HANI MEHRPOUYAN (SUMMARY)

RESEARCH

- ✓ **Close to 50 journal and conference papers** that have been published or are under review at leading IEEE venues such as IEEE Trans. on Signal Processing, IEEE Transactions on Communications, and IEEE Trans. on Wireless Communications.
- ✓ **Associate Editor** of **IEEE Communication Letters** and Canadian Journal of Electrical Engineering.

PROFESSIONAL EXPERIENCE

- ✓ **Assistant Professor at Boise State University**, Boise, Idaho, *2015-Present*
- ✓ **Assistant Professor at California State University**, Bakersfield, California *2012-2015*
- ✓ **Postdoctoral researcher at Chalmers University of Technology**, Sweden, *2010-2012*
- ✓ **Ph.D. at Queen's University**, Canada, Jul. 2011 (*Supported by NSERC scholarship*)
- ✓ **Industry experience** at Ericsson, Blackberry, and Stelix Technologies Corp. (co-founder)

GRANTS

- ✓ **NASA: Research Initiation Grant Program, $50,000, awarded, 2016-2017, PI.**
- ✓ **Department of Defense (DoD):** Equipment and Instrumentation for Millimeter-Wave Research, **awarded $468,000**, 1 year, **PI**.
- ✓ **Australia Research Council Discovery:** "Realizable Synchronization Techniques: Unlocking the Potential of Future Wireless Networks", **awarded** in 2013, **$365,000**, 3 years, **CO-PI**.
- ✓ **National Science Foundation XPS**: DSL for Enabling Parallelism in Communication System Analysis and Simulation $258,000, **PI** (under review).
- ✓ **National Institute of Standards and Technology**: Enabling Millimeter-Wave Communications via Reconfigurable Antennas $402,000, **PI** (under review).
- ✓ **National Science Foundation CI-P**: System Testbed for Hybrid Millimeter-Wave Photonic Interconnects $100,000, **CO-PI** (under review).

RESEARCH INTERESTS

- ✓ *Millimeter-wave communications*
- ✓ *Cooperative communications*
- ✓ *Wireless energy harvesting*
- ✓ *Parallel Computing for Communicaitons*
- ✓ *Circuit impairments in communications*
- ✓ *Satellite communications*
- ✓ *Molecular communications*
- ✓ *Reconfigurable antennas*

TEACHING EXPERIENCES & INTERESTS

- ✓ Electromagnetics
- ✓ Electric and analog circuits
- ✓ Wireless networks
- ✓ Digital signal processing
- ✓ Wireless communications
- ✓ Millimeter-wave systems
- ✓ Digital communications
- ✓ Multiple-Input Multiple Output systems
- ✓ Estimation and detection theory
- ✓ Cooperative communications

Hani MEHRPOUYAN

PERSONAL DATA

ADDRESS:	Science Building III, 3rd Floor 9001 Stockdale Hwy. Bakersfield, CA 93311
PHONE:	(661) 654-2837
EMAIL:	hani.mehr@ieee.org
WEBSITE:	www.mehrpouyan.info

EDUCATION

Ph.D. **Queen's University,** *Sep. 2005- Jul. 2011*
Kingston, Ontario, Canada,

- Received the prestigious **Natural Sciences and Engineering Council (NSERC)** Scholarship from 2005-2009 under the super vision of Prof. Steven Blostein.
- Recognized for research and academic excellence.
- Published many papers in prominent IEEE journals and conferences.

B.Sc. **Simon Fraser University (SFU),** *honors,* *Sep. 1999-Dec. 2004*
Burnaby, British Columbia, Canada,

- Received the SFU Summit Scholarship from 1999-2004.
- Completed the undergraduate thesis with honors under the supervision of Prof. Dong In Kim.
- Won the technical and entrepreneurial excellence awards at both regional and national engineering competitions in Canada.

PROFESSIONAL EXPERIENCE

Assistant Professor Boise State University Jul. *2015 to Present*
Boise, Idaho, USA

- Conduct research on wireless communications and signal processing.
- Teach courses in the field of electrical engineering with specific focus on wireless communications and signal processing.
- Set up a state-of-the-art laboratory on millimeter-wave communications in the school of electric and computer engineering.
- Help the school obtain ABET accreditation.
- Provide service to the campus community.

Assistant Professor California State University *Aug. 2012-Jul. 2015*
Bakersfield, California, USA

- **Outstanding** first/second year **review** by the department and the dean.

- Received grants from the Department of Defense, Australian research council, California State University Chancellor's office.
- Running a summer program for high school students to encourage the participation of **women and minorities** in engineering.
- Leading the Digital Signal Processing Laboratory.
- Co-supervising two PhD candidates.

