

# VIVEK SHRIVASTAVA

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## EDUCATION

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### **Ph.D., Computer Sciences,**

Advisor: Dr. Suman Banerjee,

Thesis: *Optimizing Enterprise Wireless Networks through Centralization*

University of Wisconsin, June 2004 - December 2010.

### **M.S., Computer Science,**

University of Wisconsin, May 2007.

GPA 3.93/4.0

### **B.Tech., Computer Sciences and Engineering,**

Indian Institute of Technology, May 2004.

Department Rank 2/41, Institute Rank 2/200

## RESEARCH INTERESTS

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Mobile and wireless networking. Protocol/application/algorithm development, measurement and analysis.

## EXPERIENCE

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### **Sep 2010 - Sep 2012,**

Senior Researcher, Nokia Research Center

955 Page Mill Drive, Palo Alto

Worked as part of the Mobile Computer Systems group, focusing on advanced prototyping and development of next generation smart devices.

### **June 2009 - Sep 2009,**

Research Intern, (with Dr. Kang-won Lee), IBM Research

19 Skyline Drive, Hawthorne, NY

Worked on optimizing the performance of data centers using novel virtual machine migration mechanisms.

### **Dec 2004 - Aug 2010,**

Research Assistant, (with Dr. Suman Banerjee), Computer Sciences, UW-Madison

1210 West Dayton Street, Madison, WI

My research work focused on developing efficient and practical spectrum utilization mechanisms, particularly for the unlicensed band. Projects include channel management and power control in 802.11, design and implementation of in-building infrastructure testbeds.

### **June 2008 - Sep 2008,**

Technical Intern, (with Daniel Aguayo), Meraki Inc.

600 Alabama St., San Francisco, CA

Worked on monitoring client performance for Meraki mesh networks (Details are confidential).

### **June 2006 - Aug 2006,**

Research Intern, (with Dr. Tamer Nadeem), Siemens Corporate Research

755 College Road East Princeton, NJ

Worked on load balancing enterprise WLAN using association and power control. Designed the system so that a central controller efficiently assigns the client to suitable access points that provides improved throughput and delay properties.

**May2005 -Aug 2005,**

Software Design Engineer, Windows Fundamental Group, Microsoft  
One Microsoft Way, Redmond, WA

Worked on a prototype implementation CAVE (Compatibility of Applications using Virtual Environments) of application compatibility strategies using virtual machines.

**HONORS**

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Best paper award at Mobicom 2009

Awarded 2009-2010 IBM PhD Fellowship

Third Prize Cisco Network Programming Contest - UW Madison, 2007

First Prize ACM Student Research Competition - Mobicom, 2006

Student Rank One Merit Scholarship 2000-2001

Merit Scholarship - All India Talent Search Competition, 1999

**PATENTS**

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- Network-aware virtual machine migration in Datacenters (Filed with IBM Research. Granted Jul 10, 2012. Application number: 12/833,601 Publication number: US 2012/0011254 A1)
- Method and Apparatus for Utilizing Partially Overlapped Channels (Filed with UW-Madison. Granted Dec 27, 2011. Application number: 11/767,131 Publication number: US 2007/0298721 A1).
- System And Method For Interference Mitigation In Wireless Networks (Filed with UW-Madison. Granted Jul 10, 2012. Application number: 12/555,452 Publication number: US 2010/0080183 A1)
- Methods, Apparatus and Computer Program Products for Enhancing Performance and Controlling Quality of Service of Devices by Using Application Awareness (Filed with Nokia Research)
- Determining direction of wireless devices using clustering of signal strength measurements from directional radios (Filed with Nokia Research)
- Apparatus and Method for Detecting Proximate Devices. (Filed with Nokia Research)
- Method and Apparatus for Determining an Operation to be Executed and Associating the Operation with a Tangible Object (Filed with Nokia Research)
- Share Pen - Automatic Sharing (Filed with Nokia Research)
- Content sharing and group formation using a digital pen (Filed with Nokia Research)
- Share Pen - Automatic State Definition (Filed with Nokia Research)
- Methods and apparatus for creating directional peer-to-peer network consisting of at least one directional device and other legacy devices (Filed with Nokia Research)
- System and Mechanisms for Device-Aware and Tileable Viewport Manipulations and Interactivity (Filed with Nokia Research)

**PUBLICATIONS**

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[1] FLUID: Improving Throughputs in Enterprise Wireless LANs through Flexible Channelization. Shravan Rayanchu, [Vivek Shrivastava](#), Suman Banerjee, and Ranveer Chandra. In Proc. of **ACM Mobicom 2011**.

