

## Profile

### Dr.S.Vijayakumar

Vice Chairman - IEEE PSES, India.

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### Education

**Ph.D** : **Low Power VLSI Design, Anna University, Chennai, India - 600025.**

**Title of Research :** **Low Power Optimization Approaches for Multiplier Architecture**

**Evaluation Status:** **Highly Commended**

**Supervisors:** **Dr. Reeba Korah**

Director, Professor/ECE, Alliance University, Bangalore – 562 106.

**Dr.V.S.Kanchana Bhaaskaran**

Dean/Academics, VIT University - Chennai Campus.

### Membership in Professional Societies

- **Vice-Chairman, IEEE-Product Safety Engineering Society, Madras Chapter**
- **Senior Member** in **IEEE**
- **Member IEEE - Electron Devices Society**
- **Member** in **IEICE** (Institute of Electronics, Information and Communication Engineers), Japan
- **Life member** in **ISTE**
- **Senior Member (UACEE)** in **IRED** (Institute of Research Engineers & Doctors), USA
- **Member in IAENG**
- **Editorial Board Member** in **Science Publishing Group**

### Projects / Consultancy Works

- Faculty Advisor/Investigator - EMBEDDED SIM (eSIM) for Mobile Communication – Selected and sponsored by **European Innovation Academy** (EIA). Student Mr.T. Monesh kanth got scholarship around **Rs. 1.5 Lakh** to visit **Shenzhen University**, China – July 2018.
- A Proposal on “**Design, analysis and performance evaluation of arithmetic cores using 10nm - 45nm multi gate Fin-FET models over CMOS technology**” – **Research Promotion Scheme** with budget of Rupees 24.5 Lakhs is applied during September 2017.
- Applied as Coordinator - AICTE – **Grant for Organizing Conference** during September 2017.

### Value added / Hands on Module Developed

- Instrumental in organizing **One Week Value Added Course on “Embedded and IoT Based System Design”** at Department of ECE, SITAMS (Autonomous), Chittoor, Andhra Pradesh, during 19<sup>th</sup> to 24<sup>th</sup> April 2018.

## Awards/Appreciations

1. **e-YRTC** – e-Yantra Robotics Teacher Competition (Organized by **MHRD & IIT Bombay**): Participated as team member of GTEC faculty team and won **3<sup>rd</sup> position** in the event conducted at SSN College of Engineering, Chennai on 23<sup>rd</sup> December 2014.
2. **VLSI Fellowship Award** – 2011 & 2014 to attend the one week International Conference & Workshop organized by **IEEE & VLSI Society of India**.
3. Two **best papers** at the 3<sup>rd</sup> International Conference – **ICSIE 2014**, Jawahar Engineering College, Chennai on 5<sup>th</sup> & 6<sup>th</sup> April 2014.
4. **Best paper** award given at **Amity University & IETE** organized International Conference – **TELNET'2013** on 27<sup>th</sup> & 28<sup>th</sup> February 2013.
5. **Best performer** award given by **GTEC**, Vellore for producing highest pass percentage in M.E during the academic year 2011-12.

## Summary of Experience

Over **13 years** of **Teaching Experience** alongwith key roles in academic practice. The core subjects handled are:

- VLSI Technology, Architecture & Design Methodology
- ASIC, FPGA Design and Reconfigurable Computing
- Digital Integrated Circuits and Applications
- Advanced Digital System Design
- Computer Organization, Hardware Interfacing
- Microprocessors and Embedded System Design
- Digital Signals and Image Processing
- Medical Electronics & Bio-Medical Instrumentation
- RF & Microwave Engineering
- MEMs and Nanotechnology

## Summary of Academic Experience

### July 2015 onwards

- **Associate Professor**, Department of Electronics and Communication Engineering, **Sreenivasa Institute of Technology and Management Studies (Autonomous)**, Chittoor, Andhrapradesh, India – 517127.
- Coordinator, M.Tech VLSI System Design

### July 2010 to June 2015

- **Assistant Professor**, Department of Electronics and Communication Engineering, **Ganadipathy Tulsi's Jain Engineering College**, Kaniyambadi, Vellore, India – 632102.

### January 2004 to June 2008

- Lecturer, Department of Electronics and Communication Engineering, Meenakshi Ammal Polytechnic College, Uthiramerur, Kanchipuram D.T., India – 603406, (Tenure: Jan' 2004 to June 2005)

- Lecturer, Department of Electronics, CASC, Kangayam, Erode DT, India–638701, (Tenure: July 2005 to June 2008)

### **Summary of Industrial Experience**

Also have the **Industrial Experience** of **5 ½ years** in the maintenance and production fields.