Visiting Research Associate — University Luxembourg, Luxemburg, *Apr. 2012-Aug. 2012*

- Worked on designing algorithms for interference mitigation and synchronization in **satellite systems**.
- Collaborated closely with engineers at *Société Européenne des Satellites (SES)*, one of the world's leading satellite operators.
- Taught **graduate** courses on MIMO systems and estimation and detection theory.

Post-Doc. Researcher — Chalmers University of Technology, Göteborg, Gotland, Sweden, *Sep. 2010-Aug. 2012*

- Lead the *Microwave Backhauling for Future Cellular Mobile Systems (MAGIC) project* at Chalmers.
- Analyzed the impact of **circuits impairments** such as **phase noise and amplifier nonlinearities** in high-speed microwave systems.
- Worked closely with research engineers at *Ericsson* **and** *Qamcom AB*.
- Taught the course wireless networks intended for **graduate students**.

Research Assistant — Queen's University, Kingston, Ontario, Canada, *Sep. 2005-Aug. 2010*

- Carried out research in the field of **cooperative communications**, with specific focus on novel synchronization algorithms.
- Performed large scale computer simulations using Matlab and C++ to test the performance and feasibility of the proposed algorithms.
- Assisted in preparing progress reports for Defense Research and Development Canada (DRDC) grant.

Software Developer (internship) — Blackberry, Waterloo, Ontario, Canada, *Apr.-Sep. 2005*

- Worked with the WiFi **Firmware** Development Team to design and develop the radio code for BlackBerry's first 802.11 enabled products.
- Was in charge of testing and debugging the radio code to ensure seamless operation.

Cofounder-CTO — Stelix Technologies Corp., Burnaby, British Columbia, Canada, *Sep. 2003-Apr. 2005*

- Co-designed and developed Stelix's **patented** radio frequency (RF) proximity detection product.
- Implemented the product's **embedded** software via C for 8051-compatible microcontrollers.
- Successfully launched the beta version of the company's laptop security device, the Infiltrator™.

Research Assistant (internship) Simon Fraser University, *May-Dec. 2004*
Burnaby, British Columbia,

- Characterized the Ultra Wide Band (UWB) indoor wireless channel.
- Developed a Matlab model to determine the UWB channel's impulse response based on the IEEE 802.15 statistical model.

Hardware Designer (internship) Vtech Engineering Canada, *Jan. –Apr. 2003*
Richmond, British Columbia,

- Designed the hardware and software for the USB driver of Vtech's spectrum analyzer and signal generator.

Software Designer (internship) Alcatel Canada Inc., *Jan. -May 2001*
Burnaby, British Columbia,

- Designed and implemented test cases and the associated software for the automatic execution and testing of Alcatel's network management software.

Grants

NASA Research Initiation Grant Program, $50,000, **awarded**, 2016-2017, **PI**.

- The grant provides funding for research in the field of adjacent satellite interference cancellation to enable higher throughput links that take advantage of densely deployed satellites.

Department of Defense Equipment and Instrumentation for Millimeter-Wave Research, **$468,000**, **awarded**, 2015-2016, **PI**.

- The grant provides funding for the development of a state-of-the-art research lab on millimeter-wave research and development (60, 70, and 80 GHz).

Australia Research Council Discovery Grant Realizable Synchronization Techniques: Unlocking the Potential of Future Wireless Networks, **$365,000, awarded**, 2014-2016, **co-PI**.

- The grant provides funding for a PhD student, a postdoc, and the PIs to work on the most advanced synchronization techniques for heterogeneous, cooperative, and energy harvesting wireless communication systems.

CSU Chancellor's Grant	Promising Practices Program RFP for Digital Communications, **$25,000, awarded**, 2014-2015, **PI**.
National Science Foundation (CNS)	CRI Pre-proposal: CI-P: System Testbed for Hybrid Millimeter-Wave Photonic Interconnects **$100,000**, CO-**PI** (under review).
National Science Foundation (XPS)	DSL for Enabling Parallelism in Communication System Analysis and Simulation **$258,000, PI** (under review).
National Institute of Standards & Technology	Enabling Millimeter-Wave Communications via Reconfigurable Antennas $402,000, PI (under review).

AWARDS

IEEE Communications Society — Exemplary Reviewer Award, *Dec. 2012*

- Recognizing contributions to IEEE Wireless Communication Letters (top 3% of the reviewers contributing to this journal).

IEEE GLOBECOM — Student Early Bird Award, *Dec. of 2010*

IRDF — Industry Research and Development Fellowship, *Mar. 2010*

- Prestigious national scholarship awarded based on research and academic excellence worth $40,000 per year for two years.

