R. Venkatesha Prasad

Associate Professor, IEEE Distinguished Lecturer, Fellow IETE
Embedded Software, EEMCS,
Delft University of Technology

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Profile

Dr. R Venkatesha Prasad is an associate professor at the Embedded Networked Systems group of Delft University of Technology (TU Delft) since 2013. Between 2005 and 2012, he was a senior researcher and adjunct faculty at TU Delft. At TU Delft, he has supervised 18 PhD students (15 graduated, 4 ongoing) and 50 MSc students. He has (co-)authored more than 200 publications in the peer-reviewed international transactions/journals and conferences in the areas of Tactile Internet, Internet of Things (IoT), Cyber Physical Systems (CPS), Energy-harvesting, 60 GHz mmWave networks, Smart-energy systems, Personal networks, Cognitive Radios and Voice over Internet Protocol (VoIP). He has been successful in acquiring and executing several European and Dutch national projects in the areas of IoT, Future home networks (60 GHz), Smart-energy systems, Personal networks, and Cognitive Radios.

Venkatesha Prasad received his **4TU University Teaching Qualification diploma** with **excellence** in 2015. Recognizing his research contributions to IoT, he has been selected as an **IEEE Communication Society (ComSoc) Distinguished Lecturer** on Internet of Things for the period 2016-2018. He has been contributing significantly to valorise research to practice by contributing to standards on Cognitive radios and Tactile Internet. He is currently the vice-chair of IEEE Tactile Internet standardization group. He is also leading many IEEE activities through positions in standards boards (secretary in the ComSoc standards board) and technical committees (vice-chair of cognitive networking committee in 2013-16). He is on the editorial board of many international transactions and magazines and is a regular TPC member for many prestigious journals and conferences. He was responsible for the signing of **MoU between IISc - TU Delft** and he is anchoring **Indian Space Research Organization (ISRO) and TU Delft cooperation**. He is the **Deputy Project Director** for **Lunar Zebro – a moon rover project**. He is a **senior member** of IEEE and ACM. He is a **Fellow of IETE**.

He completed his **PhD from IISc, Bangalore, India in 2003**. During his PhD research, a scalable **VoIP conferencing platform** was designed. **His thesis work led to a start-up** venture, **Esqube Communication Solutions**. While at Esqube, **eight patent** applications and **three PCT** applications were filed along with his colleagues. He was instrumental in Esqube's selection as top 100 IT innovators in India in 2006 by NASSCOM and top 100 promising companies in Asia by RedHerring in 2008. Recently, he led a student team to win the **worldwide Airbus challenge -- Fly Your Ideas (2019)**.

Research Interests

Broad research interests include many aspects of wireless networking. In particular: **Tactile Internet, (Space**-) **Internet of Things, Cyber Physical Systems** and **5G Networks**. Recently he started leading a student team on building a *Moon rover.*

Academic Experience

Oct 2011 - *Present*	Tenured Faculty, Embedded Software, TU Delft (0.7 FTE)
March 2008 – Sept 2011	Research Faculty, WMC, TU Delft (0.6 FTE)
March 2005 - Feb 2008	PostDoc, Senior Research Fellow, WMC, TU Delft (0.5 FTE)
April 1992 – July 1992	Lecturer, MCE, Hassan, affiliated to Mysore University, India.

Publications (Citations 5.3k, H-Index 36, Google Scholar)

Journals/Transactions	60	IEEE Standards	13
Peer-reviewed conferences	177	Edited Books, Book Review and Invited Articles	10
Peer-reviewed book chapters	11	Patent Applications	10

Academic Activities

Supervision of Students

Post-doctorates	9	PhD students	19
MSc students	50	Bachelor students	~40 (12 projects)

Professional Activities

Successful Project Acquisitions	14	Editorial Board of Journals (Editor, Exe. Editor)	13
Organizing Technical Workshops	33	Organizing Committees, Program Committee chair	42
Conference (Unique)TPC memberships	87	Reviewer Transactions/Journals & Conferences	101
Tutorials and Invited Talks	37	Membership of Technical Committees/Associations	23

Industry Experience

Jun 2006 – Dec 2009   **Senior Design Consultant (Part time)**, ESQUBE, Bangalore, India

Nov 2003 - Mar 2005   **Design Consultant (Full time)**, ESQUBE, Bangalore, India

Apr 1999 - Jul 2003   **Project Associate and Consultant,** CEDT, IISc, Bangalore, India

Feb 1996 - Jul 1996   **Project Associate,** ERNET Lab, ECE, IISc, Bangalore, India

May 1995 - Feb 1996   **Consultant**, TPC Energy Management, Bangalore, India

July 1993 - Mar 1994   **Project Trainee**, Bharat Electronics, Bangalore, India

Honours and Recognitions (selected)

1. **The best paper award**, for the paper on **Satellite Positioning System**, ACM **MOBICOM**, 2020.
2. My Team won the *finals* **of Airbus Fly Your Ideas** competition – June 2019 (out of ~300 teams).
3. Selected by the **External Affairs Minister of India** as **one of the 10 leading Indian scientists outside India** to discuss/advise on "**Developing Cyber Capacity of India**".
4. I was invited by the ***Indian Prime Minister, Mr. Narendra Modi*** when he visited the Netherlands, 2017.
5. I was invited to attend **Microsoft Research Faculty Summit**, 2018.
6. **The best paper award**, ACM/IEEE Internet of Things - Design and Implementation, 2018.
7. **Best paper Runner-up award**, ACM/IEEE Internet of Things - Design and Implementation, 2017.
8. IEEE ComSoc **Distinguished Lecturer on IoTs** (1 out of 10 newly appointed DLs) in 2017 & 2019.
9. **My moon & space projects were covered by the Dutch national TV NOS primetime news, May 2018.**
10. **Impact**: High school students could implement our ACM/IEEE IPSN 2015 work to save Hedgehogs (link).
11. **The best paper award**, IEEE PIMRC, 2009.
12. **IEEE Outstanding Contributor Award** for IEEE P1900.2 Workgroup contributions, 2008.

Major Positions Held (selected)

1. Member -- panel on IoT Communications as part of **Vaibhav summit** by **Government of India** – Oct 2020
2. **Advisor WISE Program** (Doctoral Program for World-leading Innovative & Smart Education) **of the Ministry of Education, Culture, Sports, Science and Technology, Kyoto University, Japan.**
3. **Vice-chair** of IEEE P1918.1 standard on Tactile Internet and **currently the Mentor**.
4. IEEE TCCN **Vice-chair** (2011-2016), **Secretary** (2009-2010).
5. Secretary of IEEE ComSoc Standards Development Board, 2012-2013.
6. Elected as IEEE CSDB Liaison for IEEE TCCC, IEEE TCCN, TCGCC and IEEE AHSNTC.
7. Selected as **Dutch national representative** to COST IC0905 (Cognitive Networks), 2009-2013.

Editorial Boards and Conference Organizations (selected)

1. Editor, IEEE Communication Surveys and Tutorials (retired), Transaction on Mobile Computing
2. Associate Editor, IEEE Transaction on Green Computing and Networking.
3. Organizing Committee, IEEE INFOCOM, ACM MobiHoc, and many others.
4. Editor IEEE Journal on Selected Areas in Communications.

ACADEMIC ACTIVITIES (DETAILED)

Project Proposals

- Project acquisitions with a success rate of ~**37%.**
- Funded by Dutch national government agencies and the EU FP7 and H2020 program.

On IoTs, Sensors, Energy, and Personal Networks
1. iCORE (One of the founding members, EU FP7 Project, 2 PhDs, 685k€)
2. GoGreen (IoPGencom, 1 PhD, 230k€)
3. MISCEA (Member, Implementation Work, ~100k€)
4. MAGNET Beyond (with Prof. Niemegeers, 2PhDs, PostDoc, 900k€)
5. Joule Jotter (Initiated this proposal, ACM worldwide community project, US$27000)
6. SCOTT (EU H2020, 2 PhDs, 687k€)
7. WISHFUL (EU H2020, 46k€)
8. WINLAS (EU Defense Agency, 1 PhD, 230K€)
9. Research Funding by Cognizant Technology Services (Lead, 1.6M€, 2 PostDocs, 4 PhD)
10. InSecTT (EU H2020, 2 PostDocs, 1 PhD, 923k€)
11. Take-off Grant NWO (40k€)

On 5G Networking
12. SOWICI (NWO, 1 PhD, 237K€)
13. MEANS (NWO, 1 PhD (moved to TU/e), 230K€)
14. FHN (with Prof. Niemegeers, IOP GenCom, 2 PhDs+PostDoc, 800k€)

On Coordination and Support Action
14. PEDCA -Pan-European Data Centre Academy (CSA, 130k€)

Students Supervised

PostDocs

	Student's name	Research topic	Year
9	Sujay Narayana	InSecTT – EU Project on IoT, AI, and ML	Current
8	Ashuthosh Simha	InSecTT – EU Project on IoT, AI, and ML	Current
7	Amjad Majid	Internet of Robots	Current
6	Vineet Gokhale	Tactile Internet	Current
5	Vijay Rao	Space Robotics	2018
4	Kishor Chandra	Tactile Internet	2017
3	Javad Vazifehdan	Energy Aware Sensor Networks	2012
2	Xueli An	60GHz Networks Green Networks	2010
1	Jing Wang	Heterogeneous Networks	2010

PhDs

	Student's name	Thesis title	Year
20	Suryansh Sharma	AI & ML for EH-IoT	Current
19	Kees Kroep	Edge computing for Tactile Internet	Current
18	Nikolaos Kouvelas	Energy Harvesting in IoT for smart infrastructure	Current
17	Sujay Narayana	The next generation Space Internet of things	2020
16	Venkatraman Balasubramanian	Edge Computing (discontinued)	2017-2018
15	Akshay Utama Nambi	Personalized Energy Services: A Data-Driven Methodology towards Sustainable, Smart Energy Systems **(currently with Microsoft Research)**	2017