### **August 1998 to December 2003**

- Maintenance Supervisor, Maintenance Department, B.S.Leathers & Co., Exporters, Ranipet, Vellore D.T., India – 603406, (Tenure: August 1998 to May 2000)
- Electrical Supervisor, Acoustics India PVT. LTD., Tiruchirappalli, India–620021, (Tenure: July 2000 to December 2003)

### **Professional Activities**

#### **Transactions/Journal Reviewer**

- **IEEE Transaction on Very Large Scale Integration Systems**
- **Taylor & Francis – International Journal of Electronics**
- **Springer – Circuits, Systems and Signal Processing**
- **Inderscience – International Journal of Nano particles**
- **Taylor & Francis – Auto-Soft Journal**
- **World Journal of Engineering & Physical Sciences**

#### **Role as Advisory Board Chairperson & Resource Person:**

- **Special Session Chair, International Conference on Computational Methods, Simulation and Optimization (ICCMSO), Asian Institute of Technology, Bangkok, Thailand, 11<sup>th</sup> January to 13<sup>th</sup> January 2019.**
- **Special Session Chair, 8<sup>th</sup> IEEE International Advance Computing Conference, Bennett University, Noida, India, 14<sup>th</sup> to 15<sup>th</sup> December 2018.**
- **Special Session Chair, International Conference on Engineering, Computers and Natural Sciences (ICECNS), Goa, India, 19<sup>th</sup> to 21<sup>st</sup> October 2018.**
- **Special Session Chair, International Conference on Computational Methods, Simulation and Optimization (ICCMSO), Asian Institute of Technology, Bangkok, Thailand, 22<sup>nd</sup> to 24<sup>th</sup> June 2018.**
- **Chairperson, International Conference on Recent Engineering and Technology (ICRET-2018), New Horizon College of Engineering Bangalore, 5<sup>th</sup> May 2018.**
- **Technical Program Committee Member, International Conference on “Network Engineering and Information Security (NEIS2018)”, Wuhan, China, 20<sup>th</sup> to 22<sup>nd</sup> April 2018.**
- **Chairperson, 2<sup>nd</sup> ICCET 2018, Potti Sriramulu Chalavadi Mallikarjunarao College of Engineering & Technology, Vijayawada, 2<sup>nd</sup> and 3<sup>rd</sup> April 2018.**
- **Chairperson, 8<sup>th</sup> International Conference on Science and Innovative Engineering (ICSIE-2018), Jawahar Engineering College, Chennai, 1<sup>st</sup> April 2018.**

- **Key Note Speaker & Advisory Committee Member**, “**International Conference on Engineering and Advancement in Technology (ICEAT-2018)**”, Sri Krishna College of Engineering, **Coimbatore**, 22<sup>nd</sup> & 23<sup>rd</sup> March 2018.
- **Chairperson**, **6<sup>th</sup> International Conference on Contemporary Engineering and Technology (ICCET-2018)**, Prince Shri Venkateshwara Padmavathy Engineering College, **Chennai**, India, 10<sup>th</sup> & 11<sup>th</sup> March 2018.
- **Advisory Committee Member - International Conference** on “**Electrical, Electronics, Computers, Communication, Mechanical and Computing (EECCMC-2018)**”, Priyadarshini Engineering College, **Vellore**, 28<sup>th</sup> & 29<sup>th</sup> January 2018.
- **Chief Guest** – National Workshop on “**Arduino Based System Design**”, Ganadipathy Tulsi’s Jain Engineering College, **Vellore**, 28<sup>th</sup> December 2017.
- **Guest Lecture** on “**Nanotechnology – Etymology, Trends and Safety for Future Generation**”, **VIT University**, Vellore, 10<sup>th</sup> November 2017.
- **Session Chair & Key Note Speaker** – National Conference “**RIETMA-2017**”, Department of ECE, Priyadarshini College of Engineering, Vaniyambadi, 8<sup>th</sup> April 2017.
- **International Conference on Science and Innovative Engineering (ICSIE)**, **Jawahar Engineering College, Chennai, India.**  
- As **Chairperson** for 7 consecutive years from 2011 to 2017
- **Conference Chair & Technical Committee Member - International Intellectual Convergence on Advances in Sciences and Engineering (IIASE’2017)**, AMS College of Engineering, **Chennai**, 3<sup>rd</sup> & 4<sup>th</sup> March 2017.
- **Chief Guest & Resource Person – Juried the Project Design Contest (PDCON’ 2017) & Presented a Technical talk on “Renewable Energy Sources”** – Mahendra Engineering College (Autonomous), **Namakkal**, in Association with IEEE PSES - Madras Section, 28<sup>th</sup> Feb’ 2017.
- **Advisory Committee Member - International Conference on Research Advances in Engineering Technologies and Pharmaceutical Sciences (ICRAETPS-2017)**, 11<sup>th</sup> February 2017, **Nellore**, Andhra Pradesh, India.
- **Chief Guest & Resource Person** - Technical talk on “**The Importance of Renewable Energy for Forthcoming Generation and Ecological Safety**” – Vetri Vinayaha College of Engg. & Technology, Trichy, Tamil Nadu, India in Association with IEEE PSES – Madras, 4<sup>th</sup> Feb’ 2017.
- **Resource Person – TEQIP Sponsored 2 Days Workshop on “Applications of VLSI Design in Power Electronics**”, Department of EEE, Government College of Engineering, Bargur, Tamil Nadu, India, 31<sup>st</sup> January 2017.
- **Internal Resource Person**, Technical talk on “**Principles of Embedded Systems**” at National Workshop on “**Arduino Etymology**”, Department of ECE, SITAMS (Autonomous), Chittoor, Andhra Pradesh, 19<sup>th</sup> October 2016.