NSERC-PGSD — Postgraduate Scholarship-Doctoral, *Sep. 2007-2009*

- National scholarship awarded based on research and academic excellence worth $21,000 per year for two years.

NSERC-CGSM — Alexander Graham Bell Award, *Sep. 2005-2007*

- National Scholarship awarded based on leadership, research, and academic excellence. Worth $18,500 per year for two years.

Wireless Innovation — Wireless Innovation Award of British Columbia, *Sep. 2004*

- Provincial award recognizing innovation and entrepreneurship.

NRC — National Research Council of Canada Grant, *Sep. 2003-Oct. 2004*

- National award supporting the introduction and commercialization of new products and technologies. Worth $50,000 for a duration of three years.

TNVBC — Telus New Ventures British Columbia Award, *Sep. 2003*

- National award recognizing entrepreneurship and leadership. One-time award, worth $20,000.

SFU-OPEN Simon Fraser University Open Scholarship, *Sep. 2000- Dec. 2004*

- Institutional award recognizing academic excellence. Worth $5000 per year for 5 years.

RESEARCH

Research Interests General research interests are in the areas of communications and signal processing, with emphasis on the physical layer.

- **Millimeter-wave Communications***:* Specific focus on utilizing the millimeter-wave band for the development of next generation ultra high-speed wireless and cellular networks.
- **Effect of Circuit Impairments on Communication systems***:* Analyzing and mitigating the effect of oscillator phase noise and amplifier nonlinearities in millimeter-wave communication systems.
- **Cooperative Communications***:* Synchronization in multi-relay setups and performance enhancement schemes for cooperative communication systems.
- **Satellite Communications:** Interference mitigation and synchronization algorithms for satellite networks, with specific focus on TV broadcasting and broadband applications.
- **Wireless Energy Harvesting Systems***:* Design of transceiver structures and algorithms that allow for wireless communication systems to capture energy from the received signal for low energy application, e.g., sensor networks.
- **Molecular Communications**: Channel and noise modeling, information theoretical results, simulation techniques, and validating the simulation techniques through laboratory experiments and interdisciplinary research.
- **Parallel Computing for Communications**: Design of domain specific languages (DSLs) to implement programs and algorithms that can analyze and simulate the performance of complex communication systems efficiently by enabling parallelism.

Patents Patent Awarded

- *Title: "*Wireless valuables monitoring device, with proximity sensing and automatic arming and disarming", *Inventors:* **Mehrpouyan, Hani**; Mitchell, Christopher; Brown, Matthew T. *Dates:* Granted July 2007.
- Title: "System and Method of Resolving Channel Sparsity in MIMO Systems via Reconfigurable Antennas", *Inventors:* **Mehrpouyan, Hani**; Vakilian, Vida; Hua, Yingbo; Jafarkhani, Hamid; US Patent Pending 2015.

Journal Papers

1. Vida Vakilian and **Hani Mehrpouyan**, "*High Rate and Low Complexity Space-Time Block Codes for 2 × 2 MIMO Systems*", IEEE Communications Letters (accepted subject to revisions).

