

# Luca Niccolini

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## EDUCATION

### Ph.D., Computer Engineering

Jan. 2009 - Present

University of Pisa, Italy. Graduation expected: April 2012.

Thesis: *On the Energy Efficiency of Networked Systems*.

### Master of Science, Computer Engineering – Networking and Multimedia

2006 - 2008

### Bachelor of Science, Computer Engineering

2003 - 2006

University of Pisa, Italy. Graduated summa cum laude, top 1%.

Master Thesis: *Energy efficient scheduling of VoIP traffic in IEEE 802.16 wireless networks*.

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## EXPERIENCE

### University of California at Berkeley – Visiting Scholar

July 2011 - Present

- Modeled energy-performance tradeoffs in packet processing applications to study power saving algorithms design space.
- Evaluated the model through experiments in a 10Gbps network with routers and middleboxes running the *RouteBricks* software stack. [<http://routebricks.org>]

### Intel Research Berkeley – Research Intern

Sept. 2010 - Mar. 2011

- Studied energy inefficiencies in enterprise network equipment and designed an algorithm to dynamically choose the optimal number of active cores and their clock speed in a high-speed router.
- Implemented the algorithm in a 10Gbps Click-based software router. Modified the Linux kernel, the Intel *ixgbe* driver and Click to support low-power primitives.
- Improved energy efficiency up to 50% compared to previous implementation, without sacrificing performance.

### Intel Research Berkeley – Research Intern

Sept. 2009 - Dec. 2009

- Designed, deployed and maintained a distributed packet monitoring service for PlanetLab Europe. The service allows PlanetLab Europe users to deploy custom network monitoring modules and guarantees traffic isolation between different applications.
- Developed an optimized version of the *CoMo* open source software for network monitoring. [<http://como.sourceforge.net>]

### University of Pisa – Ph.D. student

- Studied the feasibility of asymmetric multiprocessor servers and their benefits in terms of energy. Implemented performance evaluation of a customized version of the open source Lighttpd Web server on an Intel hardware prototype with a mix of Xeon and Atom processors.

## University of Pisa – Master student

- Developed a base station traffic scheduling algorithm to coalesce per-terminal uplink and downlink communication. Improved by 30% the sleep time of WiMAX mobile terminals, under strict QoS constraints, during active VoIP sessions. Joint work with Nokia Siemens Networks.

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## PUBLICATIONS

### Building a power-proportional software router

L. Niccolini, G. Iannaccone, S. Ratnasamy, J. Chandrashekar, L. Rizzo.  
In USENIX Annual Technical Conference 2012.

### An Energy case for Hybrid Datacenters

B-G. Chun, G. Iannaccone, G. Iannaccone, R. Katz, G. Lee, L. Niccolini.  
In ACM Operating Systems Review, January 2010.

### A passive network monitoring service for PlanetLab Europe

L. Niccolini, G. Iannaccone, G. Iannaccone, A. Lo Duca.  
In the 4th Workshop on Real Overlays and Distributed Systems, ROADS 2009.

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## SKILLS

Proficient in C/C++ and Python.

Experience with Shell Script, Matlab, Java, Hadoop MapReduce, Javascript, SQL and PHP.

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## AWARDS AND CERTIFICATIONS

**Graduated Research Fellowship**, University of Pisa, 2009 - 2011.

**Cisco Networking Academy Program - CCNA certification**, 2006.

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## REFERENCES

### Dr. Gianluca Iannaccone

RedBow Labs - Berkeley.  
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### Prof. Sylvia Ratnasamy

*Electrical Engineering & Computer Science*  
University of California, Berkeley  
sylvia@eecs.berkeley.edu

### Prof. Luigi Rizzo

*Information Engineering Department*  
University of Pisa  
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### Prof. Giuseppe Iannaccone

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