

### **About me**

I am associated with the field of Electronics, instrumentation, embedded technology and information technology. With a teaching background followed by working in a research & development team of a company, I have a flair for understanding design requirements, planning for optimum resource usage and completion of assigned jobs to follow rigid time schedules. The teaching background helps me in understanding and defining objectives in the proper perspective while the professional experience allows me to execute the planned strategies to make the job effective; purpose-wise and economy-wise. I see myself as an effective communicator in the role of a teacher/trainer or in the role of a systems manager responsible for project handling in the field of Electronics and Information Technology.

### **Professional status**

Currently I am employed in the capacity of Assistant Professor at the Department of Physics and Electronics of Shivaji Mahavidyalaya, Udgir, Dist. Latur (affiliated to Swami Ramanand Teerth Marathwada University, Nanded).

Prior to this (Dec 2006 to March 20011), I was working in the research and development division of a private enterprise. The team was responsible for generating new project ideas, identifying and generating resources for establishing new designs, deliver product prototype for large scale production. My responsibilities included management of schematic designing, PCB designing, software/firmware designing, product designing, assembly and testing of product and generation of related documentation of (and for) the product. I was also entrusted with the IT infrastructure required by the company.

### **Technical Capabilities**

- Designing and planning of electronic systems
- Use of test and measurement equipment like CRO, DSO, DMM, spectrum analyzer, pc based DAQ
- Electronic system fitness testing
- Embedded technology and related programming
- Computer technology and related networking
- Radio frequency and related technologies
- IPR related activities and documentation
- Documentation of activities required as “institutional memories”
- Producing documentation including system manuals
- Effective communicator for explaining technology
- Understanding of Ultrasonic phenomenon and related instrumentation

**Teaching**

- Currently (since Mar-2011) employed in the capacity of Assistant Professor in Electronics at the Department of Physics and Electronics of Shivaji Mahavidyalaya, Udgir, Dist. Latur (affiliated to Swami Ramanand Teerth Marathwada University, Nanded).
- Contributory (part-time) Lecturer in the Post Graduate Teaching Department of the Nagpur University, at Department of Electronics & Computer Science, since 1996. Engaged Practical Laboratory Course (since Summer 1996) and also Theory Course on “Antenna Fundamentals and Satellite Communication” (since Summer 2000). Guided over 25 M.Sc. student projects.
- Mentor to Student Scientist; Tanmay Khirwadkar, one of the twelve International Winners of the competition “Red Rover Goes to Mars” conducted by The Planetary Society, USA (2000).

**Co-Curricular Activities**

- Member of various committees in the college, including – NAAC, Avishkar/Anveshan, Science Quiz amongst others.
- Experience in exam work including invigilation, paper setting and evaluation.

**Workshops/Seminars/Conferences/International visits**

- National Seminar on *Role of NAAC in quality enhancement of colleges* at Maharashtra Mahavidyalaya, Nilanga on 31Jan2015.
- *Workshop on NAAC awareness* at the SRTMU Nanded on 26-27Dec2014
- *Hands-on training cum syllabus workshop* on Labview at LAD College Nagpur on 19Apr2014.
- *One day workshop on Revised Curriculum in Physic/Electronics (UG)* at Gramin Mahavidyalaya, Vasantnagar on 20Sep2013.
- *Workshop on Patents: Rules and Regulations* at SRTMU Nanded on 18July2013.
- *Refresher Course in Research Methodologies* at the Academic Staf College, Jabalpur from 25March2013 to 13April2013 with ‘A’ grade.
- *8<sup>th</sup> International Conference on Advances in Metrology (AdMet-2013)*, from Feb 21 to 23 2013, at the National Physical Laboratory (New Delhi, India).
- *Orientation Program* at the Academic Staff College, Jabalpur from 7May2012 to 2June2012 (83<sup>rd</sup> Orientation Program) with ‘A’ grade.
- *Workshop on New Syllabi in Physics – B.Sc. III year, Semester Pattern* at M.G.M, Ahmedpur on 10September2011.
- Visited *Elettra*, Trieste (Italy), for a period of two weeks (Nov-Dec 2006).
- *Workshop cum training course on Meteorites, Asteroids and Planets*, from Feb 26 to Mar 2 2001, at the Physical Research Laboratory (Ahemdabad, India).
- *Workshop on Physics of Mesosphere Stratosphere Troposphere interactions with special emphasis on MST radar techniques*, from Nov 13 to 24 2000, at the International Centre for Theoretical Physics (Trieste, Italy).

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- Visited *Aeronomy and Radiowave Propagation Laboratory* at the International Centre for Theoretical Physics, Trieste (Italy), for a period of one month (October-November 1997) under Federation Agreement Program.
  - *International Conference on Instrumentation (ICI-96)* from 1996, at the Indian Institute of Science (Bangalore, India).