2. Wanchun Liu, Xiangyun Zhou, Salman Durrani, **Hani Mehrpouyan**, and Steven D. Blostein *"Energy Harvesting Wireless Sensor Networks: Delay Analysis Considering Energy Costs of Sensing and Transmission"*, IEEE Transaction on Wireless Communications, (accepted subject to revisions).
3. Rui Wang, **Hani Mehrpouyan**, Meixia Tao, and Yingbo Hua, "Joint channel responses and carrier frequency offset estimation in presence of phase noise in OFDM relay systems" IEEE Transaction on Wireless Communications, in press.
4. Weiyang Xu, Wei Xiang, Maged Elkashlan, and **Hani Mehrpouyan** *"Spectrum Sensing of OFDM Signals in the Presence of Carrier Frequency Offset"* IEEE Transaction on Vehicular Technology, in press.
5. Rui Wang, Meixia Tao, **Hani Mehrpouyan**, and Yingbo Hua, *"Optimal Training Design and Individual Channel Estimation for MIMO Tw-Way Relay Systems in the Correlated Environment"* IEEE Transaction on Wireless Communications, vol. 14, no. 5, pp. 2684-2699, May 2015, .
6. **Hani Mehrpouyan**, Rui Wang, Michail Matthaiou, George K. Karagiannidis, *"Hybrid Millimeter-Wave Systems: A Novel Paradigm for HetNets"* Submitted to IEEE Communication Magazine, vol. 53, no. 1, pp. 216-221, Jan. 2015.
7. Omar H. Salim, Ali A. Nasir, **Hani Mehrpouyan**, Wei Xiang, Salman Durrani, and Rodney A. Kennedy, *"Channel, Phase Noise, and Frequency Offset in OFDM Systems: Joint Estimation, Data Detection, and Hybrid Cramér-Rao Lower Bound"*, IEEE Transactions on Communications, Vol. 62, No. 9, pp. 3311-3325, Sep. 2014.
8. **Hani Mehrpouyan,** Mohammad R. Khanzadi, Michail Matthaiou, Robert Schober, and Yingbo Hua *"Improving Bandwidth Efficiency in E-band Communication Systems"*, IEEE Communications Magazine, vol. 52, no. 3, pp. 121-128, May 2014.
9. Arif O. Isikman, **Hani Mehrpouyan**, Ali A. Nasir, Alexander G. Amat, Rodney. A. Kennedy *"Joint Phase Noise Estimation and Data Detection in Coded MIMO Systems"*, IET Communications, vol. 8, no. 7, pp. 981-989, Sep. 2013
10. Ali A. Nasir, **Hani Mehrpouyan**, Salman Durani, Steven D. Blostein, Rodney A. Kenedy, and Bjorn Ottersten *"Optimal Training Sequences for Joint Timing Synchronization and Channel Estimation in Distributed Communication Networks"*, IEEE Transactions on Communications vol. 61, no. 7, pp. 3002-3015, Jul. 2013.
11. Ali A. Nasir, **Hani Mehrpouyan,** Salman Durani, Steven Blostein, Rodney A. Kennedy, and Bjorn Ottersten *"Transceiver Design for Distributed STBC Based AF Cooperative Networks in the Presence of Timing and Frequency Offsets"*, IEEE Transactions on Signal Processing, vol. 61, no. 12, pp. 3143-3158, Jun. 2013.
12. Ali A. Nasir**, Hani Mehrpouyan,** Robert Schober, and Yingbo, Hua *"Phase Noise in MIMO Systems: Bayesian Cramér-Rao Lower Bound and Soft-Input Estimation"*, IEEE Transactions on Signal Processing, vol. 61, no. 10, pp. 2675-2692, May. 2013.

13. **Hani Mehrpouyan**, Ali A. Nasir, Thomas Eriksson, Steven Blostein, George K. Karagiannidis, Tommy Svensson *"Joint Estimation of Channel and Oscillator Phase Noise in MIMO Systems"*, IEEE Transactions on Signal Processing, vol. 60, no. 9, pp. 4790-4807, Sep. 2012.
14. Ali A. Nasir, **Hani Mehrpouyan,** Steven Blostein**,** Salman Durani, and Rodney A. Kennedy *"Timing and Carrier Synchronization with Channel Estimation in Multi-Relay Cooperative Networks"*, IEEE Transactions on Signal Processing, Vol. 60, No. 3, pp. 793-811, Feb. 2012.
15. **Hani Mehrpouyan** and Steven D. Blostein, Comments on *"Timing Estimation and Resynchronization for Amplify-and-Forward Communication Systems"*, IEEE Transactions on Signal Processing, Vol. 59, No. 8, pp. 4047-4048, August 2011.
16. **Hani Mehrpouyan** and Steven D. Blostein, *"Bounds and Algorithms for Multiple Frequency Offset Estimation in Cooperative Networks"*, IEEE Transactions on Wireless Communications, Vol. 10, No. 4, pp. 1300-1311, August 2011.
17. **Hani Mehrpouyan** and Steven D. Blostein, *"ARMA Synthesis of Fading Channels"*, IEEE Transactions on Wireless Communications, Vol. 7, No. 8, pp.2846-2850, July 2007.
18. Zohair Abu-Shaban, **Hani Mehrpouyan**, Bhavani Shankar, and Bjorn Otters ten *"Interference Mitigating Satellite Broadcast Receiver using Reduced Complexity List-Based Detection in Correlated Noise"* submitted to IEEE Transaction on Wireless Communications, 2015.
19. Abbas Koohian, **Hani Mehrpouyan,** Ali A. Nasir, Salman Durani, and Steven Blostein "Blind Channel Estimation in Full Duplex Systems: Identifiability Analysis, Bounds, and Estimators" Submitted to IEEE Transaction on Signal Processing, 2015.
20. Wei Wang, Rui Wang, and **Hani Mehrpouyan** *"Beamforming for Simultaneous Wireless Information and Power Transfer in Two-Way Relay Channels"* Submitted to IEEE Transaction on Signal Processing, 2015.
21. Omar H. Salim, Ali A. Nasir, **Hani Mehrpouyan**, Salman Durrani, and Wei Xiang, "Cooperative Communications in the Presence of Phase Noise: a Comprehensive Approach" Submitted to IEEE Transaction on Communications, 2015.
22. Omar H. Salim, Wei Xiang, Ali A. Nasir, and **Hani Mehrpouyan** "Impact of Phase Noise and Carrier Frequency Offset on the Performance of Cooperative OFDM Systems for 3-D Video Applications", Submitted to IEEE Transaction on Broadcasting, 2015.
23. Ali A. Nasir, Salman Durrani, **Hani Mehrpouyan**, Steven D. Blostein, and Rodney A. Kennedy "Timing and Carrier Synchronization in Wireless Communication Systems: A Survey and Classification of Research in the Last Five Years" submitted to EURASIP Journal on Wireless Communications and Networking.