- [2] PIE in the Sky: Online Passive Interference Estimation for Enterprise WLANs. [Vivek Shrivastava](#), Shравan Rayanchu, Suman Banerjee, and Konstantina Papagiannaki. In Proc. of **USENIX NSDI 2010**.
- [3] CENTAUR: Realizing the Full Potential of Centralized WLANs through a Hybrid Data Path. [Vivek Shrivastava](#), Nabeel Ahmed, Shравan Rayanchu, Suman Banerjee, S. Keshav, Konstantina Papagiannaki, and Arunesh Mishra. In Proc. of **ACM Mobicom 2009**. (**Best paper Award**).
- [4] 802.11n Under the Microscope. [Vivek Shrivastava](#), Shравan Rayanchu, Jongwoon Yoonj, Suman Banerjee. In Proc. **ACM/USENIX Internet Measurement Conference 2008**.
- [5] A Measurement Study of a Commercial-grade Urban WiFi Mesh. Vladimir Brik, Shравan Rayanchu, Sharad Saha, Sayandeep Sen, [Vivek Shrivastava](#), Suman Banerjee. In Proc. **ACM/USENIX Internet Measurement Conference 2008**.
- [6] Understanding the Limitations of Transmit Power Control for Indoor WLANs. [Vivek Shrivastava](#), Dheeraj Agrawal, Arunesh Mishra, Suman Banerjee, Tamer Nadeem. In Proc. **ACM/USENIX Internet Measurement Conference 2007**.
- [7] Interference Mitigation in WLANs with Speculative Scheduling (short paper). Nabeel Ahmed, [Vivek Shrivastava](#), Arunesh Mishra, Suman Banerjee, Srinivasan Keshav, Dina Papagiannaki. In Proc. of **ACM Mobicom 2007**.
- [8] Towards an Architecture for Efficient Spectrum Slicing. Suman Banerjee, Arunesh Mishra, Vladimir Brik, [Vivek Shrivastava](#), and Victor Bahl. In Proc. of **IEEE HotMobile, 2007**
- [9] Load Balancing Large Scale RFID Systems. Quenfeng Dong, Ashutosh Shukla, Vivek Shrivastava, Dheeraj Agrawal, Suman Banerjee and Kaushik Kar. In Proc. of **IEEE Infocom Minisymposium, 2007**
- [10] On the (In)feasibility of Fine Grained Power Control. [Vivek Shrivastava](#), Dheeraj Agrawal, Arunesh Mishra, Suman Banerjee, and Tamer Nadeem. **ACM Mobicom SRC, September 2006 (First Prize in Student Research Competition)**
- [11] Distributed Channel Management in Uncoordinated Wireless Environments. Arunesh Mishra, [Vivek Shrivastava](#), Dheeraj Agrawal and Suman Banerjee. In Proc. of **ACM Mobicom, 2006**.
- [12] Partially Overlapped Channels Not Considered Harmful. Arunesh Mishra, [Vivek Shrivastava](#), Suman Banerjee and William Arbaugh. In Proc. of **ACM Sigmetrics, 2006**.
- [13] Natural Selection in Peer-to-Peer Streaming: From the Cathedral to the Bazaar. Vivek Shrivastava and Suman Banerjee. In Proc. of **ACM Nossdav 2005**.
- [14] Phase-based adaptive branch predictor: Seeing the forest for the trees. Karthik Jayaraman, [Vivek Shrivastava](#), Brian Pellin, Martin Hock, Mikko H. Lipasti. In Proc. of **IEEE HPCA Workshop on Introspective Architecture, 2005**

## SELECT PROJECTS

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- Transformer Meego device for high productivity (at Nokia Research, Palo Alto)
- Cross Device Awareness (at Nokia Research, Palo Alto)
- Cross Operating System Architecture (at Nokia Research, Palo Alto)
- Context Aware Virtual Machine Migration in Datacenters (at IBM Research, Hawthorne)
- Centralized Hybrid Scheduling in Enterprise Wireless LANs (at University of Wisconsin-Madison)

- Passive, Online Conflict Graph Generation for Large-scale Enterprise Wireless LANs (at University of Wisconsin-Madison)
- Measurement-driven Power Control in Indoor Wireless LANs (at University of Wisconsin-Madison)

## REFERENCES

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Available upon request.