CURRICULUM VITAE

K. Vairamani

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https://scholar.google.co.in/citations?user=t25hZtUAAAAJ

PERMANENT ADDRESS:

5/754, APK Nagar,

Alampatti Road, Nagamangalam Post,

Tiruchirappalli – 620 012, Tamil Nadu, India

FIELD OF RESEARCH INTEREST:

Sensor Instrumentation and Wireless Sensor Networks

CAREER OBJECTIVE:

Contribute precious research to human society.

EDUCATIONAL QUALIFICATIONS:

PhD : Instrumentation (full time – viva-voce 16th September 2016)

Title of work : Study on wireless networks for environmental parameter monitoring applications

Institution : University Science Instrumentation Centre, Madurai Kamaraj University, Madurai.

M.P hil : Electronics (2006-2008) – 76.4%

Institution : Bharathidasan University, Tiruchirapalli.

M.Sc : Electronics (2004-2006) – 74.9%

Institution : St.Joseph's college, Tiruchirapalli. (Affiliated with Bharathidasan University)

B.Sc : Electronics (2001-2004) – 62.59%

Institution : St.Joseph's college, Tiruchirapalli. (Affiliated with Bharathidasan University)

PRESENT POSITION:

Working as an Assistant Professor in Department of Electronics, St. Joseph's College, Tiruchirappalli since 18th June 2015.

Additional responsibility:

1. Micro Quality circle member and Involved in Consultancy activities of JOSTRONIX Consultancy services of college

2. IPR CELL coordinator since February 2018.

RESEARCH EXPERIENCE:

Research Scholar in University Science Instrumentation Centre, Madurai Kamaraj University, Madurai. (27th January 2010 – 16th June 2015)

Honors/Awards/Recognitions received:

- **Innovation award** from St. Joseph's College (2016 - 2017)
- **Letter of Appreciation** from Commander C. Sivamani, Station Air Electrical Officer, Naval Air station, Uchipuli, Ramnad for the design and development of digitized timing system for ground support equipment (2016-2017)
- SRF- Senior Research Fellowship CSIR-HRD, New Delhi. (1st April 2013 – 31st March 2015)
- USRF- University Stipendiary Research Fellowship, Madurai Kamaraj University, Madurai. (27th January 2010 - 26th January 2013)
- Best Cadet in 2 (TN) Armd Sqn NCC St. Joseph's College, Trichy for the year 2002 – 2003.

TECHNICAL SKILLS:

- Wireless Sensor Network based system design and development (Bluetooth, Wi-Fi, ZigBee, GSM& GPRS and LoRa)
- Internet of things based system design
- Python & LabVIEW programming.
- Interfacing skills with 8/32bit microcontrollers (8051, AVR & ARM).
- Single board computers (Raspberry Pi and BeagleBone)
- Hands on experience with sensor signal conditioning
- PCB Designing (Eagle, Proteus and OrCAD).

Commercial value developed Project#1

Title of Work: **Wearable system with energy harvester for Physiological parameter monitoring of athletes** (September 2018)

To: GR LYCHEE DESIGN CONTEST 2018 in India (Abstract listed in the Top 100).

- Developed a wearable physiological parameter monitoring system with energy harvesting capability for athletes during sports activity. Solar panel is fixed in the cap or T-shirt to harvest energy when the athlete doing practice. The system measures the physiological parameter heart rate, blood pressure and core body temperature of an athlete. In addition to that speed and distance travelled by the athlete, during the practice is also monitored. GR-LYCHEE is used to acquire data from the sensors and transfer the data to a remote PC. The measurement data are stored in microSD card at regular intervals and shown in a display for local inspection by the athlete. GPS receiver is used to estimate speed and distance travelled by the athlete.

Contribution: firmware and hardware development

Commercial value developed Project#2

Title of Work: **Design of RFID Reader with WIFI (December 2017)**

To: St. Joseph's College (Autonomous), Tiruchirappalli – 620 002.

- The system has NodeMCU and MFRC522 RFID read/write module. MFRC522 is interfaced with NodeMCU, whenever the student shows his/her ID card their details are updated in a remote PC connected with NodeMCU and HID interface using Arduino Pro Micro.

Contribution: developed hardware and firmware.

Commercial value developed Project#3

Title of Work: **Design of RFID Reader with HID (December 2016)**

To: St. Joseph's College (Autonomous), Tiruchirappalli – 620 002.

- The system has Arduino nano and Arduino pro micro. MFRC522 RFID read/write module is interfaced with Arduino nano and RFID card data is read and updated in a LCD. The same data is sent to a PC via HID interface using Arduino Pro Micro.

