Vinay J. Ribeiro

Professor, Dept. of Computer Science and Engg.
I.I.T. Bombay, Powai, Mumbai 400076, India
www.cse.iitb.ac.in/~vinayr
vinayr@iitb.ac.in, +91-9899-284-712

Education

Rice University
Ph.D. (2005) and **M.S.** (1999) in Electrical and Computer Engineering

Indian Institute of Technology, Madras
B.Tech. in Electrical Engineering (1997)

Honors and Awards

Awarded "Department Award for Excellence in Teaching" from Department of Computer Science and Engineering 2024.

Awarded Sridhar Shukla Chair Associate Professor in Digital Trust (2023-26)

Awarded Microsoft Outstanding Young Faculty Fellowship, I.I.T. Delhi (2008-12)

Awarded best student paper prize at the Passive and Active Internet Measurement Workshop (2003); paper now has over **1,200 citations**

Elected member of Eta Kappa Nu, the honor society of IEEE (1998)

Awarded Texas Instruments fellowship, Rice University (1997)

Research Experience

Indian Institute of Technology, Bombay

Professor, Department of Computer Science & Engineering (2023-present)
Blockchain, Computer and Network Security.
Associate Professor, Department of Computer Science & Engineering (2019-2023)
Blockchain, Computer and Network Security.

Indian Institute of Technology, Delhi

Associate Professor, Department of Computer Science & Engineering (2014-2019)
Assistant Professor, Department of Computer Science & Engineering (2006-2014)
Blockchain, Computer and Network Security, Cognitive radio, 4G-LTE, Wi-Fi, wireless mesh, ad hoc, Internet of Things (IoT), indoor navigation, mobile applications.

Rice University, Texas

Post-Doctoral Research Associate (2005-2006)
Design and analysis of wireless networks.

Research Assistant (1997-2005)

Developed novel multiscale queuing theory, designed efficient chirp probing tools for available bandwidth estimation of network paths and congestion hot-spot localization, invented fast algorithms for optimal sampling, developed multifractal models for network traffic.

Bell Labs India, Bangalore

Summer Visiting Researcher (2009)
Design of programmable wireless mesh network.

AT&T Shannon Labs, New Jersey

Summer Intern (2001)
Implemented a new measurement technique called "trajectory sampling" in the SSFNET network simulator. Trajectory sampling allows efficient network-wide packet measurements.

Summer Intern (1999)
Analyzed TCP traffic dynamics and its impact on queuing.

Sprint Advanced Technology Labs, California

Research Intern (2001)
Performed an extensive multiscale analysis of Internet backbone traces.

Institut Mittag-Leffler, Stockholm

Research Fellow (2004)
Participated in a semester-long seminar on "Queuing Theory and Teletraffic Theory" at Institut Mittag-Leffler in Stockholm, Sweden.

Indian Institute of Technology, Madras

Undergraduate Research (1996-97)
Design and implementation of a remote packet switch and cordless electronic exchange.

Course Curriculum Development

Wireless Networks (CSL838 at IIT Delhi)

Introduction to Blockchains, Cryptocurrency, and Smart Contracts (SIL763 at IIT Delhi, CS765 at IIT Bombay)

Advanced Blockchain Technologies (CS762 at IIT Bombay)

All India Council for Technical Education (AICTE) model curriculum for course "Computer Networks"

Effective teaching of Computer Networks (CSEDU Certificate program for Computer Science Teachers, supported by ACM India)

Sponsored Research Projects

MEGA-ACE: Multidisciplinary Educational Global Alliance for Algorand Center of Excellence: Blockchain research and education consortium of multiple institutions spread across 5 continents. Sponsored by Algorand Foundation.
Investigators: Prof. Manoj Prabhakaran, Prof. Umesh Bellur, Prof. Vinay J. Ribeiro (IIT Bombay)
Funding Agency: Algorand Foundation (USA)

Date: Jul. 2022 - Jul. 2025
Budget: USD 3,49,408 (approx. Rs. 2.76 Cr.)

