

Luis Miguel Cortés-Peña

<http://users.ece.gatech.edu/~cortes>

U.S. Citizen

cortes@gatech.edu

OBJECTIVE

Available: 5/9/2012

Ph.D. student seeking **SUMMER RESEARCH OR INTERNSHIP** opportunities related to the areas of Wireless communications, including MIMO, Wireless Mesh Networks, Cell Phone Networks, Satellite Communications, and Wireless Local Area Networks

EDUCATION

Georgia Institute of Technology, Atlanta, GA		
1/2007-Present	Ph.D., Electrical and Computer Engineering Focusing on accurately and efficiently modeling MIMO capabilities in Wireless Mesh Networks (WMNs) Goizueta Fellow and Graduate Research Assistant	GPA: 3.83
1/2007-5/2008	M.S., Electrical and Computer Engineering Graduate Teaching Assistant	GPA: 3.85
8/2002-12/2006	B.S., Computer Engineering Faculty Honors	GPA: 3.84

SKILLS

Linux/Unix	C/C++	MIPS Assembly	802.11n	OSPF/BGP/IGP	Agilent GS8800
VMware	Java	PICs	CSMA CD/CA	Firewalls/iptables	R&S CMU300
MATLAB	Perl	FPGAs	TCP/IP	SQL/PHP	Cisco PIX 515E

PROJECTS

- Studied the performance of MIMO space-time block coding (STBC) schemes including Alamouti's for 2 transmit antennas, as well as orthogonal STBC for 3 and 4 transmit antennas. Implemented STBCs in MATLAB and evaluated using BPSK, QPSK, 16-QAM, and 64-QAM modulation schemes for the cases of 1 up to 6 receive antennas. See http://users.ece.gatech.edu/~cortes/STBC_Matlab.html
- Proposed a winning strategy for the Google Lunar X-PRIZE. Designed the communication system which consisted of a High Definition (HD) video downlink from the Moon to the Earth, and a control channel uplink from the Earth to the Moon. Ranked #1 in class communication system design. See <http://www.propagation.gatech.edu/ECE6390/project/Fall2007/TCS/TCS/>
- Implemented a **Wireless Mesh Network** which included a gateway, two routers, an access point, and a client. Used OLSR, and BATMAN routing protocols. Broadcasted a static routing table to create different topologies and measure throughput using iperf.

EXPERIENCE

1/2008-Present	Graduate Research Assistant Critical Systems Laboratory, Georgia Institute of Technology, Atlanta, Georgia <ul style="list-style-type: none">• Implemented a MIMO channel model in ns-3 (a C++ discrete-event packet level network simulator) for spatial multiplexing using Shannon's channel capacity• Currently investigating methods for selecting MIMO weights that are accurate and efficient for large-scale WMNs• Will implement physical layer aspects of MIMO into ns-3 and develop TDMA schedulers that will increase the aggregate throughput of WMNs by taking advantages of MIMO schemes.
5/2010-8/2010	Student Engineer Boeing, Digital Receiver Technology (DRT), Germantown, Maryland <ul style="list-style-type: none">• Wrote a pn-sequence generator, and a BPSK modulator and demodulator to measure the delay of a DRT radio• Created over 20 digital signal modulations to test the Radix signal classifier bundled in DRT's Alaska software• Reverse Engineered a Long Range Cordless Phone, including modulation, packet structure, packet types, protocol, and scrambling frequency.
5/2009-8/2009	Competitive Intelligence Assistant Research In Motion (RIM), Sunrise, Florida <ul style="list-style-type: none">• Measured handheld GSM, and EDGE RF receiver sensitivity on static, typical urban (TU), and hilly terrain (HT) fading environments using the Agilent GS8800. Collected data for the Blackberry Bold/Curve as well as competitive brands including Apple, Samsung, and Motorola• Developed a Gold code sequence generator module using MATLAB for a WCDMA simulator

PUBLICATIONS

R. Srinivasan, D. Blough, L.M. Cortes-Pena, and P. Santi, "Maximizing Throughput in MIMO Networks with Variable Rate Streams," Proceedings of the European Wireless Conference, pp. 551-559, 2010.
--

ACTIVITIES AND HOBBIES

Activities:	Goizueta Volunteering, Eta Kappa Nu, IEEE student member
Hobbies:	Server admin, web programming, PICs microprocessors, barefoot running, basketball, soccer, and weightlifting

REFERENCES

Available upon request