## Research

- Awarded the Summer Research Fellowship by Indian Academy of Science. The work titled *Development of an embedded technology tool for seismological studies using MEMS devices* was executed in May-June 2013 under the guidance of Prof. Rudra Pratap (Chairman, Center for Nano Science and Engineering, IISc, Bangalore)
- Recognised Ph.D. guide in Electronics at the Rashtrasant Tukadoji Maharaj Nagpur University. Areas of interest are Instrumentation, Atmospheric/Ionospheric sciences, Seismological studies, Embedded Technology and related topics.
- Doctoral research work included designing and development of a PC based ultrasonic pulse echo technique where echoes are digitized through a novel approach of deploying slower devices to digitize fast events, using locally available components. Digitized data is acquired by PC using an in-house developed ISA card, displayed in graphical format and is saved as a data file on the PC. A software module has been written in Visual Basic to display and analyze the raw data for estimation of the ultrasonic velocity and attenuation in the sample under consideration.
- Participated in development of Meteor Doppler Radar for detection of radio meteors at 36MHz. The work involved designing of RF transmitter (1kW peak pulsed power), receiver, antenna system and the subsequent data processing modules. I was also involved in obtaining the license to develop and implement the project.

## Research Papers

- *E-surveillance: Instrumentation for enforcement of regulation*, V. M. Pendsey, A. M. Mundhada, V. R. Vyaghra, Proceedings of the 7<sup>th</sup> International Conference on Trends in Industrial measurements and automation, 2011, 495.
- *High resolution ultrasonic attenuation measurement in Pulse-echo setup*. P.K. Dubey, S. Rajagopalan, V.R. Vyaghra, V.M. Pendsey, S.J. Sharma Mapan, 23(4), 2008, 245.
- *PC based Ultrasonic Attenuation Recorder*, S. Rajagopalan, S.J. Sharma, V.R. Vyaghra, Journal of Pure and Applied Ultrasonics (29), 2007, 42-45.
- *Remote surface mapping using ultrasonic technique*, S. Rajagopalan, S.J. Sharma, P.K. Dubey, V.R. Vyaghra, V.M. Pendsey, Fourteenth National Symposium on Ultrasonics, NPL, New Delhi, February 2006.
- *PC based measurement of absorption coefficient in ultrasonic pulse echo technique using ISA card*, S. Rajagopalan, S.J. Sharma, V.M. Pendsey, P.K. Dubey, V.R. Vyaghra, National Symposium on Instrumentation (NSI-30), CUSAT, Cochin, December 2005.
- *Design of 10MHz pulser and receiver for ultrasonic studies*, S. Rajagopalan, S.J. Sharma, V.M. Pendsey, V.R. Vyaghra, P.K. Dubey, National Symposium on Instrumentation (NSI-30), CUSAT, Cochin, December 2005

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- *Compensated non-contact distance measurement for anthropometric applications*, S. Rajagopalan, S.J. Sharma, V.R. Vyaghra, P.K. Dubey, V.M. Pendsey, National Symposium on Instrumentation (NSI-30), CUSAT, Cochin, December 2005.
  - *Demonstration of temperature surveillance using semi-intelligent adapting robotic vehicle*, S. Rajagopalan, S.J. Sharma, V.R. Vyaghra, Javed Sheikh, National Symposium on Instrumentation (NSI-30), CUSAT, Cochin, December 2005.
  - *Development of effective software tool for harmonic analysis of speech signals*, S. Rajagopalan, S.J. Sharma, V.R. Vyaghra, Sunil Mittal, National Symposium on Instrumentation (NSI-30), CUSAT, Cochin, December 2005.
  - *PC based high resolution velocity measurement in an ultrasonic pulse-echo setup*, S. Rajagopalan, S.J. Sharma, V.R. Vyaghra, International Conference on Instrumentation (INCON 2004), COEP, Pune, 2004
  - *Design and fabrication of interferometer for solar/radio studies*, S.M. Deshpande, V.R. Vyaghra, G.N. Navaneeth, International Conference on Instrumentation (ICI-97), IISc, Bangalore, 1997.

### **Books Published**

*Signal Processing for High Frequency Characterisation of Liquids: Advanced Digital Techniques*, Vyankatesh Vyaghra, Satish Sharma, S. Rajagopalan, Lambert Academic Publishing GmbH & Co., Germany, 2011 (ISBN: 978-3-8454-3416-2)