Joint Research between IDRBT and IIT Bombay: IDRBT wishes to sponsor some MTech/MS and PhD students in CSE to be jointly guided by faculty from CSE and IDRBT.
Investigators: Head of Department (CSE) (PI), Co-PIs: Prof. Vinay J. Ribeiro, Prof. Shivaram Kalyanakrishnan.
Funding Agency: Institute for Development and Research in Banking Technology (IDRBT)
Date: 31-3-2022 to 30-3-2027
Budget: Rs. 55 lakh

Latency Sensitive Blockchain Networks: This project investigates providing incentives for ensuring low-latency in blockchain networks.
Funding Agency: Trust Lab (IIT Bombay)
Investigators: Vinay J. Ribeiro (PI), Devashish Gosain (co-PI)
Date: 28-07-2022 to 31-12-2045
Budget: Rs. 15 lakhs

Structured Sharing of Networks and Computer Resources in a Community of Devices: Design and development of middleware for device-to-device (D2D) networking for sharing network and compute resources.
Investigators: Prof. H. Saran, Dr. Vinay J. Ribeiro, Dr. S. Sarangi (IIT Delhi)
Funding Agency: Intel Labs University research Office (URO) (USA)
Date: July 2013 - Dec. 2017
Budget: Rs. 1,22,67,582

Algorithms, Protocols and Simulator development for WLAN Optimizations and Internet of Things (IoT): Development of latest Wi-Fi protocols in ns3 simulator and development of bluetooth IoT framework.
Investigators: Dr. V. Ribeiro, Prof. H. Saran (IIT Delhi)
Funding Agency: Cambridge Silicon Radio (India) Pvt. Ltd.
Date: Sept. 2014 - Sept. 2015
Budget: Rs. 12,24,000

TV white Space Trails: Performance evaluation of make-in-India TV white space products.
Investigators: Dr. V. Ribeiro, Prof. H. Saran (IIT Delhi)
Funding Agency: Ministry of Communications & Information Technology, Govt. of India
Date: Apr. 2015 - July 2016
Budget: Rs. 15,80,000

SPARC: SPectrum-Aware Rural Connectivity: Specific objectives of the project are: (i) designing a low-cost spectrum-aware wireless mesh network for long-distance rural backhaul, (ii) developing high-performance but low-cost software defined radio prototypes for the sub-GHz band, (iii) devising new protocols that follow "spectrum etiquette" between devices using potentially different wireless standards, (iv) characterizing spectrum usage and determining optimal allowed transmit power for secondary users in the rural Indian context, and finally, (v) integration of this research on IIT campus testbeds, with a proof of concept demonstration in Indian rural locations.
Investigators: Dr. V. Ribeiro, Dr. Manish Sharma, Prof. H. Saran (IIT Delhi), Dr. K. Chebrolu (IIT Bombay), Dr. B. Raman (IIT Bombay)
Funding Agency: Department of Information Technology, Govt. of India

Date: Mar. 2012 - Aug. 2014
Budget: Rs. 1,67,44,000

LTE Performance Evaluation and Application Development: Performance of small-cell (pico, femto) LTE technology and development of context based applications.
Investigators: Prof. H. Saran, and Dr. V. Ribeiro
Funding Agency: CISCO
Date: Mar. 2012 - Mar. 2016
Budget: Rs. 55,08,000

Design and development of a rapidly deployable Wimax mesh network: This builds a high-performance wireless mesh network to support triple-play services in scenarios where communication infrastructure does not exist such as in military or disaster management.
Investigators: Prof. Huzur Saran, Dr. Vinay Ribeiro, Dr. Kolin Paul, Prof. B. N. Jain
Funding Agency: Department of Information Technology, Govt. of India
Date: Dec. 2008 — June 2012
Budget: Rs. 97,00,000

Design and Implementation of Content Distribution Architecture for Rural and Remote Areas: This project develops the network and application layer protocols for content distribution in Rural areas. This is an Indo-Australia joint project.
Investigators: Dr. A. Seth, Dr. V. Ribeiro, and Prof. H. Saran
Funding Agency: Department of Science and Technology, Govt. of India
Date: Jan. 2011 — Dec. 2013
Budget: Rs. 24,50,000

