MIGUEL A. ERAZO

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EDUCATION

Florida International University — Miami, Florida
Ph.D. Candidate in Computer Science — *Expected: December 2012*
Dissertation title: "Leveraging Symbiotic Relationships for Emulation Of Computer Networks."
Advisor: Dr. Jason Liu
GPA: 3.92

University of Puerto Rico — Mayaguez, Puerto Rico
M.Sc. in Computer Engineering — *June 2006*
Dissertation title: "An Energy-Efficient MAC Protocol for Wireless Sensor Networks for Wide Area Large Scale Environmental Monitoring."
Advisor: Dr. Yi Qian
GPA: 4.0

Major University of Saint Andrews — LaPaz, Bolivia
B.Sc. in Electrical Engineering — *July 2003*
Dissertation title: "GSM Network for Nuevatel Enterprises in Oruro."
GPA: 3.2 (summa cum laude)

RELEVANT WORK HISTORY

FIU - Modeling and Networking Systems Research Group, Miami, Florida, USA
Role: Graduate Research Assistant — *Fall 2007 - Present*

- Achieved the conception, design and implementation of the SymbioSim system: a network simulator/emulator based on symbiosis between a simulator and an emulator, topology downscaling algorithms, and adaptive sampling. SymbioSim promises to scale better that current approaches used for network experimentation (**C++, Java, bash**).
- Designed and implemented SVEET, a testbed based on time-dilation and virtualization in which real implementations of TCP variants can be accurately evaluated under diverse network configurations and workloads (**C++**).
- Achieved the integration of Linux TCP congestion control algorithms into our network simulator. I extended our existent simulated TCP for the PrimoGENI project (http://www.primessf.net/bin/view/Public/PrimoGENIProject) so that it enabled seamless communication between simulated and real hosts (**C++, bash**).
- Attained the deployment and integration of Emulab (a network emulator) into the GENI federation (www.geni.net). Also, I wrote several scripts that allowed us to automatically instantiate real-time simulation experiments into GENI (**bash, Perl**).

Los Alamos National Laboratory (LANL)CCS3 group, Los Alamos, New Mexico, USA *Role: Summer Intern* *May 2011 August 2011*

- Working in LANLs CCS-3 group, I achieved the modeling of the Panasas parallel file system, currently running on LANLs RoadRunner cluster, for their discrete-event network simulator (SimCore).
- Later, I implemented the model, validated its output, and published the results in a top tier conference (**C++, Boost, bash**).

University of Puerto Rico - WALSAIP group, Mayaguez, Puerto Rico, USA
Role: Research Assistant *Fall 2004 Summer 2007*

- Achieved the design, implementation, evaluation, and subsequent publication of SEA-MAC. A medium access control protocol (MAC) for wireless sensor networks with environmental monitoring purposes.
- Attained SEA-MAC implementation in the network simulator (ns-2), mica2, and mica2Dot motes (**NesC, C++**).

AXS Bolivia S.A. (Telecommunications Industry), La Paz, Bolivia, USA
Role: Software Developer *December 2000 July 2004*

- Designed and implemented a network statistics visualization tool. This tool allows displaying customer statistics used for troubleshooting. It extracts the data out from DSL (Digital Subscriber Line) access servers for further storage and visualization (**Visual Basic**).

Role: Support Network Engineer *December 2000 July 2004*

- Management, Provisioning and Troubleshooting of AXSs access network. This network was based in DSL technology and its main purpose was to provide Internet access to customers.

COMPUTER SKILLS

- **Languages:** C++(proficient), Java(familiar with), bash(familiar with), C#(basic), visualBasic (basic), nesC(basic), Perl(basic), Python(basic).
- **Databases:** MySQL(familiar with), Microsoft SQL Server(basic), Access(basic).
- **OS:** Linux(proficient), FreeBSD(familiar with), Windows(familiar with).

AWARDS AND HONORS

- Travel grants for GEC13 (2012), GEC12 (2011), TRIDENTCOM 2009.
- CyberBridges / GreenLight Fellow, FIU, 2009, 2010.
- AGEP program Fellow, UPRM, Puerto Rico, 2007-2008.
- AGEP program Fellow, UPRM, Puerto Rico, 2006-2007.
- Outstanding student in Electronics Engineering, College of Engineering, UMSA, La Paz, Bolivia, 2000.
- Maximum Grades in term 1999-2000, UMSA, La Paz, Bolivia, 2000.

- Excellence Award, Electronics Engineering, UMSA, La Paz, Bolivia, 2000.
- Maximum Grades in term 1998-1999, UMSA, La Paz, Bolivia, 1999.
- Excellence Award, Electronics Engineering, UMSA, La Paz, Bolivia, 1999.
- Best Student, Electronics Engineering, UMSA, La Paz, Bolivia, 1998.

SELECTED PUBLICATIONS

1. **M. A. Erazo**, T. Li, J. Liu, S. Eidenbenz, "Toward Comprehensive and Accurate Simulation Performance Prediction of Parallel File Systems", Accepted to DSN 2012. (17% acceptance rate).
2. N. Van Vorst, **M. A. Erazo**, Jason Liu, PrimoGENI for Hybrid Network Simulation and Emulation Experiments in GENI, to appear in Journal of Simulation.
3. N. Van Vorst, **M. A. Erazo**, J. Liu, "PrimoGENI: Integrating Real-Time Network Simulation and Emulation in GENI", 25th Workshop on Principles of Advanced and Distributed Simulation (PADS2011), Nice, France, 2011.
4. **M. A. Erazo**, R. Pereira, "On Profiling the Energy Consumption of Distributed Simulations: A Case Study", The 2010 IEEE/ACM International Conference on Green Computing and Communications, Hangzhou, China, 2010.
5. **M. A. Erazo**, J. Liu, A model-driven emulation approach to large-scale TCP performance evaluation, International Journal of Communication Networks and Distributed Systems, 2010.
6. **M. A. Erazo**, Y.Li, J. Liu, "SVEET! A Scalable Virtualized Evaluation Environment for TCP", TRIDENTCOM, Washington DC, 2009.
7. **M. A. Erazo**, Y. Qian., K. Lu, D. Rodrguez, "Analysis and Design of a MAC Protocol for Wireless Sensor Networks with Periodic Monitoring Applications", Proceedings of MILCOM 2007, Orlando, Florida, 2007.
8. **M. A. Erazo**, Y. Qian, SEA-MAC: Simple Energy Aware MAC Protocol for Wireless Sensor Networks for Environmental Monitoring, Proceedings of ISWPC2007, San Juan, PR, 2007.

REFERENCES

- Dr. Jason Liu (PhD advisor), Phone: 1-305-348-1625, email: liux@cis.fiu.edu
  School of Computing and Information Sciences, Florida International University, Miami, FL 33199.
- Dr. Yi Qian (former PhD Advisor), Phone: 1-402-554-4990, email: yqian2@unl.edu
  Computer & Electronics Engineering, University of Nebraska Lincoln, Lincoln, NE 68588.
- Dr. Stephan Eidenbenz, Phone: 1-505-667-3742, email:eidenben@lanl.gov
  Information Sciences (CCS-3), Los Alamos National Laboratory, Los Alamos, NM 87545.

LANGUAGES

English (fluent), Spanish (native).