

Dr. Vasuki Narasimha Swamy

University of California, Berkeley

CONTACT INFORMATION	vasuki@berkeley.edu	LinkedIn: vasukinarasimhaswamy	www.eecs.berkeley.edu/~vasuki/
RESEARCH INTERESTS	System Design, Wireless Communications, Networks, Machine Learning, Optimization, Signal Processing, Algorithms, Information and Coding Theory		
EDUCATION	University of California, Berkeley		Aug '12 - Aug '18
	<i>Doctorate of Philosophy (Ph.D.) in Electrical Engineering and Computer Sciences</i>		
	Advisor: Anant Sahai		
	Thesis: Real-Time Ultra-Reliable Wireless Communication: Enabling Future Interactive Tech		
	University of California, Berkeley		Aug '12 - Dec '15
	<i>Master of Science (M.S.) in Electrical Engineering and Computer Sciences</i>		
	Advisor: Kannan Ramchandran		
	Thesis: Low-Complexity Interactive Algorithms for Synchronization from Deletion, Insertions, and Substitutions		
	Indian Institute of Technology Madras, Chennai		July '08 - May '12
	<i>Bachelor of Technology in Electrical Engineering, Minor in Operations Research</i>		
SCHOLASTIC ACHIEVEMENTS	<ul style="list-style-type: none">• EECS Distinguished Graduate Student Instructor Award, UC Berkeley 2017 - 2018• Prestigious <i>Microsoft Research Dissertation Grant</i> 2017 - 2018• Winner of <i>Microsoft Hackathon Oneweek 2016</i> in the Industries Category• 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>All India Rank 14</i> in IIT Joint Entrance Exam (IIT-JEE) 2008 out of 320,000 students• <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• <i>Engineering Rank 1</i> in Karnataka Common Entrance Test (CET) 2008 out of 120,000 students		
TEACHING EXPERIENCE	Lecturer, EECS 16A: Designing Information Devices and Systems		Summer '17
	Head TA, EECS 16A: Designing Information Devices and Systems (pilot offering)		Spring '15
	Teaching assistant, EECS 70: Discrete Math and Probability Theory		Fall '14
INTERNSHIPS	Microsoft Research - Redmond, WA USA		May '16 - Aug '16
	<i>Mentors: Ranveer Chandra, Gireeja Ranade, Anirudh Badam and Sudipta Sinha</i>		
	<ul style="list-style-type: none">• Designed low-cost long-term aerial imagery system with lighter-than-air gas filled balloon system• Designed novel path planning algorithm, vision and machine learning techniques for reconstruction of imagery and information extraction		
	Qualcomm Flarion Technologies Inc - NJ, USA		May '14 - Aug '14
	<i>Mentors: Venkatesan Ekambaram, Jubin Jose and Xinzhou Wu</i>		
	<ul style="list-style-type: none">• Worked on designing algorithms for accurate indoor positioning, focussing mainly on estimating the angle between two devices• Designed algorithms to identify and extract the first-arrival signal path to mitigate multipath effects		
	Accord Software and Systems - Bangalore, India		May '10 - July '10
	<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)		

RESEARCH
EXPERIENCE

Graduate Student Researcher - Berkeley, CA, USA

Oct '13 - present

Guide: Anant Sahai, UC Berkeley

- Designed wireless communication protocol framework for high-performance control applications using multi-user diversity and machine learning
- Currently working on testing the infrastructure on software defined radios

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)

PATENTS

- US9445237 B1 “*First Arrival Path based Multipath Mitigation for Angle-of-Arrival Estimation*”
- Provisional patent application 400838-US-NP “*Low-cost, Long-term Aerial Imagery*”
- Provisional patent application 400837-US-NP “*Aerial Imaging of a Region using Helium-filled Balloons*”

SELECTED
PUBLICATIONS

- **Vasuki Narasimha Swamy**, Paul Rigge, Gireeja Ranade, Borivoje Nikolic, Anant Sahai, “Wireless Channel Dynamics and Robustness for Ultra-Reliable Low-Latency Communications”, submitted to *IEEE JSAC Special Issue on Ultra-Reliable Low-Latency Communications in Wireless Networks*
- **Vasuki Narasimha Swamy**, Sahaana Suri, Paul Rigge, Matthew Wiener, Gireeja Ranade, Anant Sahai, Borivoje Nikolic, “Real-time Cooperative Communication for Automation over Wireless”, *IEEE Transactions of Wireless Communication, Vol. 16, No. 11, November 2017*
- 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*
- **Vasuki Narasimha Swamy**, Paul Rigge, Gireeja Ranade, Borivoje Nikolic, Anant Sahai, “Predicting Wireless Channels for Ultra-Reliable Low-Latency Communications”, *IEEE International Symposium on Information Theory 2018, Vail, CO, USA*
- 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**, 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*
- **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 BiasBusters @ Cal which aims at creating awareness about unconscious bias at workspace and improving the climate at UC Berkeley (based on Google’s BiasBusting @ Work)
- Chair of Industrial Liaison Committee 2013 - 2015 at Dept of EECS, UC Berkeley