14	Vijay Rao	Ambient-Energy Powered Multi-Hop Internet of Things **(currently with TU Delft PostDoc)**	2017
13	Kishor Chandra	Towards realizing 5G: Efficient medium access and beamwidth adaptations in 60 GHz communications **(currently with TUDelft)**	2017
12	Chayan Sarkar	Virtualizing the Internet of Things **(currently with TCS Research)**	2016
11	Bien Quang	Handoff management in Radio over Fiber 60GHz indoor networks **(currently with Vietnam Telecom)**	2014
10	Stefan Aust	Advanced Wireless Local Area Networks in the Unlicensed Sub-1GHz ISM-bands **(currently with NEC Japan)**	2014
9	Shi Huai Zhou	Fairness and Resource Allocation in Device-to-Device Wireless Regional Area Network **(European Patent Office, Rijswijk)**	2014
8	T V Prabhakar	An Empirical Approach to Zero Energy Networking **(currently with Indian Institute of Science)**	2012
7	Javad Vazifehdan	Energy Aware Wireless Multi-hop Networks (Cum Laude) **(currently with ASML, Eindhoven)**	2011
6	Jing Wang	Network Technologies for Future Home Networks using 60GHz **(currently with CISCO, Germany)**	2010
5	Xueli An	Medium Access Control and Network Layer Design for 60GHz Wireless Personal Area Network **(currently with Bell Labs, Belgium)**	2010
4	Cheng Guo	Simple, reliable, scalable and energy efficient wireless sensor networks	2010
3	Yanying Gu	Personal Networks: Mobility and Clustering **(currently with KPN Research)**	2010
2	P. Pawelczak	Opportunistic Spectrum Access – Designing Link and Transport Layers **(currently with TU Delft)**	2009
1	Bao Linh Dang	Toward Seamless Networking in Indoor Environments in Millimeter Wave Bands **(currently with Intel Research)**	2008

Master of Science Thesis

	Student's name	Thesis title	Year
50	Jelger Lemmers	Fingertip Haptic Texture Interface	2021
49	Maria Teresa Blanco Abad	Designing and implementing SFMAC: A MAC protocol for LoRa networks for efficient use of unlicensed bands	2020
48	Gerardo Ivan Moyers Barrera	Sensor Fusion for Localization of Autonomous Ground Drone in Indoor Environments	2020
47	Suryansh Sharma	*WhirlWind* - Wind Energy Harvesting Wireless System for Sensing Angle of Attack and Wind Speed	2020
46	Jakka Naveen Chakravarthy	Emergency Braking in Platoons with Communication Loss	2020
45	Niels Hokke	A New Type Of Medium Access Control For Event Driven Energy Harvesting Devices	2020
44	Gerrit Maurice Willemsen	Multihop Transmission for Time Correlation in Energy Harvesting Networks	2020
43	Dhaval Shah	Multimodal Data Fusion for Posture Estimation of Wheelchair Users	2019
42	Himanshu Shah	Development of an attention test using the VitalSky	2019
41	Mohammad Al Rahibi	Human Activity Recognition using Channel State Information	2019
40	Joseph Verburg	How Can I Touch You?- Setting the Yardstick: A Quantitative	2019

		Metric for *Effectively* Measuring Tactile Internet	
39	Kavya Managundi	Indoor Localization Using Thermal Sensors	2019
38	Anand Haridas	Extending the lifetime of NB-IoT devices through Energy-Harvesting techniques	2018
37	Gauri Tawade	Scalability in LoRaWAN	2018
36	Sergio Soto Munoz	Telehealth and Remote Monitoring of the Elderly, a Generic IoT Approach	2018
35	Anand Haridas	Extending the lifetime of NB-IoT devices through Energy-Harvesting Techniques	2018
34	Bontor Humala	Semi-supervised Energy Disaggregation Framework using General Appliance Models	2018
33	Kiran Sharma	**Adaptation Study of Zebro as Nano Rover for Lunar Exploration and Demonstration of Locomotion on Simulated Lunar Surface**	2018
32	Shruthi Kashyap	Adapting TCP/IP protocol to a Time-Slotted NFC Channel present in a Wireless Power Environment	2017
31	Duncan Lew	Integration of V2H/V2G Towards Effective Demand-Response Programs	2017
30	Renukaprasad Manjappa	Crowd Distribution Estimation using Smart Lighting Grids	2017
29	Anggrit Pinangkis	On Reduction of Beam-Searching Overhead in 60 GHz Communications	2017
28	Atul Pandaravila Biju	An Energy-Harvesting Facade Optimization System for Built Environments	2017
27	Luis A. Moreira Cardoso	Solar Powered Passive Wireless Moisture Sensor with Cloud Communication	2017
26	Nikos Kouvelas	Energy Allocation Strategies for Micro Grids	2017
25	Alexander de Moes	AirLoc: Pedestrian Dead Reckoning for Passenger Localization	2017
24	Paul Marcelis *(Young Talent of Netherlands Runnerup)*	Frame Loss Characterization and Data Erasure Coding for LoraWAN	2016
23	Rizqi Hersyandika	Characterization of Human Blockage in 60GHz Communication	2016
22	Henrik John	Enabling Localization based services using wearable and handheld	2016
21	Luis Alfonso Gonzalez Godinez	Micro Activity Recognition using Wearables for Human Augmentation	2016
20	Eloi Garrido Barrabes	Opportunistic Routing for Indoor Energy Harvesting WSNs	2016
19	Arpan Govindraju	Sensing Locations: Occupancy Sensor Data Driven Automatic Determination of Sensor Locations	2016
18	Andres Moreno	Design of a real-time micro-winch controller for Kite-Power Applications	2015
17	Xin Wang	Topology Control in Energy-Harvesting Wireless Sensor Networks	2015
16	Antonio Reyes Lua	Location-aware Energy Disaggregation in Smart Homes (*Cum Laude*)	2015
15	Sujay Narayana	Orchestrating Mixed-Criticality Melody: Reconciling Energy with Safety for Mixed-Criticality Embedded Real-Time Systems	2015
14	Jan Jaap Treurniet	From Check-in/Check-out to Be-in/Be-out: BLE-based Automated Journey Payment in Public Transportation (*Cum Laude*)	2015
13	Arjan Doff	Sensor-Assisted Movement Identification and Prediction for	2015

		Beamformed 60 GHz Links	
12	Zhongxian Pan	Resource Allocation in Cognitive Radio Networks	2014
11	Prasanna Gururaj	VoIP support in LTE networks	2012
10	Preethi Prada	BOSCH: Wireless Network Tuning for Real-time Applications	2012
9	Pavan Gaonkar	TomTom: File Updates in V2V Networks	2012
8	Shruthi D	Neighbor Discovery in Energy Harvesting WSNs	2012
7	Ke Dong	Clustering in Wireless Networks	2011
6	Zhao Yukun	Human Mobility Models	2010
5	Hani Dabbagh	Free-space Optical Emulator for 60 GHz directional antenna equipment	2009
4	Vijay S	Allocation of Opportunistic Spectrum for Cognitive Radio Ad hoc Networks (*Cum Laude*)	2009
3	Yiyu Zhao	Performance study of scheduling algorithms for WiMAX Networks	2007
2	Yanying Gu	Clustering for Personal Networks	2006
1	Yonghua Li	FEW PeaNets: A Framework for Emulation of Wireless Personal Area Networks	2006

Education

Degree/Diploma	Institution/University	Year	Grade
4TU University Teaching Qualification	TU Delft, the Netherlands	2014	"Excellent"
Ph.D	Indian Institute of Science, Bangalore, India	2004	NA
M. Tech (Industrial Electronics)	Mysore University (S. J. C. E Mysore)	1994	Distinction
B. E. (Electronics & Communication)	Mysore University (M. C. E Hassan)	1991	Distinction
Class XII	Karnataka State Pre-University Education Board	1987	Distinction
Class X	Karnataka State Secondary Education. Board	1985	Distinction

Theses

Ph.D Thesis: *A New Paradigm for Audio Conferencing on Voice Over IP (VoIP)* – **Indian Institute of Science, Bangalore, India, 2003. Committee:** *Prof. H S Jamadagni (IISc), Prof. Martin Vetterli (EPFL), Prof. Vishveshwaran (IIT Delhi)*

This work involved the following aspects: (a) Design of a novel distributed audio conferencing architecture; (b) System design and building various servers and client for the conferencing support on IP networks; (c) Analysis of the real-time packets and designing the systems accordingly; (d) Conceiving various algorithms for the automatic selection of participants; (e) Studying behavioral aspects of humans in a conference; (f) Simple Voice Activity Detection algorithms; and (g) Building the prototype system and testing them. The work also involved indigenous conferencing protocol design since SIP had no distributed conferencing support when the work was carried out. The work was completely executed and demonstrated with the help of a prototype.

Master's project: *Scaled Down Model of an S Band Coupled Cavity Traveling Wave Tube (TWT) Power Supply* - Bharat Electronics Ltd., India, 1994.

TWT used in Radars needs a high power ripple free DC voltage (45KV, 26KW). The power supply model was developed at Bharat Electronics, Bangalore, India. In this project, I modelled a Resonant Mode DC-DC Converter to avoid high power spikes. Since the power involved is in the order of tens of KW, SCRs were used as the switching devices. To find the values of the L and C of the tank circuit, a mathematical

model was developed along with a numerical iterative algorithm to fix the values of L and C. A *Pspice* simulation a scaled down 0.5KW converter was built and tested successfully.

Undergraduate project: ***Microprocessor based Real Time Voice Encryption*** - MCE, Hassan, India, 1991. This project was intended to protect voice transmission for military and intelligence purposes against possible intrusion through encryption. A pilot system was developed using the 8085 Microprocessor. The voice signals were digitized and then were encrypted digitally. A simple algorithm for encryption was developed. A USART based serial transmission and reception were also implemented as part of the project to test and demonstrate the ideas proposed in the project.