Cross-layer protocols for enhanced quality of user experience in broadband wireless networks: This project aims to improve resource usage in broadband wireless networks through cross-layer mechanisms.
Investigators: Dr. Swades De, Dr. V. Ribeiro, and Prof. H. M. Gupta
Funding Agency: Department of Science and Technology, Govt. of India
Date: Mar. 2011 — Mar. 2014
Budget: Rs. 41,00,000

Medium Access Layer Scheduling in IEEE 802.11 and IEEE 802.16 Wireless Networks: This project studies performance of OLPC mesh networks and WiMAX point-to-multipoint scheduling schemes.
Investigators: Dr. V. Ribeiro, and Prof. H. Saran
Funding Agency: Marvell India Pvt. Ltd.
Date: Aug. 2008 — Dec. 2012
Budget: Rs. 24,00,000

Managing Secured Documents: Certain documents such as birth certificates must last a lifetime. This project studies how to secure electronic forms of such documents for extended periods of time. We also develop a degree certificate generation and authentication system.
Investigators: Prof. B. N. Jain, and Dr. V. Ribeiro
Funding Agency: National Institute for Smart Government, Govt. of India
Date: June 2007 – Sept. 2011
Budget: Rs. 9,60,000

Production of High Value Therapeutic Proteins using Pichia System: We develop low-cost therapeutic proteins on a large scale using Pichia systems. We envision to use wireless technologies for communication in the control loop of the experiment.
Investigators: Prof. S. Mishra, Dr. V. Sahai, Prof. A. K. Srivastava, Dr. A. Rathore, Dr. J. Gomes, Dr. V. Ribeiro
Funding Agency: Industrial Research and Development Unit, I.I.T. Delhi
Date: Apr. 2011 – Mar. 2016
Budget: Rs. 1,00,00,000

India -UK advanced technology centre (IU-ATC Phase - 2) of excellence in Next generation networks systems and service Indo-UK collaborative project between multiple institutions. Our project involved developing an emergency warning system for Heterogeneous environments.
Investigators: Prof. Subrat Kar, Prof. H. Saran, Dr. Vinay J. Ribeiro
Funding Agency: Department of Science and Technology
Date: Nov. 2012 – Oct. 2015
Budget: Rs. 25,49,000

Tracking human motion via sensor fusion We develop new algorithms for tracking human motion on a real-time basis by fusing data obtained from wireless signals (WiFi, cellular etc.), GPS and inertial sensors.
Investigators: Dr. Vinay J. Ribeiro, Prof. Huzur Saran
Funding Agency: Cambridge Silicon Radio (India) Pvt. Ltd.
Date: Apr. 2013 – Apr. 2014
Budget: Rs. 12,24,000

LTE Performance Evaluation and Application Development-II: Performance of small-cell (pico, femto) LTE technology and development of context based applications.
Investigators: Prof. H. Saran, and Dr. V. Ribeiro
Funding Agency: CISCO
Date: Jun. 2013 - Apr. 2016
Budget: Rs. 19,80,000

Consultancy Projects

Expert report on violation of Blackberry SDK terms and conditions
Investigators: Prof. R. K. Mallik, Dr. Vinay J. Ribeiro
Date: Sept. 2011 - Dec. 2011
Budget: Rs. 10,00,000

Implementation of system architecture of Visible Light Communication-PAN to facilitate multi-user access and mobility
Investigators: Dr. Brejesh Lall, Dr. V. J. Ribeiro
Date: Sept. 2017 - Aug. 2018
Budget: Rs. 17, 40, 000

Query with respect to the technology used for transmission of the channel through IPTV is same/similar to the technology used for transmission of the channel through OTT Platforms
Investigators: Dr. V. J. Ribeiro
Date: Aug. 2017 - Oct. 2017
Budget: Rs. 3,08,774

Opinion on viewing cards used in IRD/Set Top Box
Investigators: Prof. Umesh Bellur, Dr. V. J. Ribeiro
Date: Mar. 2019 - Apr. 2019
Budget: Rs. 4,24,000