Contribution: developed hardware and firmware.

Commercial value developed Project#4

- Title of Work: **Digital drag damper time scale comparator - digitized timing system for ground support equipment** (JULY 2016)

To: INS, Uchipuli, Ramanathapuram district.

- The system measures the time of drag damper movement. It has an Atmega8 microcontroller and limit switches to sense the movement. It measures the time in milliseconds and updates the seven segment display up to 60 s. The system is battery operated.

Contribution: developed the complete hardware and firmware. Schematic is developed using Orcad.

Commercial value developed Project#5

Title of Work: **Design of RFID Reader/Writer with encryption and decryption** (June 2016)

To: St. Joseph's College (Autonomous), Tiruchirapppalli – 620 002.

- The system is capable of reading and writing Mifare RFID cards. The system comprises of a RFID read/writer, 16X2 LCD display unit, and Arduino nano. The data in the RFID card is read and write by the Arduino Nano and it has been displayed on LCD and sent to PC via COM port. The data written in the RFID card is encrypted and it is decrypted while reading the card.

Contribution: developed hardware setup and firmware.

Commercial value developed Project#6

Title of work: **Data logger for animal behavior monitoring**

To: department of Animal behavior studies, Madurai Kamaraj University, Madurai (January 2015)

- Designed a data logger to log the data such as temperature, humidity, light intensity and rat activity. The system has an Arduino UNO microcontroller, light intensity sensor, Temperature and humidity sensor, real-time clock, and 16X2 LCD to display the measurement data with time stamp. Measurement data is logged in a microSD card for every one minute interval in ".CSV" file format.

Contribution: Developed the complete hardware and firmware. Developed schematics and PCB using eagle software. Also developed IR based rat activity detector for existing data logger in the department

RESEARCH CONTRIBUTIONS:

Different wireless networks are studied and applied for different environmental parameter monitoring applications

- **Rabbit cage heat stress monitoring – Bluetooth network (Python and ATmega328)**
- **Solar flat-plate collector efficiency – ZigBee network (LabVIEW)**
- **Dairy farm THI monitoring – ZigBee (LabVIEW)**
- **Sericulture farm monitoring – GSM-SMS (AT89S51 and LabVIEW)**
- **Animal behaviour monitoring – GSM-SMS & GPRS data logger with wireless connectivity (LPC1768 & LabVIEW)**
- **Weather monitoring system – GPRS (LPC1768 and PHP scripting) – Internet data access**

Collaborative research contributions:

Designed potentiostat and cyclic voltammeter for analytical sensor characterization has been developed biosensors and contributed a part of work in designing handheld cyclic voltammeter for **DIPAS – DRDO, New Delhi, in collaboration with VHNSN College, Virudhunagar**

PUBLICATIONS:

JOURNAL:

1. K.Surya, J. Sheik Shabjan, V. Sivakamasundari and **K. Vairamani** (2019), "**Raspberry Pi based system for identification of artificially ripened mangoes using image processing with Open CV**" , Suraj Punj Journal of Mulitdisciplinary Research, Special issue, pp.73-75

2. T. Madasamy, M. Pandiaraj, M. Balamurugan, P. Santharaman, K. Arun Venkatesh, A. Robson Benjamin, **K. Vairamani** and C. karunakaran (2017), "Virtual instrumentation for electrochemical biosensor applications", Sensor letters, Vol.5(1), pp. 1 - 10

3. E.Thirumeni and **K. Vairamani** (2017), "Application of Cloud Computing in Sericulture Monitoring", International Journal of Computer Science, Vol.5 (1), pp. 1839 –1848.

4. P. Santharaman, K. Arun Venkatesh, **K. Vairamani**, A. Robson Benjamin, N.K. Sethy, K. Bhargava and C. Karunakaran (2017), "**ARM-microcontroller based portable nitrite**

electrochemical analyzer using cytochrome c reductase biofunctionlized onto screen printed carbon electrode", Biosensors and Bioelectronics, Vol. 90, pp. 410 - 417.

5. **K. Vairamani** and N. Mathivanan (2015), "**GPRS and Web based Weather Monitoring System**", Jl. of the Instrum. Soc of India, Vol.45 (3), pp. 161 – 163.

6. M. Pandiaraj, A. Robson Benjamin, T. Madasamy, **K. Vairamani**, A. Arya, N. Kumar Sethy, K.Bhargava and C. Karunakaran (December 2014), "**A cost-effective volume miniaturized and microcontroller based cytochrome c assay**", Sensors & Actuators A: Physical, Vol. 220, pp. 290 -297.

