

## BIO-DATA

1. **Name** Mini K. Namboothiripad
2. **Designation** IQAC Coordinator-FCRIT Vashi since January 2021.  
Assistant Professor, Electrical Department since September 2001.
3. **Office Address** Agnel Charities' Fr. C. Rodrigues Institute of Technology  
Vashi, Fr. Agnel Technical Education Complex, Sector-9A, Vashi.
4. **Date of birth** 15-05-1974
5. **Total Experience**
  - i. **Teaching** 23yrs
  - ii. **Industrial** 2yrs

6. **Qualifications**

Exam Passed	Year	Institution/ University	Branch/Specialization	Percentage/CGPI
PhD.	2021	IIT Bombay	Electrical	
M Tech	2011	IIT Bombay	Electrical / Control & Computing	9.85 CGPI
B Tech	1995	Calicut University	Electrical & Electronics	77.8%

7. **Employment Record**

Institution	Year (From To)	Designation
Fr.C.R.I.T Vashi	2001 till date	Assistant Professor
Fr.C.R.I.T Vashi	2021 till date	IQAC Coordinator

8. **Undergraduate / Postgraduate Teaching Experience and Subjects Taught**

Subjects Taught at UG level: Control system-I & II, Industrial Controller, Signal Processing, Numerical Methods and Optimization Techniques, Power Electronics, Electrical Network.

Subjects Taught at PG level: Applied Linear Algebra, Power Quality Issues and Mitigation Technique

9. **Professional Societies Fellowship / Membership,:**

Life member of IETE, Life member of ISTE

10. **Achievements / Awards / Position :**

1. Recognized as **Top Reviewer** for the 4th IEEE Bombay Section Signature Conference (IBSSC-2022) held during December 8 -10 2022 and Organized by IEEE Bombay Section and SVKM's NMIMS MPSTME, Mumbai, India.
2. Received **faculty incentive** from F.C.R.I.T, Vashi for two years
3. Received **second position** for the **WIE 3-Minutes Thesis Challenge Award** for the PhD Thesis in InCAP 2021, Jaipur during December 13-16, 2021.
4. Received **Third Position in PhD EEE category** of the National Symposium and Research Colloquium jointly organized by IEEE SB Government College of Engg. Kannur, IEEE IA/IE/PELS Jt. Chapter Kerala and IEEE Kerala Section in 11-12 September 2021.

