

# Joshua Robinson, Ph.D.

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CONTACT INFORMATION	<i>Office phone:</i> 408.215.4243 <i>E-mail:</i> jrobinson@narus.com <a href="http://www.joshuarobinson.net">http://www.joshuarobinson.net</a>	<i>Mobile:</i> 832.725.9664 <i>E-mail:</i> joshua.robinson@gmail.com
CURRENT POSITION	<b>Narus, Inc</b> , Sunnyvale, CA <i>Senior Member of the Technical Staff</i>	<b>April 2009 - present</b>
RESEARCH INTERESTS	Network measurements, wireless protocols, combinatorial optimization, network deployment and resource provisioning, wireless medium access protocols, mobile device architecture and distributed systems.	
EDUCATION	<b>Rice University</b> , Houston, TX Ph.D. in Electrical and Computer Engineering, January 2009 <ul style="list-style-type: none"><li>• Thesis Title: Deployment and Assessment of Wireless Mesh Networks</li><li>• Advisor: Edward Knightly</li></ul> M.S. in Electrical and Computer Engineering, completed June 2006 B.S. in Electrical and Computer Engineering, May 2003	
HONORS	MobiCom 2008 Best Paper Award Winner Rice President's Fellowship, 2003-2009	
PUBLICATIONS	J. Robinson, M. Singh, R. Swaminathan, and E. Knightly, "Deploying Mesh Nodes under Non-Uniform Propagation," <i>To Appear in IEEE INFOCOM 2010</i> , San Diego, CA, March 2010.  J. Robinson, R. Swaminathan, and E. Knightly, "Assessment of Urban-Scale Wireless Networks with a Small Number of Measurements," <i>Proceedings of ACM MobiCom 2008</i> , San Francisco, CA, September 2008. ( <b>Best Paper Award Winner</b> )  J. Robinson, M. Uysal, R. Swaminathan, and E. Knightly, "Adding Capacity Points to a Wireless Mesh Network Using Local Search," <i>Proceedings of IEEE INFOCOM 2008</i> , Phoenix, AZ, April 2008.  J. Robinson and E. Knightly, "A Performance Study of Deployment Factors in Wireless Mesh Networks," <i>Proceedings of IEEE INFOCOM 2007</i> , Anchorage, AK, May 2007.  J. Camp, J. Robinson, C. Steger, and E. Knightly, "Measurement Driven Deployment of a Two-Tier Urban Mesh Access Network," <i>Proceedings of ACM MobiSys 2006</i> , Uppsala, Sweden, June 2006.  J. Robinson, K. Papagiannaki, C. Diot, X. Guo, and L. Krishnamurthy, "Experimenting with a Multi-Radio Mesh Networking Testbed," <i>1st workshop on Wireless Network Measurements (Winmee)</i> , Riva del Garda, Italy, April 2005.	
PATENTS FILED	"System and Method for Collecting and Processing Information of an Internet User Via IP-Web Correlation," Pending, filed October 2009.  "System and Method for Identifying Network Applications Based on Packet Content Signatures," Pending, filed July 2009.  "System and Method for Identifying Network Applications," Pending, filed July 2009.  "Algorithms for the Deployment of Wireless Mesh Nodes," Pending, filed April 2009.	

“Assessment of Urban-Scale Wireless Networks with a Small Number of Measurements,” Pending, filed April 2009.

“Adding Capacity Points to a Wireless Mesh Network Using Local Search,” Pending, filed April 2009.

PROFESSIONAL  
EXPERIENCE

**Rice University**, Houston, TX

**May 2003 - April 2009**

*Graduate Student:* Performed Ph.D. level research on wireless mesh networks, selected projects include:

- **Mesh Node and Gateway Deployment.** I proposed and evaluated approximation algorithms for both gateway deployment and mesh node placement. These algorithms build upon graph theoretic techniques and incorporate realistic contention effects and physical-layer models. Evaluation of these algorithms utilized realistic topologies and scenarios.
- **Measurement Assessment.** To assess a deployed network, I proposed a framework for predicting spatial performance with a limited measurement budget. The framework uses coarse-grained terrain maps and carefully chosen measurement locations to accurately predict performance. Validation required a large-scale measurement study (30000 locations) in two networks and showed that my framework achieves high accuracy.

**HP Labs**, Palo Alto, CA

**September 2007 - December 2007**

*Research Intern:* Research work on experimental evaluation of deployed wireless mesh networks. Conducted large-scale measurement study of two commercial networks and developed algorithms to more efficiently measure and characterize wireless networks.

**Rice University**, Houston, TX

**Spring 2003 - Spring 2007**

*Teaching Assistant:* Elec 220 – Introduction to Computer Engineering. Spring semester 2003, 2005, 2006, and 2007. Developed initial course syllabus and led weekly lab lectures.

