



Address: 77 Garden Ave  
Richmond hill  
ON, L4C 6L6

Phone: (416) 994-1239  
E-mail: rooholah@ece.uvic.ca  
Web: <http://www.ece.uvic.ca/~rooholah>

# Rooholah Hasanizadeh

## Education

2006-Present University of Victoria Victoria, BC-Canada

### Ph.D. Student in Electrical Engineering

- Major: Wireless Communications
- GPA: 4.3/4.0

2003-2006 Khaje-Nasir Toosi Univ. of Technology Tehran-Iran

### M.Sc. in Electrical Engineering

- Major: Telecommunication systems
- GPA: 3.36/4.0
- Thesis on Energy efficient MAC protocols for Wireless Sensor Networks
- Protocol Stack survey of Wireless Sensor Networks

1998-2003 Sharif Univ. of Technology Tehran-Iran

### B.Sc. in Electrical Engineering

- Major: Electronics
- GPA: 2.85/4.0
- Thesis on communicating with PC via USB port

1994-1998 Alborz college Tehran-Iran

### High school diploma

- GPA: 3.82/4.0

## Study fields

- Adaptive techniques for Wireless Communications: Transmit/Receive Diversity techniques, Adaptive Modulation/Coding schemes, Cooperative communications, MIMO structures and OSTBC coding, Energy efficient MAC protocols for Ad hoc and Sensor networks
- Interference cancellation methods for multiuser CDMA detection

## Publications

1. Rooholah Hasanizadeh and Hong-Chuan Yang, "Adaptive Diversity Combining with Direct Mode Transition and its Markov-based Analysis," *IEEE Globecom Conference*, Washington DC, November 2007.
2. Rooholah Hasanizadeh and Saadan Zokaei, "Optimal Power Allocation to Diversity Branches of Cooperative MISO Sensor Networks," *International Journal of Signal Processing, IJSP*, Vol. 4, No. 3, pp 281-288, 2006.
3. Rooholah Hasanizadeh and Saadan Zokaei, "Energy Efficiency of Adaptive-Rate Medium Access Control Protocols for Sensor Networks," *3rd International Conference on Computer Science, ICCS'06*, Budapest, Hungary, May 2006.

## Coursework

### o Undergraduate level courses

Applied electronics design, Digital TV systems, Microprocessors, Communication circuits, Solid state devices, Pulse shaping techniques, Digital and analog communications, Industrial electronics, Linear control systems, Electronics, Electric motors, Logic circuits, Signals and systems, Electromagnetics, Engineering mathematics, Probability and statistics, Circuits theory, Economics fundamentals

### o Graduate level courses

Communication/Computer networks, Stochastic processes, Digital signal processing, Advanced digital communications, Information theory, Spread spectrum communications (CDMA), Multiuser detection, Coding theory, Wireless communications and cellular networks, Introduction to fields and waves, microwave circuits and antennas

UWB, Wireless Networks, Advanced Wireless Communications, Adaptive techniques for wireless communications

## Completed projects

Aug. 2007                      Advanced Wireless Communications                      UVic

### **Space-Time Block Codes from Orthogonal Designs**

- OSTBC design fundamentals

Apr. 2007                      Wireless Networks                      University of Victoria

### **Energy Efficiency and Performance of Cooperative Communications in Wireless Sensor Networks**

- Markov chain modeling and analysis
- Diversity-Multiplexing tradeoff

Dec. 2006                      UWB Course project                      University of Victoria

### **Multiple Access in UWB Communication Systems**

- UWB MAC challenges and standards
- Adaptive power allocation

Jul. 2006                      M.Sc. thesis                      KN Toosi univ.

### **Energy efficient MAC and PHY design for wireless sensor networks**

- Proposes a joint MAC and PHY scheme
- Low duty cycle operation of sensor nodes
- Task-adaptive TDMA schemes for MAC layer
- Modulation optimization under energy constraints
- Battery and load issues in PHY layer

Apr. 2005                      Multiuser detection                      KN Toosi univ.

### **Successive interference cancellation for CDMA multiuser signals**

- SIC fundamentals and operation
- Channel capacity improvement

Jan. 2005                      Wireless communications                      KN Toosi univ.

### **Space-time coding schemes simulation**

- Rayleigh channel model simulation using complex Gaussian noise
- Alamouti, repeat and V-BLAST schemes simulation using Matlab

Jan. 2005                      Wireless communications                      KN Toosi univ.

### **Sensor networks protocol suite survey**

- Architectures and protocols for energy efficiency in wireless sensor networks
- A simulation on using MIMO techniques in MAC layer by Matlab

Aug. 2004                      Coding theory                      KN Toosi univ.

**Applications of Turbo codes**

- Satellite, multimedia, source coding and other applications
- The course included a BCH code simulation by Matlab

Aug. 2004                      Spread spectrum communications                      KN Toosi univ.

**Secure communications methods**

- Pulse jamming methods
- Coding and interleaving schemes against jamming

Aug. 2004                      Spread spectrum communications                      KN Toosi univ.

**Direct sequence spread spectrum simulation using Matlab**

- Simulation of DSSS with processing gain of 20

Jan. 2004                      Digital signal processing                      KN Toosi univ.

