Dr. Shashikant Sadistap

Chief Scientist, IT Group, Professor AcSIR (CSIR-NEERI)

CSIR-NEERI, Nagpur, India

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- **Research (R&D) Experience:**
  - Thirty four years' experience in development of real time Intelligent Embedded systems design & applications **for water, Agro and power sector**
  - During this period 20 major projects were successfully completed and technologies transferred to Industries / Govt. Organizations

- **Vision: On the basis of my 34 years of research and teaching experience, I foresee the following emerging areas as field of my interest**
  - Intelligent Instrumentation & Embedded systems design
  - Soft computing for smart sensors & systems
  - Process Control - Agriculture, Water and Green Energy

- **Educational qualifications: M Sc, PhD (Electronics-Science)**

- **Field of my interest: Smart Agriculture, Water Technology. Green Energy**

- **Deputation:**
  - **Worked as a '<u>Visiting Scientist'</u> in Dept. of BioSystems Engineering, University of Manitoba, Winnipeg, Canada on development of Sensor technology for Agriculture and Grain storage applications**
  - **Participated as a Member of Indian Delegation from DST India for Indo – Dutch Water Expert Meeting from April 18th – April 21st, 2011 at Utrecht University, Netherland according to Programme of cooperation between India (DST) and Netherland**

- **Patents:**
  - **Patent on "Equipment for time sharing of single AC motor soft starter with more n umber of AC Motors" approved in 1998**

- **Awards : 6**
  1. **Foundation Day Award For Recognition of Excellence in Services and Process Innovation (RO plant Automation) 2020**
  2. **SKOCH award among st India's best -2015 in Smart Technology for RO AUTOMATION FOR RURAL INDIA(VILLAGES OF RAJASTHAN)- 2015**
  3. **Excellence in Development of Technology for Water & Aqua (Institutional) Award - 2014** World Aqua Conf. (WAC)- 2014
  4. **Best Paper Award** - International Symposium on Physics and Technology of Sensors (ISPTS-2), CMET, Pune , 8-10 March, 2015 Swati Ingole, Satyam Srivastava, G. Naresh and Shashikant Sadistap, "Application of In-situ Developed Odor Vision Sensing (OVS) System to Extract the Quality Parameters of Oranges", in 2nd -
  5. **Best paper award** - "Adaptive-Network-Based Fuzzy Inference System for Energy Meter Calibration." By S.S. Sadistap and W.S. Khokle, in National Conference on Sensor Technology NCST-2002, Delhi, Sept. 2002.
  6. **Dr.G N Acharaya Running Trophy-1992** for **best process/product** of year 1992 for the project **"UPS System**" as a team member

- **List of Publications (Published in Journals & Conferences) - Total 96**
  - **Journal Paper: 38**
  - **International Journal : (SCI, Scopus indexed etc) - 29, (B) Indian Journal - 9**
  - **Conference Proceedings : 58**
    (A) International - 38 (B) National- 20

- **Student Guided -: PhD: - 3 , In-process 1**

B.Tech/B.E./M.Tech/M.Sc/MCA- 65

- **Skills:**

1. **Embedded Development platform** – PC based Real time Hardware and software development tools and PC based RTE for Intel, Motorola, Texas & Analog Devices microcontrollers / DSP controllers
2. **Software Platform** - Microsoft C++, Visual C++, VHDL/Verilog , System C
3. **EDA tools** – SPICE, MatLab, FPGA / CPLD Development tools for Xilink FPGA's and CPLD (VHDL Design)
4. **Instruments Used**: GC/MS, Enose, SEM, E-nose, Spectrum Analyser, Sensor Calibration Setup for Work function and conductivity measurements, Emulators, Electronic Workbench etc.

- **Book Chapters:**

1. Neethirajan, S., Jayas, D.S**.,** ***Sadistap, S.,*** 2009. Carbon dioxide (CO2) sensors for the agrifood industry: a review. Food Bioproc. Technol. 2, 115À121.
   - **Innovations in Food Packaging - Google Books Result** Jung H. Han - 2013 - Scenic, *isbn=0123948355*
   - **Chemical Sensors and Biosensors: Fundamentals and Applications** Florinel-Gabriel Banica - 2012 -, Am. J. Respir. Crit. Care Med., 157, S114–S122.
   - **Handbook of Gas Sensor Materials - Google Books Result** Springer, Berlin , *isbn=1461471656*
   - **Chemical Analysis of Food: Techniques and Applications** Yolanda Picó - 2012, i*sbn=0123848628*