Patents

Himanshu Nayar, Vinay J. Ribeiro, Ranjan K. Mallik, **Tunable peak-to-average power ratio frequency division multiplexing** (**US10193728B2**, Date of patent: January 29, 2019)

Umesh Bellur, Nitin Awathare, Sourav Das, Vinay J. Ribeiro, **Method for scaling computation in blockchain by delaying transaction execution** (**US11423016B2** Date of Patent: August 23, 2022; Application No: EP3767514A1, IN201921025326, Priority Date: June 26 2019)

Siddharth Nimeshbhai MAURYA, Vinay Joseph Ribeiro, Umesh Rama Rao BELLUR, **Methods and systems for formation and termination of payment channel between distinct ledgers** (**US20240378600A1** Application Date: 2024-03-07) (India Patent No (granted): 558447, Date: 22/1/2025)

Vinay J. Ribeiro, Ovia Seshadri, **Method in blockchain systems for fast stabilization and increased responsiveness** (Application No: WO2020161530A1, US20220108313A1, **India Patent No : 556654; Filing Date February 7, 2019; Grant Date: 20/12/2024** , Priority date: February 7, 2019)

Vinay J. Ribeiro, Ovia Seshadri, **Method in blockchain systems for fast stabilization and increased responsiveness using links** (**India patent number 525001**, Date of Grant: 14/3/2024; Priority date: June 15, 2019)

Synergistic Activities

Chair Positions

Technical Program Committee chair COMSNETS 2023, Workshop Chair (Blockchain Workshop) at COMSNETS 2019, Finance Chair MOBICOM 2018, Publications Chair IEEE NCC 2013, Student Travel Grant Chair for MOBIHOC 2013, Local Arrangements Chair for ACM SIGCOMM, New Delhi, Aug. 2010. Local Arrangements Chair for IEEE ANTS, New Delhi, Dec. 2009, Organizing Committee for Indo-US workshop on Pervasive Computing, March 2011.

TPC member

ICISS 2025, AsiaCCS 2026, USENIX ATC 2024, ICBC 2024/2023, ICDCS 2023, ACM SIGMETRICS 2026/2025/2024/2023/2022, COMSNETS 2023/2021/2019/2017/2014/2013/2012, MOBICOM 2013, NCC 2024/2018/2017/2016, IEEE CORAL 2016, WNM 2016, MASCOTS 2023/2013, INFOCOM-WiP'10 (work-in-progress) session, IEEE ANTS 2008, IEEE WISARD 2009/2010/2011, IEEE Globecom 2009, IEEE TENCON 2008, ADCOM 2007 and IEEE Statistical Signal Processing (SSP) 2007, BW3 Blockchain Workshop 2019.

Reviewer (Journals)

IEEE Transaction on Network and Service Management, Journal of Network and Computer Applications (JNCA), IEEE Journal of Selected Areas in Communication (JSAC), IEEE Transactions on Mobile Computing, IEEE Transactions on Networking, IEEE Transactions on Wireless Communications, IEEE Transactions on Management Information Systems, ACM Computing Surveys, CSI Transactions on ICT

National-level Curriculum Development

Developed curriculum for AICTE course "Computer Networks"

Chairman Cyber Security Committee of Multi Commodity Exchange Clearing Corporation Ltd. (MCXCCL) (2020-2023)

The committee advises MCXCCL on issues related to cyber security

Conference Publications

[1] Kirti Singh, Vinay J. Ribeiro, and Susmita Mandal, "4-Swap: Achieving Grief-Free and Bribery-Safe Atomic Swaps Using Four Transactions", *Advances in Financial Technologies (AFT 2025).*

[2] Kirti Singh, Vinay J. Ribeiro, Susmita Mandal, "Flexiswap: A Cross-Chain Decentralized Exchange Protocol", *COMSNETS 2025.*

[3] Siddharth Maurya, Nitin Awathare, Vinay Joseph Ribeiro and Umesh Bellur, "Tombolo: Towards a Decentralized Interconnected Blockchain Ecosystem using Cross-Chain Payment Channels", *ICDCS 2025.*

