Oscar Bejarano

CONTACT INFORMATION

Cisco Systems, Inc.
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INTERESTS

Design of wireless network architectures (4G/5G/Wi-Fi) from research to product development with an emphasis on industry standardization.

EDUCATION

Ph.D., Electrical and Computer Engineering, May 2015
Rice University
GPA: 3.8/4.0
- Advisor: Edward W. Knightly
- Area of Study: Wireless Networking and Communications

M.S., Electrical and Computer Engineering, May 2011
Rice University
GPA: 3.8/4.0
- Advisor: Edward W. Knightly
- Area of Study: Wireless Networking

B.S., Electrical and Computer Engineering, May 2009
The University of Texas at Austin
GPA: 3.8/4.0
- With Honors in Engineering
- Electrical Specialization (emphasis on communications and electronics)

LANGUAGES

- English - Fluent
- Spanish - Native

AWARDS

- Best Paper Award, IEEE SECON 2015
- Best Paper Award, IEEE SECON 2014
- Rice Entrepreneurship Award, 2009
- Texas Instruments Fellowship, 2009-2015

PROFESSIONAL EXPERIENCE

Cisco Systems, Richfield, OH USA

Wireless Systems Engineer III **May 2015 to Present**

- Devised indoor Wi-Fi location algorithms and developed proof-of-concept models
- Designed and developed an Access Point deployment tool in Matlab
- Designed and developed an IEEE 802.11n/ac MAC/PHY simulator in Matlab
- Wrote functional specifications and test plans for wireless business unit products
- Implemented Channel State Information (CSI) compression algorithms in C
- Debugged and sustained released features and products
- Participated in IEEE standards bodies

James A. Baker III Institute for Public Policy, Houston, TX USA

Research Intern **May 2014 to Aug. 2014**

- Published a research article that analyzes the current state of the telecommunications sector in Mexico, as well as the outcome of the 2014 telecommunications reform

Qualcomm Atheros, Inc., San Jose, CA USA

Interim Engineering Intern **May 2013 to Aug. 2013**

- Developed an analysis of the behavior of TCP and UDP traffic in Multi-Channel Concurrency (MCC) applications
- Designed a multi-channel concurrency scheduling algorithm for the next generation of IEEE 802.11ac chipsets

Microsoft Research Asia, Beijing, China

Research Intern **May 2011 to Sept. 2011**

- Designed and implemented the automatic gain control algorithm for the Software Radio platform SoRa

Research, Rice University, Houston, TX USA

Research Assistant at Rice Networks Group **Sept. 2009 to May 2015**

- Research on the Impact of Relay Cooperation in Wireless Networks - Analyzed the effects of relay cooperation on networks where hidden and exposed terminals are present, as well as the scalability of such techniques to more complex and bigger topologies
- Research on Utilizing TV Whitespaces for Low-Cost Wireless Access Networks - Studied the potential and feasibility of deploying an urban whitespace network to provide Internet service to an underserved community.
- Medium Access Control (MAC) Design for Multi-Antenna Systems - Worked on multiple aspects of Multi-User Beamforming techniques for network performance optimization

Undergraduate Research, The University of Texas at Austin, Austin, TX USA

Research in Communications and Networking **June 2008 to May 2009**

- Deployed a mobile adhoc network (MANET) testbed with the purpose of studying experimental capacity limits as well as inter-node behavior
- Studied the performance of lattice codes by implementing different coding techniques in a Xilinx FPGA

Toshiba Mexico, Ciudad Juarez, Mexico

Engineering Assistant **May 2006 to Sept. 2006**

- Assisted Electrical and Industrial Engineers with the Total Productivity Improvement Project

Electrical Engineer **May 2007 to Sept. 2007**

- Designed and tested portable and reliable wiring systems for testing areas
- Developed test software for different production line modules

Academic Experience

Rice University, Houston, TX USA

Course and Teaching Assistantships **Aug. 2010 to Dec. 2013**

- Assistant for the following courses: *ELEC 533: Introduction to Random Processes and Applications, ELEC 430: Digital Communications, ELEC 438: Wireless Networking for Under-Resourced Urban Communities, ELEC 437/537: Communication Networks*
  - Guest lectured
  - Hosted frequent office hours and review sessions
  - Graded homework assignments

The University of Texas at Austin, Austin, TX USA

Teaching Assistant **Aug. 2008 to Dec. 2008**

- Assistant for *EE351K: Introduction to Probability and Random Processes*
  - Responsible for assisting other undergraduate students understand the course material as well as their homework assignments
  - Graded homework assignments

