Shahram ShahbazPanahi

A. GENERAL INFORMATION

Shahram ShahbazPanahi, Ph.D., PEng
Professor (tenured)
Faculty of Engineering and Applied Science
University of Ontario Institute of Technology (UOIT)
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	http://faculty.uoit.ca/shahbazpanahi/index.html

CURRENT RESEARCH INTERESTS

- Massive MIMO
- 5G Networks
- Source Location and Signal Localization
- Physical Layer Security
- Distributed Signal Processing
- Cooperative Communication Networks
- Cognitive Networks and Dynamic Spectrum Access
- Wireless and Mobile Communications
- Statistical and Array Signal Processing
- Detection and Estimation
- Signal Processing Applications in Communication Systems
- Ultrasonic Array Imaging and Signal Processing
- MIMO Communications
- Applications of Information Theory
- Robust Signal Processing
- Multi-User Detection and Spread Spectrum Communications

DEGREES

Postdoctoral Fellow .... McMaster University, Canada 2001-2003

- Department of Electrical and Computer Engineering
- Supervisors: Prof. Alex Gershman and Prof. Max Wong
- Conducted research as a member of Advanced Signal Processing for Communications Group
- Co-supervised graduate students

Ph.D. .... Sharif University of Technology, Iran 1996-2001

- Department of Electrical Engineering
- Supervisors: Prof. Shahrokh Valaee and Prof. Mohammad Hasan Bastani
- Areas of Specialization: Statistical and Array Signal Processing, Wireless Communications
- Thesis title: "Parametric localization of distributed sources using array signal processing"
- Ranked second among all Ph.D. applicants in the nationwide Ph.D. entrance exam
- Outstanding Ph.D. graduate

M.Sc. . . . . Sharif University of Technology, Iran 1992-1994

- Department of Electrical Engineering
- Supervisor: Prof. Hamid Fahimi
- Fields: Signal Processing and Communication Systems
- Thesis title: "Image compression using Gabor transform"
- Ranked 7th among all M.Sc. applicants in the nationwide M.Sc. entrance exam
- Ranked first among all graduating M.Sc. students

B.Sc. . . . . Sharif University of Technology, Iran 1987-1992

- Department of Electrical Engineering
- Supervisor: Prof. Mohammad Hasan Bastani
- Field: Electrical Engineering (majored in Communication Systems)
- Thesis title: "Design of an IC tester"
- Ranked first among all the applicants to the Power Engineering program in the nationwide entrance exam
- Ranked second among all B.Sc. graduating students

EMPLOYMENT   **Professor** . . . . University of Ontario Institute of Technology . . . . July 2016-present

- Faculty of Engineering and Applied Science
- Courses taught: Signals and Systems, DSP Theory and Design, Stochastic Processes, Statistical Signal Processing
- Conducting research in the areas of Wireless Communications and Networks, Cooperative and MIMO Communications, Statistical and Sensor Array Processing
- Supervising graduate and undergraduate students

Associate Professor . . . . University of Ontario Institute of Technology . . . . July 2010-June 2016

- Faculty of Engineering and Applied Science
- Courses taught: Signals and Systems, DSP Theory and Design, Stochastic Processes, Statistical Signal Processing
- Conducting research in the areas of Wireless Communications and Networks, Cooperative and MIMO Communications, Statistical and Sensor Array Processing
- Supervising graduate and undergraduate students

Assistant Professor . . . . University of Ontario Institute of Technology . . . . July 2005-June 2010

- Faculty of Engineering and Applied Science
- Courses taught: Electric Circuits, Fundamentals of Electromagnetics, Signals and Systems, DSP Theory and Design, Stochastic Processes, as well as Statistical Signal Processing
- Conducting research in the areas of Wireless Communications and Networks, Cooperative and MIMO Communications, Statistical and Sensor Array Processing
- Supervising graduate and undergraduate students

Adjunct Professor . . . . McMaster University, Canada . . . . May 2004-May 2011

- Co-supervised a graduate student

Lecturer in Signal Processing . . . . . McMaster University, Canada . . . . . Sept. 2004-April 2005

- Taught an undergraduate course on *Digital Signal Processing* and a graduate course on *Statistical Signal Processing*
- Co-supervised graduate students
- Conducted research on carrier offset recovery in MIMO communication systems

Visiting Scientist ...... University of Duisburg-Essen, Germany ...... April 2003-August 2004

- Conducted research on robust linear receivers for orthogonal space-time block codes and researched multi-access interference suppression in MIMO systems
- Developed blind techniques for detection of space-time block codes and new methods for robust downlink beamforming based on stochastic programming

Postdoctoral Fellow .... McMaster University, Canada .... July 2001-March 2003

- Researched robust adaptive beamforming including wideband beamforming
- Developed new techniques for robust multi-user detection and efficient methods for robust downlink beamforming and power control

Visiting Researcher .... Gerhard-Mercator University, Germany .... Feb.-Sept. 2002

- Department of Communications Systems
- Researched robust space-time adaptive processing and proposed new methods for distributed source localization

Project Manager .... Emad Semiconductor Co., Iran 1999-2001

- Headed embedded system design projects
- Designed DSP algorithms for pager application

Hardware and Software Design Engineer ...... Parstel Telecomm Co., Iran 1996-1999

- Designed an E1 link interface for digital switch exchanges
- Designed an E1 link signaling tester
- Designed a DSP board for voice applications in telecommunication switch centers
- Designed a time-space switch board for a 1024×1024 switch center

Lecturer .... Razi University, Iran 1994-1996

- Faculty of Engineering
- Taught undergraduate courses including Signals and Systems; Filter and Circuit Synthesis; Fields, Waves and Transmission Lines; Electromagnetics; Advanced Engineering Mathematics

Research Assistant .... Sharif University of Technology, Iran 1993-1994

- Conducted research "Efficient Implementation of Gabor Transform", the project was funded by the Research Administration Office at Sharif University of Technology

Teaching Assistant .... Sharif University of Technology, Iran 1990-1993

- Tutored Random Processes and Electromagnetics courses

HONORS AND AWARDS	

HONORS AND AWARDS

- Awarded **NSERC Discovery Grant**, 2017-2022
- Awarded **NSERC Discovery Grant**, 2011-2016
- Awarded **UOIT's Junior Research Excellence Award**, 2011
- Received an **Early Researcher Award** from Ontario's Ministry of Research and Innovation, 2010.
- Awarded **Research Excellence Award**, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2010
- Awarded **NSERC Discovery Grant** 2006-2011
- Selected as **an Outstanding Graduate Student** among all PhD graduates at the Department of Electrical Engineering, Sharif University of Technology, 2001
- **Ranked 2nd** in the nationwide Ph.D. entrance exam out of 100 applicants, 1995
- **Ranked 1st** among 15 Communications Engineering graduating M.Sc. students, 1994
- **Ranked 7th** among about 200 Electrical Engineering students in the Iranian nationwide MS entrance exam, 1992
- **Ranked 2nd** among all Electrical Engineering graduating B.Sc. students out of 120 students, 1992
- **Ranked 1st** among all Communications Engineering students in the Iranian nationwide BS entrance exam out of 25000 applicants, 1987
- Received the **Iranian Presidential Award** for ranking first among all Communications Engineering students, 1987

