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BIOSKETCH

Dr KK Venkataraman did his B.E.(Hons.) Electronics & Communications, from PSG College of Technology in the year1978 and obtained his Masters (MBA) from PSG Tech in the year 1992 and PhD (-Management) in the year 2015 from Bharathiar University. He is currently working as Professor in ECE in PSG Institute of Advanced Studies (PSGIAS) in Nanotechnology (– Electronic domain support & Printed electronics) and Industry/Institute linked projects from 2010. He is taking classes on 'Organisational Behaviour' for Indo-US and Indo-UK and Indo-Australian studies at PSGIAS and Product development & Entrepreneurship for MTech students of PSG College of Technology.

He has a rich 32 years of industrial experience – 6 years at Pricol Ltd in Automotive domain, 20 years at Premier Polytronics in Textile electronics and 6 years at BPL India Limited in Biomedical and Instrumentation. Has developed several types of equipment indigenously like Defibrillator and Monitor, Yarn clearers, Digital Dashboard equipment, Automotive sensors, High-end ICU Ventilators etc. Currently he has developed High end ICU ventilator, Immobiliser for beating heart under PSG Medical Devices umbrella. Also has taken up new biomedical product developments on Multi-parameter monitor with IoT and Low pressure wound management system. The liver transplant support system developed has completed animal trials and is awaiting commercial transformation. He is a 'Fellow in Institution of Engineers India', Co-authored 4 Indian patents and One PCT patent. He also has Fellowship in "Institute of Smart Structures", "International Society for Management". He obtained the 'Outstanding engineer' award from the Institution of Engineers (India) in the year 2013.

Educational Profile

- Doctor of Philosophy: Management, Bharathiar University, Coimbatore, India, 2015.
- Master degree: MBA, PSG College of Technology, Anna University, Coimbatore, 1992.
- Bachelor degree- BE (Hons.) – Electronics and Communication Engineering, PSG College of Technology, Coimbatore, Anna University, 1978

Positions Held

Sr. No.	Position held (Designation)	Place of work	Duration	Areas of work
1	Professor in ECE	PSG Institute of Advanced Studies	2010 – till now 16 Years	IoT Printed electronics Biomedical devices Industry institute interactions IPR & MoU

2	Vice President - Engineering	Pricol	6 Years	Automotive electronics
3	Vice President – R&D	Premier Evolvics	20 Years	Textile electronics
4	Engineer – R&D	BPL India	6 Years	Biomedical and Instrumentation

Research Areas: Products developed:

- Biomedical devices
- Electronic instrumentation / interfaces / IoT
- **Products developed:**

Sl no.	Name of the instrument/Device	Field
1	Defibrillator and monitor	Biomedical
2	Twin channel Bedside Monitor	Biomedical
3	Central Nursing station	Biomedical
4	High impedance Multimeter	Instrumentation
5	35MHz Cathode ray Oscilloscope	Instrumentation
6	Yarn clearer – Micro 2000	Textile electronics
7	Colour clearer	Textile electronics
8	Digital dash boards	Automotive
9	Stepper motor & Pressure sensor	Devices
10	IoT based Monitoring system for solar panels	IoT
11	High end ICU Ventilator	Biomedical
12	Flexible transformer	Power Electronics
13	Heart tissue Stabiliser for open heart surgery	Bio medical
14	Bronchial stent and spigot	Bio medical

Awards & Achievements

April 2013 – Best Engineer Award – Institution of Engineers India

November 2019 – Research Innovation Award , PSG Hospitals

Research work and developments:

@ PSGIAS: from 2010

Current work at PSG Medical Devices:

Development and commercialization support for the following products of PSG Medical Devices (-a division of PSG Industrial Institute)

a) **Medical Product assembly establishment in Clean room ISO6 Class1000**

b) PSG i-Ventmax – High end ventilator – Commerical Design and development

PSG - i VentMaX

HIGH END ICU VENTILATOR

PSG *i* - VentMax Ventilator system is designed to be used on patients from Adult to Paediatric. There is a neo-natal option available. It has the capability to handle the most acute phases of respiratory distress, through recovery and weaning phases. The PSG *i*-VentMax provides excellent ventilation support to the patients with monitoring capabilities and treatment options. This Ventilator can be used in both invasive and non-invasive modes and is best suitable for all types of ICUs. The ventilator has simple and easy interfaces for operations and has a high reliability and low maintenance.