Conference Papers

24. Ali A. Nasir, **Hani Mehrpouyan**, David Matolak, and Salman Durrani *"Non-Coherent FSK: An Attractive Modulation Set for Millimeter-Wave*

Communications" IEEE Wireless Communications and Networking Conference, in press.

25. Wanchun Liu, Xiangyun Zhou, Salman Durrani, **Hani Mehrpouyan**, Steven D. Blostein "*Performance of Wireless-Powered Sensor Transmission Considering Energy Cost of Sensing*" IEEE Global Communication Conference 2015.
26. Abbas Koohian **Hani Mehrpouyan**, Mahmoud Ahmadian, and Mohammad Azarbad, "*Bandwidth Efficient Channel Estimation for Full-Duplex Communication Systems*" IEEE Communications Conference (ICC), 2015.
27. Vida Vakilian, **Hani Mehrpouyan**, and Yingbo Hua "*A Rate-2 Space-Time Block Codes for Millimeter-Wave Wireless Systems with Reconfigurable Antennas*", IEEE Wireless Communications and Networking Conference, (WCNC) 2015.
28. Rui Wang, **Hani Mehrpouyan**, Meixia Tao, and Yingbo Hua "C*hannel Estimation and Carrier Recovery in the Presence of Phase Noise in OFDM Relay Systems*" IEEE Global Communications Conference (Globecom), 2014.
29. Rui Wang, **Hani Mehrpouyan**, and Meixia Tao, "T*raining Design and Channel Estimation in MIMO Two-Way Relay Systems in the Presence of Interference*", IEEE Global Communications Conference (Globecom), 2014
30. Ali A. Nasir, **Hani Mehrpouyan**, Salman Durani, Steven D. Blostein, and Rodney A. Kenedy, "*Timing and Carrier Synchronization with Channel Estimation in AF Two-Way Relaying Networks*" IEEE International Workshop on Signal Processing Advances for Wireless Communications, 2014.
31. Zohair Abu-Shaban, Bhavani Shankar, **Hani Mehrpouyan**, and Bjorn Ottersten "*Enhanced List-Based Group-Wise Overloaded Receiver with Application to Satellite Reception*" IEEE International conference on Communications (ICC), 2013, in press.
32. **Hani Mehrpouyan** and Steven D. Blostein, and Bjorn Ottersten "*Simultaneous Estimation of Multi-Relay MIMO Cooperative Networks' Channels*", IEEE Global Communications Conference, 2013.
33. Ali A. Nasir, **Hani Mehrpouyan**, and Rodney A. Kenedy "N*ew Expression for the Functional Transformation of the Vector Cramer-Rao Lower Bound*", IEEE International Workshop on Signal Processing Advances for Wireless Communications, 2013.
34. Zohair Abu-Shaban, **Hani Mehrpouyan**, Joel Grotz, and Björn Ottersten "*Overloaded Satellite Receiver Using SIC with Hybrid Beamforming and ML Detection*" IEEE International Workshop on Signal Processing Advances for Wireless Communications, 2013.
35. Ali A. Nasir, **Hani Mehrpouyan**, Salman Durani, Steven D. Blostein, Rodney A. Kenedy, and Bjorn Ottersten "*DSTBC based DF Cooperative Networks in the Presence of Timing and Frequency Offsets*" IEEE International Workshop on Signal Processing Advances for Wireless Communications, 2013.