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Senior Member of *IEEE* (since 2010)
- Member of *IEEE* (since 2002)
- Licensed Professional Engineer of Ontario, PEng (since 2006)
- Counselor for UOIT's IEEE Student Branch (since 2006)
- Re-elected as a member of IEEE Sensor Array and Multi-channel (SAM) Technical Committee of the IEEE Signal Processing Society (2011-2014)
- Elected as a member of IEEE Sensor Array and Multi-channel (SAM) Technical Committee of the IEEE Signal Processing Society (2008-2011)
- Symposium Chair of Emerging Areas, Canadian Conference on Electrical and Computer Engineering (CCECE) 2008
- Invited to organize a session in the Third IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2009
- **Technical Chair** for Seventh IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2015
- **Senior Area Editor** for *IEEE Signal Processing Letters* (2014-2015).
- **Associate Editor** for
  - *IEEE Signal Processing Letters* (2012-present).
  - *IEEE Transactions on Signal Processing* (2007-2011), renewed twice.
  - *IEEE Signal Processing Letters* (2006-2010), renewed twice.
- **Member of Technical Program Committee** for
  - The Tenth IEEE International Workshop on Sensor Array and Multichannel Signal Processing (SAM) 2016
  - The Sixth IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2015
  - IEEE Globecom Conference, 2014
  - IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2014

- The Ninth IEEE International Workshop on Sensor Array and Multichannel Signal Processing (SAM) 2014
- The 25th IEEE Symposium on Personal, Indoor, Mobile and Radio Communications (PIMRC 2014)
- The Tenth International Symposium on Wireless Communication Systems, 2013
- The Fifth IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2013
- IEEE Vehicular Technology Conference-Spring 2013
- IEEE Vehicular Technology Conference-Fall 2012
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2012
- IEEE International Conference on Communications, 2012
- IEEE Vehicular Technology Conference-Spring 2012
- The Seventh IEEE International Workshop on Sensor Array and Multichannel Signal Processing (SAM) 2012
- IEEE Vehicular Technology Conference-Fall 2011
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2011
- The Fourth IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2011
- The Canadian Conference on Electrical and Computer Engineering 2011
- The 22nd IEEE Symposium on Personal, Indoor, Mobile and Radio Communications (PIMRC 2011)
- The Sxith IEEE International Workshop on Sensor Array and Multichannel Signal Processing (SAM) 2012
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2010
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2009
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2008
- The Canadian Conference on Electrical and Computer Engineering 2008 **Technical Program Chair**
- IEEE Vehicular Technology Conference-Fall 2008
- European Signal Processing Conference, 2006
- IEEE Globecom Conference, 2006

- **Reviewer for Journals**
  - *IEEE Transactions on Information Theory*
  - *IEEE Transactions on Signal Processing*
  - *IEEE Signal Processing Letters*
  - *IEEE Transactions on Communications*
  - *IEEE Communication Letters*
  - *IEEE Transactions on Wireless Communications*
  - *IEEE Journal on Selected Areas in Communications*
  - *IEEE Transactions on Vehicular Technology*
  - *IEE Communications Proceedings*
  - *IEEE Journal of Selected Topics in Signal Processing*
  - *EURASIP Journal on Applied Signal Processing*
  - *European Transactions on Telecommunications*

- *Elsevier Signal Processing*

- **Reviewer for Conferences**

  - The Sixth IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2015
  - IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, and 2003
  - the Seventh IEEE International Workshop on Sensor Array and Multichannel Signal Processing (SAM) 2012
  - IEEE International Conference on Communications (ICC) 2012, 2010, 2006, and 2005
  - IEEE Workshop on Signal Processing Advances in Wireless Communications, 2005
  - International Symposium on Personal Indoor and Mobile Radio Communications, 2006
  - IEEE Wireless Communications and Networking Conference, 2006
  - IEEE Vehicular Technology Conference Spring 2005, Spring 2004, and Fall 2003
  - IEEE Global Telecommunications Conference (GLOBECOM), 2002, 2005

B. RESEARCH

CURRENT
RESEARCH
INTERESTS

- Massive MIMO
- 5G Networks
- Source Location and Signal Localization
- Physical Layer Security
- Distributed Signal Processing
- Cooperative Communication Networks
- Cognitive Networks and Dynamic Spectrum Access
- Wireless and Mobile Communications
- Statistical and Array Signal Processing
- Detection and Estimation
- Signal Processing Applications in Communication Systems
- Ultrasonic Array Imaging and Signal Processing
- MIMO Communications
- Applications of Information Theory
- Robust Signal Processing
- Multi-User Detection and Spread Spectrum Communications

1. **NSERC Discovery Grant**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* March 2017
   - *Duration:* 5 years
   - *Title of project/award:* Resource Allocation for Active Channels
   - *Total amount of award:* $ 200,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

2. **Research Collaboration Contract on Massive MIMO Communications**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Ericsson Canada Inc.
   - *Date of award:* January 2017
   - *Duration:* 1 year
   - *Title of project/award:* Design of Massive Distributed Antenna Systems in 5G Networks
   - *Total amount of award:* $50,000
   - *All investigators:* Ravi Adve (PI) and Shahram ShahbazPanahi

3. **NSERC Collaborative Research and Development Grant**

   - *Purpose:* Research and Travel
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* January 2017
   - *Duration:* 2 years
   - *Title of project/award:* Robust Signal Processing for Asynchronous Distributed Massive MIMO
   - *Total amount of award:* $107,142
   - *All investigators:* Shahram ShahbazPanahi (PI)

4. **NSERC Engage Grant**

   - *Purpose:* Research and Travel
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* October 2015
   - *Duration:* 9 months
   - *Title of project/award:* Energy Efficient Communications for Massive MIMO Systems
   - *Total amount of award:* $25,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

5. **NSERC Collaborative Research and Development Grant**

   - *Purpose:* Research and Travel
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* October 2015
   - *Duration:* 2 years months
   - *Title of project/award:* QoE-aware provisioning in Software-Defined Multimedia Content Delivery Networks
   - *Total amount of award:* $73,526
   - *All investigators:* Shahram Heydari (PI) and Shahram ShahbazPanahi

6. **Travel Grant for a Talk at Iranian Workshop on Communications and Information Theory**

   - *Purpose:* Travel
   - *Name of agency:* Iran's National Elite Foundation
   - *Date of award:* May 2017
   - *Duration:* one week
   - *Title of project/award:* A talk at IWCIT 2017 titled as "Recent Advances in Network Beamforming"
   - *Total amount of award:* $ 2,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