- Safe Drinking Water Generation and Management for CEERI Colony Residents: A Case Study --- KSN Rao, S. Sadistap, Santosh Kumar, B, Ramana and Chandrashekhar in "Sustainable Water Resources Management and Impact of Climate Change" --- By K. Srinivasa Raju and A. Vasan, Published by BS Publications, 2010,
- **Sai Krishna Vaddadi, SS Sadistap, " Design of Wireless Sensor Network Based Embedded Systems for Aquaculture Environment Monitoring", in Information Systems Design and Intelligent Applications,** book series (AISC, volume 435) **pp 89-97, February 2016, DOI: 10.1007/978-81-322-2757-1_10** BS Publications, 2010,

❖ **Project Achievements: as PI or Project Leader**

The following major projects were successfully completed and technology Field deployment is achieved

S. N.	Title of Project	Project Category	Project value (Rs. In lakhs)	Your role as defined	Significant achievement of the project My role - Supervision and coordination in design, development (Hardware, software algorithms, testing etc) and field deployment
i	Smart Pond Management System for Freshwater Aquaculture	R&D DBT, Delhi (sponsored)	35.53	Project Leader	• **Designed, developed and deployed three Prototype of** 1. **Embedded auto feeder system to provide a better method to feed fish in precise amount at regular time interval** 2. **Embedded Smart Motorized Boat for Water and Aquaculture** **in the 1 to 4 hectare fish ponds at CIFA Bhubaneswar**
ii	Embedded Odor-Vision Sensing (OVS) System for Detection of Food Freshness	R&D, Funded by – DBT Delhi	23.00	PI	• **Designed, developed and successfully field deployed Handheld Embedded E-nose system for Orange and Tomato Quality detection - tested at CCRI, Nagpur (ICAR) to help the farmers in getting low cost handy system for fruit plucking during the harvesting**
iii	Remotely Monitored and Controlled High Capacity RO Plant for desalination of Sea Water	R&D WTI-DST, Delhi (sponsored)	42.14	Project Leader	• **Designed, developed and successfully field deployed Embedded monitoring and control system for 6000LPH capacity Seawater Desalination RO plant at two places - to help the society in getting low cost safe drinking water along with CSIR-CSMCRI Bhavnagar**
iv	Automation of RO plants	Field Deployment CSMCRI, Bhavnagar (sponsored)	**8.0**	Project Leader	• **Design and successfully deployed Embedded Automation system for CSMCRI 1000 LPH RO plants installed at 5 villages in Churu district of Rajasthan to provide potable water to community**
v	Development of smart systems for Agro and Food Processing Applications: Sensing, Reporting and Control	R&D Supra institutional Project CSIR sponsored	180	Activity Leader	• **Designed, developed and tested <u>PIC 18f452 Microcontroller based Smart Sensor system</u> for environmental monitoring** • **Prototype systems of smoke and temperature detector using the CO gas sensor and non contact temperature sensor developed by HMC Group at CEERI**
vi	Advanced Microsensors and Microsystems : (Micro-SenSys)	R&D CSIR 12 th Plan Network Projects	30.0	Work package WP 23 - Leader	• **Development of Embedded non-contact type smart sensing systems for detection of freshness of bakery and milk Quality Inspection tested and deployed TWO systems at Saras, Jaipur** • **Established Analytical Lab - GC/MS, E-nose, for food and water quality analysis, etc**
vii	Clean Coal Technology (TapCoal)	R&D, CSIR 12th Plan Network Projects	**72.37**	Work package Leader	• **Designed, developed and tested Control System for Circulating Fluidized Bed (Coal Gasifier) deployed at CMERI, Durgapur**

viii	Clean Water: Sustainable Options	R&D, CSIR 12th Plan Network Projects	**38.88**	Work package WP 2 Leader	• **Designed, developed and field deployed Three prototype of embedded multi-sensor system with wireless connectivity for monitoring water (potable and waste) quality parameters - at NEERI Nagpur with Implementation of water quality index (WQI) for classification of water body**
ix	Development of Real Time Wireless Embedded Multi-Sensor System for Monitoring of RO plants with Water Quality	R&D DST Delhi	**104.0**	Project Leader	• **Design developed and successfully deployed Embedded Remote Monitoring (ROMON) system for 1000 LPH RO plants installed at 35 villages in Jhunjhunu, Churu, Ajmer and Jaipur Rajasthan to provide potable water to rural community** • **RO plants from - Bosch Jaipur, Barefoot College, NGO and CSMCRI**
x	A Community based participatory Aquifer Management System for Equity and Sustainability in Water Resource Management	R&D DST Delhi	**30.0**	Co-PI	• **Successfully developed and field tested Ultrasonic based water level measurement and battery operated WQ monitoring (TDS, pH, Fluoride) system for rain water storage tank installed at 32 villages of Chirawa, Mandrella, Pilani block of Rajasthan for Sustainability in Aquifer Management System for Equity and Sustainability in Water Resource Management along with Ramkrishna Jaidayal Dalmia Seva Sansthan - Dalmia Trusts, Cirawa**
xi	PC based Intelligent Instrumentation and control for Withering and Fermentation stage of Tea Manufacturing at Model Tea Factory, Assam, India	DoE, TRA and CSIR	**250.00**	Co-PI	• **Five system for withering and Fermentation process deployed in MTF TRA Johrat**
xii	Embedded system design for Intelligent System for Controlled Atmosphere Storage System for Fruits	CSIR	**98.00**	WP Leader	• **Two system deployed at CSIO**
xiii	Microcontroller (80196KB) based 90 HP Energy Efficient DC motor Drive for Mining Locomotives	HZL Udaipur	**15.00**	Co-PI	• **Three system deployed in HZL Udaipur**
xiv	PMDC/ BLDC motor drive –PWM amplifier	ADE Bangalore	**21.00**	Co-PI	• **5 systems handed over to ADE Banglore**

