

Vasuki Narasimha Swamy

University of California, Berkeley

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EDUCATION	University of California, Berkeley <i>PhD candidate in Electrical Engineering and Computer Sciences</i> Advisor: Anant Sahai Areas of interest: Wireless communication for critical control systems, Internet of Things	Aug '12 - present	
	University of California, Berkeley <i>Master of Science (MS) in Electrical Engineering and Computer Sciences</i> Advisor: Kannan Ramchandran Thesis: Low-Complexity Interactive Algorithms for Synchronization from Deletion, Insertions, and Substitutions	Aug '12 - Dec '15	
	Indian Institute of Technology Madras, Chennai <i>Bachelor of Technology in Electrical Engineering, Minor in Operations Research</i>	July '08 - May '12	
SCHOLASTIC ACHIEVEMENTS	<ul style="list-style-type: none">• Microsoft Research Dissertation Grant 2017 - 2018• Outstanding Course Development and Teaching Award 2015 - 2016 at UC Berkeley• Prestigious <i>Berkeley Graduate Fellowship</i> from Fall 2012 to Spring 2014• <i>Gold Medalist</i> in Indian National Chemistry Olympiad (2008)• <i>Aditya Birla Group Scholarship 2008</i> for securing an <i>All India Rank 14 (Rank 1 among women)</i> in IIT Joint Entrance Exam (IIT-JEE) 2008 out of 320,000 students• <i>OP Jindal Engineering and Management Scholarship 2009</i>• <i>CBSE merit scholarship</i> for securing an <i>All India Rank 5</i> and <i>State Rank 1</i> in All India Engineering Entrance Examination (AIEEE) 2008 out of 800,000 students		
INTERNSHIPS	Microsoft Research - Redmond, WA USA <i>Mentors: Ranveer Chandra, Gireeja Ranade and Anirudh Badam</i> <ul style="list-style-type: none">• Designed low-cost long-term aerial imagery system with lighter-than-air gas filled balloon system which includes novel path planning algorithm and vision technique for reconstruction of imagery• Provisional patent application 400838-US-NP "<i>Low-cost, Long-term Aerial Imagery</i>"• Provisional patent application 400837-US-NP "<i>Aerial Imaging of a Region using Helium-filled Balloons</i>"	May '16 - Aug '16	
	Qualcomm Flarion Technologies Inc - NJ, USA <i>Mentor: Jubin Jose</i> <ul style="list-style-type: none">• Worked on designing algorithms for accurate indoor positioning, focussing mainly on using measurement engine for estimating the angle between two devices• Patent US9445237 B1 "<i>First Arrival Path based Multipath Mitigation for Angle-of-Arrival Estimation</i>"	May '14 - Aug '14	
	Accord Software and Systems - Bangalore, India <i>Mentor: Rakesh M Nayak</i> <ul style="list-style-type: none">• Developed and simulated algorithms for tracking GPS satellites and acquisition of satellite data and compared various coding schemes for GPS signals• Results were used for choosing the coding technique for Indian Remote Navigation Satellite System (IRNSS) developed by Indian Space Research Organization (ISRO)	May '10 - July '10	
TEACHING EXPERIENCE	Summer 2017: Course instructor for the first summer offering of " <i>EECS 16A: Designing Information Devices and Systems</i> ". Spring 2015: Teaching assistant for the pilot offering of " <i>EECS 16A: Designing Information Devices and Systems</i> ". Work included content creation, holding discussion sections, setting up labs, grading and backend management. Fall 2014: Teaching assistant for " <i>EECS 70: Discrete math and probability</i> ". Work included content creation, holding discussion sections, conducting oral exams and grading.		

RESEARCH
EXPERIENCE

Graduate Student Researcher - Berkeley, CA, USA

Oct '13 - present

Guide: Anant Sahai, UC Berkeley

- Currently working on testing the infrastructure on software defined radios
- Designed wireless communication protocol framework for high-performance control applications
- Main result so far: Multi-user diversity can get us the desired reliability without relying on time or frequency diversity created by natural multipath or frequency selectivity

Graduate Student Researcher - Berkeley, CA, USA

Jan '13 - Oct '13

Guides: Kannan Ramchandran, UC Berkeley, Ramji Venkataramanan, University of Cambridge, UK

- Developed and implemented fast algorithms to synchronize two remotely located files
- Compared performance with RSYNC and showed substantial improvement over it

Undergraduate Student Researcher - Chennai, India

May '11 - July '12

Guides: Pramod Viswanath, UIUC, IL, USA; Rajesh Sundaresan, IISC, Bangalore, India; Srikrishna Bhashyam, IIT Madras, Chennai, India

- Optimized throughput of various kinds of large networks where information was to be broadcasted, devised an optimal routing strategy
- Proved that simple routing of information was sufficient and there was no need to deploy smart nodes (i.e., network coding gave no advantage)

PUBLICATIONS

- **Vasuki Narasimha Swamy**, Sahaana Suri, Paul Rigge, Matthew Wiener, Gireeja Ranade, Anant Sahai, Borivoje Nikolic, "Real-time Cooperative Communication for Automation over Wireless", to appear in *IEEE Transactions of Wireless Communication*
- Leah Dickstein **Vasuki Narasimha Swamy**, Gireeja Ranade, Anant Sahai "Finite Block Length Coding for Low-latency High-Reliability Wireless Communication", *IEEE 54th Allerton Conference on Communication, Control, and Computing, Moticello, IL, USA*
- **Vasuki Narasimha Swamy**, Gireeja Ranade, Anant Sahai "Robustness Of Cooperative Communication Schemes To Channel Models", *IEEE International Symposium on Information Theory 2016, Barcelona, Spain*
- **Vasuki Narasimha Swamy**, Paul Rigge, Gireeja Ranade, Anant Sahai, Borivoje Nikolic, "Network Coding for High-Reliability Low-Latency Wireless Control", *IEEE Wireless Communications and Networking Conference 2016, Doha, Qatar*
- **Vasuki Narasimha Swamy**, Sahaana Suri, Paul Rigge, Matthew Wiener, Gireeja Ranade, Anant Sahai, Borivoje Nikolic, "Cooperative Communication for High-Reliability Low-Latency Wireless Control", *IEEE International Conference on Communications 2015, London, UK*
- Ramji Venkataramanan, **Vasuki Narasimha Swamy**, Kannan Ramchandran, "Low-Complexity Interactive Algorithms for Synchronization from Deletions, Insertions, and Substitutions", *IEEE Transactions on Information Theory, Vol 61, No. 10, October 2015*
- **Vasuki Narasimha Swamy**, Rajesh Sundaresan, Pramod Viswanath, Srikrishna Bhashyam, "An asymptotically optimal push-pull method for multicasting over a random network", *IEEE Transactions on Information Theory, Vol. 59, No. 8, August 2013*
- Ramji Venkataramanan, **Vasuki Narasimha Swamy**, Kannan Ramchandran, "Efficient Interactive Algorithms for File Synchronization under General Edits", *IEEE 51st Allerton Conference on Communication, Control, and Computing, Moticello, IL, USA*
- **Vasuki Narasimha Swamy**, Rajesh Sundaresan, Pramod Viswanath, "An asymptotically optimal push-pull method for multicasting over a random network", *2012 IEEE International Symposium on Information Theory, Cambridge, MA, USA*

LEADERSHIP
EXPERIENCE

- Co-founder of BiasBuster @ Cal which aims at creating awareness about unconscious bias at workspace and improving the climate at UC Berkeley
- Chair of Industrial Liaison Committee 2013 - 2015 at Dept of EECS, UC Berkeley