7. **K. Vairamani**, K. Arun Venkatesh and N. Mathivanan, (2014) "**Design and Development of ZigBee based Data acquisition System for Air Temperature and Relative Humidity Monitoring**", Jl. of the Instrum. Soc of India, Vol. 44(1), pp. 20 - 22.

8. **K. Vairamani**, N. Mathivanan, K.Arun Venkatesh and U. Dinesh Kumar, (2013), "**Environmental Parameter Monitoring Using Wireless Sensor Network**", Instruments and experimental techniques, Vol. 56(4), pp. 468-471.

9.T. Madasamy, M. Pandiaraj, M. Balamurugan, S. Karnewar, A. Robson Benjamin, K. Arun Venkatesh, **K. Vairamani**, S. Kotamraju and C. Karunakaran, (2012) "**Virtual electrochemical nitricoxide analyzer using copper, zinc superoxide dismutase immobilized on carbon nanotubes in polypyrrole matrix**", Talanta, Vol. 100, pp.168-174.

10. **K. Vairamani** and N. Mathivanan, (2012), "**Design of Low Cost GSM based Air Temperature and Relative Humidity Monitoring System**", Jl. of the Instrum. Soc. of India, Vol. 42(3), pp. 179-181.

11. S. Elango, N. Mathivanan, K. Arunvenkatesh, **K. Vairamani**, C. Karunakaran, T. Madasamy and M. Pandiyaraj (2012), "**Deployment of Wireless Sensor network for the Measurement of Exhaled Nitric Oxide in In-home Healthcare**", Sensors & Transducers, Vol. 142(7), pp. 87-94.

12. **K. Vairamani**, K. Arunvenkatesh and N. Mathivanan (2011), "**Design and Development of ZigBee based instantaneous flat-plate Collector Efficiency Measurement System**", Measurement Science Review, Vol. 11(2), pp.57-60.

BOOK CHAPTERS:

1. Chapter 5: Integrated Electronics, Analytical Transducers and Signal Processing. Pandiaraj Manickam, **Vairamani Kanagavel**, Robson Benjamin Alby and Karunakaran Chandran, pp. 139 – 159.

Book: **Nanobiotechnology for sensing applications: From lab to field**

Edited by: Ajeet kumar kaushik and Chandra K. Dixit.

Publisher: Apple Academic Press, CRC Press, a Taylor & Francis Group, August 2016 (ISBN 9781771883283).

2. Chapter 12: Electrochemical systems for Healthcare applications (Pandiaraj Manickam, **Vairamani Kanagavel**, Apurva Sonawane, Thipperudraswamy, S.P and Shekar Bansali

Book: **Bioelectrochemical Interface engineering**

Edited by: Krishnaraj and Sani

Publisher: Wiley (Accepted for publication)

CONFERENCES:

PAPERS PRESENTED:

1. J. Anuj and **K. Vairamani** "**Electrical parameter monitoring system using microcontroller as DAQ card with Scilab and Xcos**", OpenFOAM and Scilab Conference organized by ESI India, at Pune. (22nd August 2018)

2. **K. Vairamani**, "**GPRS based environmental parameter monitoring system for animal behavior studies**", Recent Trends in electronics (NCRE2018), organized by department of Electronics, St. Joseph's College (Autonomous), Tiruchirappalli, India (8th & 9th January 2018).

3. E. Thirumeni and **K. Vairamani**, "**Application of Cloud Computing in Sericulture Monitoring**", IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR2017), organized by Alagappa University, Karaikudi, India (15th & 16th February 2017).

4. **K. Vairamani**, "**Design and development of cloud based environmental parameter monitoring system**", National conference on Recent trends in Electronics (NCRE)", organized by Department of Electronics, St. Joseph's College, Tiruchirappalli. (18th February 2016).

5. N. Sujatha and **K. Vairamani**, "Design and development of wearable healthcare monitoring system", National conference on Recent trends in Electronics (NCRE)", organized by Department of Electronics, St. Joseph's College, Tiruchirappalli. (18th February 2016).

6.T. Madasamy, **K. Vairamani**, S. Elango and C. Karunakaran, "**Bioelectricity Generation From Compartment-Less Nitrite/Oxygen Enzymatic Biofuel Cell Using Cu, ZnSOD Functionalized Nanocomposite**", 3rd International conference on materials for energy and nanoconvergence, ICMENC-2013, pp. 108-109. Organized by Centre for Excellence in

clean Energy and Nanoconvergence (CENCON), Hindustan University, Chennai. (4th – 6th July 2013)

7. **K. Vairamani**, K. Arun Venkatesh and N. Mathivanan, "**Design and development of ZigBee based data acquisition system for real-time microclimate environmental parameter monitoring**", International workshop and conference on Renewable energy and climate change, organized by School of energy, Environment and Natural Resources, Madurai Kamaraj University, Madurai.(2012).