Teaching and Lectures

Courses Offered
1. Instructor for MSc course on Ad Hoc Networks (TU Delft, 2013-Present).
2. Instructor for MSc course on the Internet of Things (TU Delft, 2013- Present).
3. Instructor for BE courses at MCE, Hassan, India, 1992:
   a. Computer Networks
   b. Digital Circuits
4. Innovation in Teaching Courses:
   a. http://www.icto.tudelft.nl/nl/icto/nieuws/artikel/detail/it-for-teaching-msc-course/
       (OR) https://www.youtube.com/watch?v=sjXSGBIiakU&feature=youtu.be
   b. https://www.youtube.com/watch?v=O6wzecgNieA&feature=youtu.be
5. Guided 12 Bachelor Projects (~35 students).

Lectures
1. A Course on TCP/IP for Engineers from British Physical Laboratories (BPL), Bangalore, October 2000.
2. Continuing Engineering Education Programme (CEEP) course on VoIP at CEDT, IISc, Bangalore, for participants from academic institutions and industry, September 2002.
3. Lectures for students at the Dept. of Electrical Engineering, IISc, Bangalore on VAD and Personal Networks, 2008.
4. Cognitive Radio Networks – Guest lecture TU Delft (Ad hoc network course, 2010-2011).
5. Energy Harvesting in WSNs - Guest lectures TU Delft (Ad hoc network course, 2012).

Other Academic Activities (Reviewer & Examiner)
1. Served on 30 MSc Thesis Examination Committees at TU Delft, (2005-2020).
2. Reviewer, Canada Foundation for Innovation, 2019
3. Reviewer, Project Proposals of EU Next Generation Internet (NGI)-2020.
4. Invited to Project Review Panel, Natural Sciences, and Engineering Research Council of Canada (NSERC) Discovery Grant proposals, 2017 & 2018.
5. Project Reviewer, Academy of Finland Natural Sciences and Engineering Research, Finland, 2017.
6. Project Reviewer EU FIESTA Calls, 2016.
7. Invited to Project Review Panel of Research Foundation Flanders (FWO), Belgium, 2016.
8. Textbook Proposal reviewer, Morgan Kaufmann 2015.
9. Project Reviewer, H2020-TWINN-2015.
10. Board of studies for M.Tech program in Communication Engineering and Signal Processing, Amrita Vishwa Vidya Peetham, Amrita University, 2014.
11. Springer Journal on Green Communication, Proposal reviewer, 2013.
12. Invited as a Juror for the Pirelli Innovation Award 2008.
13. Project Review Panel of Science Foundations of Ireland 2007.
14. Deputy Work Package Leader of WP2 – MAGNET Beyond project, 2006.
15. Developed Microprocessor Lab Primer for BE students of the state of Karnataka, 1992.

Bachelor's Projects Supervised
1. Automated Card Payment Testing.
2. Development of a software system for connecting Zigbee devices to an IoT gateway.

3. Video Mail plug-in for Browsers.
4. Voice Activity Detection.
5. Multiport Data Acquisition System.
6. Integral Cycle Control of Power (using 8085).
7. Energy Monitoring System (using 8085).
8. Constant Firing Angle Triggering circuit for a variable frequency converter.
9. Industrial Process control.
10. Telephone to IP Gateway.
11. Networking of 8085 Microprocessors using Interrupt Controller and UART.
12. AC Link Inverter.

PROFESSIONAL ACHIEVEMENTS & ACTIVITIES (DETAILED)

Honours, Recognitions and Awards
1. Fellow of IETE, India, 2018.
2. Senior Member of ACM
3. Senior Member IEEE and IEEE ComSoc, IEEE Computer Society, IEEE Vehicular Technology Society.
4. The best paper award, ACM MOBICOM (2020)
5. My Team wins the finals of Airbus Fly Your Ideas competition – June 2019 (out of ~300 teams).
6. **EU StandICT Award** for Representing EU and Attending IEEE Standards Meeting, 2019.
7. Invited to attend Microsoft Faculty Summit 2018.
8. The best paper award, ACM/IEEE Internet of Things - Design and Implementation (2018).
9. My work (with students) on TUDelft's moon & space projects was covered by the Dutch national TV NOS primetime news, May 2018.
10. Selected by External Affairs Minister of India as one of the 10 leading Indian scientists outside India to discuss/advise on "Developing Cyber Capacity of India".
7. I was invited by the *Indian Prime Minister, Mr. Narendra Modi,* when he visited the Netherlands.
8. Best paper runner up award, ACM/IEEE Internet of Things - Design and Implementation (2017).
9. IEEE ComSoc Distinguished Lecturer on Internet of Things (1 out of 10 newly appointed) in 2017.
10. **Impact**: High school students could implement our ACM/IEEE IPSN 2015 work for saving hedgehogs (link).
11. Awarded Grassroots Prize (two times) for innovations in teaching 2015, 2016.
12. IEEE Bangalore section – Publication award 2014 & 2015.
13. Selected for IEEE Public Visibility Initiative – My interview and Article on IoT (2014).
14. Covered by IBC News under the heading, Invisible Network of the Future, 2014.
15. Recognition by IEEE for contributions to the IEEE ComSoc Standards Program Development, 2014.
16. Invited to Dagstuhl seminar on *Physical Cyber Social Computing,* 2013.
17. Award for IEEE P1900.5 Workgroup contributions, 2012.
18. Our article in *IEEE Communication Letters*, "An Analytical Energy Consumption Model for Packet Transfer over Wireless Links", was selected as the top 0.5% of papers IEEE ComSoc in Feb 2012.
19. Best paper award, IEEE PIMRC, 2009.
20. IEEE Outstanding Contributor Award for IEEE P1900.2 Workgroup contributions, 2008.
21. First place for DC Motor drive and consolation prize for AC Motor Drive in Karnataka state level, India, for 'Do It Yourself' competition at S.J.C.E, Mysore, India, 1993.

Editorial Boards
1. Editor, IEEE Transaction on Mobile Computing 2019-
2. Editor IEEE Surveys and Tutorials, 2015-.
3. Editor IEEE Systems Journal, 2018-.
4. Associate Editor, IEEE JSAC on SDN and Network Virtualization, 2018-2019
5. Editor IEEE Transaction on Green Communication Networks, 2017-
6. Editor IEEE Transaction on Cognitive Communications and Networks, 2019-
7. Guest Editor Special Issue on Green IoT, IEEE Transaction on Green Communication Networks
8. Editor IEEE Communications Magazine, Green Track, 2015-2018.

9. Guest Editor Research to standards Next Generation IoT and M2M Applications Networks-and Architectures, IEEE Communications 2016.
10. Associate Editor, Transaction on Emerging Telecommunication Technology, 2011-2017.
11. Editor Elsevier-Journal on Networking and Computer Applications, 2015-2018.
12. Editor Elsevier-Communication Networks, 2017-2018.
13. Editor for the IEEE Communications Society Communications Technology (CTN).

PhD Thesis Examination Committee

1. Mr.Ramachandra Budhihal, "Unified Cognitive Radio Architectural Analysis, Design, and Implementation" Indian Institute of Science, Bangalore, India.
2. Mustafa Moussa, Flood and Traffic Wireless Monitoring System for Smart Cities, KAUST, Saudi Arabia
3. Nahina Islam, Energy efficiency in wireless communication, RMIT, Melbourne, Australia.
4. Reema Sharma, Modeling and Analysis of Dynamic Packet Scheduling Scheme in Internet of Things, VTU, India.
5. Suma K V, Analysis of Nailfold capillary morphology for diagnosis of Type 2 Diabetes Mellitus and hypertension in Indian Population, VTU, India.
6. Chaudhuri Manoj Kumar Swain, A Study on Development of Path loss Modelling Schemes and Coverage Analysis for a Broadband Wireless Access Network, National Institute of Technology, NIT, Rourkela.
7. Smita Pallavi, An Integrated Business Intelligence Framework To Support Olap Mining Applications In Educational CRM, BIT, Patna, India.

Memberships, Positions, Standards Activities

1. Fellow, IETE
2. Senior Member of ACM
3. Senior Member IEEE and IEEE ComSoc, IEEE Computer Society, IEEE Vehicular Technology Society.
4. IEEE Standards Association Member.
5. Non-voting member, IEEE ComSoc Standards Development Board.
6. Member of IEEE ComSoc Mobile Networks Standards Governing Committee (MobiNet-SC) 2018-current.
7. Member IEEE Standards P1920.1, 2020 --.
8. Member IEEE Standards P1931.1, 2017-- .
9. Member IEEE Standards on Nano cCommunications, P1906.1, 2014--2018.
10. **Advisor WISE Program** (Doctoral Program for World-leading Innovative & Smart Education) **of the Ministry of Education, Culture, Sports, Science and Technology, Kyoto University, Japan.**
11. **Mentor** for IEEE P1918.1 standard on Tactile Internet 2018-current.
12. Vice-Chair IEEE P1918.1 standard on Tactile Internet, 2016-2018
13. Member of Examination Committee, CE & CS, and CS & ES, EEMCS, TU Delft, (2013-present).
14. Vice-chair for Standards, IEEE TCGCC 2017-2020.
15. Member IEEE ComSoc Education Services Board (2018-2021).
16. Elected as IEEE ComSoc Standards Development Board Liaison for IEEE TCCC, IEEE TCCN, TCGCC and IEEE AHSNTC, 2017.
17. Member of IEEE ComSoc Standards Program Development Board, 2015-2017.
18. Member IEEE FiWi Sub-TC 2016-2018.
19. Member IEEE TCIIN, 2016.
20. Member IEEE TITC, 2016 -- .
21. Elected IEEE TCCN Vice Chair (Europe) 2011-2016.
22. Member IEEE-SA Rapid Standardization Taskforce on 5G and SDN, Berlin, 2016.
23. Member IEEE-SA Rapid Standardization on Taskforce IoT New Jersey, 2014.
24. Secretary and Member of IEEE ComSoc Standards Development Board, 2012-2013.
25. Member IEEE-SA Internet of Things Ecosystem Study, New Jersey, 2014
26. Member – IEEE DySPAN (2011-) & IEEE SCC41, Standards Coordination Committee (2005-2011).
27. IEEE P1723 standards on SOA (2012).