- **Resource Person – IEEE event on “Students Technology Awareness Program (STAP)”** – Organized by IEEE PSES, PCS and CS Madras Chapters, Government Higher Sec. School (Girls), K.V.Kuppam, Tamil Nadu, India, 9<sup>th</sup> August 2016.
- **Technical Program Committee & Conference Proceedings Editor**, International Conference “**Network and Communication Security - NCS 2016**”, Beijing, China, 11<sup>th</sup> & 12<sup>th</sup> June 2016.
- **Guest Lecture on “VLSI Design**”, Organized by Department of ECE, Ganadipathy Tulsi’s Jain Engineering College, Vellore, India, 10<sup>th</sup> May 2016.
- **Guest Lecture on “Outcome Based Education**”, Department of ECE, Arulmigu Meenakshi Amman College of Engineering, Kanchipuram, Tamil Nadu, 2<sup>nd</sup> December 2014.
- **Internal Resource Person**, Technical Talk on “**Design for Testability**” at **National Workshop** on “**VLSI to MEMS & NMES Era**”, Department of ECE, Ganadipathy Tulsi’s Jain Engineering College, Vellore, India, 12<sup>th</sup> May 2014.

#### **FDPs/Guest Lectures/Workshops/Seminars Organized**

- **Organizing Secretary – One Week Value Added Course on “Embedded and IoT Based System Design**” at Department of ECE, SITAMS (Autonomous), Chittoor, Andhra Pradesh, during 19<sup>th</sup> to 24<sup>th</sup> April 2018.
- **Technical Talk on Career Opportunities in Medical Electronics & Health Safety**, Organized at Department of ECE, SITAMS (Autonomous), Chittoor, Andhra Pradesh, on 23<sup>rd</sup> January 2017.
- **Two Days Workshop on “Electronic Circuit Design – Artwork and Practice**” at Department of ECE, SITAMS (Autonomous), Chittoor, Andhra Pradesh, on 3<sup>rd</sup> & 4<sup>th</sup> March 2016.
- **Three Days Workshop on “Introduction to Robotics**” at Department of ECE, SITAMS (Autonomous), Chittoor, Andhra Pradesh, during 22<sup>nd</sup> to 24<sup>th</sup> Sept’ 2015.
- **FDP - Programming Fundamentals (for CSE & IT faculty)**, Ganadipathy Tulsi’s Jain Engineering College, Vellore, Tamil Nadu, India during 26<sup>th</sup> to 27<sup>th</sup> June 2014.
- **FDP - Design of Electrical and Electronic Circuits and Networks (for ECE & EEE faculty)**, Ganadipathy Tulsi’s Jain Engineering College, Vellore, Tamil Nadu, India during 24<sup>th</sup> to 27<sup>th</sup> June 2014.
- **FDP - Transform and Partial Differential Equations (for Mathematics & ECE faculty)**, Ganadipathy Tulsi’s Jain Engineering College, Vellore, Tamil Nadu, India during 23<sup>rd</sup> to 25<sup>th</sup> June 2014.
- **National Workshop on “VLSI to MEMS & NEMS Era**”, at Department of ECE, Ganadipathy Tulsi’s Jain Engineering College, Vellore, Tamil Nadu, India on 12<sup>th</sup> May 2014.
- **FDP - Innovative Teaching Methodology for Outcome Based Education (for GTEC faculty)**, Ganadipathy Tulsi’s Jain Engineering College, Vellore, Tamil Nadu, India during 7<sup>th</sup> to 10<sup>th</sup> May 2014.