### **Invited Talks**

- *Evolution of Computers: Electronics perspective*, 20Mar2015, Department of Electronics, Sindhu Mahavidyalaya, Nagpur
- *Recent Aspects in Mobile Technology*, 30Aug2014, Department of Electronics and Computer Science, RTM Nagpur University
- *Demonstration of Electronic Circuit Simulation Software using some typical circuits*, 26Jul2014, Sindhu Mahavidyalaya, Nagpur (at the One day workshop on Circuit-maker for teaching faculty of RTM Nagpur University)
- *An introduction to simulation software for electronic studies*, 22Feb2014, Mohta Science College, Nagpur (at the One day symposium on Interactions in Fundamental Electronics – IFE-14)
- *M for Morphology, M for Maths*, 13Jan2014, Under Graduate Research Program in Life Sciences, Sindhu Mahavidyalaya, Nagpur
- *Space: Spectrum of Sciences*, Department of Electronics, Sindhu Mahavidyalaya, Nagpur
- *Perspectives of technology: Evolution of Hardware and Software*, 2Dec2013, Refresher Course, ASC Nagpur (conducted at Dept. of Electronics & Computer Science)
- *Perspectives of technology: Electronics, Signals and Maths*, 3Dec2013, Refresher Course, ASC Nagpur (conducted at Dept. of Electronics & Computer Science)
- *Contemporary perspectives of Information Technology*, 23Oct2012, Refresher Course, ASC Nagpur (conducted at Dept. of Electronics & Computer Science)
- *Meteors*, 17August2012, Shri Rajendra High School & Junior College, Nagpur
- *Relevance of Maximum Power Transfer Theorem in Electronics*, 16Aug2012, Department of Electronics and Computer Science, RTM Nagpur University, Nagpur.

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- *Effective PC Based Data Acquisition And Communication Techniques*, 3Sep2011, Department of Electronics and Computer Science, RTM Nagpur University, Nagpur.

**M.Sc. projects supervised (partial list)**

- Modification of PC CRT monitor as low bandwidth oscilloscope to display square, sine and triangular waveforms.
- Using superficial skin impedance measurement for monitoring of local anesthesia.
- Solid-state memory for digitizing and recording human voice
- Designing of software based digital filters for voice/speech analysis
- Evolution of a 200 steps stepper motor into a 1600 steps micro stepping motor
- Exploring PLC's and implementing finite state machines using PC and microcontrollers.
- Demonstration of magnetic levitation train.
- Line following car (this project was awarded second prize at 'Quantum 2005', a national level project competition and, with the first prize at a state level competition organized by IETE).

**Industry Interaction (design and development)**

- Low power electronic stimulator for studies of certain olfactory response in some fishes.
- High Voltage generator for studying effects of Electrostatic field on animal tissues.
- Ozone generator using Dielectric-Barrier-Discharge.
- Microcontroller based switching network to transfer serial data to one-off fifty machines from a central PC.
- Long duration timer whose period can be set from few seconds to few months.
- RF and IR based wireless link for data exchange between PC-microcontroller and microcontroller-microcontroller.
- IR based remote control for appliance switching.
- Interface for acquiring 4-20mA current loop data into PC for online display and storage purposes using 12bit analogue to digital conversion for better accuracy.
- Linear binary encoder system with interface to PC through printer port for position estimation. The system was multiplexed to acquire data from 24 such modules.
- Decoding of multiple digit 7-segment data into multiplexed 4-bit data for devices that do not have data port access.
- Data transfer using 'fixed-station' and 'portable' wireless sets using DTMF technology.
- Ore material grading system using magnetic field technology.
- Electronic in-situ data acquisition and storage module for custom applications.
- Worked in a project targeted to provide LED lighting solution for far-off rural areas.
- Ultrasonic agitator for cleaner and for homogeneous mixing applications.
- Experience in working on "intelligent home/industrial automation system" with access provision to devices over phone, cell phone and via Internet.
- The doctoral research work is being assessed as a commercial product for material characterization and as a flaw detector.

## Personal Information

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Date of Birth 24 March 1973

Gender Male

Nationality Indian

Marital Status Married

Mother Tongue Marathi

Languages Known English, Hindi, Marathi  
(Read, write & speak)



## Education (Essential)

Exam	Board/University	Subject	Institution
SSC 1988	M.S. Board Nagpur Div	Languages, Science, Social Science, Mathematics	Sarasvati Vidyalaya Nagpur
HSSC 1990	M.S. Board Nagpur Div	Languages, Mathematics Phy, Chem, Bio	Hislop College Nagpur
B.Sc. 1993	Nagpur University	Electronics, Physics, Mathematics	Hislop College Nagpur
M.Sc. Electronics 1995	Nagpur University	Applied instrumentation Bio-medical instrumentation Laboratory instrumentation	PGTD Nagpur University
Ph.D.	RTM Nagpur University	Electronics	2008 (Awarded)

\* Languages indicate English, Hindi and Marathi.

\* Science includes Physics, Chemistry and Biology (or Zoology + Botany).

\* Nagpur University is now known as Rashtant Tukadoji Maharaj (RTM) Nagpur University

\* **Title for Ph.D., “Ultrasonic Signal Processing for Characterization of Matter”**

\* Projects Graduation: 4x4 Diode Matrix ROM

Post Graduation:

M Sc I – Different techniques of Wind Velocity Measurement

M Sc II – Customization of AutoCAD for circuit designing