5. Received certificate of appreciation for **excellence in Teaching Assistantship** in the course “**VLSI Design Lab**” for the spring semester of academic year 2018-19, from the Department of Electrical Engineering at **IIT Bombay**.
  6. Received certificate of **appreciation for excellence in Teaching Assistantship** in the course “**Foundation of VLSI CAD**” for the autumn semester of academic year 2017-18, from the Department of Electrical Engineering at **IIT Bombay**.
  7. Received **scholarship** under Quality Improvement Program of MHRD, Department of Education, Govt. of India, for pursuing Ph.D.
  8. Received **Prof. G.N. Revankar Prize** for the year 2010-11, being the **most outstanding of all students** who completed M. Tech in Electrical Engineering at **IIT Bombay**.
  9. **Received Shri K.M. Doshi Charitable Trust Prize** for the year 2010-11, being **the most outstanding of all** students who completed M. Tech in Electrical Engineering at **IIT Bombay**.
- 11. Projects guided in PG level:**
1. Optimal Control of TCR Using Soft Computing Technique.
  2. Maximum Power Point Tracking of Solar Cell Using Sliding Mode Control.
  3. Design of Second Order Sliding Mode Controller for DC-DC Converter.
  4. Design and Implementation of Shunt Active filter using Sliding Mode Control
  5. Design and Implementation of model predictive control based maximum power point tracking for PV
- Projects guided in UG level (Recently):**
6. Multi-objective predictive control for three-phase three-level neutral-point clamped inverter using FPGA in 2021-22
  7. Implementation of AI Based Surveillance Robot with Object Identification in 2022-23
  8. IoT Based DC Motor Speed Control for Surface Operated Rover in 2023-24
- 12. List of Journal Papers Published**
1. Namboothiripad and Mini, “Analyzing the Impact of Discretization Techniques on Real-Time Simulation of DC Servomotor using FPGA,” *International Journal of Computing and Digital Systems*, vol. 15, no. 1, p. 103, March 15 2024.
  2. Akhilesh Mendon, Agnel Austin, Shraddha Ambilkar, Shikha Menon and Mini K Namboothiripad, "Multi-Objective Predictive Control For Three-Phase Three-Level Neutral-Point Clamped Inverter", *International Journal of Advanced Technology and Engineering Exploration*, vol. 10, issue 100, pp. 321-339, March 2023, <http://dx.doi.org/10.19101/IJATEE.2021.876453>
  3. M. K. Namboothiripad, M. J. Datar, M. C. Chandorkar and S. B. Patkar, "FPGA Accelerator for Real-Time Emulation of Power Electronic Systems Using Multiport Decomposition," in *IEEE Transactions on Industry Applications*, vol. 56, no. 6, pp. 6674-6686, Nov.-Dec. 2020, doi: 10.1109/TIA.2020.3024347.
  4. S. George, K.N. Mini, K. Supriya, “Optimized reactive power compensation using Fuzzy logic Controller”, *Springer Journal of the Institution of Engineers (India) Series B. Electrical, Electronics and Computer Engineering*, ISSN 2250-2106, May-14.
  5. Arpita Das, Mini K Namboothiripad, “Voltage Control of Buck Converter using Sliding Mode Controller”, *International Journal of Engineering Research & Technology*, ISSN: 2278-0181, Vol. 3 Issue 4, April – 2014.
  6. MK Namboothiripad, “Genetic Algorithm Based SVC Switching for Harmonic and Reactive Power Compensation”, *International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control engineering*, Volume 1, Issue 7, October 2013.
  7. Bindu R, Mini N., “Tuning of PID Controller for DC Servo Motor using Genetic Algorithm”, *International Journal of Emerging Technology and Advanced Engineering*, ISSN 2250-2459, Volume 2, Issue 3, March 2012.
- 13. List of Books/Bookchapters Published with Reputed Publishers**
1. Mini Rajeev, Mini K. Namboothiripad, published book chapter titled “Power Electronic Converters and Implementation in FPGA Applicable to Electric

Vehicles”, chapter-11 of book titled “Power Electronics for Electric Vehicles and Energy Storage: Emerging Technologies and Developments,” Taylor and Francis Group, CRC Press, ISBN 9781032164199.

#### 14. List of Papers Published in National and International Conferences

1. S. Gaikwad, O. Malunekar, R. Mandve, V. Mhatre and M. Namboothiripad, "IoT Based DC Motor Speed Control for Surface Operated Rover," 2024 Asia Pacific Conference on Innovation in Technology (APCIT), MYSORE, India, 2024, pp. 1-5, doi: 10.1109/APCIT62007.2024.10673572.
2. M. K. Namboothiripad, M. J. Datar, M. C. Chandorkar and S. B. Patkar, "Accelerator for Real-Time Emulation of Modular-Multilevel-Converter Using FPGA," 2020 IEEE 21st Workshop on Control and Modeling for Power Electronics (COMPEL), Aalborg, Denmark, 2020, pp. 1-7, doi: 10.1109/COMPEL49091.2020.9265684.
3. Y. Mahajan, S. Obla, M. K. Namboothiripad, M. J. Datar, N. N. Sharma and S. B. Patkar, "FPGA-Based Acceleration of LU decomposition for Analog and RF Circuit Simulation," 2020 33rd International Conference on VLSI Design and 2020 19th International Conference on Embedded Systems (VLSID), Bangalore, India, 2020, pp. 131-136, doi: 10.1109/VLSID49098.2020.00040
4. M. K. Namboothiripad, M. J. Datar, M. C. Chandorkar and S. B. Patkar, "FPGA Accelerator for Real-Time Emulation of Power Electronic Systems Using Multiport Decomposition," 2019 National Power Electronics Conference (NPEC), Tiruchirappalli, India, 2019, pp. 1-6, doi: 10.1109/NPEC47332.2019.9034784.
5. Maitreyee D, MK Namboothiripad, “DSP Based Second Order Sliding Mode Controller for Buck Converter”, in 3rd IEEE International Conference on Convergence in Technology 2018, Pune, India, held on 6-8 April 2018.
6. M. Deshmukh, MK Namboothiripad "A constant frequency second order sliding mode controller for buck converter," 2017 Second International Conference on Electrical, Computer and Communication Technologies (ICECCT), Coimbatore, 2017, pp. 1-5, doi: 10.1109/ICECCT.2017.8118001.
7. M Mane, MK Namboothiripad, "PWM based sliding mode controller for shunt active power filter", International Conference on Nascent Technologies in Engineering (ICNTE), pp. 1-6, February 2017.
8. M Mane, MK Namboothiripad, “Current harmonics Reduction using sliding Mode Control Based Shunt Active Power Filter”, 10th International Conference on Intelligent Systems and Control (ISCO), 2016 Coimbatore vol.01, pp.93-98.
9. Kunal Pardeshi, MK Namboothiripad, “Robust Sliding Mode Controller for PV Connected Converter Inverter System”, 2nd international conference on Emerging trends in Technology and Applied sciences at SAINTGITS COE Kottayam in 2015, Kerala.
10. A Das, MK Namboothiripad, “Sliding Mode Controller with Adaptive Sliding Coefficient for Buck Converter”, 6th IEEE Power India International Conference, Power Electronics; PIICON -2014.
11. S Bindu, N Mini, “Reactive power compensation in three phase circuits by different power definitions”, TENCON-2008, IEEE Hyderabad section.
12. Bindu S, Mini N, Reshmi K “A method to improve the Reliability of Energy Storage Element in reactive power compensation” National Conference INDICON-2007 Bangalore, 2007.