7. **NSERC Discovery Grant (Extension of the previous Grant)**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* June, 2015
   - *Duration:* 1 year
   - *Title of project/award:* Power- and Bandwith-Efficient Relay-Assisted Communications
   - *Total amount of award:* $ 40,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

8. **Research Collaboration Contract on Massive MIMO Communications**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Ericsson Canada Inc.
   - *Date of award:* January 2016
   - *Duration:* 1 year
   - *Title of project/award:* Energy Efficient Massive MIMO Communications
   - *Total amount of award:* $50,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

9. **NSERC Engage Grant**

   - *Purpose:* Research and Travel
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* Jan 2013
   - *Duration:* 6 months
   - *Title of project/award:* Physical and Medium Access Control Layer Design for Dynamic Resource Sharing and Channel Bonding among Wireless Carrier Providers
   - *Total amount of award:* $25,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

10. **NSERC Discovery Grant**

    - *Purpose:* Research, Travel, and Publications
    - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
    - *Date of award:* March 21, 2011
    - *Duration:* 5 years
    - *Title of project/award:* Power- and Bandwith-Efficient Relay-Assisted Communications
    - *Total amount of award:* $200,000 ($40,000 per year)
    - *All investigators:* Shahram ShahbazPanahi (PI)

11. **FedDev Grant for Applied Research and Commercialization Initiative**

- *Purpose:* Research, Travel, and Publications
- *Name of agency:* Federal Economic Development Agency for Southern Ontario
- *Date of award:* March 31, 2011
- *Duration:* 1 year
- *Title of project/award:* Real-Time Car Localization for Traffic Mapping
- *Total amount of award:* $50,000
- *All investigators:* Shahram ShahbazPanahi (PI)

12. **FedDev Grant for Applied Research and Commercialization Initiative**

- *Purpose:* Research, Travel, and Publications
- *Name of agency:* The Cable Shoppe Inc.
- *Date of award:* March 31, 2011
- *Duration:* 1 year
- *Title of project/award:* Real-Time Car Localization for Traffic Mapping
- *Total amount of award:* $25,000 (cash + in-kind)
- *All investigators:* Shahram ShahbazPanahi (PI)

13. **UOIT-MRI Postdoctoral Fellowship**

- *Purpose:* Research
- *Name of agency:* Ontario's Ministry of Research and Innovation and UOIT
- *Date of award:* November 2010
- *Duration:* 2 years
- *Title of project/award:* Array Processing for Non-Destructive Testing
- *Total amount of award:* $50,000
- *All investigators:* Shahram ShahbazPanahi (PI)

14. **NSERC Strategic Project Grant**

- *Purpose:* Research, Travel, and Publications
- *Name of agency:* NSERC
- *Date of award:* approved, funded as an NSERC CRD grant, 2010
- *Duration:* 3 years
- *Title of project/award:* Cognitive Sensing for Dynamic Spectrum Access
- *Total amount of award:* $584,000
- *All investigators:* Shahram ShahbazPanahi (PI), Min Dong, Shahrokh Valaee, Elvino Sousa

15. **NSERC Strategic Project Grant**

- *Purpose:* Research, Travel, and Publications
- *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
- *Date of award:* October 2010
- *Duration:* 3 years
- *Title of project/award:* Future Ubiquitous Green Mesh Relay Network Design based on Distributed Beamforming
- *Total amount of award:* $510,000
- *All investigators:* Yindi Jing (University of Alberta), Shahram ShahbazPanahi, Min Dong (UOIT)

16. **Research Collaboration Contract on Cognitive Communications**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* The CableShoppe Inc.
   - *Date of award:* September 2009
   - *Duration:* 2 years
   - *Title of project/award:* Cognitive Communications
   - *Total amount of award:* $30,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

17. **Research Collaboration Contract on Robust MIMO Communications**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Research in Motion (RIM)
   - *Date of award:* January 2010
   - *Duration:* 2 years
   - *Title of project/award:* Robust MIMO Communications
   - *Total amount of award:* $50,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

18. **Early Researcher Award**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Ministry of Research and Innovation
   - *Date of award:* March 2010
   - *Duration:* 3 years
   - *Title of project/award:* Intelligent Decentralized Signal Processing for Cooperative Green Communications
   - *Total amount of award:* $140,0000
   - *All investigators:* Shahram ShahbazPanahi (PI)

19. **Matching Fund for Early Researcher Award**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* UOIT
   - *Date of award:* March 2010
   - *Duration:* 3 years
   - *Title of project/award:* Intelligent Decentralized Signal Processing for Cooperative Green Communications
   - *Total amount of award:* $40,0000
   - *All investigators:* Shahram ShahbazPanahi (PI)

20. **Research Collaboration Contract on Statistical Signal Processing for Non-Destructive Testing for Nuclear Industry**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Ontario Power Generation (OPG), Atomic Energy of Canada limited (AECL), Bruce Power, University Network of Excellence in Nuclear Engineering (UN-ENE)
   - *Date of award:* January 2010.
   - *Duration:* 3 years
   - *Title of project/award:* Statistical Signal Processing for Non-Destructive Testing for Nuclear Industry
   - *Total amount of award:* $90,000 from UNENE

- *All investigators:* Shahram ShahbazPanahi (PI)

21. **NSERC Collaborative Research and Development Grant**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* NSERC
   - *Date of award:* January 2010.
   - *Duration:* 3 years
   - *Title of project/award:* Statistical Signal Processing for Non-Destructive Testing for Nuclear Industry
   - *Total amount of award:* $180,000 from NSERC
   - *All investigators:* Shahram ShahbazPanahi (PI)

22. **Leaders Opportunity Fund (LOF)**

   - *Purpose:* Equipment
   - *Name of agency:* Canada Foundation for Innovation
   - *Date of award:* April 2007
   - *Duration:* 5 years
   - *Title of project/award:* Advanced Wireless Communications and Networking Lab
   - *Total amount of award:* $85,460
   - *All investigators:* Shahram ShahbazPanahi (PI), Ramiro Liscano

23. **Matching Fund for CFI-LOF**

   - *Purpose:* Equipment
   - *Name of agency:* Ontario Research Fund
   - *Date of award:* June 2007
   - *Duration:* 5 years
   - *Title of project/award:* Advanced Wireless Communications and Networking Lab
   - *Total amount of award:* $85,600
   - *All investigators:* Shahram ShahbazPanahi (PI), Ramiro Liscano

24. **Matching Fund for CFI-LOF**

   - *Purpose:* Equipment
   - *Name of agency:* Private sector
   - *Date of award:* June 2007
   - *Duration:* 5 years
   - *Title of project/award:* Advanced Wireless Communications and Networking Lab
   - *Total amount of award:* $85,600
   - *All investigators:* Shahram ShahbazPanahi (PI), Ramiro Liscano