c) PSG i-Optima – Heart tissue stabilizer – Design, development and Commercialization

d) PSG i-Stent – Design, Development and Commercialization

e) PSG i-Block – Endo bronchial Spigot

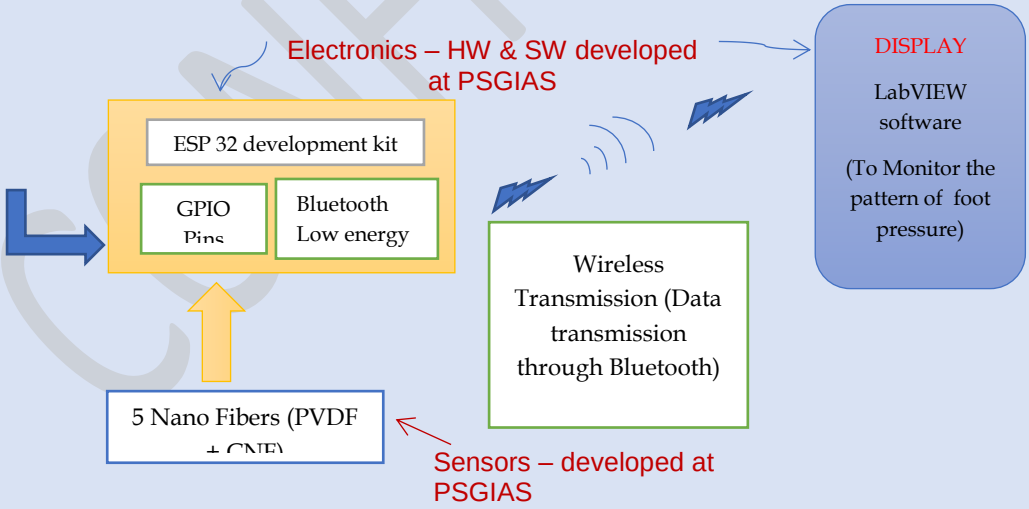
- **Completed DST / PSG Management sponsored project:**

"Design and Development of High-end ICU Ventilator" with a total cost of Rs. 78 Lakhs – timeline 3 years. Project completed and technology transferred to PSG Industrial Institute – Clinical trials and mass production in the year 2020

Prototype of the High end ICU Ventilator

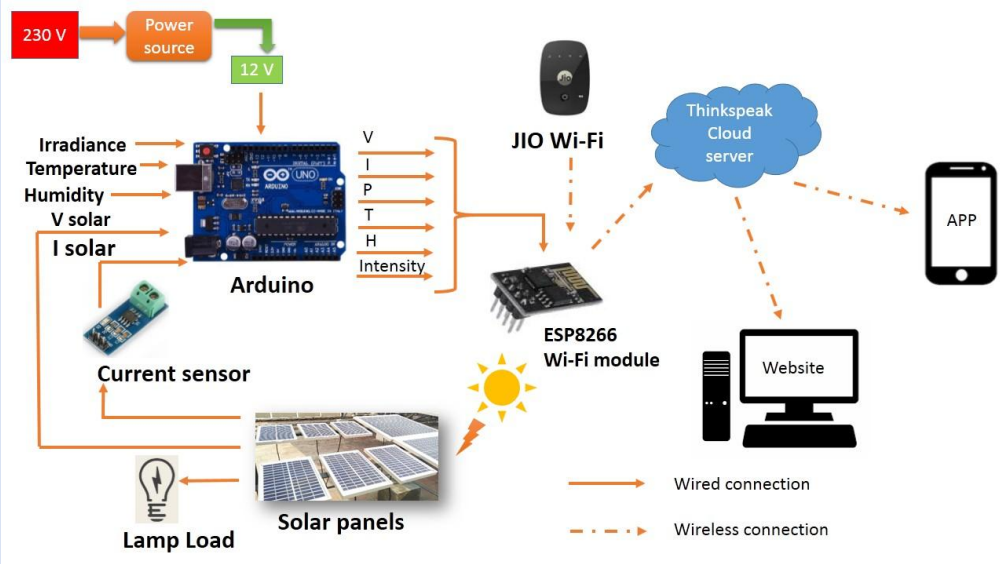
- **Co-PI in 'Smart Socks' DST project (Electronics part)**

Development of a wireless miniature device to transfer the signals to a display and storage device (computer, laptop or smart phone).



- **Co-PI in ONGC project on Nanocoating on Solar panels (Electronics part)**

  Development of a system for remote monitoring of solar panel parameters using GSM. – (Voltage, Current, Power, Temperature and Light intensity from 2 different sites). All data and graph can be viewed on website, anytime/anywhere.