8. T. Madasamy, M. Pandiyaraj, M. Balamurugan, S. Elango, K. Arun venkatesh, **K. Vairamani**, K. Bhargava and C. Karunakaran,"**LabVIEW-based highly sensitive and cost effective Nitric oxide analyzer using Cu,ZnSOD immobilized on carbon nanotubes in polypyrrole matrix**", International symposium on recent trends in Neurosciences & XXIX annual conference of Indian Academy of Neurosciences, IAN-2011, pp.174-175. Organized by Defence Institute of Physiology and allied sciences, New Delhi. (30th October – 1st November 2011)

9. **K. Vairamani** and C. Hariharan, "**Application of Solar, Wind, Bio energy for Rural Development**", State level seminar on Renewable energy conservation for rural development sponsored by UGC & Ministry of -Nonconventional Energy Sources, New Delhi, organized by rural technology centre, Gandhigram University, Dindigul. (1st November 2006)

10. **K. Vairamani**, "**Suthanthira India?**", State level seminar on Suthanthiram06 organized by Subbalakshmi Lakshmipathi College of Science Madurai. (7th September 2006)

POSTERS:

11. M. Pandiaraj, T. Madasamy, K. Arun Venkatesh, **K. Vairamani** and C. Karunakaran (2013), "**LabVIEW based electrochemical immunosensor assay for cytochrome c**", National conference on Chemosensors, pp. 53. Organized by Department of Chemistry, National Institute of Technology Tiruchirapalli. (18th & 19th September 2013, Won Best poster presentation award)

ATTENDED:

1. NAAC Sponsored National Conference on "**Enhancement and Sustenance in Higher Educational Institutions (HEIs) through Six Sigma (6σ) Quality Strategy**", on 23rd & 24th October 2008, at St. Joseph's College (Autonomous), Tiruchirapalli.

2. UGC Sponsored National Conference on "**Higher Education and National Development: The Challenge of Expansion, Quality and Inclusion**", on 30th & 31st January 2009, at St. Joseph's College (Autonomous), Tiruchirapalli.

SYMPOSIUM:

1. Presented poster titled "**Satellite Communication**" and won 2nd prize in ELECTRON05 National level symposium, organized by National Institute of Technology Tiruchirapalli. (26th February 2005)

2. Presented paper titled "**I2C**" and won 2nd prize in FESTRONIX-2K4 state level symposium, organized by Mohamed Sathak College of Arts & Science, Chennai. (30th September - 1st October 2004)

RESOURCE PERSON:

1. One day workshop on "**Raspberry pi for Internet of Things**", for the students of Department of Software development and System Administration, St. Joseph's College(Autonomous), Tiruchirappalli. (8th February 2019)

2. One day orientation program on "**Arduino programming**", for the faculty members of Department of Physics, St. Antony's College of Arts and sciences for women, Dindigul (15th November 2018)

3. Faculty development program on "**Physics Experiments through simulation**", for Department of Physics, St. Joseph's College (Autonomous), Tiruchirappalli (18th to 21st April 2018).

4. Lecture on "**RFID and its Applications**", for the M.Sc Electronics students of Government arts College, Thiruverambur, Tiruchirappalli. (27th March 2018).

5. Lecture on "**Patent Drafting**", in Faculty development program, organized by department of Electronics, St. Joseph's College (Autonomous), Tiruchirappalli.(25th November 2017).

6. DBT sponsored Short term course on "**Raspberry Pi for IoT**" for the I UG Students of Department of Statistics, St. Joseph's College (Autonomous), Tiruchirappalli. (19th July to 4th October 2017).

7. DBT Sponsored Short term course on "**Arduino for IoT**" for the IUG students of Department of Statistics, St. Joseph's College (Autonomous), Tiruchirappalli. (21st June to 12th July 2017)

8. Lecture on "**Biosensor and Instrumentation**", faculty development program on, Recent trends is biosensor and bioinformatics, organized by Kalasalingam University, Krishnan Kovil. (19th March 2017).

9. DBT Sponsored 12 day short term course on "**Arduino Programming for IoT**" for B.Sc., Computer Science students, organized by Department of Computer Science, St. Joseph's College (Autonomous), Tiruchirappalli. (24th November to 22nd December 2016).