36. Omar Salim, Ali A. Nasir, **Hani Mehrpouyan**, and Wei Xiang "P*hase Noise and Carrier Frequency Offset in OFDM systems: Joint Estimation and Hybrid Cramer-Rao Lower Bound*", IEEE International Workshop on Signal Processing Advances for Wireless Communications, 2013.
37. Muhammad A. Tariq, **Hani Mehrpouyan**, and Tommy Svensson "*Performance of Circular QAM Constellations with Time Varying Phase Noise*", IEEE International Personal, Indoor, and Mobile Radio Communication (PIMRC), 2012.
38. **Hani Mehrpouyan**, Ali A. Nasir, Thomas Eriksson, Steven Blostein, George K. Karagiannidis, and Tommy Svensson "*Channel and Time-Varying Phase Noise Estimation in MIMO Systems*", IEEE International Workshop on Signal Processing Advances in Wireless Communication (SPAWC), 2012.
39. Ali A. Nasir, **Hani Mehrpouyan,** Steven Blostein**,** Salman Durani, and Rodney A. Kennedy "*Estimation of Synchronization Parameters in AF Cooperative Networks*", IEEE International Conference on Communications (ICC), 2012.
40. Mohammad R. Khanzadi, **Hani Mehrpouyan,** Erik Alpman, Dan Kuylenstierna, Thomas Eriksson "*On Models, Bounds, and Estimation Algorithms for Time-Varying Phase Noise*", International Conference on Signal Processing and Communication Systems (ICSPCS), December 2011.
41. **Hani Mehrpouyan**, Steven D. Blostein, and Tommy Svensson "*A New Distributed Approach for Achieving Clock Synchronization in Heterogeneous Networks*", IEEE Globecom, December 2011.
42. Rajet Krishnan, **Hani Mehrpouyan**, Thomas Eriksson, and Tommy Svensson "*Optimal and Approximate Methods for Detection of Uncoded Data with Carrier Phase Noise*", IEEE Global Communications Conference (Globecom), December 2011.
43. **Hani Mehrpouyan** and Steven D. Blostein, "*Estimation, Training, and Effect of Timing Offsets in Distributed Cooperative Networks*", IEEE Global Communications Conference (Globecom), December 2010.
44. **Hani Mehrpouyan** and Steven D. Blostein, "*Synchronization in Cooperative Networks: Estimation of Multiple Carrier Frequency Offsets*", IEEE International Conference on Communications (ICC), May 2010.
45. **Hani Mehrpouyan**, and Steven D. Blostein "*Bounds on Timing Jitter Estimation in Cooperative Networks*", IEEE Queens Biennial Symposium on Communications (QBSC), May 2010.
46. Yi Zheng, **Hani Mehrpouyan,** and Steven D. Blostein, "*Application of Phase Shift in Coherent Multi-Relay MIMO Communications*", presented at IEEE International Conference on Communications (ICC), June 2009.
47. **Hani Mehrpouyan** and Steven D. Blostein, "*ARMA Synthesis of Fading Channels-an Application to the Generation of Dynamic MIMO Channels*", IEEE Global Communications Conference (Globecom), December 2007.
48. **Hani Mehrpouyan** and Steven D. Blostein, "*Random Antenna Selection and Antenna Swapping Combined with OSTBCs*", International Symposium Signals, Systems, and Electronics, 2007.

Collaborators

- **Professor Akbar Saeed:** *University of Wisconsin, Madison, Fellow of IEEE*. Associate Editor of IEEE Signal Processing. Collaborating on millimeter-wave communication system design and development for next generation wireless networks.
- **Professor Bjorn Ottersten**: *University of Luxembourg, Luxembourg, Fellow of IEEE*. Collaborating on satellite communications, synchronization, and amplifier nonlinearity equalization.
- **Professor George K. Karagiannidis:** *Aristotle University of Thessaloniki, Greece, Fellow of IEEE. Editor in Chief of IEEE Communications and Senior Member of IEEE*. Collaborating on design of optimal modulations in the presence of phase noise in addition to channel and phase noise estimation in MIMO systems.
- **Professor Hamid Jafarkhani:** *University of California Irvine, Fellow of IEEE*. Collaborating on reconfigurable antennas for millimeter-wave communications.
- **Professor Michail Matthaiou:** *Chalmers University of Technology, Sweden*. Associate Editor of IEEE Communications Letters. Collaborating on performance analysis and estimation of system parameters for large MIMO heterogeneous networks.
- **Professor Robert Schober**: *University of British Columbia (UBC), Canada, Editor in Chief of IEEE Transactions on Communications. Fellow of IEEE*. Collaborating on performance analysis and estimation of system parameters, e.g., phase noise for MIMO and large MIMO systems.
- **Professor Rodney A. Kennedy:** *Australian National University, Australia. Fellow of IEEE*. Collaborating on channel and synchronization parameter estimation in cooperative networks.
- **Dr. Salam Durrani:** *Australian National University, Australia, Senior Member of IEEE*. Collaborating on channel and synchronization parameter estimation in cooperative networks.
- **Professor Steven D. Blostein:** *Queen's University, Canada, Senior Member of IEEE*. Collaborating on a wide range of topics.
- **Professor Tommy Svensson:** *Chalmers University of Technology, Sweden, Senior Member of IEEE*. Collaborating on receiver design and channel and phase noise estimation in MIMO systems.
- **Professor Yingbo Hua**: *University of California, Riverside, Fellow of IEEE*. Collaborating on improving bandwidth efficiency in E-band communication systems.