Monitoring of Solar panel parameters – using IoT, anytime/anywhere

- **Academic Classes** for Indo-US, Indo-UK and Indo-Australian students at PSGIAS on 'Organisational Behaviour" – a dedicated website for students https://sites.google.com/site/orgbehaviour2015/

- **PSG Nanochallenge competitions**

PSG Nanochallenge series of competition in nanotechnology jointly conducted by PSG Institute of Advance Studies (PSGIAS), PSG-STEP and college of Nanoscale Science and Engineering (CNSE), Albany, USA. The program is sponsored by PSG Institutions, and Department of Science and Technology (DST) to promote product development in Nanotechnology domain.

The finals of a national level Nanotechnology competition - **PSG Nanochallenge 2019** – was conducted by PSGIAS and PSG-STEP on 11th Dec 2019. It is the fifth in the series conducted every year to promote ideas and product level technologies in Nanotechnology . There were 14 finalists who presented their idea. The judges were Dr. Pradeep Haldar, Fulbright Scholar, US State Department , Dr. R. Sivasubramanian, PSGIAS and Dr. Gopal Shankar, PSGIAS. Eight contestants won various prizes of eligibility to enter Nidhi-EIR (Rs. 30,000/- per month) / Nidhi-Prayas schemes (Rs. 1- Lakhs grant)

Winners of PSG Nanochallenge 2019 with the organisers

PSG Nanochallenge 2018: The grand finale of the event took place on 12th and 13th Dec 2018 and the entries were evaluated by a panel consisting of Dr. Pradeep Haldar, CNSE, SUNY, USA, Dr. R.Selvakumar, PSGTech, Prof. Bindu Salim, PSGIAS. Two teams were selected for the Nidhi-Prayas scheme of Rs. 10 Lakhs grant and two teams were selected for cash award of Rs. 25,000/- each and two teams were awarded the consolation prize of Rs. 10,000/- each. Apart from these awards, two teams were offered eligibility to apply for Nidhi-EIR scheme of Rs.30,000/- per month for one year, subject to other conditions on eligibility.

Winners of Nanochallenge 2018 with organisers

Nanochallenge 2017: The response for the invitations were overwhelming with 105 entries from Institutions all over India.The final event of the PSG Nanochallenge 2017 Competition was held on 10th Jan 2018 & 11th Jan 2018 for 2 days at PSG College of Technology, Coimbatore. On Final day, the judges

Dr. Pradeep Haldar and Dr. Ashok S. Patil reviewed the top 10 finalist presentation from 29 teams of Day 1, which was reviewed by Dr. Nikhil A. Koratkar, Dr. Dorai Thodla & Dr. Prabhakar Singh.

Top 20 contestants with organizers of Nanochallenge 2017

Nanochallenge 2016: The finals event of the PSG Nanochallenge 2016 competition was held on 17th Aug 2016 at PSG College of Technology, Coimbatore. The judges viz. Dr. Pradeep Haldar and Dr. Esfthathiadis (from CNSE, SUNY, Albany) reviewed the top 10 presentations and finalised the prizes for the first 3 places. (First prize Rs. 1 Lakh, Second prize Rs. 50,000 and Third prize Rs. 25,000 were distributed. Also consolation prizes of Rs. 2500/- each declared for 20 participants).

Organisers and finalists of Nanochallenge 2016

PSG Nanochallenge 2015: The finals of the event was conducted on 10th Aug 2015 and the judges were Dr. Pradeep Haldar and Dr. Harry Efstathiadis of Colleges of Nanoscale Science and Engineering, Albany, USA. I prize Rs. 1 Lakh, Ms. Shivani Saxena, Banashali University, Rajesthan; II prize Rs. 50,000

Mr. Gokulnath, PSG College of Arts and Science, Coimbatore; and III prize Rs. 25,000 Ms. Anitha Raj , Periyar Maniammai University, Tanjavur

தினமலர் தமிழமுது

பி.எஸ்.ஜி கல்லூரி நேனோ தொழில்நுட்ப போட்டி

பி.எஸ்.ஜி தொழில்நுட்பக் கல்லூரியில் நேனோ தொழில்நுட்ப போட்டி நடைபெற்றது. பி.எஸ்.ஜி கல்லூரி உயர் தொழில் நுட்பத் துறை தலைவர் ஜெயகுமார் போட்டியை துவங்கி வைத்தார். பல்வேறு கல்லூரிகளைச் சேர்ந்த மாணவ, மாணவிகள் கலந்து கொண்டனர். இதில் ராஜஸ்தான் பலாஷாலி பல்கலைகழகத்தை சேர்ந்த மாணவி ஷிவானிசக்சேனா முதல் பரிசை வென்றார். அவருக்கு ஒரு லட்சம் ரூபாய் பரிசாக வழங்கப்பட்டது. பரிக்கால் நிறுவனத்தின் முதன்மை தொழில்நுட்ப அதிகாரி நரேந்திர பாலன் பரிசு வழங்கினார்.