Academic Tutor **Aug. 2008 to May 2009**

- Tutor for *EE438: Introduction to Electronic Circuits*
  - Responsible for providing assistance to undergraduate students on their homework and exam preparation

Technical Skills

Extensive hardware and software experience in wireless networking and communications, signal processing, machine learning, analog and digital electronics, and other areas:

- Software: NS-2, NS-3, GIT, LaTeX, and others
- Systems: Basic experience with Cisco Access Points and Cisco Wireless Controllers
- Programming: MATLAB/Octave, C, C++, R, Perl, Linux shell scripting, Xilinx System Generator, Python, and others
- Machine Learning: Experience with linear and logistic regression, neural networks, and support vector machines
- Operating Systems: Microsoft Windows, Apple OS X, and Linux

Publications and Other Work

Patents

- **Bejarano, O**., Knightly, E., Gurewitz, O., and Magistretti, E., "Method and System for Reducing Sounding Overhead in Wireless Communications," Provisional Patent Application Serial No. 62/187,055 filed on June 30, 2015.

Technical Publications

- Hoefel, R-P-F., and **Bejarano, O.**, "On the Application of PHY Layer Abstraction Techniques for System Level Simulation and Adaptive Modulation in IEEE 802.11ac/ax Systems," in Journal of Communication and Information Systems, v. 31, p.198-210, 2016.
- **Bejarano, O.**, Hoefel, R-P-F., Knightly, E., "Resilient Multi-User Beamforming WLANs: Mobility, Interference, and Imperfect CSI," in Proc. of IEEE INFOCOM 2016, San Francisco, CA 2016.
- Hoefel, R-P-F., and **Bejarano, O.**, "IEEE 802.11ac: Performance of MU-MIMO Interference Cancellation Detectors with Imperfect Channel State Information at Tx and Rx Sides," in Proc. of IEEE LatinCom 2015, Arequipa, Peru, 2015.

- Hoefel, R-P-F., and **Bejarano, O.**, "On the Application of PHY Layer Abstraction Techniques in IEEE 802.11ac/ax WLANs," in Proc. of IEEE SBrT 2015, Rio de Janeiro, Brazil, 2015.
- **Bejarano, O.**, Quadri, S., Gurewitz, O., Knightly, E., "Scaling Multi-User MIMO WLANs: the Case for Concurrent Uplink Control Messages," in Proc. of IEEE SECON, 2015. **Best Paper Award**
- H. Yu, **Bejarano, O.**, and L. Zhong, "Combating Inter-cell Interference in 802.11ac-based Multi-user MIMO Networks," to appear in Proc. of ACM MobiCom, 2014.
- **Bejarano, O.**, Magistretti, E., Gurewitz, O., Knightly, E., "MUTE: Sounding Inhibition for MU-MIMO WLANs," in Proc. of IEEE SECON, 2014. **Best Paper Award**
- **Bejarano, O.**, Park, M., and Knightly, E., "IEEE 802.11ac: From Channelization to Multi-User MIMO," in IEEE Communications Magazine, October 2013.
- **Bejarano, O.** and Knightly, E., "Virtual MISO Triggers in WiFi-like Networks," in Proc. of IEEE INFOCOM, 2013.
- **Bejarano, O.**, Miskovic, S., Aryafar, E., and Knightly, E. W. 2010. "TFA: A Large Scale Urban Mesh Network for Social and Network Research," in Proc. of ACM S3 Workshop, 2010.
- **Bejarano, O.**, "Protocol Design and Experimental Evaluation for Efficient Multi-User MIMO Wireless Networks." Ph.D. Dissertation, May 2015.
- **Bejarano, O.**, "Limits and capabilities of cooperative diversity: A network and protocol perspective." Masters Thesis, May 2011.

Public Policy Publications

- **Bejarano, O.**, "The Telecommunications Sector in Mexico: Present and Future in the Context of the 2014 Reform." James A. Baker III Institute for Public Policy, November, 2014.

Service - Reviewer and TPC member

- WiNTECH 2016 - Technical Program Committee (TPC) member
- SECON 2016 - Technical Program Committee (TPC) member
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Networking
- International Journal of Communication Systems
- Wireless Communications and Mobile Computing Journal
- MILCOM 2013
- VANET 2013
- WONS 2013, 2012
- CellNet 2013
- ITC 2011
- SCENES 2010