Students, Post-Docs, and Interns

- **Ruhollah Amiri:** PhD student since Dec. of 2015. Masers degree from Iranian University of Science and Technology. Completing his PHD on parallel computing and its rule in enhancing the simulation of complex communication systems in such setups.

- **Ahmed Kausar:** PhD student since Sep. of 2015. Masers degree from NUST in Pakistan and working on his PhD on the design of reconfigurable antennas for the millimeter-wave band.
- **Vida Vakilian:** Post-doc since Feb. of 2014. PhD at Ecole Polytechnique de Montreal, Canada. Currently working on high rate space time codes for millimeter-wave communications.
- **Abbas Koohian:** PhD. student since Apr. of 2014. Research is focused on estimation and statistical signal processing for full-duplex systems.
- **Solmaz Niknam:** Visiting student since Jan. of 2015. Research is focused on heterogeneous networks and resource allocation for next generation wireless networks.
- **Omar Hazim Salim:** *Ph.D. student Feb. of 2012-present*. Signal processing algorithms for cooperative and MIMO-OFDM systems (co-supervision).
- **Rui Wang:** Visiting intern *Aug. 2012-Feb. of 2013*. Imperfect system parameter estimation in cooperative communication systems. Assistant professor at Tongji University in Shanghai.
- **Ali Arshad Nasir:** *Ph.D. student May of 2010-Sep. 2012*. Synchronization in cooperative communication systems. Postdoc at Australian National University (co-supervision).
- **Arif Önder Isikman:** *Master student August of 2011-September of 2012*. Iterative coded detection and estimation in MIMO systems affected by phase noise (co-supervision).
- **Mohammad Assad Tariq:** *Masters student September of 2010-June 2011*. Optimum modulation design in the presence of phase noise. Now at Tieto AB.

Teaching Experience

Digital Signal Processing

Instructor, Boise State University, course intended for graduate and undergraduate students, *Spring of 2016*,

- Introduction to principles of Digital Signal Processing (DSP) including sampling theory, aliasing effects, frequency response, Finite Impulse Response filters, Infinite Impulse Response filters, spectrum analysis, Z transforms, Discrete Fourier Transform and Fast Fourier Transform. Overviews of modern DSP applications such as modems, speech processing, audio and video compression and expansion, and cellular protocols. Four hours lecture/discussion. More information at www.mehrpouyan.info.

Electric Circuits

Instructor, Boise State University, course intended for undergraduate students, *Fall of 2015*,

- Fundamental laws, basic network analysis, and circuit theorems. Capacitors, inductors, and operational-amplifier circuits. First- and second-order circuits. Sinusoidal steady-state analysis of AC circuits.

Introduction to computer-aided circuit simulation. More information at www.mehrpouyan.info.

Wireless Communications

Instructor, California State University, course intended for undergraduate students, *Fall of 2014*,

- Presented material on analytical characterizations of mobile communications channels and the main techniques for mitigating the mobile communication channel effects such as equalization, diversity, multiple access techniques. Moreover, setup hardware and software labs using **National Instrument Software Defined Radio Units and Labview**. More information at www.mehrpouyan.info.

Digital Signal Processing

Instructor, California State University, course intended for undergraduate students, *Spring of 2013 and 2014*,

- The course provided an introduction to principles of Digital Signal Processing (DSP) including sampling theory, aliasing effects, frequency response, Finite Impulse Response filters, Infinite Impulse Response filters, spectrum analysis, Z transforms, Discrete Fourier Transform and Fast Fourier Transform. Overviews of modern DSP applications such as modems, speech processing, audio and video compression and expansion, and cellular protocols. More information at www.mehrpouyan.info.

Digital Communications

Instructor, California State University, course intended for undergraduate students, *Winter of 2013 and 2014*,

- Presented material on the fundamentals of digital communications including modulations, information theory, source coding, error correction coding, optimum detection, error probability calculation, Shannon's capacity, quantization, and more. Also setup hardware and software labs using **National Instrument Emona FOTEx Telecommunication Boards and Matlab**, respectively. More information at www.mehrpouyan.info.