#### 15. International Conference Technical Program Committee Member / Reviewer:

1. **Reviewer** of IEEE Open Journal of Circuits and Systems for a research paper on August 2024.
2. **Reviewer** for the 2nd International Conference on Advances in Technology and Management ICATM-2024, on April 5th - 6th, 2024.

3. **Pre Conference Tutorial Committee Chair** for the 5th Biennial International Conference on Nascent Technologies in Engineering, ICNTE-2023 organized by Fr. C. Rodrigues Institute of Technology, Vashi in association with IEEE and IAS on January 20 -21,2023.
4. **Reviewer** for the 5th Biennial International Conference on Nascent Technologies in Engineering, ICNTE-2023 organized by Fr. C. Rodrigues Institute of Technology, Vashi in association with IEEE and IAS on January 20 -21,2023.
5. Recognized as **Top Reviewer** for the 4th IEEE Bombay Section Signature Conference (IBSSC-2022) held during December 8 -10 2022 and Organized by IEEE Bombay Section and SVKM's NMIMS MPSTME, Mumbai, India.
6. **Session Chair** in 2022 3<sup>rd</sup> Global Conference for Advancement in Technology (GCAT) during 7<sup>th</sup> & 9<sup>th</sup> October 2022
7. **Reviewer** for AICTE sponsored Springer International conference on Recent evolutions in Energy Drive and E-Vehicles(REEDeV-2022)" held during September 2022 at St. Vincent Palloti College of Engineering and Technology Nagpur.
8. **Reviewed** papers of the Third International Conference on Innovation in Science and Technology for Sustainable Development organized by the College of Engineering, Perumon, sponsored by TEQIP-II and technically co-sponsored by IEEE Kerala section on 25, 26 August 2022.
9. **Reviewer** of Taylor & Francis Journal, Energy Sources, Part A: Recovery, Utilization, and Environmental Effects
10. **Reviewer** of the papers submitted in the field of Electrical Engineering for the International Conference on Nascent Technologies in Engineering (ICNTE) 2015, 2017, 2019, 2021 and 2023.
11. **Technical chair** at International Conference on Nascent Technologies in Engineering (ICNTE) 2021.