25. **NSERC Discovery Grant**

   - *Purpose:* Research, Travel, and Publications
   - *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
   - *Date of award:* March 21, 2006
   - *Duration:* 5 years
   - *Title of project/award:* Channel Estimation and Tracking for Point-to-Point and Multiple-Access MIMO Communications
   - *Total amount of award:* $110,000
   - *All investigators:* Shahram ShahbazPanahi (PI)

26. **NSERC Research Tools and Instrument (RTI)**

- *Purpose:* Equipment
- *Name of agency:* Natural Science and Engineering Research Council (NSERC) of Canada
- *Date of award:* March 21, 2006
- *Duration:* 1 year
- *Title of project/award:* A Test-Bed for MIMO Communications
- *Total amount of award:* $69,300
- *All investigators:* Shahram ShahbazPanahi (PI)

27. **UOIT Start-up Fund**

- *Purpose:* Research, Travel, and Publications
- *Name of agency:* University of Ontario Institute of Technology
- *Date of award:* July 1, 2005
- *Duration:* 2 years and continuing
- *Title of project/award:* MIMO Communications
- *Total amount of award:* $40,000
- *All investigators:* Shahram ShahbazPanahi (PI)

RESEARCH FUNDING APPLIED

1. **NSERC Collaborative Research and Development Grant**

- *Purpose:* Research, Travel, and Publications
- *Name of agency:* Ericsson Canada Inc.
- *Date of award:* September 2017
- *Duration:* 2 year
- *Title of project/award:* Design of Massive Distributed Antenna Systems in 5G Networks
- *Total amount of award:* $100,000
- *All investigators:* Ravi Adve (PI) and Shahram ShahbazPanahi

Articles in Refereed Journals (published or in press, trainee named are underlined)

1. M. Askari and **S. ShahbazPanahi**, "On sum-rate maximization approach to network beamforming and power allocation for asynchronous single-carrier two-way relay networks," *IEEE Access*, accepted, to be published in 2017, available on IEEExplorer through Early Access Articles, DOI: 10.1109/ACCESS.2017.2692210.

2. F. Eshaghian-Dorcheh and **S. ShahbazPanahi**, "Jointly optimal pre- and post-channel equalization and distributed beamforming in asynchronous bi-directional relay networks," *IEEE Transactions on Signal Processing,* accepted, to be published in 2017, available on IEEExplorer through Early Access Articles, DOI: 10.1109/TSP.2017.2686323.

3. R. Rahimi and **S. ShahbazPanahi**, "A two-way network beamforming approach based on total power minimization with symmetric relay beamforming matrices," *IEEE Access,* accepted, to be published in 2017, available on IEEExplorer through Early Access Articles, DOI: 10.1109/ACCESS.2017.2710908.

4. A. Gavili and **S. ShahbazPanahi**, "Optimal network beamforming in collaborative relay networks with centralized energy harvesting," *IEEE Transactions on Signal Processing,* vol. 64, pp. 6005-6016, Nov. 15, 2016.

5. R. Vahidnia and **S. ShahbazPanahi**, "Pre-channel equalization and distributed beamforming in asynchronous single-carrier bidirectional relay networks," *IEEE Transactions on Signal Processing,* vol. 2016, pp. 3968-3983, Aug. 1, 2016.

6. M. Chang, M. Dong, F. Zuo, and **S. ShahbazPanahi**, "Joint subchannel pairing and power allocation in multichannel MABC-based two-way Relaying," *IEEE Transactions on Wireless Communications*, vol. 15, pp.620-632, Jan. 2016.

7. P. AbbasiSaei and **S. ShahbazPanahi**, "Sum-rate maximization for two-way active channels," *IEEE Transactions on Signal Processing,* vol. 64, pp. 1369-1382, March 15, 2016.

8. S. Hamidi and **S. ShahbazPanahi**, "Sparse signal recovery based imaging in the presence of mode conversion with application to non-destructive testing," *IEEE Transactions on Signal Processing,* vol. 64, pp. 1352-1364, 5, March 1, 2016.

9. A. Gavili and **S. ShahbazPanahi**, "Optimal resource sharing and network beamforming in multi-carrier bidirectional relay networks," *IEEE Transactions on Signal Processing*, vol. 63, pp. 6354-6367, Dec. 1, 2015.

10. R. AliHemmati, **S. ShahbazPanahi**, "Sum-rate optimal network beamforming and subcarrier power allocation fr multi-carrier asynchronous two-way relay networks," *IEEE Transactions on Signal Processing,* vol. 63, no. 15, pp. 4129-4143, Aug. 2015.

11. J. Mirzaee and **S. ShahbazPanahi**, "On achievable SNR region for multi-user multi-carrier asynchronous bi-directional relay networks," *IEEE Transactions on Wireless Communications*, vol. 14, no. 6, pp. 3219-3230, June 2015.

12. R. AliHemmati, **S. ShahbazPanahi**, and M. Dong, "Joint spectrum sharing and power allocation for OFDM-based two-way relaying," *IEEE Transactions on Wireless Communications,* vol. 14, no. 6, pp. 3294-3308, June 2015.

13. N. Mollemi and **S. ShahbazPanahi**, "A new array spatial signature model for ultrasonic imaging of multi-layer Media," *IEEE Transactions on Signal Processing*, vol. 63, no. 10, pp.2464-2475, May 2015.

14. R. Vahidnia and **S. ShahbazPanahi**, "Single-carrier equalization for asynchronous two-way relay networks," *IEEE Transactions on Signal Processing*, vol. 62, no. 22, pp. 5793-5808, Nov. 2014.

15. A. Minasian, **S. ShahbazPanahi**, and R. Adve, "Energy harvesting cooperative communication systems," *IEEE Transactions on Wireless Communications*, vol. 13, pp. 6118-6131, Nov. 2014.

16. A. Gavili and **S. ShahbazPanahi**, "Optimal spectrum leasing and resource sharing in two-way relay networks," *IEEE Transactions on Signal Processing*, vol. 62, pp. 5030-5045, Oct. 2014.

17. J. Mirzaee and **S. ShahbazPanahi**, "Sum-rate maximization for active channels with unequal subchannel noise powers," *IEEE Transactions on Signal Processing*, vol. 62, pp. 4187-4198, Aug. 2014.

18. N. Moallemi and **S. ShahbazPanahi**, "A distributed reflector localization approach to ultrasonic array imaging in non-destructive testing applications," *IEEE Transactions on Signal Processing,* vol. 62, pp. 3863-3873, Aug. 2014.

19. Y. Hao, Y. Jing, and **S. ShahbazPanahi**, "Energy efficient network beamforming design using power-normalized SNR" *IEEE Transactions on Wireless Communications,* vol. 13, pp. 2756-2769, May 2014.

20. S. Salari, **S. ShahbazPanahi**, and K. Ozdemir, "Mobility-aided wireless sensor network localization via semi-definite programming," *IEEE Transactions on Wireless Communications,* vol. 12, pp. 5966–5978, Dec. 2013.