28. Member of ECMA PN Standardization workgroup, (2011).
29. Elected IEEE TCCN Secretary 2009-2010.
30. Member of Standards on -- IEEE SCC41 Policies and Procedures Subgroup, Web-master of SCC41, DySpan-SC, 2010-current.
31. Selected as Dutch national representative to COST IC0905, 2009-2013.
32. Member of the *Society of Industry Leaders - Standard & Poor's Vista Research*, 2009 (by Invitation).
33. Member – Open Spectrum Alliance (OSA) (by Invitation).

Tutorials, Invited Talks, Demonstration

1. Keynote, IEMERA -- Intelligent Energy Management, Electronics, Electric & Thermal Power, Robotics and Automation, Oct 2020 -- Murphy Loves CI.
2. Tutorial, IEEE CCNC 2020 -- Iot Systems And Smartness – Virtualization, Protocols, Intelligence And Proof Of Concept.
3. Keynote, IEEE ATNAC, New Zealand, Nov 2019 – Improving CI through Distructuve Interference.
4. IEEE Distinguished Lectures at three universities in New Zealand, Nov 2019 – Improving CI through Distructuve Interference.
5. Invited Lecture, Indian Institute of Information Technology(IIITB), Bangalore, Aug 2019 – *Understanding and Improving the Performance of Constructive Interference Using Destructive Interference in WSNs*.
6. Tutorial, IEEE CCNC 2019 -- IoT Systems and Smartness, Virtualization Protocols Applications and Big Data.
7. IEEE Distinguished Lectures at three universities in Srilanka, 2018 – *IoT and Applications*.
8. IEEE Distinguished Lectures at Four universities in New Zealand, 2018 – *Internet of Things, Approximate Services and Virtual Sensing*.
9. Keynote speech IEEE Edgecom, 2018 -- *Constructive Interference – Does it Really Exists?*
10. Invited Talk, Rotary Club International, Bangalore, India, 2018 -- *Internet of Things Applications*.
11. Tutorial, IEEE CCNC 2018 -- IoT Systems and Smartness – Virtualization, Protocols, Applications and Big data.
12. Keynote at IEEE SCIoT, Iran, 2018 -- *Low Latency Low Energy Cost Data Collection in Sensor Networks*.
13. One of the panel members along with Dr. Jie Liu (Microsoft Research), Prof. Prabal Datta (UCB) and others for "New directions" at ACM SenSys, Nov. 2017.
14. Keynote IEEE ISCC, Greece, 2017 -- *Murphy Loves Constructive Interference*
15. IEEE Distinguished Lectures at three universities in Srilanka, 2017 -- *Introduction to IoT*
16. Keynote Speech at UBICNET, Bangalore 2017-- *Murphy Loves Constructive Interference*.
17. Tutorial, IEEE CCNC 2017 -- Interference Virtualization of Internet of Things (IoT) and Big Data Paradigm in Consumer Applications.
18. Panel talk for Young Scientists and Engineers (IEEE-YES), IEEE GlobeCom-2016, Washington DC – *Academic Life Goals*.
19. Speaker at EE and CE Education afternoon, 2016 – *How to Get and Give Feedback using FeedbackFruits*.
20. Demo -- Fine-tuned Lighting Control Leveraging Smartphone-based Occupancy Detection, International Conference on Embedded Wireless Systems and Networks (EWSN), ACM, 2016.
21. Keynote speech, International Conference on Intelligent and Autonomous Systems, Hassan, 2015 -- *Internet of Things- What else?*
22. IEEE Distinguished Lectures at (a) BMSCE, Bangalore, 2015; (b) Amrita College of Engineering, 2016; (c) MCE Hassan, 2016 -- *IoT & Applications*.
23. Tutorial, IEEE CCNC 2016 -- Internet of Thing (IoT) and Big Data Paradigm in Consumer Applications.
24. Keynote speech Workshop on 5G Internet of Things (IoT) jointly with 25th GISFI Standardization Series Meeting (GSSM) 2015 -- *Various Aspects Internet of Things Design*
25. Tutorial, IEEE CCNC 2015 -- Internet of thing (IoT) and Cloud Based Paradigm in Future Consumer Applications.
26. Invited Talk Technology for Concept Design, IDE, TU Delft 2015 – *IoT Application Design*.
27. Distinguished Lecture in 3ME, TU Delft, 2015 -- *Internet of Things and Energy*.

28. Keynote Speech CYCLONE, IoT360, Rome Oct 2015 – *IoT Applications and Approximate Services*.
29. IEEE GlobeCom-2015 Lightening Talk, San Diego –- *Non-Sense!*
30. Tutorial, IEEE CCNC 2014 -- Internet of Things (IoT) Paradigm in Consumer Applications.
31. Invited IEEE ComSoc Talk at New Jersey Institute of Technology, NJ, USA, 2013 -- *Approximate Services in the Internet of Things*.
32. IEEE GlobeCom-2012 Lightning Talk, Anaheim -- *Approximate Services*.
33. Invited speaker IEEE ANTS-2012, Bangalore, -- *iCore - Internet Connected Objects for Reconfigurable Ecosystem*.
34. Keynote Speaker -- IEEE-ACM WINBIS, Katmandu, Nepal, 2009 -- *Personal Networks*.
35. Online Person Tracking System, MobiHoc 2016 [Demo]
36. Demonstration of the VoIP-testbed developed at CEDT, IISc, Bangalore, to members of Communication Software Industry and venture capital members. This helped in the establishment of start-up firm Esqube Communication Solutions Pvt. Ltd. in 2003.
37. Lab demonstrations for workshop on "A Course on Internet Telephony" conducted by Dept. of ECE, IISc, Bangalore, 2002.

Organizing Committees and TPC Chairs

1. TPC Chair WF-IoT 2021.
2. Tutorial Chair, WF-IoT 2020.
3. Tutorials Chair Globecom 2019.
4. Juror, Selection Committee, IEEE Student Competition on *Communication Technology Changing the World*, 2014-2020.
5. Symposium on Green Communication and Networking, Chair ICC 2020.
6. Tutorial Chair, WF-IoT 2019.
7. Steering Committee, WF-IoT, 2019.
8. Organizing committee member, ACM MobiHoc-2013-2019.
9. Publicity Chair ACM MobiHoc 2013-2019.
10. IEEE INFOCOM Demo & Poster Chair 2018, 2019.
11. Student Travel Chair MobiHoc 2019.
12. UBICNET TPC Chair 2017 & 2018.
13. Best Paper Award Chair CCNC 2017, 2018, 2019, 2020, 2021.
14. IEEE SmartNets 2018 - Industry 4.0 Track chair.
15. IEEE SECON Student Travel Grant Chair, 2014-2019.
16. Organizing Committee Member, Publicity Chair, IEEE ICC, Kansas, 2018.
17. Demos and Poster Chair MobiHoc, 2018.
18. Industry Track Chair, WF-IoT, 2018.
19. Organizing Committee Member, Publicity Chair, IEEE GlobeCom, Singapore, 2017.
20. Track Chair, Consumer Communication & Networking Standards, IEEE CCNC, LasVegas, 2015-2016.
21. Organizing Committee Member, Tutorial Chair, Demonstration Co-Chair and Publicity Chair of IEEE CCNC, Las Vegas 2009 - 2017.
22. Organizing Committee Member, Green Track Chair, IEEE GlobeCom, Washington DC, 2016.
23. Student Travel Grants Chair, IEEE GlobeCom, Washington DC, 2016.
24. TPC Chair, Telecom Policies Development of Global Access, GIIS 2016 conference.
25. Track Chair IEEE CSCN 2016.
26. TPC Chair Telecom Policies and Development of Global Access, track, GIIS conference 2016.
27. Publicity Chair WF-IoT, 2015.
28. Publicity Chair IEEE CCSNA, 2013, 2015, 2016.
29. Organizing Committee Online GreenCom 2015 & 2016.
30. General Chair STEMCOM 2015.
31. Technical Program co-Chairs, Green Standardizations and Industry Issues for ICT and Relevant Technologies (GSICT), Globecom 2015.
32. Organizing Committee Member, Tutorial Chair, IEEE GlobeCom, San Diego, 2015.
33. Publication co-Chair, IEEE CSCN, Tokyo, 2015.
34. Publicity Chair IEEE WCNC, 2015.

35. IEEE Globecom-CRN Track Chair, 2015.
36. IEEE CSCN- Publications Chair, 2015.
37. TPC Chair, 21st IEEE Symposium on Communications & Vehicular Technology (SCVT), Delft, 2014.
38. Steering Committee, iC3I, New Delhi, 2014.
39. Publication and EDAS Co-Chair, IEEE CCSNA, GlobeCom, Austin, 2014.
40. Organizing committee member, Publicity Chair ACM MobiHoc, Bangalore, 2013.
41. IEEE VTC-CRSS Track Chair, 2013.
42. Organizing Committee Member, Publication Chair, COMSWARE, Dublin, 2009.
43. Late Breaking Results Committee Associate Chair SIGCHI, 2004.

Workshops Conducted

1. Co-founder, Steering committee, IEEE Next Generation Green ICT Workshop ICC-2016 Kuala Lumpur.
2. Co-founder, TPC Chair and Organizing Committee Member, IEEE Next Generation Green ICT Workshop ICC-2015 London.
3. Co-founder, TPC Chair and Organizing Committee Member, IEEE E2Nets: Workshop on "Energy Efficiency in Wireless Networks and Wireless Networks for Energy Efficiency (E^{2}Nets)", ICC-2010 Cape town, ICC-2011 Kyoto, ICC-2012 Ottawa, ICC-2013 Budapest, ICC-2014 Sydney.
4. Co-founder, Steering Committee and Organizing Committee Member, TPC Chair for IEEE Personalized Networks Workshop, San Jose 2006, Philadelphia 2007, Las Vegas 2009 - 2012.
5. Co-founder, TPC Chair and Organizing Committee Member, IEEE CogNet: Workshop on "Towards Cognition in Wireless Networks", ICC-2007, Glasgow, ICC-2008 Beijing, CogWiNets ICC-2009, Dresden.
6. Organizing Committee Member, Publicity Chair – Mobicare, Mobile Health Care Workshop, Mobiquitous, Toronto, 2009.
7. Co-Chair and Organizing Committee Member, Workshop WILLOPAN: Wireless Personal and Local Area Networks, COMSWARE, Bangalore, 2008.