❖ Honors:

- Member of BoS Committee for Electronics Science -SPPU, Fergusson College, SP College, Delhi University, BITS Pilani
- Member of Paper Setting Committee for Electronics Science -SET/NET Exam - Pune University 2003, 2004, 2006, 2010, 2012. 2016, 2018, 2019
- Member of Candidate Selection Committee of Pune University Certificate course on Diploma in Embedded and VLSI System Design at University of Pune 2003, 2004, 2005, 2007, 2009
- Member Technical Paper Review Committee of KBCS International conf. on Soft computing, CDAC Kharghar, Mumbai, 2003 and 2005
- Member of Syllabus Review Committee for M.Sc Electronic-Science, M.Tech Embedded Course of Pune University 2006, 2008 and 2010
- Member Technical Committee of First International Conference on "Resource Utilization and Intelligent Systems" INCRUS-2006 and INCRUS-2008 at Kongu Engineering College, Perundurai Erode Tamilnadu India
- Resource person and session chair for State Level Conference " OFCSA-08" held at New Arts Commerce and Science College, Ahmednagar, 11-13 Dec.2008
- Resource person and session chair for National Seminar on Advances in Instrumentation, Signal Processing and communication (AISPC-09) on 23rd Jan, 2009
- Resource person and session chair for the International Conference on Instrumentation ICI-2009, MKSSS, Cummins College, Pune, Jan 2010
- Resource person and session chair for the National Conference on "Emerging Trends in Electronics & Computer Science" at Pad. Dr. D.Y. Patil Science College, Pimpri, Pune, Feb 2010
- Resource person and session chair for the National conference on Computer, Electronics etc held at Indore Institute of Science and technology, Indore April 2010
- Advisory committee member and session chair for the National Conference on Sensor Networks and Embedded Systems, Abasaheb Garware College, Pune 2 -4th February 2011.
- Advisory committee member and session chair for the National Conference on Recent Initiatives towards Green Electronics (NCRIGE-2013), Brijlal Biyani Science College, Amravati, 8- 9th February 2013.

❖ Teaching Experience:

- From 2011 onwards, Professor (Physical Sciences), Academy of Scientific & Innovative Research (ACSIR), M.Tech and Ph.D Course at CSIR - CEERI, Pilani
- Visiting Lecturer to B.Sc (Applied) one year course of Pune University 1988-89
- Visiting Faculty to M.Sc (Information Technology) course of Indramani Mandelia College Rajasthan University 2007-08
- Delivered guest lectures and conducted laboratory sessions and experiments with M. Tech. students of IIT Delhi, BITS Pilani and M.Sc. students of Pune University on different topics of Microcontroller and PC based control system design and its Industrial process control, drives applications
- Delivered several guest lecturers- to M.Sc & M tech(Electronics) students of SGGS Institute of Engineering & Technology, Vishnupuri, Nanded on the topics "ARM Processor Architecture, Programming examples, and Interfacing related to ARM, Standards such as USB, CAN, I2C etc.

❖ **Membership of professional bodies/societies/academies**:

- Indo-France Technical Association (IFTA) Life member 1994.
- Indian Physics Association (IPA) Life member 1997
- Life Member IETE 2018

❖ **Personal profile**

- Date of Birth: 26.06.1966 Gender: Male
- Marital Status: Married Nationality: Indian
- Language:

Marathi:	Very Good,	English:	Good,
Hindi	Very Good	French:	Good

- Hobbies/Interest: Reading, Cricket, chess and listening Music
- Personal skills
  1. Good team player, Initiative and self-motive,
  2. Hardworking, quick learning, strong sense of responsibility