21. M.M. Naghsh, M. Modarres-Hashemi, **S. ShahbazPanahi**, M. Soltanalian, and P. Stoica, "Unified optimization framework for multi-static radar code design using information-theoretic Criteria," *IEEE Transactions on Signal Processing,* vol. 61, pp. 5401–5416, Nov. 2013.

22. J. Mirzaee, **S. ShahbazPanahi**, and R. Vahidnia, "Sum-rate maximization for active channels," *IEEE Signal Processing Letters,* vol. 20, pp. 771–774, Aug. 2013.

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77. **S. ShahbazPanahi**, <u>M. Beheshti</u>, A. B. Gershman, M. Gharavi-Alkhansari, and K. M. Wong, "Minimum variance linear receiver for multi-access interference rejection in space-time block coded MIMO communication systems," *The Thirty-Seventh Annual Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 9-12, 2003, pp. 1017-1021.

78. **S. ShahbazPanahi** and A. B. Gershman, "Robust multiuser CDMA receivers based on the worst-case performance optimization," *IEEE Workshop on Signal Processing Advances in Wireless Communications, SPAWC 2003*, Rome, Italy, June 2003, pp. 537-541.

79. M. Biguesh, **S. ShahbazPanahi**, and A. B. Gershman, "Robust downlink power adjustment in cellular communication systems with antenna arrays at base stations," *IEEE Workshop on Signal Processing Advances in Wireless Communications, SPAWC 2003*, Rome, Italy, June 2003, pp. 634-638.

80. **S. ShahbazPanahi**, A. B. Gershman, Z.-Q. Luo, and K. M. Wong, "Robust adaptive beamforming using worst-case SINR optimization: a new diagonal loading-type solution for General-Rank Signal Models," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP),* Hong Kong, April 2003, pp. V–333-336.

81. A. B. Gershman and **S. ShahbazPanahi**, "Robust blind multi-user detection for synchronous CDMA systems," *IEEE International Conference on Acoustics, Speech and Signal Processing, (ICASSP)*, Hong Kong, April 2003, pp. IV–53-56.

82. M. Biguesh, **S. ShahbazPanahi**, and A. B. Gershman, "Robust power adjustment for transmit beamforming in cellular communication systems," *IEEE International Conference on Acoustics, Speech and Signal Processing, (ICASSP),* Hong Kong, April 2003, pp. V–105-108.

83. **S. ShahbazPanahi**, S. Valaee, and A. B. Gershman, "Parametric localization of multiple incoherently distributed sources using covariance fitting," *IEEE Sensor Array and Multichannel Signal Processing Workshop,* Washington, D.C., August 2002, , pp. 332-336.

84. **S. ShahbazPanahi**, A. B. Gershman, Z.-Q. Luo, and K. M. Wong, "Robust adaptive beamforming for general-rank signal models using worst-case performance optimization," *IEEE Sensor Array and Multichannel Signal Processing Workshop*, Washington, DC, August 2002, pp. 13-17.

85. **S. ShahbazPanahi**, S. Valaee, and M. H. Bastani, "Array calibration and DOA estimation in the ESPRIT algorithm," *The 6th Iranian Conference in Electrical Engineering,* pp. 4-123 - 4-128, May 12-14, 1998, Khajeh Nasir-al-din University of Technology, Tehran, Iran.

86. **S. ShahbazPanahi**, S. Valaee, B. Champagne, and P. Kabal, "Extended source localization using the ESPRIT algorithm," *International Conference on Telecommunications*, pp. 1033-1037, Melbourne, Australia, April 2-5, 1997.

87. **S. ShahbazPanahi**, S. Valaee, and M. M. Nayebi, "Parameter estimation of distributed source," *The 5th Iranian Conference in Electrical Engineering,* pp. 6-304 - 6-311, Sharif University of Technology, Tehran, Iran, May 7-9, 1997.

88. **S. ShahbazPanahi** and H. Fahimi, "A new method for Gabor transform implementation," *The 3rd Iranian Conference in Electrical Engineering*, University of Science and Technology, Tehran, Iran, 1995.

Book Chapters

1. **S. ShahbazPanahi** and Y. Jing, "Recent advances in network beamforming," peer-reviewed and accepted for publication by Elsevier, to appear in 2017.

2. M. Gharavi-Alkhansari, A. B. Gershman, and **S. ShahbazPanahi**, "Recent advances in orthogonal space-time block coding," chapter in the book *Space-Time Processing for MIMO Communications*, A. B. Gershman and N. D. Sidiropoulos, (Editors), John Wiley & Sons, pp. 105-168, April 2005.

3. A. B. Gershman, Z.-Q. Luo, and **S. ShahbazPanahi**, "Robust adaptive beamforming using worst-case performance optimization," chapter in the book *Robust Adaptive Beamforming*, P. Stoica and J. Li (Editors), John Wiley & Sons, pages 49–89, August 2005.

MANUSCRIPTS IN PREPARATION AND SUBMITTED TO PUBLISHERS BUT NOT YET ACCEPTED.

Journal Papers

1. R. Rahimi and **S. ShahbazPanahi**, 'Asynchronous two-way MIMO relaying," submitted to *IEEE Transactions on Wireless Communications*, 2017.

2. R. Rahimi and **S. ShahbazPanahi**, "Multi-user massive MIMO bidirectional relaying," submitted to *IEEE Transactions on Wireless Communications*, 2017.

3. N. Moallemi and **S. ShahbazPanahi**, "A novel frequency-domain imaging technique for two-layer maerials using ultrasonic arrays," *IEEE Access,* 2017, revised.

4. A. Minasain, R. Adve, and **S. ShahbazPanahi**, "Optimal design of multi-user distributed massive MIMO systems," *IEEE Transactions on Wireless Communications,* 2017, submitted.

5. A. Minasain, R. Adve, and **S. ShahbazPanahi**, "The impact of RF circuit non-reciprocity on the performance of massive MIMO systems," submitted to *IEEE Transactions on Wireless Communications,* revised.

6. <u>S. Bastanirad</u>, **S. ShahbazPanahi**, and A. Grami, "A total power minimization approach to optimal network beamforming and power allocation in single-carrier asynchronous two-way relay networks," *IEEE Transactions on Wireless Communications,* 2016, revised and re-submitted.

7. <u>S. Hamidi</u> and **S. ShahbazPanahi**, "Super resolution ultrasonic imaging of two-layer objects using sparsity," *IEEE Transactions on Signal Processing,* 2016, submitted.

8. <u>S. Hamidi</u> and **S. ShahbazPanahi**, "Ultrasonic imaging for non-destructive testing using MU-SIC and Capon techniques," *IEEE Transactions on Ultrasonics, Ferroelectronics, an Frequency Control*, 2016, under revision.

9. <u>V. Havary-Nassab</u>, **S. ShahbazPanahi**, and A. Grami, "Experimental performance evaluation of blind and semiblind channel and carrier frequency offset estimation in OSTBC-based MIMO communication systems," in preparation, 2017.