[4] Saksham Agrawal and Vinay J. Ribeiro, "Timelock Shield: A Robust Defense Against MEV and Censorship Attacks in Blockchain", Cryptovalley Conference 2025

[5] Shubham Anand Jain, Rohan Shah, Sanit Gupta, Denil Mehta, Inderjeet J Nair, Jian Vora, Sushil Khyalia, Sourav Das, Vinay J Ribeiro, Shivaram Kalyanakrishnan, "PAC Mode Estimation using PPR Martingale Confidence Sequences", *AISTATS 2022.*

[6] Sourav Das, Nitin Awathare, Ling Ren, Vinay J. Ribeiro, Umesh Bellur, "Tuxedo: Maximizing Smart Contract computation in PoW Blockchains," *ACM SIGMETRICS 2022* and *Proceedings of the ACM on Measurement and Analysis of Computing System, 5(3), Dec. 2021.*

[7] Ovia Seshadri, Vinay J. Ribeiro, Shadab Zafar, "Securely Improving Stability and Performance of PoW Blockchains Using Anchors," *COMSNETS 2022.*

[8] Ovia Seshadri, Vinay J. Ribeiro, Aditya Kumar, "Securely Boosting Chain Growth and Confirmation Speed in PoW Blockchains," *IEEE Blockchain 2021.*

[9] Nitin Awathare, Suraj, Akash, Vinay J. Ribeiro, Umesh Bellur, "REBAL : Channel Balancing for Payment Channel Networks," *MASCOTS 2021.*

[10] Himanshu Gandhi, Misha Mehra, Vinay J. Ribeiro, "BOND: Efficient and Frugal DL Model Co-design for Botnet detection on IoT Gateways," *AIML Systems 2021.*

[11] Nitin Awathare, Sourav Das, Vinay J. Ribeiro, Umesh Bellur, "RENOIR: Accelerating Blockchain Validation using State Caching," *ICPE 2021.*

[12] Misha Mehra, Jay N. Paranjape, Vinay J. Ribeiro, "Improving ML Detection of IoT Botnets using Comprehensive Data and Feature Sets," *COMSNETS 2021.*

[13] Saurav Das, Vinay J. Ribeiro, Abhijeet Anand, "YODA: Enabling computationally intensive contracts on blockchains with Byzantine and Selfish nodes", *NDSS 2019.*

[14] Saiyed Kashif Shaukat, Vinay J. Ribeiro, "RansomWall: A Layered Defense System against Cryptographic Ransomware Attacks using Machine Learning", *COMSNETS 2018.*

[15] Aditya Ahuja, Vinay J. Ribeiro, Ranveer Chandra, and Amit Kumar, "SpectraMap: Efficiently Constructing a Spatio-Temporal RF Spectrum Occupancy Map," *COMSNETS 2017*, (invited paper), LNCS, volume 10340.

[16] Divyansh Singh, Veerendra Singh, Aniesh Chawla, Somit Pangtey and Vinay J. Ribeiro, "UDA: Fast Transport Protocol for D2D Networks over WiFi," *NCC 2017*, I.I.T. Madras, Chennai, 2017.

[17] Gareth Tyson, John Bigham, Eliane L Bodanese, Nadeem Akhtar, Pradipta Biswas, Pat Langdon, Vineet Mimrot, Pratyay Mukhopadhyay and Vinay Ribeiro, "Designing an Adaptive Emergency Warning System for Heterogeneous Environments," *PIMRC*, Valencia Spain, 2016.

[18] Nihal Srivastava, Gaurav Singh, Vinay Ribeiro, Huzur Saran, Suresh Gupta,"CoSEL: Control-plane Only Scalable Efficient and Lightweight SDN Debugger," *NCC 2016*, IIT Guwahati.

[19] Amitabha Bagchi, Francesco Betti Sorbelli, Cristina Maria Pinotti and Vinay Ribeiro, "Connectivity of a Dense Mesh of Randomly Oriented Directional Antennas under a Realistic Fading Model," *ALGOSENSORS*, Patras Greece, 2015.

[20] P. Mazumdar, V. J. Ribeiro, S. Tewari, "Generating Indoor Maps by Crowdsourcing Positioning Data From Smartphones," *IPIN*, Korea, 2014.