Projects Executed (selected)

As a senior design consultant at Esqube Communication Solutions (P) Ltd. Bangalore, India (2003-2009)
1. CQube a 'click to talk' application for enabling the websites with interactive voice and video.
2. VoIP Player for decoding and playing back the voice data after snooping VoIP packets from the Internet.
3. VQube - a VoIP application suite.
4. Flash Player for enabling the websites with text, voice and video communications.
5. CallBack facility for portals bringing PSTN and Web together.
6. PSTN Phone aliasing and Anonymous dialling applications.
7. PSTN Conferencing Solution with Web interworking.
8. SIP-based PSTN Callback service.
9. PSTN-Web enabled Voice Mail service.

As a Project Associate & Consultant at CEDT, IISc, Bangalore (1999-2003)
1. Large Scale Conferencing System and Protocol design.
2. Design of Value added services on a VoIP conferencing suite and VoIP testbed.

As a trainee (BEL) and project associate (ERNet)
1. Development of Switched Mode Power Supplies and High power Resonant Converters for Radars (1994).
2. Design of high-frequency magnetic components and high-voltage and High-Frequency Power Supplies (Project Tempest for Indian military) at Bharat Electronics, Bangalore (1994).
3. Implementation of DQDB protocol cards (1996).

Extra-Curricular Activities

1. **Organising Committee member** during 1997 – 1998, and **Secretary**, **Samskrita Sangha**, a Cultural Organization at IISc, Bangalore, during 1998- 1999. http://www.iisc.ernet.in/ssangha/

    I was involved in leading a team of *ten* members in conducting/organizing cultural programmes that reflected Indian Heritage and Culture.

2. **Member**, **Students Advisory Committee (SAC)** to the Director, IISc, Bangalore, for *two* years during 1999 and 2000.

    This committee represents the students of the Institute; I was involved in academic affairs. I was also involved with relief activities under Students' Council during Orissa Cyclone and Gujarat Earthquake.

3. **President - Mess Committee,** IISc Hostels, during June 2000-Dec. 2000

    I was responsible for the smooth running and maintenance of the Messes catering to about 1500 students. Mess committee is an interface between Workers, Students and the Wardens/Authorities. As a mess president, I lead a team of about *twelve* members team and me responsible for handling a budget of rupees Rs.1.5M per month.

4. **Member - Core-Committee and Treasurer, *Prasthutha*,** - a Students' Forum of IISc, during 1999-2002; http://www.iisc.ernet.in/prasthu/

    I was part of a four-member team building this organization. We were involved in arranging lectures/debates by eminent personalities on various issues - Scientific, Social and Cultural. I was holding the additional duties of *Treasurer*, responsible for generating funds for all our activities and maintaining accounts during 1999 to 2000.

5. **Member - Department Curriculum Committee (DCC)** of CEDT, IISc, during 1998-2002.

    I was responsible for representing research students of the department and act as a buffer between students, the chairman, and the faculty.

6. **Giving back to the Nature**

    I am trying to nurture at least 100 trees in a big city like Bangalore, in India. Planting, watering and protecting them has been my passion for the last 5 years. It is important for me to leave *zero* carbon footprint. See: https://www.facebook.com/selfiewithmytrees

7. **I write articles for TU Delta, MyInd and on LinkedIn**.

Patents

Patent No	Title	Type
2024953/G01J/2020	*Systems and methods for infrared sensing,* with Sujay Narayana, Vijay S.	European -- Applied
900/CHE/2006	*A system "click to video talk" for establishing a VoIP video and method thereof,* with R S Varchas, S Vinay, Vijay S, H S Jamadagni, N K Rajasekharan.	Indian – *Granted* (Esqube, Bangalore)
PCT/IN06/000289	*A system "click to video talk" for establishing a VoIP video and method thereof,* with R S Varchas, S Vinay, Vijay S, H S Jamadagni, N K Rajasekharan.	International – PCT *Granted* (Esqube, Bangalore)
1545/CHE/2006	*A method for broadcasting on a network,* with C R Anand, R S Varchas, Vijay S, H S Jamadagni, N K Rajasekharan.	Indian -under process (Esqube, Bangalore)
01291/CHE/2007	*A method to enable web page with media/integrated media communication engine* with R S Varchas, Vijay S, H S Jamadagni, N K Rajasekharan.	Indian -under process (Esqube, Bangalore)
00887/CHE/2007	*A dependable and anonymous peer to peer buy and sell system through buddy services* with R S Varchas, Vijay S, H S Jamadagni, N K Rajasekharan.	Indian -under process (Esqube, Bangalore)
PCT/IN07/000028	*Speech detection using order statistics* with R M Shankar, Vijay S, H N Shankar	PCT - *Granted* (PESIT, Bangalore)
PCT/IN2008/000875	*Determining the presence of a user in an online environment* with R M Shankar, Vijay S, H N Shankar	PCT *Granted* (PESIT, Bangalore)
3003/CHENP/2009	*Speech detection using order statistics* with R M Shankar, Vijay S, H N Shankar	Indian - under process (PESIT, Bangalore)
12/515,536	*Speech detection using order statistics* with R M Shankar, Vijay S, H N Shankar	US – *Granted* (PESIT, Bangalore)

List of Publications

Citations – H-Index: 35

Erdős number: **5** (Paul Erd s › Joel H. Spencer › Remco van der Hofstad › Piet Van Mieghem › Ramin Hekmat › Venkatesha Prasad)

Journals

[1] Nikos Kouvelas, R Venkatesha Prasad, "Efficient Allocation of Harvested Energy at the Edge by Building a Tangible Micro-Grid—The Texas Case", IEEE Transaction on Green Communication and Networking, March-2021.

[2] P. J. Marcelis, N. Kouvelas, V. S. Rao, R. Venkatesha Prasad, DaRe: Data Recovery through Application Layer Coding for LoRaWAN, IEEE Transaction on Mobile Computing, 2021.

[3] Kishor Chandra Joshi, Solmaz Niknam, R. Venkatesha Prasad, Balasubramaniam Natarajan, "Analyzing the Trade-offs in Using Millimeter Wave Directional Links for High Data Rate Tactile Internet Applications", IEEE Transaction on Industrial Informatics, 2020.

[4] Kishor Chandra Joshi, Rizqi Hersyandika, R. Venkatesha Prasad, "Association, Blockage and Handoffs in IEEE 802.11ad based 60GHz Picocells-A Closer Look", IEEE Systems Journal, 2020.

[5] Chayan Sarkar, R. Venkatesha Prasad, and Koen Langendoen, "FLEET: When time-bounded communication meets high energy-efficiency", IEEE Access, 2019.

[6] Rao, Vijay Sathyanarayana; R Venkatesha Prasad, Prabhakar, Tamma Venkata; Sarkar, Chayan; Koppal, Madhusudan; Niemegeers, Ignas Understanding and Improving the Performance of

Constructive Interference using Destructive Interference in WSNs", IEEE/ACM Transaction on Networking, 2019.

[7]   O. Holland, E. Steinbach, R V Prasad, et al., "The IEEE 1918.1 "Tactile Internet" Standards Working Group and its Standards," in Proceedings of the IEEE, vol. 107, no. 2, pp. 256-279, Feb. 2019

[8]   Anand Haridas, Vijay S Rao, R Venkatesha Prasad, and Chayan Sarkar. "Opportunities and Challenges of using Energy-harvesting for NB-IoT", ACM SIGBED Review, 2019.

[9]   Sujay Narayana, R. Venkatesha Prasad, Kevin Warmerdam, "Mind Your Thoughts: BCI Using Single EEG Electrode", IET Cyber-Physical Systems: Theory and Applications, 2018.

[10] M. Mukherjee, L. Shu, R. Venkatesha Prasad, D. Wang, and G. P. Hancke, "Sleep Scheduling for Unbalanced Energy Harvesting in Industrial Wireless Sensor Networks," IEEE Communications, 2018.

[11] Luis Henrik John, Chayan Sarkar, R. Venkatesha Prasad, Where is PELE?: pervasive localization using wearable and handheld devices, ACM SIGBED Review, Volume 15 Issue 2, pp. 8-15, March 2018.

[12] Prabhakar T, V, Vishwas Shashidhar, G S Aishwarya Meghana, R. Venkatesha Prasad, Garani Vittal Pranavendra, Zero energy visible light communication receiver for embedded applications, ACM SIGBED Review, Volume 15 Issue 2, pp. 37-43, March 2018.

[13] Chayan Sarkar, Jan Jaap Treurniet, Sujay Narayana, R. Venkatesha Prasad, and Willem de Boer, SEAT: Secure Energy-efficient Automated Public Transport Ticketing System, Transactions on Green Communications and Networking (TGCN), IEEE, 2017.

[14] Kishor Chandra, Andrea Marcano and Shahid Mumtaz and R Venkatesha Prasad, "Combining Millimeter Wave and Non-Orthogonal Multiple Access for Power-Efficient Ultra-dense 5G Networks' in IEEE Vehicular Technology, 2018.

[15] S. N. Akshay Uttama Nambi, R. Venkatesha Prasad, Antonio R. Lua, "Decentralized Energy Demand Regulation in Smart Homes", Green Communications and Networking IEEE Transactions on, vol. 1, pp. 372-380, 2017.

[16] Kishor Chandra, R Venkatesha Prasad and Ignas Niemegeers "Performance analysis of IEEE 802.11ad MAC protocol", in IEEE Communications Letters, vol. 99. March 2017.

[17] Chayan Sarkar, Vijay S. Rao, R. Venkatesha Prasad, Sankar Narayan Das, Sudip Misra, and Athanasios Vasilakos, VSF: An Energy-Efficient Sensing Framework using Virtual Sensors. IEEE Sensors Journal, 2016.