10. <u>F. Gao</u>, **S. ShahbazPanahi**, A. Nallanathan, and A.B. Gershman, "Sensor self-localization for partly-calibrated array via RARE direction-of-arrival estimator," in preparation, 2017.

INVITED TALKS

- "Recent Advances in Network Beamfroming" Iranian Workshop on Communications and Information Theory, May 2017, **Sharif University of Technology**, Tehran, Iran.

- A Two-Way Network Beamforming Approach to CoMP based 5G Wireless Networks, **University of Kurdistan**, Sanandaj, Kurdistan, Dec. 2016.

- A Two-Way Network Beamforming Approach to CoMP based 5G Wireless Networks, **Shahed University**, Tehran, Iran, Jan. 2017.

- A Two-Way Network Beamforming Approach to CoMP based 5G Wireless Networks, **Sharif University Of Technology**, Tehran Iran, Jan. 2017.

- "A Two-Way Network Beamforming Approach to CoMP based 5G Wireless Networks: Total Power Minimization with Symmetric Relay Beamforming Matrices," **Amir Kabir University**, Tehran, Iran, 2016

- "A Two-Way Network Beamforming Approach to CoMP based 5G Wireless Networks: Total Power Minimization with Symmetric Relay Beamforming Matrices," **Ryerson University**, 2016

- "Achievable Rate and Sum-Rate Maximization in Two-Way Relay Networks," **Harvard University**, August 2009.

- "Optimal Power Control for Two-Way Relay Networks," **University of Toronto,** March 2009.

- "General-Rank Beamforming for MIMO Relaying," **Technical University of Darmstadt**, June 2009.

- "An SNR Balancing Approach to Distributed Beamforming in Two-Way Relaying," **University of Toronto**, July 2009

- "Two-Way Relay Beamforming," **Technical University of Darmstadt**, July 2009.

- "Distributed Beamforming," **Iran University of Science and Technology**, May 2008.

- "MIMO Channel Estimation and Tracking," **Sharif University of Technology**, April 2007.

- "Smart Antennas," **University of Kurdistan**, April 2006.

- "Robust Adaptive Beamforming," **Sharif University of Technology**, April 2006.

- "Robust Multi-User Detection," **Institut national de la recherche scientifique**, March 2005.

- "Blind Channel Estimation for Orthogonal Space-Time Block Codes," **University of Waterloo**, April 2005

- "Robust Power Control for Wireless Cellular Communications," **Kings College London,** September 2004.

- "Robust Beamforming Based on Worst-Case Performance Optimization," **Norwegian University of Science and Technology**, March 2004.

- "Channel Estimation for Orthogonally Coded Space-Time Block Codes," **Norwegian University of Science and Technology**, March 2004.

EDITORIAL POSITIONS FOR SCHOLARLY JOURNALS

- Associate Editor for *IEEE Transactions on Signal Processing* (2007-2011), renewed twice
- Associate Editor for *IEEE Signal Processing Letters* (2006-2010), renewed twice.
- Senior Area Editor for *IEEE Signal Processing Letters* (2014-2015).

D. TEACHING ACTIVITIES

UNDERGRADUATE COURSES TAUGHT

- UOIT
  - Signals and Systems (ELEE 3110U), Fall 2007, Fall 2008, Fall 2009, Fall 2010, Fall 2012, Fall 2013, Fall 2015, Fall 2016.
  - DSP Theory and Design (ELEE 4420U), Fall 2008, Fall 2009, Fall 2010, Fall 13, Fall 2014, Fall 2015, Fall 2016.
  - Electric Circuits (ELEE 2790U), two sections in Winter 2006, two sections in Winter 2007, two sections in Winter 2008, one section in Winter 2016
  - Fundamentals of Electromagnetics (ELEE 2520U), Winter 2007
  - Complex Analysis for Engineers (ELEE 2530), Winter 2015, Winter 2017
- McMaster University
  - Digital Signal Processing, Fall 2004
- Razi University
  - Signals and Systems, Fall 1994, Winter 1995, Fall 1995, Winter 1996
  - Filters and Circuit Synthesis, Winter 1996
  - Fields, Waves and Transmission Lines, Fall 1995
  - Electromagnetics, Winter 1993, Fall 1994, Winter 1995, Fall 1995
  - Advanced Engineering Mathematics, Fall 1994, Winter 1995, Fall 1995, Winter 1996

GRADUATE COURSES TAUGHT

- UOIT
  - Advanced Estimation Theory (ENGR 5631G), Winter 2014
  - Advanced Detection Theory (ENGR 5632G), Winter 2013, Fall 2014
  - Directed Studies – Cooperative Communications, Winter 2012, Winter 2013, Fall 2014, Winter 2015
  - Directed Studies – Array Signal Processing, Fall 2015
  - Stochastic Processes (ENGR 5610G), Fall 2007, Fall 2008, Winter 2010, Fall 2010.
  - Statistical Signal Processing (ENGR 5630G), Winter 2009
- McMaster University
  - Advanced Topics in Signal Processing, Winter 2005

Doctoral Students:

1. Name: Mr. Razgar Rahimi (sole supervision)
   Thesis topic: MIMO Two-Way Relay Systems
   Date: 2014-present
   Institute: University of Ontario Institute of Technology

2. Name: Mr. Arin Minasian (co-supervision with Prof. R. Adve from University of Toronto)
   Thesis topic: Energy Harvesting in Wireless Networks
   Date: 2014-present
   Institute: University of Toronto

3. Name: Mr. Javad Mirzaei (co-supervision with Prof. R. Adve from University of Toronto)
   Thesis topic: TBD
   Date: 2015-
   Institute: University of Toronto

4. Name: Mr. Shahrokh Hamidi (sole supervision)
   Thesis topic: Compressive Sensing based Imaging for Non-Destructive Testing
   Date: 2012-present
   Institute: University of Ontario Institute of Technology

5. Name: Mr. Adnan Gavili (sole supervision)
   Thesis topic: Spectrum Leasing and Sharing
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

6. Name: Mr. Reza Vahidnia (sole supervision)
   Thesis topic: Asynchronous Relay Networks
   Date: 2010-2014
   Institute: University of Ontario Institute of Technology

7. Name: Ms Nasim Moallemi (sole supervision)
   Thesis topic: Array Processing for Non-Destructive Testing
   Date: 2011-2014
   Institute: University of Ontario Institute of Technology

8. Name: Mr. Veria Havary-Nassab (co-supervision)
   Thesis topic: Cognitive Radio
   Date: 2008-2015
   Institute: University of Toronto

9. Name: Mr. Ahmed Ablkader (co-supervision)
   Thesis topic: Relay Networks
   Date: 2008-2009
   Institute: Technical University of Darmstadt, Germany

10. Name: Mr. Nima Sarmadi (co-supervision)
    Thesis topic: MIMO-OFDM Systems
    Date: 2007-2012
    Institute: Technical University of Darmstadt, Germany