**A digital low-pass filter simulation using Matlab**

Jan. 2004                      Stochastic processes                      KN Toosi univ.

**Self-similar behavior of data networks traffic**

- Log-normal, Pareto and Weibull models

Sep. 2003                      B.Sc. thesis                      Sharif univ.

**USB architecture and some 8051 interfaces**

- USB host, device and client architectures
- IC's with built-in USB controller and 80C51 core

Aug. 2003                      Microprocessors lab                      Sharif univ.

**A keypad to PC interface using 89C51 microcontroller**

Jan. 2003                      Applied electronics design                      Sharif univ.

**Several projects in electronics laboratory**

- A 4 points course composed of a 3 hours class a week and a 4 hours lab
- A new idea, design and implementation for each week
- Amplifiers, voltage level converters, etc.

Aug. 2002                      Microprocessors                      Sharif univ.

**DOS screen saver using 80x86 assembly language**

Aug. 2002                      Filter design                      Sharif univ.

**A low-pass elliptic filter in the GHz band**

Jan. 2001                      Logic circuits                      Sharif univ.

**PAL implementation of a simple circuit using Protel**

- CUPL hardware description language
- PAL 16L8 used

Aug. 1999                      Advanced programming                      Sharif univ.

**A Library program by Turbo Pascal**

**Professional  
experience**

- 2006-2007                      University of Victoria                      Victoria, Canada  
**Research Assistant**
- Academic research assistant (3 published papers, 1 submitted)
  - Teaching assistant
  - Laboratory instructor and leader
  - Reviewer for several ICC and WCNC conference papers
- 2006                                  Nokia International                                  Tehran, Iran  
**Network Planning Engineer**
- GSM 2<sup>nd</sup> generation and GPRS
  - RF/Transmission/Core planning trainee
- 2005-2006                      Parasp Inc.                                  Tehran, Iran  
**Power Supervisor**
- Technical supervisor for BTS power supply
  - Installation, maintenance and grounding co-supervision
  - The company acts as a general contractor of telecom projects
  - Main customers: Nokia, Siemens and Ericsson companies
- 2003-2004                      Gaameyek Eng. Co. Ltd.                      Tehran, Iran  
**Design Engineer**
- Electronic circuits and boards design for several commercial projects
  - Technical support and troubleshooting of electronic boards
- 2003                                  SA Iran (Telecommunications industries)                      Tehran, Iran  
**Quality assurance**
- Digital maximeter documentation and testing
  - Testing and troubleshooting of CKD boards
  - Applying environmental and functional standard tests: IEC 68, 1000, 1038
  - Protocol standard test according to DL/T 645
- 2002-2003                      Mehr tadbir Co. Ltd.                                  Tehran, Iran  
**Design Engineer**
- Electronic circuits documentation using MS Access
  - Schematic design of electronic components and circuits using Visio
- 2001                                  Electronic power supply Inc.                      Boomehen, Iran  
**Intern student**
- The testing part of 48v inverters and battery chargers for Telephony switching centers in the factory
  - The company is a main supplier of SIEMENS in Iran
- 1999-2000                      National Iranian Steel Co. (NISCO)                      Tehran, Iran  
**Network Technician**
- Maintaining and troubleshooting the local intranet
  - Documentation of LAN reports under MS Access
- 1997                                  NISCO                                  Tehran, Iran  
**Intern student**
- Qbasic and DOS programming

## Teaching experience

- 2006-2007 University of Victoria Victoria, Canada  
**Teaching and Lab assistant**
- Electronic circuits and engineering design Labs
  - Signal analysis teaching assistant
- 2005 Azad University Tehran, Iran  
**Instructor**
- Teaching Matlab to university students
- 2002-2003 Elmi-Karbordi College Tehran, Iran  
**Teaching assistant**
- Probability and statistics/Differential calculations
- 1999-2001 Tehran, Iran  
**Teacher**
- Teaching physics and math to pre-university students

## Computer skills

- Operating systems: DOS, MS Windows, Linux, Unix
- Programming languages: Basic, Pascal, C/C++, Assembly 80x86-8051
- Engineering software: Matlab, Pspice, Protel, AutoCAD
- Other software: Latex, MS Office, Front page, Visio

## Languages

- Native Persian
- Fluent English
  - TOEFL score: 603 and TWE: 3.5 on Nov. 2004
  - GRE Quantitative:800 and Verbal:350 and Analytical writing:3.0 on Oct. 2005
- Basic Arabic (reading/writing)

## Honors

1. Ranked 69<sup>th</sup> among more than 300,000 participants of Iran National Universities entrance exam, 1998 (Top ¼ percent of admitted students)
2. Ranked 3<sup>rd</sup> in Azad university graduate entrance exam in Electronics, 2003
3. Ranked 201<sup>st</sup> among more than 20000 participants of Iran National Universities entrance exam : graduate studies, 2003 (Top 5 percent of admitted students)
4. Ranked 1<sup>st</sup> in the last two years of pre-university among class students, 1996-1998
5. Ranked 2<sup>nd</sup> in National Science Olympiad among 7<sup>th</sup> region students in Tehran, 1993

## Activities

- Managing group teams for camps (more than 10 long trips)
- Coordination of group session discussions
- Playing table tennis