PSG Nanochallenge 2015 in News

- **Instrumental in interfacing 'Effluent treatment using nanotechnology' with industry – M/s Silver crown Industries, Coimbatore**

Dr. R.Selvakumar, Associate Professor in Nanobiotechnology, Nanotech Research Innovation and Incubation Centre, PSG Institute of Advanced Studies (PSGIAS) has developed a gas bubble technology for treatment of effluents from Chromium plating industry. The technology effectively removes the chromium contaminants in the water from the plating system. Also the chromium can be retrieved for reuse, thus improving the efficiency of the electroplating system. The technology has been transferred with non-exclusive rights to M/s Silver Crown Enterprises, Coimbatore

During technology transfer to Silver crown industries

- **IOT projects @ Cyber Physical Systems Lab**

Various projects on Cyber Physical Systems Lab at PSGIAS were completed successfully. Following are a few of them:

a) IoT interface for sensors

The electronics' interface that handles the sensor signals and convert them for display are enabled for viewing/analysing through the IoT platform using Bluetooth. The inputs of the system are standardized to handle resistance variation or voltage variation from sensor.

Sensor readout system with IoT

b) Online water level and water quality monitoring systems

IoT based water level monitoring

- Online Water level monitoring at Ooty Corporation

Data collection on Water level at remote Location (-Ooty park)

Receiving station at Ooty Corporation office

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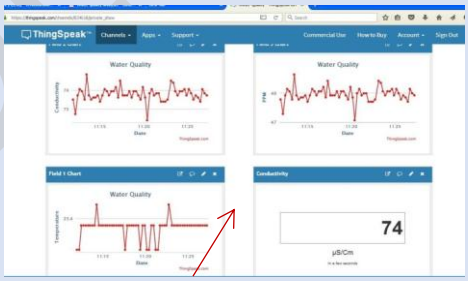
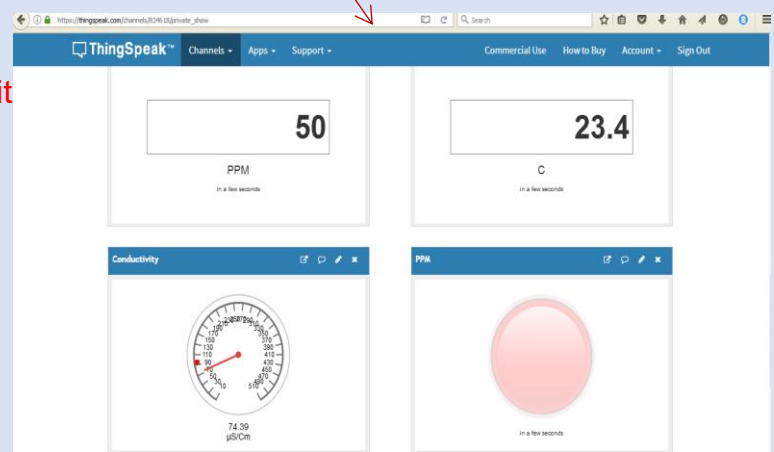
IoT based water quality