11. Name: Mr. Balasingham Balakumar (co-supervision)
    Thesis topic: MIMO Channel Tracking
    Date: 2005-2009
    Institute: McMaster University

12. Name: Mr. Keyvan Zarifi (co-supervision)
    Thesis topic: Robust Multiuser Detection for DS-CDMA Systems
    Date: 2002-2007
    Institute: Technical University of Darmstadt, Germany

13. Name: Mr. Yue Rong (co-supervision)
    Thesis topic: Robust Multiuser Detection for Multiple – Access MIMO Communications Systems
    Date: 2002-2006
    Institute: Technical University of Darmstadt, Germany

Master's Students:

1. Name: Mr. Hossein Shafierad (co-supervision with Prof. R. Adve from University of Toronto)
   Thesis topic: Energy Harvesting in Wireless Communications
   Date: 2014-present
   Institute: University of Toronto

2. Name: Mr. Lingqian Zeng (sole supervision)
   Thesis topic: Energy Harvesting in Cooperative Communications
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

3. Name: Ms. Lei Zheng (sole supervision)
   Thesis topic: Spectrum Sharing for Cooperative Communications
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

4. Name: Mr. Ashkan Kiani (sole supervision)
   Thesis topic: Two-Way Active Channels
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

5. Name: Ms. Mina Askari (sole supervision)
   Thesis topic: Asynchronous Two-Way Cooperative Communications
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

6. Name: Ms. Sahar BastaniRad (co-supervision)
   Thesis topic: Asynchronous Two-Way Cooperative Communications
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

7. Name: Ms. Farzaneh Eshaghian Dorcheh (sole supervision)
   Thesis topic: Asynchronous Two-Way Cooperative Communications
   Date: 2013-2015
   Institute: University of Ontario Institute of Technology

8. Name: Mr. Pedram AbbasiSaei (sole supervision)
   Thesis topic: Sum-Rate Maximization for Two-Way Active Parallel Channel
   Date: 2013-2014
   Institute: University of Ontario Institute of Technology

9. Name: Mr. Minchung Chang (co-supervision)
   Thesis topic: Subcarrier Pairing in Two-Way Relay Networks
   Date: 2013-2014
   Institute: University of Ontario Institute of Technology

10. Name: Mr. Javad Mirzaee (sole supervision)
    Thesis topic: Asynchronous Relaying
    Date: 2011-2013
    Institute: University of Ontario Institute of Technology

11. item Name: Mr. Aras Azimipanah (sole supervision)
    Thesis topic: Compressive Sensing for Non-Destructive Testing
    Date: 2011-2013
    Institute: University of Ontario Institute of Technology

12. Name: Mr. Mohammad Zaeri-Amirani (sole supervision)
    Thesis topic: Two-way Relay Networks
    Date: 2010-2011
    Institute: University of Ontario Institute of Technology

13. Name: Mr. Arash Esmaeili-Rizi (sole supervision)
    Thesis topic: Distributed Space-Time Coding for Wired Networks
    Date: 2010-present
    Institute: University of Ontario Institute of Technology

14. Name: Ms. Chinwe Matha Nwaekwe (sole supervision)
    Thesis topic: Collaborative Communications
    Date: 2009-2011
    Institute: UOIT

15. Name: Mr. Olaf D'Souza (co-supervision)
    Thesis topic: MIMO Relays
    Date: 2007-2009
    Institute: UOIT

16. Name: Ms. Tina Mirfakhraie (sole supervision)
    Thesis topic: Cooperative Communications
    Date: 2008-2010
    Institute: UOIT

17. Name: Mr. Fadhel Alhumaida (sole supervision)
    Thesis topic: Cooperative Communications
    Date: 2008-2010
    Institute: UOIT

18. Name: Mr. Siavash Fazely-Dehkordi (co-supervision)
    Thesis topic: Distributed Signal Processing for Wireless Sensor Network
    Date: 2006-2008
    Institute: Queen's University

19. Name: Ms. Cammy Wong (co-supervision)
    Thesis topic: Robust Power Control for Cellular Wireless Communications Systems with Antenna Arrays at the Base Stations
    Date: 2003-2005
    Institute: McMaster University

20. Name: Mr. Mohammadali Beheshti (co-supervision)
    Thesis topic: Linear Receiver for Multiple-Access MIMO Communications
    Date: 2003-2005
    Institute: McMaster University

Post Doctoral Fellows:

1. Name: Ms Nasim Moallemi (sole supervision)
   Research topic: Array Processing for Non-Destructive Testing
   Date: 2015-201
   Institute: University of Ontario Institute of Technology

2. Name: Dr. Ruhallah AliHemmati (sole supervision)
   Research topic: Cooperative Communications
   Date: 2012-present
   Institute: UOIT

3. Name: Dr. Foroohar Foroozan (sole supervision)
   Research topic: Ultrasonic Array Processing for Non-Destructive Testing
   Date: 2011-2012
   Institute: UOIT

4. Name: Dr. Soheil Salari (sole supervision)
   Research topic: Vehicle Localization
   Date: 2011-2012
   Institute: UOIT

5. Name: Dr. Haihua Chen (co-supervision)
   Research topic: Relay Networks in Frequency Selective Environments
   Date: 2008-2010
   Institute: Technical University of Darmstadt, Germany

Research Associates:

1. Name: Ms. Mina Askari (sole supervision)
   Research topic: Asynchronous Two-Way Cooperative Communications
   Date: 2015-2015
   Institute: University of Ontario Institute of Technology

2. Name: Ms. Sahar BastaniRad (co-supervision)
   Research topic: Asynchronous Two-Way Cooperative Communications
   Date: 2015-2015
   Institute: University of Ontario Institute of Technology

3. Name: Ms. Farzaneh Eshaghian Dorcheh (sole supervision)
   Research topic: Asynchronous Two-Way Cooperative Communications
   Date: 2015-2015
   Institute: University of Ontario Institute of Technology

4. Name: Mr. Aras Azimipanah (sole supervision)
   Research topic: Sparse Signal Representation for Imaging in NDT
   Date: 2013-2013
   Institute: University of Ontario Institute of Technology

5. Name: Mr. Javad Mirzaei (sole supervision)
   Research topic: AsySparse Signal Representation for Imaging in NDT
   Date: 2013-2013
   Institute: University of Ontario Institute of Technology

6. Name: Mr. Mohammad Zaeri-Amirani (sole supervision)
   Research topic: Two-way Relay Networks
   Date: 2012-2012
   Institute: University of Ontario Institute of Technology

7. Name: Mr. Mahbod Ghelichi (sole supervision)
   research topic topic: MIMO Communications
   Date: 2009-2010
   Institute: University of Ontario Institute of Technology

8. Name: Mr. Veria Havary-Nassab (co-supervision)
   Research topic: Two-way and One-Way Relay Networks
   Date: 2007-2008
   Institute: University of Ontario Institute of Technology