[18] S. N. A. U. Nambi, E. Pournaras and R. Venkatesha Prasad, "Temporal Self-Regulation of Energy Demand," in IEEE Transactions on Industrial Informatics, vol. 12, no. 3, pp. 1196-1205, June 2016.

[19] Akshay Uttama Nambi S.N., and R. Venkatesha Prasad, Toward the Development of a Techno-Social Smart Grid. IEEE Communications, 2016.

[20] S.F.Bush, J. Paluh, G. Piro, V S Rao, R Venkatesha Prasad, A. Eckford, "Defining Communication at the Bottom", IEEE Transaction on MBMC, 2016.

[21] Stefan Aust, R. Venkatesha Prasad, Ignas G. M. M. Niemegeers, Outdoor Long-Range WLANs: A Lesson for IEEE 802.11ah, IEEE COMST, pp 1761-1775, 2015.

[22] Kishor Chandra, R Venkatesha Prasad and Ignas Niemegeers, "CogCell: Cognitive Interplay between 60GHz picocells and 2.4/5GHz hotspots in the 5G Era," IEEE Communication, Emerging Applications, Services and Engineering for Cognitive Cellular Systems (EASE4CCS), July 2015.

[23] Sarkar, C. and Uttama Nambi S.N., A. and Prasad, R. and Rahim, A. and Neisse, R. and Baldini, G., DIAT: A Scalable Distributed Architecture for IoT, Internet of Things Journal, IEEE PP (99):1-1. 2014

[24] Bien Van Quang, Kishor Chandra, R. Venkatesha Prasad, Ignas Niemegeers "Resource Management in Indoor Hybrid Fi-Wi Network", Transaction on Emerging Technologies, 2014.

[25] V S Rao, Akshay Nambi, R Venkatesha Prasad, I.G.M.M. Niemegeers, "On Systems Generating Context Triggers Through Energy Harvesting" IEEE Communications, June 2014, in Context-Aware Networking and Communications series.

[26] Stefan Aust, Venkatesha Prasad, Ignas G.M.M. Niemegeers, Codebook Selection Strategies in Long-range Sub-1GHz WLANs, Elsevier, Procedia Computer Science, Volume 32, 2014, pp 133-140

[27] Huaizhou Shi, R Venkatesha Prasad, I. G. M. M. Niemegeers, Ming Xu, "Spectrum and Energy Efficient D2DWRAN" IEEE Communications, 2014.

[28] R Venkatesha Prasad, S Devasenapathy, V S Rao, J Vazifehdan, Reincarnation in the Ambiance: Devices and Networks with Energy Harvesting, pp. 1- 19, IEEE Communications Surveys and Tutorials,2014.

[29] Huaizhou Shi, Venkatesha Prasad, Ertan Onur, I.G.M.M. Niemegeers, Fairness in Wireless Networks - Issues, Measures and Challenges, IEEE ComST, pp. 5-24, 2013.

[30] Javad Vazifehdan, Venkatesha Prasad, I.G.M.M. Niemegeers, Energy-Efficient Reliable Routing Considering Residual Energy in Wireless Ad Hoc Networks, IEEE Transaction on Mobile Computing, pp. 434 – 447, 2014.

[31] Huaizhou Shi, R. Venkatesha Prasad, E. Onur, Ignas Niemegeers, "A Distributed Lifetime Guaranteed Mechanism in Cooperative Personal Network", Elsevier Computers & Electrical Engineering, 2013.

[32] Javad Vazifehdan and R. Venkatesha Prasad and Ignas Niemegeers, "On the lifetime of node-to-node communication in wireless ad hoc networks", Elsevier Computer Networks, Vol. 56 (6), pp. 1685 – 1709, 2012.

[33] Gianmarco Baldini, Ranga Rao Venkatesha Prasad, Abdur Rahim Biswas, Klaus Moessner, Matti Etelapera, Juha-Pekka Soininen, Septimiu-Cosmin Nechifor, Vera Stavroulaki, Panagiotis Vlacheas, "A Cognitive Management Framework to Support Exploitation of the Future Internet of Things", Scalable Computing: Practice and Experience, Vol. 13 (2), Jun 2012.

[34] Vazifehdan, Javad, R. Venkatesha Prasad and Niemegeers, Ignas, "Battery-aware Routing in Personal Networks", Wireless Personal Communications, Springer, pp. 1-28, 2012.

[35] Venkata, P.T. and Nambi, S.N.A.U. and Prasad, R.V. and Niemegeers, I., "Bond Graph Modeling for Energy-Harvesting Wireless Sensor Networks", IEEE Computers, Vol. 45 (9), pp. 31 -38, Sep 2012.

[36] Javad Vazifehdan, R Venkatesha Prasad, M. Jacobsson, Ignas Niemegeers, "An Analytical Energy Consumption Model for Packet Transfer over Wireless Links", IEEE Communication Letters, 16 (1), 30 – 33, Jan 2012.

[37] Cheng Guo, R. Venkatesha Prasad, Jiang Jie He, Martin Jacobsson and Ignas Niemegeers, "FIST: a framework for flexible and low-cost wireless testbed for sensor networks", Int. J. Ad Hoc and Ubiquitous Computing, Vol.9, No.2, pp.111 - 121. 2012.

[38] Bien Van Quang, R. Venkatesha Prasad, Ignas Niemegeers, "A Survey on Handoffs – Lessons for 60 GHz Based Wireless Systems," Journal of IEEE Communications Surveys & Tutorials, 2012.

[39] Maurizio Murroni, R Venkatesha Prasad, et al., "IEEE 1900.6 Spectrum Sensing Interfaces and Data Structures for Dynamic Spectrum Access and other Advanced Radio Communication Systems Standard: Technical Aspects and Future Outlook", IEEE Communications, Dec 2011.

[40] Xueli An, R. Venkatesha Prasad, and Ignas Niemegeers, "Impact of Antenna Pattern and Link Model on Directional Neighbor Discovery in 60 GHz Networks", IEEE Trans. On Wireless Communication, Vol. 10, No. 5, May 2011.

[41] Ke Dong, Diptanil Debbarma, R. Venkatesha Prasad, Cheng Guo, "Performance Study of Clustering of ZigBee Devices in OPNET", short note, ACM Performance Evaluation Review, Vol 39, No 2, September 2011.

[42] Jinglong Zhou, Venkatesha Prasad R, Yue Lu, Ignas Niemegeers, "Analysis of a Multi-hop Integrated UMTS and WLAN Network", Springer Telecommunication Systems Journal, September 2011.

[43] Javad Vazifehdan, R Venkatesha Prasad, Ignas Niemegeers, "Energy-Aware Routing Algorithms for Wireless Ad Hoc Networks with Heterogeneous Power Supplies" Elsevier Communication Networks, Computer Networks, Volume 55 Issue 15, October 2011.

[44] Y. Gu, R. Venkatesha Prasad, Ignas Niemegeers, "Mobility Modeling for Personal Networks", Springer Wireless Personal Communications, Volume 58, Issue 2 (2011), Page 169.

[45] Bien Van Quang, R. Venkatesha Prasad, Ignas Niemegeers, "Handoff in Radio over Fiber Indoor Networks at 60 GHz", Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications, 2010.

[46] X. An, C. S. Sum, R. Venkatesha Prasad, H. Harada, and I. Niemegeers, "Performance Analysis of Synchronization Frame based Interference Mitigation in 60 GHz WPANs," IEEE Communications Letters, 2010.

[47] J. Wang, R. Venkatesha Prasad, and I.G.M.M. Niemegeers, "Solving the Uncertainty of Vertical Handovers in Multi-radio Home Networks Computer Communications", Elsevier Computer Communications, Feb. 2010.

[48] J. Wang, R. Venkatesha Prasad, and I.G.M.M. Niemegeers, "In House High Definition Multimedia: An Overview on Quality-of-Service Requirements", International Journal of Research and Reviews in Computer Science, Science Academy Publisher, March 2010

[49] Prabhakar Venkata Tamma, Jamadagni H.S., Akshay Uttama Nambi, Krishna Swaroop, R Venkatesha Prasad, I.G.M.M. Niemegeers, "A novel DTN based energy neutral transfer scheme for energy harvested WSN Gateways", ACM Performance Evaluation Review, Dec 2010.

[50] F. Granelli, P. Pawe czak, R. Venkatesha Prasad, K.P. Subbalakshmi, R. Chandramouli, J.A. Hoffmeyer, S. Berger, "Standardization and Research in Cognitive and Dynamic Spectrum Access Networks: IEEE SCC 41 Efforts and Open Issues", IEEE Communications, Jan 2010.

[51] J. Wang, R. Venkatesha Prasad and I.G.M.M. Niemegeers, "Analyzing 60 GHz Radio Links for Indoor Communications", IEEE Trans. on Consumer Electronics, vol: 55, no: 4, pp: 1832-1840, Nov. 2009.

[52] J. Wang, R. Venkatesha Prasad, Xueli An, Ignas Niemegeers, "Wireless Sensor Network Based Indoor Positioning System for Context-aware Applications", Wiley Wireless Communications and Mobile Computing, 2009; 9:1–20.

[53] P. Pawelczak, S. Pollin, H-S. W. So, A. Bahai, R.Venkatesha Prasad, R. Hekmat, Performance Analysis of Multichannel Medium Access Control Algorithms for Opportunistic Spectrum Access, IEEE Transactions on Vehicular Technology, Sept. 2009.

[54] P. Pawelczak, S. Pollin, H-S. W. So, A. Motamedi, A. Bahai, R.Venkatesha Prasad, R. Hekmat, "Quality of Service of Opportunistic Spectrum Access: A Medium Access Control Approach", IEEE Wireless Communications, Volume: 15, No. 5, pp. 20-29, Oct 2008.

[55] Novi Ineka, R Venkatesha Prasad, M. Jacobsson, Ignas Niemegeers, "Address Autoconfiguration in Wireless Ad Hoc Networks: Protocols and Techniques" IEEE Wireless Communications, Vol 15, No. 1, pp 70-80, Feb 2008.