Fields and Waves

Instructor, California State University, course intended for undergraduate students, *Fall of 2012, 2013, and 2014*,

- Presented material on electromagnetism, Maxwell's equations, wave propagation, impedance matching, DC and AC motors, boundary conditions, Smith charts, and more. Also setup many labs within the Digital Signal Processing Laboratory that took advantage of **Matlab software and hardware tools to accompany the lectures**. More information at www.mehrpouyan.info.

Estimation and Detection Theory

Instructor, University of Luxembourg, course intended for M.Sc. and Ph.D. Students, *Spring of 2012*,

- Presented material on the principles of estimation and detection theory, such as random parameter estimation, Bayes Estimation, bounds on the estimation of parameters, representation of random

processes, maximum a posterior estimation, Kalman based estimation, etc.

MIMO Systems Instructor, University of Luxembourg, course intended for M.Sc. and Ph.D. Students, *Spring of 2012*,

- Presented on Multi-Input Multi Output systems in wireless communication systems, more specifically, capacity of MIMO systems, Line-of-Sight MIMO, space time block coding, beamforming approaches for MIMO systems, receiver design and MIMO detectors, etc.

Wireless Networks Instructor, Chalmers University of Technology, course intended for M.Sc. and Ph.D. Students, *Spring of 2011*,

- Presented material on state of the art standards and protocols, such as long-term evolution (LTE), LTE-advanced, IEEE 802.11n, and more. Students were evaluated based on their group project report and presentation, and final exam scores (SSY145). More information is available at www.mehrpouyan.info.

Numerical Analysis Instructor California State University, course intended for undergraduate students, *Spring of 2013*,

- Presented materials on topics in the field of numerical analysis with specific focus on Taylor polynomials, various search methods, least squares approximations Matrix arithmetic, Gaussian elimination, LU factorization, and iterative methods. More information at www.mehrpouyan.info.

PROFESSIONAL ACTIVITIES

Technical Activities

- **Associate Editor for IEEE Communication Letters and** Canadian Journal of Electrical Engineering**.**
- **Served as NSF Panelist for the CSIE and ECCS devisions.**
- Board member of the IEEE Bakersfield-China Lake Chapter.
- Technical Program Committee (TPC) member for various IEEE Conferences, such as IEEE International Conference on Communications, IEEE Global Communication Conference, Vehicular Technology Conference, etc.

Invited Talks

- **Luisiana State University**: "Signal Processing and Communication: advancing the next generation of cellular networks", Mar. 2015.
- **Portland State University**: "Millimeter-wave communications the next frontier", Mar. 2015.

- **Boise State University**: "Signal Processing and Communication: Their roles in advancing the next generation of cellular networks", Feb. 2015.
- **University of California Riverside**: "Reconfigurable Antennas and Their Application in Millimeter-Wave Frequencies" Dec. of 2014.
- **University of South Carolina**: "Signal Processing in Communications with Special Focus on Millimeter-Wave Systems", Nov. of 2014.
- **University of North Florida**: "Energy Harvesting Systems in Wireless Sensor Networks" Jan. of 2014.
- **University of California Riverside**: "Enabling Multi-Giga Bit Per Second Wireless Point-to-Point Links" Aug. of 2012.
- **University Luxemburg:** "On the Bayesian Framework for Estimation of Random Parameters", Nov. of 2011.
- **University California, Davis**: "On Estimation of Phase Noise in MIMO Systems", Jul. of 2011.
- **Ericsson AB:** "On Performance Enhancement and Channel Estimation in Cooperative Networks", Oct. 2010.
- **Chalmers University of Technology:** "On Imperfect System Parameter Estimation in Cooperative Communication Systems", Apr. 2010.

REFERENCES

Queen's university

- Professor Steven D. Blostein, Ph.D. *Supervisor,*
  Email: steven.blostein@queensu.ca
  Phone number: (613) 533-6561.

Chalmers University of Technology

- Associate Professor Tommy Svensson, Post-Doc *Supervisor*
  Email: tommy.svensson@chalmers.se
  Phone number: +46 31 772 18 23

University of British Columbia/Universität Erlangen-Nürnberg

- Professor *Robert Schober, Collaborator and Mentor,*
  Email: rschober@ece.ubc.ca
  Phone number: (604) 822-3515
  Phone Number: Tel. +49 (0)9131 85-27162

California State University, Bakersfield

- Assistant Professor Saeed Jafarzadeh, *Colleague*
  Email: sjafarzadeh@csub.edu
  Phone number: (661) 654-6005