9. Name: Mr. Ahmad Manzar (NSERC summer student sole-supervision)
   Research topic: Blind Channel Estimation for OSTB Codes
   Date: 20015-2015
   Institute: University of Ontario Institute of Technology

10. Name: Mr. Matthew Kay (NSERC summer student, sole supervision)
    Research topic: Two-way and One-Way Relay Networks
    Date: 2012
    Institute: University of Ontario Institute of Technology

11. Name: Ms Laura Barlow (sole supervision)
    Research topic: Ultrasonic Non-Destructive Testing
    Date: 2010
    Institute: University of Ontario Institute of Technology

12. Name: Mr. Brendan Janssen (sole supervision)
    Research topic: Array Signal Modeling for NDT
    Date: 2010
    Institute: University of Ontario Institute of Technology

13. Name: Mr. Saurabh Talwar (sole supervision)
    Research topic: Wideband Array Processing for NDT Applications
    Date: 2010
    Institute: University of Ontario Institute of Technology

14. Name: Ms. Samantha Hazel (sole supervision)
    Research topic: Wideband Array Processing for NDT Applications
    Date: 2010
    Institute: University of Ontario Institute of Technology

Undergraduate 4th Year Design Thesis Supervision:

1. Name: Laura Barlow (sole supervision)
   Design Thesis topic: Ultrasonic Non-Destructive Testing
   Date: 2010-2011
   Institute: UOIT

2. Name: Evan H-arris (sole supervision)
   Design Thesis topic: Synchronization for Two-Way Relay Networks
   Date: 2010-2011
   Institute: UOIT

3. Name: Brendan Janssen (sole supervision)
   Design Thesis topic: Array Signal Modeling for NDT
   Date: 2010-2011
   Institute: UOIT

4. Name: Marcin Makar (sole supervision)
   Design Thesis topic: Synchronization for Two-Way Undergraduate Relay Networks
   Date: 2010-2011
   Institute: UOIT

5. Name: Jullian Mullings-Black (sole supervision)
   Design Thesis topic: Synchronization for Two-Way Undergraduate Relay Networks
   Date: 2010-2011
   Institute: UOIT

6. Name: Saurabh Talwar (sole supervision)
   Design Thesis topic: Wideband Array Processing for NDT Applications
   Date: 2010-2011
   Institute: UOIT

7. Name: Ms. Mariam Fatima (co-supervision)
   Design Thesis topic: Design and Hardware Implementation of QPSK Wireless Communications
   Date: 2008-2009
   Institute: UOIT

8. Name: Mr. Thomas McConkey (co-supervision)
   Design Thesis topic: Design and Hardware Implementation of QPSK Wireless Communications
   Date: 2008-2009
   Institute: UOIT

9. Name: Mr. Arash Esmaeili-Rizi (sole supervision)
   Design Thesis topic: Design an implementation of relay-based communications
   Date: 2009-present
   Institute: UOIT

10. Name: Mr. Adel Shehada (sole supervision)
    Design Thesis topic: Design an implementation of relay-based communications
    Date: 2009-present
    Institute: UOIT

11. Name: Mr. Ryan Sebu (sole supervision)
    Design Thesis topic: Design an implementation of relay-based communications
    Date: 2009-present
    Institute: UOIT

12. Name: Ms. Savneet Kaur (sole supervision)
    Design Thesis topic: Design an implementation of relay-based communications
    Date: 2009-present
    Institute: UOIT

13. Name: Mr. Salman Ali
    Design Thesis topic: Using GPS to track the sun in a solar panel
    Date: 2009-present
    Institute: UOIT

14. Name: Mr. Farrukh Zaman
    Design Thesis topic: Using GPS to track the sun in a solar panel
    Date: 2009-present
    Institute: UOIT

15. Name: Mr. Hamid Zahoor
    Design Thesis topic: Using GPS to track the sun in a solar panel
    Date: 2009-present
    Institute: UOIT

16. Name: Mr. Taha Bin-Taher
    Design Thesis topic: Multi-Modal Discrete Distributed Sensor Matrix
    Date: 2009-present
    Institute: UOIT

17. Name: Mr. Gunjan Patel
    Design Thesis topic: Multi-Modal Discrete Distributed Sensor Matrix
    Date: 2009-present
    Institute: UOIT

E. SERVICE AND ADMINISTRATIVE POSITIONS

- Member of the Tenure Committee, Faculty of Engineering and Applied Science, UOIT, 2012-2015.
- Interim Chair of the Department of Electrical, Computer, and Software Engineering, Faculty of Engineering and Applied Science, UOIT, 2012
- Member of Chair hiring committee, Department of Electrical, Computer, and Software Engineering, Faculty of Engineering and Applied Science, UOIT, 2012
- Member of the Strategic Research Planning Committee, UOIT, 2012
- Member of the FEAS Scheduling Committees (2010-2011)
- Member of the FEAS Space Committees (2010-2011)
- Founding Director of Wireless Communications and Networking Research Group (since winter 2009)
- Chair of the FEAS TA Committee (2008-2009)
- Member of the FEAS TA Committee (2009-2010)
- Member of the FEAS Change Committee (2008-2009)
- Member of the FEAS Committee of Committees (2008-2009)
- Member of the FEAS Curriculum Committee (2007-2010)
- Developed several courses for Ph.D. program in Electrical and Computer Engineering (2008)
- Met with OCGS visiting team for Ph.D. Programs in Electrical and Computer Engineering (2008)
- Member of ad hoc program committee for curriculum change in Electrical Engineering program (2008-2009)
- Introduced one new course into Electrical Engineering undergraduate program (2008)
- Reviewed the course content of the Differential Equations course offered by Faculty of Science to the FEAS students (2008)
- Established the UOIT's IEEE Student Branch (2006)
- Currently serving as the IEEE Student Branch Counselor (since 2006)
- Held the first series of UOIT's IEEE Student Branch Talks (since 2006)
- Served as voting member of the UOIT's Admission and Scholarship Committee (2005-2007)

- Reviewed the applications for UOIT's major scholarships (2005-2007)
- Member of Electrical Engineering Lab Committee at FEAS (2006-2007)
- Developed lab experiments for the course Signals and Systems (2007)
- Developed lab experiments for the course DSP Theory and Design (2008)
- Member of Technical Staff Hiring Ad hoc Committee at the FEAS Science (2006)
- Attended Ontario University Fair, (2005, 2006)
- Attended UOIT's Open House event (2005, 2006)
- Actively involved in document preparation for proposal of the Master's programs in Electrical and Computer Engineering submitted for OCGS (2006)
- Developed several courses for Master's programs in Electrical and Computer Engineering (2006)
- Met with OCGS visiting team for M.Sc. Programs in Electrical and Computer Engineering as well as for Automotive Engineering (2006)
- Actively involved in course material preparation for CEAB visits, and also attended several meetings and interviews (since 2005)