- **VLSI – Embedded systems Value Added Course Coordinator**, Department of ECE, Ganadipathy Tulsi's Jain Engineering College, Vellore, Tamil Nadu, India during Academic Year 2012-13.
- **SDP on “Xilinx – System Generator” for ECE faculty**, Department of ECE, Ganadipathy Tulsi's Jain Engineering College, Vellore, Tamil Nadu, India, 10<sup>th</sup> March 2011.

### **Familiarized Tools**

- Cadence EDA
- Mentor Graphics
- Tanner EDA
- LT Spice
- ALTERA FPGA – QUARTUS II
- XILINX
- ModelSim

### **Journal Publications**

1. M.Sravani, **S.Vijayakumar**, “Design and Implementation of Hybrid LUT/Multiplexer FPGA Logic Architectures using Verilog HDL”, *International Journal of Research*, ISSN: 2236-6124, DOI: 16.10089.IJR.2018.V7I9.285311.22836, vol. 7, no. 9, pp. 820-828, September 2018.
2. A.Manikanta, D.Y.Pushpamitra, **S.Vijayakumar**, “Design of CMOS PLC Receiver Using Dual Power Lines for Design For Testability”, *Journal of Emerging Technologies and Innovative Research (JETIR)*, ISSN: 2349-5162, vol. 5, no. 9, pp. 74-82, September 2018.
3. D.Habeeba Sulthana, **S.Vijayakumar**, “An Efficient Implementation of High Speed, Low Power Vedic Multipliers using Reversible Gates”, *Journal of Emerging Technologies and Innovative Research (JETIR)*, ISSN: 2349-5162, vol. 5, no. 9, pp. 69-73, September 2018.
4. Konduru Lakshmi Bhanu Prakash Reddy, **S.Vijayakumar**, “High Speed Low Area and Energy Efficient 32 bit Carry Skip Adder using Verilog HDL”, *International Journal of Engineering Research in Electronics and Communication Engineering*, ISSN: 2394-6849, DOI: 01.1617/vol4iss3pid041, vol. 4, no. 3, pp. 205-209, March 2017.
5. S.Rohith Kumar, **S.Vijayakumar**, “An Optimized Power Efficient Programmable PRPG with Test Compression Capabilities”, *International Research Journal in Advanced Engineering and Technology*, E-ISSN: 2454-4752, vol. 2, no. 3, pp. 1061-1066, 2016.
6. S.Vishnupriya, A.Manimegalai, P.Saravanan, **S.Vijayakumar**, “Design of an Intelligent Human Interacting Mobile Robot with Sensing System”, *International Journal of Science and Innovative Engineering & Technology (IJSIET)*, ISBN 978-81-904760-7-2, vol. 2, May 2015.
7. J.Archana, **S.Vijayakumar**, P.Saravanan, A.Manimegalai, “Modeling a Mobile Robot to Reduce Energy Consumption”, *International Journal of Science and Innovative Engineering & Technology (IJSIET)*, ISBN 978-81-904760-7-2, vol. 2, May 2015.



8. **Vijayakumar, S** & Reeba Korah 2014, 'Circuit level, 32 nm, 1-bit MOSSI-ULP adder: power, PDP and area efficient base cell for unsigned multiplier', *IEICE Electronics Express*, vol. 11, no. 6, pp. 1-7, DOI: 10.1587/elex.11.20140109.
9. Nivitha, D, **Vijayakumar, S** & Reeba Korah 2014 'Design and implementation of microstrip antenna for wireless application in UWB region', *International Journal of Research in Engineering Technology*, vol. 3, Special Issue 7, pp. 260-264.
10. Venkatesan, RG, **Vijayakumar, S** & Yashodha, P 2013, 'Power harvesting and area efficient clock gating method for a de-composed MUX controller', *International Journal of Advanced Research in Computer Science*, vol. 4, no. 4, pp. 45-51.
11. Thamizarivu, M & **Vijayakumar, S** 2013, 'DBET: Demand based energy efficient topology using P-MANET', *International Journal of Computer Applications*, vol. 68, no. 19, pp. 4-9.
12. **Vijayakumar, S** & Reeba Korah 2012, 'Area and power efficient hybrid PTCSL MUX design', *European Journal of Scientific Research*, ISSN 1450-216X, vol.83, no.1, pp.39-52.

