-Aug 2008
- Course Design Workshop, SFU, April 2007
- Voice and Presentation Skills Workshop, SFU, April 2007
- Workshop: Graduate Student Supervision, Instructor Dr. Jonathan Driver, Dean of Graduate Studies, SFU, March 2007
- Workshop: The Speaker Within; Simple Vocal and Presentation Skills to Enhance Your Teaching, Instructor: Sarah Luise Turner, SFU, 2005
- Short Course: Fundamentals of Ultra Wide-Band Communications Instructor: Prof. Moe Win, MIT,Offered by: Mobile Information and Communication Syustems(MICS), EPFL, Lausanne, Switzerland, July4-7, 2005
- Short Course: Universal Compression and Probability Estimation, Instructor: Prof. Alon Orlintsky, UCSD, Offered by: Mobile Information and Communication Syustems(MICS), EPFL, Lausanne, Switzerland, July4-7, 2005
- Teaching Development Workshop, SFU, 2000

SCHOLARSHIPS AND AWARDS

- Nominated for SFU Excellence in Teaching Award, Oct 2017
- Natural Science and Engineering Research Council (NSERC) of Canada, Industrial Research Fellowship, 2000
- University of Waterloo International Student Fee Waiver
- University of Waterloo Graduate Scholarship and Faculty of Engineering Awards, Seven Semesters
- University of Waterloo Women's Awards, Seven Semesters
- First rank award in the B.Sc. program, Isfahan University of Technology
- Ranked 44 in Iran's National University Entrance Exam among approximately 150,000 participants

PROFESSIONAL MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE), member.
- IEEE Communications Society, member.
- Canadian Engineering Education Association (CEEA), member.
- Engineers and Geoscientists, BC, registered professional engineer and member.