**Fulbright & Jaworski LLC**, Houston, TX

**December 2004 - March 2006**

*Technical Consultant:* Consulted on two patent infringement cases related to: CDMA2000 technology and Internet router traffic shaping policies. For both cases, reviewed public information and defendant’s internal documentation for evidence of infringement and advised case attorneys.

**Intel Research**, Cambridge, UK

**February 2004 - August 2004**

*Research Intern:* Research work on experimental platforms for wireless mesh networking. Built wireless testbed and performed multi-radio interference experiments, heavily using Linux and 802.11b. Measured and quantified impact of operating multiple radios in a single node.

**Rice University**, Houston, TX

**May 2002 - April 2003**

*Undergraduate Research Assistant:* Working under Dr. Edward Knightly, developed a testbed implementation of a ring network scheduling algorithm for proposed IEEE standard 802.17. Programmed MIPS assembly code using for network processor architecture.

**Rice University**, Houston, TX

**October 2000 - April 2002**

*Technical Services:* Worked part-time on campus performing port activations and troubleshooting physical layer network problems. Job involved building racks, installing and configuring LAN switches (3Com and Cisco), making custom cabling, and maintaining SNMP software.

MEDIA COVERAGE

“Popping no-coverage bubbles in citywide WiFi networks,” Ars Technica, Oct. 1, 2008. (<http://arstechnica.com/news.ars/post/20081001-popping-no-coverage-bubbles-in-citywide-wifi-networks.html>)

“HP collaborates to identify Wi-Fi dead zones cheaply,” iTnews Australia, Sept. 30, 2008. (<http://itnews.com.au/News/85705,hp-collaborates-to-identify-wifi-dead-zones-cheaply.aspx>)

“Zeroing in on Wi-Fi ‘dead zones’: Award-winning technique inexpensively finds gaps in wireless networks,” Rice News, Sept. 25, 2008.

(<http://www.media.rice.edu/media/NewsBot.asp?MODE=VIEW&ID=11493&SnID=330181524>)

CONFERENCE  
PRESENTATIONS

“Assessment of Urban-Scale Wireless Networks with a Small Number of Measurements,” *MobiCom 2008*, San Francisco, CA, September 2008.

“Adding Capacity Points to a Wireless Mesh Network Using Local Search,” *IEEE INFOCOM 2008*, Phoenix, AZ, April 2008.

“A Performance Study of Deployment Factors in Wireless Mesh Networks,” *IEEE INFOCOM 2007*, Anchorage, AK, May 2007.

“Experimenting with a Multi-Radio Mesh Networking Testbed,” *1st workshop on Wireless Network Measurements (Winmee)*, Riva del Garda, Italy, April 2005.

OTHER  
PRESENTATIONS

“Assessment of Urban-Scale Wireless Networks with a Small Number of Measurements”

- Rice - Texas Instruments Research Seminar, Sept. 25, 2008.
- HP Labs Research Talk, Sept. 12, 2008.
- Rice - Intel Research Seminar, July 22, 2008.
- Nokia Siemens Networks - Rice Research Seminar Finalist, Feb. 28, 2008.

“Adding Capacity Points to a Wireless Mesh Network Using Local Search”

- HP Labs Systems Lunch Seminar. Oct. 8, 2007.

SOFTWARE  
DEVELOPED

Mesh Node Placement: Placement algorithms *Minimize-Nodes* and *Measure-and-Place* (C/C++)

Mesh Assessment: Algorithm to predict coverage with limited measurements (Matlab)

Capacity Point Deployment: Local search algorithms *MinHopCount* and *MinContention* (C/C++)

Mesh Topologies: Monte-carlo simulator for coverage and connectivity (C/C++)

ACTIVITIES

Technical program committee member for IMC 2009

Authored online documentation for Ns-2 802.11 module (over 50 unique visitors per day)

IEEE Member, 2006-present

English as Second Language Conversation Partner Program, 2004-2007

Rice University, New Student Orientation Advisor, 2000

**Technical Reviewer for Journals/Conferences:**

- IEEE Transactions on Vehicular Technology
- IEEE/ACM Transactions on Networking
- IEEE Transactions on Mobile Computing
- WiOpt 2007
- IEEE Communications Magazine
- Journal on Selected Areas in Communications: Mesh Networks
- IEEE INFOCOM 2005

COMPUTER SKILLS

Packages: Matlab, Ns-2, iPerf, Microsoft Office Software Family, Adobe Photoshop, LaTeX

Languages: C/C++, Ruby, Matlab, Perl, Bash Shell Scripting, MIPS Assembly

Operating Systems: Unix/Linux, MacOS X, Windows