[56] R. Venkatesha Prasad, P. Pawelczak, J. Hoffmeyer and S. Berger, "Cognitive Functionality in the Next-Generation Wireless Networks: Standardization Efforts", IEEE Communications, Vol. 46, No. 4 pp. 72-78, April 2008.

[57] Bao Linh Dang, M. Garcia Larrode, R. Venkatesha Prasad, Ignas Niemegeers, A. M. J. Koonen, "Radio over Fiber based Architecture for Seamless Wireless Indoor Communication in the 60 GHz band", Elsevier Computer Communication Journal, 30, 18 (Dec 2007), 3598–3613.

[58] Anthony Lo, Weidong Lu, Martin Jacobsson, R Venkatesha Prasad and I. Niemegeers, "Personal Networks: An Overlay Architecture for 4G Mobile Communication Networks", Teletronikk journal, Vol.16, No.1, 2007.

[59] R. Venkatesha Prasad, H. S. Jamadagni, H. N. Shankar, "Number of Floors for a Voice-Only Conference on Packet Networks - A Conjecture", Proceedings IEE Communication, Special Issue on Internet Protocols, Technology and Applications (VoIP), 2004.

[60] Venkatesha Prasad, Joy Kuri, H. S. Jamadagni and Ravi Ravindranath, "A Scalable Architecture for VoIP Conferencing", in Journal on Systemics, Cybernetics and Informatics, Vol. 1, No. 11, 2003.

Peer Reviewed Book Chapters

[1] Kishor Chandra, Anggrit Pinangkis, R. Venkatesha Prasad "Codebook-Based Beamforming Protocols for Millimeter Wave Communications", Accepted in 5G Networks: Fundamentals, Requirements, Enabling Technologies, and Operations Management, IEEE Wiley 5G Book, 2017.

[2] Ricardo Neisse, Bertrand Copigneaux, Abdur Rahim Biswas, R. Venkatesha Prasad, Gianmarco Baldini, "A Policy Based approach for Informed Consent in Internet of Things, in Book: Security and Privacy in Internet of Things (IoTs): Models, Algorithms, and Implementations," ed. Fei Hu, CRC Press, 2016.

[3] John Soldatos, et al., "IoT Analytics: Collect, Process, Analyze, and Present Massive Amounts of Operational Data – Research and Innovation Challenges", in IERC Cluster Book, "Building the Hyperconnected Society - Internet of Things Research and Innovation - Value Chains, Ecosystem and Markets", River Publishers, 2015.

[4] Kishor Chandra, R. Venkatesha Prasad "Directional MAC Protocols for 60GHz Millimeter Wave WLANs", in Wireless Network Performance Enhancement via Directional Antennas: Models, Protocols, and Systems, Taylor & Francis LLC, CRC Press, 2015.

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53. Int. J. of Sensor Networks.
54. Informatica - Int. J. on Computing and Information.
55. IEEE JSAC Nano-Communication.
56. IEEE JSAC- Emerging Technologies in Communications
57. IEEE JSAC- Cognitive Radio Networking and Communications.
58. Springer Journal of Network, and Systems Management.
59. Journal of Communications and Networks.
60. IEEE Communication Surveys and Tutorials.
61. IEEE JSTP.
62. Journal of Network and Systems Management.
63. IEEE Access.
64. IEEE Intelligent Systems.
65. IEEE Transactions on Cyber-Physical Systems.
66. IEEE Transactions on Control of Network Systems.

TPC Membership

Chaired Sessions in many of the following conferences.

1. IEEE INFOCOM 2019 SMILING Workshop
2. IEEE Infocom 2016 to 2019.
3. IEEE WF-5G 2018.
4. International Conference on the Network of the Future (NoF) 2018.
5. Workshop on LPWAN Systems and Applications (LPWANSys) 2018.
6. IEEE DySpan 2015 to 2018.
7. SENSORNETS-2013 to 2017.
8. IEEE ICC (Various tracks) 2008-2019.
9. IEEE Globecom (Various tracks) 2008-2019.
10. IEEE CLEEN workshop, 2018 - 2019
11. CORAL Workshop 2012, 2013, 2015, 2016.
12. IEEE International Symposium on Software Defined Systems, 2016.
13. ACM EWSN 2016.
14. Workshop: IoT as driver for the co-created Smart City, WF-IoT 2016.
15. IEEE VTC Spring-2009, 2010, 2015, Fall-2008, 2010, 2012, 2013, 2016.
16. IEEE TenSymp, 2015.
17. ComsNets PhD Forum, 2015.
18. ComsNets 2015.
19. IEEE SWANSITY (SECON) 2015.
20. conference on sensing systems and software, IoT Summit, 2015.
21. Self-IoT 2015.
22. CiviTech in the context of SmartCity 360, 2015.
23. IoTIP 2015.
24. IEEE International Conference on Computer and Information Technology (CIT 2015).
25. IEEE SDS 2015.
26. IEEE MCV 2014.
27. CROWNCOM 2007-2014.

28. CCNC-14 Demos.
29. IEEE goSMART 2012 – 2014.
30. IEEE WCNC-2008 to 2013.
31. Networking Track IEEE CCNC-2009, 2010, 2013
32. IEEE SECON-2009 to 2013, 2019.
33. IEEE GreenCom 2011 to 2016.
34. Future Network and MobileSummit 2013.
35. PerCom CCC 2012, 2013 Workshop.
36. USENIX Self-IoT 2012, 2013 Workshop.
37. International Conference on Telecommunications 2012, 2013.
38. Future Network Summit-2013.
39. Symposium on Communications Engineering - JIEEEC 2013
40. MobileCloud-2013 at MobiHoc 2013.
41. MILCOM-2013,
42. ICUFN-2013,
43. IEEE RAICS 2013,
44. LCDNET-2013 at MobiCom 2013.
45. ICCVE-2013.
46. Internet Technology and Applications (iTAP) 2012 and 2013.
47. GlobeCom AHSN 2010 to 2012.
48. Cognitive, Cooperative & Diversity Techniques (CCDT), 2012
49. Cooperative and Cognitive Communication IEEE Infocom-2012
50. Cognitive, Cooperative & Diversity Techniques (CCDT) 2012 Workshop.
51. ICBME—2012, India
52. IEEE ICCC-CQR, 2012.
53. IWCMC Wireless Networks track, 2011, 2012.
54. WCSP'12 – WNS.
55. GlobeCom SAC 2008 to 2011
56. WoNGeN-2008, 2011 (with IEEE HiPC).
57. Cognitive and Resource Aware Communication (CRWC), ICCCN 2011
58. NCC, Bangalore, 2011
59. Mobihealth, at MobiHoc, 2011
60. Cognitive and Cooperative Networks Workshop at Infocm 2011.
61. CogArt 2011.
62. IEEE PIMRC-2008, 2010
63. IEEE LCN -2009, 2010.
64. MOBILIGHT-2009, 2010.
65. SDR/Whitespace Workshop with SECON, 2010.
66. Workshop Cognitive Radio Resource Aware Networks (CR-RAN), 2010
67. Workshop on CR-TVWS, IPCCC, 2010
68. Advances in Next Generation Services and Service Architectures (ANGSA) 2010
69. Wireless Telecommunication Symposium (WTS), 2010
70. International Conference on Ubiquitous and Future Networks (IEEE ICUFN) 2009, 2010.
71. Ubi-Islands 2009, 2010
72. CoRoNet-2009, Mobicom, Beijing.
73. ACM WICON-2008, 2009.
74. Member International Conference on Future Information Networks (ICFIN), 2009
75. International Conference on Computer Science and Global Communications Technology, Nepal, 2009.
76. Wireless VITAE 2009.
77. COGCOM 2009 (ICCCN).

78. IEEE IMSAA 2009
79. ChinaCom-2007, 2008.
80. IEEE ICCCN-2008
81. IEEE Symposium on Computer and Communications 2002 to 2008.
82. IEEE ICCCN-2008, Cognitive Radio Track.
83. IEEE ADCOM-2008, Chennai.
84. COMSWARE-2007.
85. ACM MM (Networking) -2007.
86. CoNET-2007.
87. ATNAC-04.

Conference Reviews

1. ACM – SIGCHI - 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012.
2. British HCI – 2006, 2007, 2008.
3. ACM-SIGCHI DIS2004: Designing Interactive Systems, Cambridge, Massachusetts.
4. ACM- Computer Supported Collaborative Work - CSCW 2004, 2008, 2010, 2013.
5. ACM workshop on Modeling, Analysis and Simulation of Wireless and Mobile Systems, San Diego, 2003, and Venice, Italy, 2004.
6. IEEE VTC 2017
7. IEEE International Conference on Communication Systems - 2006.
8. IEEE International Conference on Network Protocols - 2006.
9. IEEE International Conference on Telecommunications - 2013.
10. IEEE International Conference on Communications and Electronics - 2006
11. IEEE European Wireless 2006.
12. ACM HCI 2006, 2008
13. CCCT 2004, Texas Austin, CCCT 2005 - University of Texas, Austin.
14. Risk Management and Cyber Informatics (RMCI- 2005, 2006, 2007, 2008, 2009).
15. IEEE International Conference on Computer Communications and Networks, ICCN-2007.
16. ACM VRST-2007.
17. SCVT-2007
18. IWCMC 2010
19. IEEE TenCon-2008.
20. IEEE DySpan 2008, 2010,
21. Infocm Workshop on Mobile Cloud Computing, 2014.
22. Third International IFIP Conference on New Technologies, Mobility and Security – 2009
23. IEEE ICC-2010, Signal Processing Track.
24. IEEE ADCOM – 2009.
25. International Conference on Wireless Communication and Signal Processing.
26. ICCCN 2007
27. IEEE ICNP 2006
28. IEEE Conference on Wireless Communication and Signal Processing 2009
29. Workshop on Mobile Computing and Networking Technologies (WMCNT). 2011
30. Workshop on Ubiquitous Computing and Networks, with Globecom, 2011
31. ACM EICS 2010
32. ACM CSCW 2011
33. European Wireless Technology Conference (EuWiT) 2010
34. Future Network and Mobile Summit 2010, 2013
35. NTMS Mobility Track, 2009