[21] P. Biswas, P. Langdo, S. Sarangi, V. Mimrot, S. Kar, V. J. Ribeiro, J. Umadikar, S. Prashant, "Interface Personalization through Inclusive User Modelling Web Service," *Interaccion*, Spain, 2014.

[22] Nitin Rakheja, Prerna Bhatia, Vishal Sevani, Vinay J. Ribeiro,"ROSALNet: A Spectrum Aware TDMA Mesh Network for Rural Internet Connectivity," *National Conference on Communications*, Kanpur, 2014.

[23] K. S. Mahajan, D. Agarwal, V. J. Ribeiro, "QoS Aware Overlay MAC Layer for Coexistence of Heterogeneous Networks over White Spaces," *COMSNETS*, Bangalore, 2014.

[24] S. Mundra, V. J. Ribeiro, "Throughput improvement of IEEE 802.11 using adaptive slot size," *COMSNETS*, Bangalore, 2014.

[25] S. Shrivastava, V. J. Ribeiro, "Overhearing packet transmissions to reduce preamble overhead and improve throughput in IEEE 802.11 networks," *COMSNETS*, Bangalore, 2014.

[26] Z. Koradia, G. Aggarwal, V. J. Ribeiro, A. Seth, S. Ardon, A. Mahanti, S. Triukose, "First Impressions on the State of Cellular Data Connectivity in India," *ACM DEV*, Cape Town, 2013.

[27] P. Kumar, N. Rakheja, A. Saraswat, H. Varshney, P. Bhatia, S. G. Redddy, V. J. Ribeiro, M. Sharma, "White space detection and spectrum characterization in urban and rural India", *CORAL*, Madrid, 2013.

[28] E. Nanda, U. Joshi, V. J. Ribeiro, H. Saran, "RODMAC : A RObust and Distributed MAC Protocol for Efficient Use of White Spaces," *COMSNETS*, Bangalore, 2013.

[29] V. M. Swarup, A. Gupta, V. J. Ribeiro, "A Comparative Study of Scheduling Schemes for Cognitive Radio Networks: A Quality of Service Perspective," *COMSNETS*, Bangalore, 2013.

[30] A. Chawla, V. Yadav, V. D. Sharma, J. Bajaj, E. Nanda, V. Ribeiro, H. Saran, "RODEO: Robust and Rapidly Deployable TDM Mesh with QoS Differentiation," *WISARD*, Bangalore, 2012.

[31] P. Goyal, V. J. Ribeiro, H. Saran, A. Kumar, "Strap-Down Pedestrian Dead-Reckoning System," *IPIN*, Guimaraes, 2011.

[32] H. Gupta, V. J. Ribeiro, A. Mahanti, "A case for roubst semi-experiments", *MASCOTS*, Miami, 2010.

[33] H. Gupta, V. J. Ribeiro, A. Mahanti, "A longitudinal study of small-time scaling behavior of Internet traffic," *IFIP Networking*, Chennai, 2010.

[34] A. Kapoor and V. J. Ribeiro, "An end-to-end QoS aware greedy distributed scheduling framework for WiMAX mesh networks," *WISARD*, Bangalore, 2010.

[35] H. Gupta, A. Mahanti, V. J. Ribeiro, "Revisiting coexistence of Poissonity and self-similarity in Internet traffic," *MASCOTS*, London, 2009.

[36] V. Rastogi, A. D. Nayar, V. Ribeiro, "Measurements in OLPC Mesh Networks," *WiNMee*, Seoul, 2009.

[37] A. Kumar, V. Ribeiro, "REEF : A Reliable and Energy Efficient Framework for Wireless Sensor Networks," *WISARD*, Bangalore, 2009.

[38] A. Haddad, V. Ribeiro, R. Riedi, "DRB and DCCB: Efficient and Robust Dynamic Broadcast for Ad Hoc and Sensor Networks", *SECON*, San Diego, 2007.

[39] A. Haddad, V. Ribeiro, R. Riedi, "Broadcast Capacity for Multihop Wireless Networks," *Mobicom*, Los Angeles, 2006.