10. Lecture on "**Cloud computing and IoT**", National conference on Recent trends in Electronics", St. Joseph's College, Tiruchirappalli. (18th February 2016).

11. Lecture on "**Cloud computing an overview**" for B.Sc Computer science students of VHNSN College, Virudhunagar. (28th February 2015)

12.TNSCST, Chennai & NCSTC, New Delhi Sponsored "**Special Lecture Programme for P.G. Physics Teachers**" organized by St. Joseph's College, Tiruchirapalli. (12th – 14th November 2009)

13. Lecture on "Embedded Systems" for B.Sc., and M.Sc., Electronics Students of KR College of Arts & Science, Kovilpatti. (20th July 2009)

TRAININGS AND WORKSHOPS UNDERGONE:

1. Training Program on "**Tuning Young Faculty towards Effective Teaching**" organized by St. Christopher's College of Education, Chennai, Funded by United Board for Christian Higher Education in Asia. (23^{rd} – 27^{th} January 2018).

2. "**Workshop on Access to technology for innovation & Establishing a technology and Innovation Support Center (TISC) Network**", organized by CIPR, Anna University, Chennai. (7th & 8th December 2017).

3. "**Certificate course on Effective Patent Drafting**", Organized by CIPR Anna University in association with TNTDPC and CII, Southern region at Anna University Chennai. (8^{th} – 12^{th} November 2017).

4. "**Endowment Workshop on Current Trends in Computer Science**" organized by Department of Information technology, St. Joseph's College (Autonomous), Tiruchirappalli. (31st August and 1st September 2017).

5. "**Workshop on 3D Printing**", organized by Learning Center, Trichy in association with SF IT systems, Bangalore and DiGiit, Singapore.(9^{th} September 2017)

6. "**Workshop on test procedures and practice of solar thermal technology**", organized by the school of Energy, Environment and natural resources, Madurai Kamaraj University, Madurai. (12th - 13th September 2011)

7. "**Interdisciplinary workshop on biosensors and their applications**" organized by Biomedical Research Lab, VHNSN college, Virudhunagar (20th December 2010).

8. "**Linux System Programming, Embedded Linux & Driver Development**", organized by C-DAC, Hyderabad in collaboration with JNTU, Hyderabad as a part of PREPARE FUTURE project, HRD Division, Department of Information Technology, Government of India at C-DAC. (18th – 29th May 2009).

9. "**VLSI Implementation of Digital Radio Receivers**" organized by the department of ECE, National Institute of Technology Tiruchirapalli. (29th - 31st December 2006)

10. In-plant training, Office of the Commissioner of Customs office, Tiruchirapalli. (15th - 17th June 2005)

11. In-plant training, ITI Bangalore. (13th - 27th November 2004)

12. "**Awareness program on Remote sensing**" organized by ISRO & Centre for Remote sensing, Bharathidasan University Tiruchirapalli. (23rd December 2000)

CERTIFICATION:

1. Typewriting in English with 2nd class in senior grade (August 2000)

5 professional referees of high repute interacted in the past:

Sl. No	Referees details
1.	**Dr. N.Mathivanan, M.Sc., M.Tech., Ph.D.,** Research Supervisor, (Professor (Retd.), USIC, MKU, Madurai) Plot No. 13 & 16, F1, Ashok Manor Apartments, Rengasamy Street, Chrompet, CHENNAI – 600 044. Mobile: 9443829142 E-mail: nmvanan@yahoo.com
2.	**Dr. S. Elango**, Associate Professor, Department of Computer Science,VHNSN College, Virudhunagar – 626 001, Tamil Nadu Mobile: 9443660267 Email: vnrselango@yahoo.com
3.	**Dr. I. Arul Rayappan,** Associate Professor & Head, Department of Physics, St. Joseph's College (Autonomous), Tiruchirappalli, Tamil Nadu Mobile: 9842455852 Email: arulroy@gmail.com
4.	**Dr. M. Pandiaraj,** **Scientist,** Electrodics and Electrocatalysis, CSIR-Central Electrochemical Research Institute, Karaikudi, India Mobile: 9442771880 Email: pandiaraj@cecri.res.in
5.	**Dr. T. Madasamy,** Post-doctoral Fellow,

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PERSONAL MEMORANDA

Date of Birth	:	11-11-1983
Gender	:	Male
Nationality	:	Indian
Marital Status	:	Married and surviving with two kids
Father's Name	:	V. Kanagavel
Languages Known	:	Tamil & English

DECLARATION

The details furnished above are true to the best of my knowledge.

Yours Truly,

Place:

Date: (K.Vairamani)