Appendix - C

Associate Professor/Senior Researcher at Embedded Networked Systems /Wireless and Mobile Communications (WMC), TU Delft, Netherlands (March 2005 – Present)

I initially worked as a Postdoctoral researcher in Wireless and Mobile Communications group, TU Delft from March 2005 to January 2008 and then a permanent research faculty in WMC group from January 2008-2011. My major contributions/responsibilities can be summarized briefly as:

1. Acquisition, research and implementation of Dutch national and European projects.
2. Initiated and organized three workshops: Personalized Networks (PerNets), Cognitive Networks (CogNets) and Energy Efficiency in Wireless Networks and Wireless Networks for Energy Efficiency (E2Nets) have been successfully running now with IEEE ICC.
3. Organizing workshops, conferences, and chairing sessions apart from reviewing papers for a large number of conferences, journals and magazines.
4. Contributed significantly to IEEE P1900.x standardization work on Cognitive Radios. WG member of six standards.
5. Supervising MSc and PhD students.
6. Published over 150 conference and journal papers (including book chapters) and contributed to technical reports/deliverables of the projects.
7. Contributed to EU project proposals representing the group.
8. I am also involved in the task of setting up of collaboration with Indian universities.
9. I am taking leadership role in being standards liaison for IEEE TCs and I was Secretary of IEEE CSDB and member of IEEE CSPDB.
10. I had been the Secretary of IEEE TCCN, currently the Vice-chair of IEEE TCCN.

My main task had been to work on European projects EU funded MAGNET and MAGNET Beyond, and IST funded PNP2008. I was involved in Future Home Networks project. In these Personal Network based projects, I have mainly contributed on network architectures, Personal Network (PN) clustering, Foreign Communications and PN Federations. I have guided PhD and MSc students and have also published on these topics. I have also worked on auto-configuration and self-configuration, service discovery in PNs, localization algorithms in sensor networks.

I supervised PhD theses on 60GHz indoor communications and handoffs, Cognitive Radios, Group-Mobility models especially for PNs and Vertical Handoff in Future Home Networks. Our work on OPT-Online Person Tracking system has been demonstrated at Mobihoc conference and has been used as one of the context generator in MAGNET Beyond projects. Many research publications based on our new ideas in 60GHz Future Home Networks lead to funding of curiosity driven project in the domain of Fi-Wi networks with directional antennas.

I was an IEEE working group member of the IEEE SCC41, P1900.1, P1900.2, 1900.5/a/.1, 1900.6 and P1900.4. I am part of IEEE P1900.1/a, P1900.2, 1900.5 and 1900.6/a standards. I have contributed significantly to them, especially P1900.2 for which I have received a certificate of appreciation for the outstanding contribution. I also take care of IT subcommittee of IEEE DySpan-SC. I am a member of IEEE ComSoc Standards Board. I have been an active member, secretary and now the vice chair of IEEE TCCN. I am a member of IEEE CSPDB providing impetus for identifying and helping new standards in wireless networking, mobile communication, etc. I served as the Secretary of IEEE CSDB, which governs all the IEEE ComSoc sponsored IEEE Standards.

Apart from these, I have conducted and chaired conferences, tutorials and, workshops on Personal Networks and Cognitive Radio. I have been invited on to the Organizing Committee and Technical Programme Committee of many prestigious conferences and I have been a reviewer for many IEEE transactions and Elsevier journals. Further, I have contributed and lead proposals for new workshops.

I have been coordinating setting up of collaboration between TU Delft and Indian Institute of Science. Recently IISc and TU Delft signed an MoU to further the cause of joint work in many areas of interests and research, especially in the field of computing and communications. I have received letter of appreciation from the chair of WMC and the dean of EWI, TU Delft for my contribution in the group *seven* times. Recognizing my work at WMC, TU Delft, I was invited as a juror for Pirelli Mathematics track awards and as a reviewer of Ireland Science Foundation funded project proposals with gratification.

From 2012 onwards, I am working as a tenured faculty member at Embedded Networked Systems group in EEMCS, TU Delft. My research work profile involves Internet of Things, Cyber Physical Systems, Energy Harvesting WSNs, 60GHz indoor home networking with directional antennas. I am specifically working on Approximate services, Virtual Sensing, IEEE 802.15.3c, IEEE 802.11ad for 60GHz networks and Fairness in IEEE 802.22 WRANs. I am teaching two master's level courses – Ad hoc networks that I handle independently, and seminar course on Internet of Things that I offer with another colleague. Currently, I am (co-)supervising seven Ph.D students and 3 Master students. Further, my work profile also deals with acquisition of projects funded by EU and National agencies. As a tenured faculty I am involved in Examination Committee and also helped the support staff for improving wireless network infrastructure.

APPENDIX - D

Senior Design Consultant at Esqube Communication Solutions Pvt. Ltd., Bangalore, India.

Voice Enabled Applications and Services (July 2006 – 2009)

I was working as a senior design consultant taking care of the innovative voice-enabled applications for Web as well as standalone applications mainly on Windows platform. The products/applications that I was involved in during this period are:

1. CQube a 'click to talk' browser-based application for enabling the websites with interactive voice and video.
2. Web-based Voice Mail – a voice mail application for the webpages.
3. VoIP Player for decoding and playing back the voice data after snooping the VoIP application packets from the Internet.
4. VQube - a VoIP application suite indigenously developed at Esqube – I worked on the design of various modules, testing, and debugging.
5. Flash Player for enabling the websites with text, voice and video communications.
6. Worked on design and development of Telecom and VoIP related service orientated projects such as web based calls, multiparty conferencing , etc.
7. Callback facility for portals bringing PSTN and Web together.
8. PSTN Phone aliasing and Anonymous dialing applications.
9. PSTN Conferencing Solution with web interface and management.
10. SIP based PSTN Callback service.
11. PSTN-Web enabled Voice Mail service.
12. Wrote project proposals for external funded research projects as well as R&D proposals for customers.
13. From Esqube, I have filed a total of 4 patents out of which 1 is awarded, 1 has PCT acceptance.

I was also involved in managing and team building including recruitment and interacting with clients at Esqube.

Development of P2P VoIP Services and an Ad hoc Service network (November 2003 – 2005)

I was leading a team of ten members that developed a customizable VoIP application stack. I was responsible for guiding the team members, testing, discussing with customers and managing the work flow. At Esqube I was involved in infrastructure development of P2P VoIP services. This included server deployment and client development too. Mainly, I was involved in design of VoIP services and fine-

tuning the application core for very low bandwidth conditions, aiming at long distance low cost solutions at low bandwidth. I designed the servers and developed newer algorithms that suit the requirements for dial up users for example, Adaptive playout delay algorithm and VAD.

Further, I was involved in the development of a VoIP application called VQube along with scalable servers, Web based VoIP clients and Web based Voice Mail system (called CQube). My work also included solving many network issues for VoIP such as Firewall, NAT, etc. I integrated many Codecs and facilities such as customizable Answering Machine, Voice Mail Service, Call recording, Network quality measurement and P2P conferencing. The aim was to have a VoIP solution that would try to be a Personal Voice Assistant as well.

I was also involved in leading a team of four towards implementing an "Ad hoc Service Network". We used Bluetooth enabled sensors from *ImpulseSoft* for the purpose. We connected these small sensor nodes in ad hoc mode with a "Personal Area System" (PAS), which is connected to the backbone network. I started two processes – Employee selection and Network administration processes. I was responsible for network maintenance and network administration.

APPENDIX – E

Project Associate and Consultant at CEDT, IISc, Bangalore, India (1999 – 2003)

Design and Implementation of Voice over IP (VoIP) Testbed

This project was aimed at providing a complete corporate telecom solution with the facilities of conferencing, voice mail, PBX facilities and gateway connectivity to the PSTN. The setup for the product involved these components: Call Processor, Conference Server, PSTN Gateway, Voice Mail Server, PBX Server and Soft Clients. Initially, I joined the project as a Project Associate and after one year of completion I was designated as Project Consultant. As a project associate, I was designing and coding the Conference server and Call Processor, along with the overall design of the complete VoIP system. I developed a proprietary protocol to implement a novel system for conferencing. In the second year I developed a distributed conferencing solution and built a prototype of the whole system. The coding of the software was carried out using C++. I was involved in coding, designing the architectures and in guiding project assistants towards achieving the aim of building the prototype. New idea generation and new algorithms for implementations were necessary part of my work profile.

In the third year, Voice Mail Server design was carried out and implemented with other project assistants working in the team. I was also involved in designing PBX functionalities for VoIP clients. The testing of the various entities in the prototype formed essential aspects of the work carried out.

In the fourth year a PSTN Gateway was designed and I guided project assistants in implementing the gateway. The work involved extensive work in understanding Dialogic (Intel) hardware and the associated API. The gateway design involved an additional server and its integration into the Call Processor. It also included testing of various entities of the VoIP test-bed collectively.

I was also involved in guiding a project trainee from a foreign university to implement SIP Proxy and Client. The discussions and brainstorming with him paved way to design work for providing conferencing support using SIP. The ideas from these discussions ultimately lead to presenting a few papers in international conferences.

The conferencing system was tested with multiple parties and some of the results were published in the PhD thesis which was part of this work. Performance studies were done during the course of this project. Later this work was productized and branded as VQube at Esqube communication Solutions Pvt. Ltd.

Apart from the development work, I have given many short lectures on VoIP. Many industry courses were conducted in our department and I have supported the team by giving lectures. One of them was the weeklong VOIP workshop that was organized by our department and I had given 12 hours of

lectures on various issues in VoIP and development of a VoIP Product. We successfully demonstrated our project to leading corporate CEO's and they have applauded our work. The basic ideas, the experiences and the lessons learned during this exercise were taken to the next stage to make a product VQube, at a start-up by professors from IISc – Esqube Communication Solutions. I have also guided three groups of undergraduate students for their final year project and many short-term projects for B.E. students in the third and fourth years.