[40] A. Haddad, V. Ribeiro, R. Riedi, "Color-Based Broadcasting for Ad Hoc Networks," *WiOpt*, Boston, 2006.

[41] V. Ribeiro, R. Riedi, R. Baraniuk, "Optimal Sampling Strategies for Multiscale Models with Application to Network Traffic Estimation," *IEEE Statistical Signal Processing Workshop*, St. Louis, 2003.

[42] V. Ribeiro, R. Riedi, R. Baraniuk, J. Navratil, and L. Cottrell, "pathChirp: Efficient Available Bandwidth Estimation for Network Paths," *Passive and Active Measurement Workshop*, San Diego, 2003.

[43] Z. Zhang, V. Ribeiro, S. B. Moon and C. Diot, "Small-time Scaling Behaviors of Internet Backbone Traffic: An Empirical Study," *IEEE INFOCOM*, San Francisco, 2003.

[44] V. Ribeiro, M. Coates, R. Riedi, S. Sarvotham, B. Hendricks and R. Baraniuk, "Multifractal Cross-Traffic Estimation," *ITC Specialist Seminar on IP Traffic Measurement, Modeling and Management*, Monterey, 2000.

[45] V. Ribeiro, R. Riedi, M. Crouse, R. Baraniuk, "Multiscale Queuing Analysis of Long-Range Dependent Network Traffic," *IEEE INFOCOM*, Tel Aviv, Israel, 2000.

[46] Y. Joo, V. Ribeiro, A. Feldmann, A.C. Gilbert and W. Willinger, "On the impact of variability on the buffer dynamics in IP networks," *37th Annual Allerton Conference on Communication, Control, and Computing*, Allerton, 1999.

[47] V. Ribeiro, R. Riedi, M. Crouse, R. Baraniuk, "Simulation of non-Gaussian Long-Range Dependent Traffic using Wavelets," *ACM SIGMETRICS*, Atlanta, 1999.

[48] M. Crouse, R. Riedi, V. Ribeiro and R. Baraniuk, "Network Traffic Modeling using a Multifractal Wavelet Model," *International Symposium on DSP for Communication Systems DSPCS*, Perth, Australia, 1999.

[49] M. Crouse, R. Riedi, V. Ribeiro and R. Baraniuk, "Multifractal Signal Models with Application to Network Traffic," *Eighth IEEE Digital Signal Processing Workshop*, Bryce Canyon, 1998.

[50] M. Crouse, R. Riedi, V. Ribeiro and R. Baraniuk, "A Multifractal Wavelet Model for Positive Processes," *IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis*, Pittsburgh, 1998.

[51] M. A. Aziz Ahmed, C. L. Kalyan, S. F. Joseph Reddy, R. K. Ganti, V. Ribeiro, N. Taj, S. Karthikeyan, N. Vasudev, C. Mathiazaghan, A. Jhunjhunwala, "A low cost cordless EPABX Solution," *National Communication Conference*, Madras, India, 1997.

Journal Publications

[1] Aditya Ahuja, Vinay J. Ribeiro, Ranjan Pal, "How Should We Regulate Cryptocurrencies via Consensus?: A Strategic Framework for Optimal Legal Transaction Throughput," accepted for publication at *ACM Distributed Ledger Technologies: Research and Practice 2023*

[2] Sourav Das, Nitin Awathare, Ling Ren, Vinay J. Ribeiro, Umesh Bellur, "Tuxedo: Maximizing Smart Contract computation in PoW Blockchains," *ACM SIGMETRICS 2022* and *Proceedings of the ACM on Measurement and Analysis of Computing System, 5(3), Dec. 2021.*

[3] Samuel Wedaj, Kolin Paul, Vinay J. Ribeiro, "DADS: Decentralized Attestation for Device Swarms", *ACM Transactions on Privacy and Security*, 22(3), July 2019.

[4] L. Rajya Lakshmi, Vinay J. Ribeiro, B. N. Jain, "A Dynamic Backup Path Management Method for TDMA Based WiMAX Client WMNs," *Wireless Personal Communications* 2016.