- Bench model Water quality using IoT

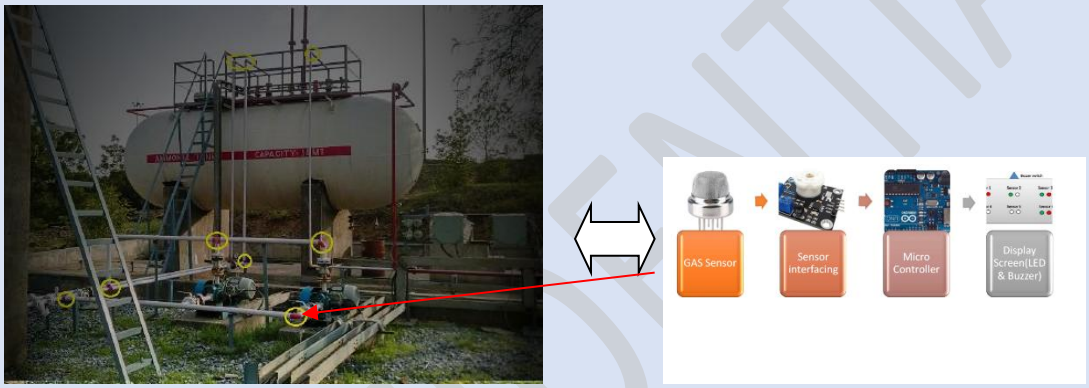


Displays on website



c) Interfacing of multiple sensors for ammonia gas leakage detection and monitoring using IoT technology in an industry site

The project was carried out in a local industry, to reduce the risk factors in isolated areas having large gas installations by detecting the leakages and displaying the status on a continuous basis. Leakage of gas can occur at multiple points in the same installation. Hence multiple sensors are interfaced to detect the leakage and transmit the signals to the base stations located far away. Using microcontrollers, multiple sensor values are received and processed. The processed data is encoded and transmitted to the base using wireless protocol where another microcontroller system decodes it and gives the respective sensor status. The system also provides an audio and visual warning when leakages are detected and since the time taken to detect is low due to high speed processing, the leakage situations are brought under control with minimum or no damage. This project is an economical and efficient method to reduce gas leakage risk in large instillations using latest IoT technologies and monitoring anywhere in the web



Major Consultancy projects:

S. No.	Title	Sponsoring Agency	Period	Amount
1.	Design and development of "Flexible transformer" PI	Bosch	2016-17	Rs. 7.75 Lakhs
1.	TVS Oxygen sensor project (Co-PI – Electronics support)	TVS	2016-18	Rs. 9.84 Lakhs

1.1 Journal Publications

Sl no.	Author(s)	Title	Name of journal	Volume/Page/Year
1	Sukhananazerin Abdulla, Jayaseelan Dhakshinamoorthy, Vijay Mohan, Dinesh Veeran Ponnuvelu, **Venkataraman Krishnan Kallidaikuruchi**, Lazar Mathew Thalakkotil and Biji Pullithadathil , ,	Development of low-cost hybrid multi-walled carbon nanotube-based ammonia gas-sensing strips with an integrated sensor read-out system for clinical breath analyzer applications	Journal of Breath Research,	Volume 13, Number 4, 17 July 2019 • © 2019 IOP Publishing Ltd
2	R. Senthil kumar, T.Sarathi, **K. K. Venkataraman**, Amitava Bhattacharyya *	*, Piezoresistive nanocomposite films for foot strike data monitoring.	Sensors & Actuators A : Physical	284(2018) 76-84 2018
3	Biji. P, Sukhananazerin Abdulla, Jayaseelan Dhakshinamoorthy, ; Vijay Mohan, ; Dinesh Veeran Ponnuvelu; **Venkataraman Krishnan Kallidaikuruchi**; Lazar Mathew Thalakkotil	Development of 3D printed, Low-Cost, Portable NH3 Gas Sensor Device with Integrated Electronic-readout System based on Functionalized Multiwalled Carbon nanotubes for Clinical Breath Analyzer Applications",	Sensors & Actuators	Dec 2018
3	Bindu salim and **Venkataraman KK**	"Study on polymer printed resistor on plastic adding nanomaterials to PEDOT:PSS"	International Journal of Nanotechnology and Applications	Vol.5, No.2 123-128 2011

1.2 Conference Presentations

a. Sujatha N. and **Venkataraman.K.K.,** "Algorithm and automation support in instruments for medical applications" Automation conference (ICAARS), June 2016

b. K. Manjunathan and **K K . Venkataraman**, "ARM Cortex – R4 controller with enhanced safety critical capability for designing Bio-medical instrumentation", Automation conference (ICAARS), June 2016

Others

- **Drafted IPR policy for PSG Institutions**
- **Printing trials of nanomaterials using screen printing machine for realising printed LEDs, Printed fuel level sensors.**
- **Electronics support to NPMASS 'Ammonia sensor' project and Marine sensor project**
- **Industrial interface for Research outputs and Students' projects**
- **Supported two major seminars on "Systems engineering" and "Nanotechnology & Incubation centre"**
- **Evaluation of projects (Electronics and Bio medical) for funding at PSG – STEP. Part of project management committee at PSG-STEP**