### Papers Presented in Conferences

1. **S.Vijayakumar**, V.Jayaprakasan, Reeba Korah, "Design and Analysis of Low Power, Area Efficient Skip Logic for CSKA Circuit in Arithmetic Unit" Proceedings of **IEEE** Conference on Emerging Devices and Smart Systems, ICEDSS 2018, Mahendra Engineering College, Namakkal, Tamilnadu, 2<sup>nd</sup> and 3<sup>rd</sup> March 2018.
2. Konduru Lakshmi Bhanu Prakash Reddy, **S.Vijayakumar**, "High-Speed, Low Area and Energy Efficient 32 bit Carry Skip Adder Using Verilog HDL", Proceedings of International Conference on Emerging Trends in Engineering Science and Technologies (ICETEST-2017), SVCE, Tirupati, 2017.
3. S.Rohith Kumar, **S.Vijayakumar**, "Programmable PRPG with Test Compression Capabilities", Proceedings of National Conference on Recent Advancements in Nanoelectronics (NCRANE-2016), Tirupati, 2016.
4. S.Vishnupriya, A.Manimegalai, P.Saravanan, **S.Vijayakumar**, "Design of an Intelligent Human Interacting Mobile Robot with Sensing System", Proceedings of 5<sup>th</sup> International Conference on Science and Innovative Engineering, 5<sup>th</sup> April 2015.
5. J.Archana, **S.Vijayakumar**, P.Saravanan, A.Manimegalai, "Modeling a Mobile Robot to Reduce Energy Consumption", Proceedings of 5<sup>th</sup> International Conference on Science and Innovative Engineering, 5<sup>th</sup> April 2015.
6. Nivitha, D & **Vijayakumar, S** 2014, 'Design and implementation of microstrip antenna for wireless applications in UWB region', TITCON-2014, Chennai, India, 8th & 9th April 2014.

7. Nivitha, D & **Vijayakumar, S** 2014, 'Ultra wide band applications based microstrip antenna design and implementation', ICSIE-2014, Chennai, 5th & 6th April 2014.
8. Gowthami, N & **Vijayakumar, S** 2014, "Reduction of coupling transitions for low switching activity power", ICSIE 2014, 5th & 6th April 2014.
9. Gowthami, N & **Vijayakumar, S** 2014, 'On-chip data encoding for low power dissipation', RACE 2014, Arni, Tamilnadu, India, 6th March 2014.
10. Nivitha, D & **Vijayakumar, S** 2014, 'Design of Microstrip UWB Antenna for Wireless Applications', RACE 2014, Arni, Tamilnadu, India, 6th March 2014.
11. **Vijayakumar, S**, "Challenges Faced by Facilitators (Teachers) Against the Digital Natives", National Conf. – Development of Ethical and Moral Values Among the Students and Teachers in Educational Institution, 11th & 12th May 2013.
12. **Vijayakumar, S** and Reeba Korah "13T low power PTL based arithmetic leaf cell for signal Processing", **IETE** – TELNET'2013, 27th & 28th February 2013.
13. V.Jayaprakasan, **Vijayakumar, S** and V.S.Kanchana Bhaaskaran "Evaluation of the Conventional Vs. Ancient Computation Methodology for Energy Efficient Arithmetic Architecture," **IEEE** Int. Conf -PACC'2011, 20th to 22nd July 2011.
14. **Vijayakumar, S** and B.Karthikeyan, "Mixed style of Low Power Multiplexer Design for Arithmetic Architectures using 90nm Technology" **WSEAS** & CIET Organized Int. Conf. ICNVS'2010, 18th & 19th February 2010.
15. **Vijayakumar, S** and B.Karthikeyan, "An Efficient Low power static CMOS MUX Design for Multiplexer trees" – **IEEE** & **ISTE** Sponsored Int. Conf. EPSCICON'2010, 4th to 6th January 2010.

### **Areas of Interest**

- Digital Integrated Circuits
- Low Power Design
- Physical Design Automation
- ASIC & FPGA Design
- Reconfigurable Computing
- RF & Microwave Engineering
- Digital Signals and Image Processing
- Nanotechnology
- Renewable Energy
- MEMS

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