[5] L. Rajya Lakshmi, Vinay J. Ribeiro, and B. N. Jain, "Handover management framework for WiMAX Point-to-Multi-Point networks," *Computers and Electrical Engineering* 2015.

[6] Salik Warsi, Vakul Jindal, Saket Kumar, Deepak Koli, Amitabha Bagchi, Vinay J. Ribeiro, "Joint scheduling and routing using space-time graphs for TDM wireless mesh networks," *Wireless Networks*, 2015.

[7] L. Rajya Lakshmi, Vinay J. Ribeiro, and B. N. Jain, "PRIME: A Partial Path Establishment Based Handover Management Technique for QoS Support in WiMAX Based Wireless Mesh Networks," *Computer Networks 2015.*

[8] H. Nayar, V. J. Ribeiro, R. K. Mallik, "Multicarrier Modulation with Variable PAPR using Partial FFT," *IET Communications*, vol.9, no.12, pp.1450-1457, 2015.

[9] V. Ribeiro, R. Riedi, and R. Baraniuk, "Optimal Sampling Strategies for Multiscale Stochastic Processes," *IMS Lecture Notes–Monograph Series*, vol. 49, 2006.

[10] V. Ribeiro, R. Riedi, and R. Baraniuk, "Multiscale Queuing Analysis," *IEEE Transactions on Networking*, vol. 14, October 2006.

[11] V. Ribeiro, Z. Zhang, S. B. Moon and C. Diot, "Small-Time Scaling Behavior of Internet Backbone Traffic," *Computer Networks*, vol. 48 (3), June 2005.

[12] V. Ribeiro, R. Riedi, and R. Baraniuk, "Locating Available Bandwidth Bottlenecks," *IEEE Internet Computing*, September-October 2004.

[13] Y. Joo, V. Ribeiro, A. Feldmann, A.C. Gilbert and W. Willinger, "TCP/IP Traffic Dynamics and Network Performance: A Lesson in Workload Modeling, Flow Control, and Trace-Driven Simulations," *Computer Communication Review*, vol. 31, April 2001.

[14] R. Riedi, M. Crouse, V. Ribeiro and R. Baraniuk, "A Multifractal Wavelet Model with Application to Network Traffic," *IEEE Transactions on Information Theory (Special Issue on Multiscale Statistical Signal Analysis and its Applications)*, vol. 45 (3), April 1999.

Graduate Students

Ph.D.

1. L. Rajya Lakshmi (2014) [Co-advised by Prof. B. N. Jain]
   Thesis title: "Handover Management Techniques for WiMax Based Wireless Mesh Networks"
2. Samuel Wedaj (2021), [co-advised by Prof. Kolin Paul]
   Thesis title: "Decentralized Mechanisms To Attest, Recover and Update IoT Networks"
3. Aditya Ahuja (2022)
   Thesis title: "Fair and Regulated Resource Allocation in Blockchain based Decentralized Systems"
4. Nitin Awathare (2022), [co-advised by Prof. Umesh Bellur]
   Thesis title: "On the scalability of blockchains"
5. Ovia Seshadri (2022)
   Thesis title: "Securely improving performance in PoW blockchains using Links and Anchors"
6. Himanshu Gandhi (passed away Oct'22, just before submitting synopsis)
   Thesis topic: BotNet detection for IoT using ML

M.S. (Research)

1. Kirthi Singh (2025)
   Thesis title: "Efficient Enhancement of Exchange Value and Security in Cross-Chain Atomic Swaps"
2. Saksham Agarwal (2024)
   Thesis title: "Timelockshield: A robust defense against front running and bribery attacks in blockchain"
3. Kashif Shaukat (2018) (**Perfect 10 Gold Medal Winner at IIT Delhi**)
   Thesis title: "RansomWall - A Layered Defense System against Cryptographic Ransomware Attacks using Machine Learning"
4. Himanshu Gupta (2010)
   Thesis title: "Revisiting Internet Traffic Scaling Behavior and Properties"

M.Tech. 63 students

Personal

Nationality: Indian

Date of Birth: May 19, 1976