**16. Short Term Training Programmes attended/organized:**

1. Ten Days Faculty Training Program on "Implementation of Autonomy" conducted from 5th July 2024 to 19th July 2024 at Agnel Charities Fr. C. Rodrigues Institute of Technology, Vashi.
2. Seven Days "Ashtang Yoga" from 21<sup>st</sup> October 2023 to 31<sup>st</sup> October 2023 Organized by Department of Mechanical Engineering of Agnel Charities Fr. C. Rodrigues Institute of Technology, Vashi.
3. Seven Days FDP on "Exploring Dynamics of National Education Policy 2020 With Reference to NAAC Perspectives" from 24/11/2022 to 30/11/2022 Organized by SAGE University- Indore and Bhopal, Christian Eminent College, Research Foundation of India, RFI Care & JHERF.
4. Seven Days "Yoga Session" From 13th October 2022 To 20th October 2022 Organized by Department of Mechanical Engineering of Agnel Charities Fr. C. Rodrigues Institute Of Technology, Vashi .
5. AICTE Training and Learning (ATAL) Academy Online Elementary FDP on "Recent Trends and Advancements in ANN and Deep learning for Real Time Applications " from 20/12/2021 to 24/12/2021 at Rungta College of Engineering and Technology, Bhilai.
6. AICTE Training and Learning (ATAL) Academy Online Elementary FDP on "Artificial Intelligence & Machine Learning" from 25/10/2021 to 29/10/2021 at University Institute of Technology, Rajiv Gandhi Proudhyogiki, Vishwavidyalaya.
7. Co-coordinator for AICTE Training and Learning (ATAL) Academy sponsored one week FDP on "Power Electronic Systems and its Real Time Control Implementation in DSP" from 08/11/2021 to 12/11/2021 at FCRIT Vashi, Navi-Mumbai.
8. KTU sponsored Five-day FDP on "Robotics and control: Theory and practical applications" conducted by college of engineering Peruman 13-17th September 2021.

9. "AICTE Incorporating Universal Human Values in Education (An AICTE Initiative)", a 5-day online FDP organized by AICTE from 14th June to 18th June 2021.
10. Attended FDP on "Research Initiatives on Advanced Control system" conducted by the department of Electrical and Electronics Engineering on 22nd-26th February 2021.
11. 'Effective and Efficient Online Teaching in the Age of Corona, A Hands On Workshop' on 16 May 2020, with pre and post workshop online activities, involving 3 days of video lectures and hands-on work, organised by the Teaching Learning Centre (ICT) at IIT Bombay, funded by the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching, MHRD, Govt. of India.
12. One week Indo-German Spring School on Algorithm for Big Data at IIT Bombay on February 2019.
13. One week AICTE-ISTE Approved Short term Training Programme titled, "FPGA Design using VHDL", held at SIES Nerul on July 2017.
14. Three-day Workshop on "Research Trends in Control and Signal Processing (RTCSP-2015)" held at Ramrao Adik Institute of Technology, Nerul on July 2015.
15. Two-day workshop on "Introduction to Robotics" conducted on July 2015 held at IIT Bombay.
16. One week ISTE Approved Short Term Training Programme titled, "Workshop on Advanced control system Applications", held at FCRIT Vashi on July 2013.
17. One-week CE&QIP Course on "Renewable Energy Technology" conducted by IIT Bombay on May 2012.
18. One week ISTE Approved Short Term Training Programme titled, "Workshop on Power Electronic Applications", held at FCRIT Vashi on April 2012.
19. One week ISTE Approved Short term Training Programme on, "PLC and Industrial Automation", held at FCRIT Vashi on August 2006.

**17. Invited Lectures in FDP/ STTP:**

1. As a resource person in 30 hours value-added course on "Application of Power Electronics in Electrical Engineering" organised by the Skills Development Cell, St. Francis Institute of Technology, Borivali, from 12-17 December, 2022.
2. "FPGA Programming and Implementation: Basics" during the ISTE approved, one week online Short-Term Training Programme on Power Electronics and Drives organized by the Department of Electrical Engineering, Agnel Charities' Fr. C. Rodrigues Institute of Technology from 31<sup>st</sup> October to 5<sup>th</sup> November 2022.
3. "Simulation of Power Electronic Converter using C programming language" during the ISTE approved, one week online Short-Term Training Programme on "DSP, Arduino, and C/Python" organized by Electrical Engineering department of FCRIT, Vashi from 10th May 2021 to 14th May 2021.
4. "Basic and Advanced Ladder Programming", during Training Program on PLC and SCADA, organized by Electrical Engineering Department, F.C.R.I.T. Vashi held on November 29- December 4, 2019.
5. "FPGA Based HIL Simulation of Power Electronic Systems ", at Indo-Japan project meeting held at Electrical Engineering Department, IIT Bombay on February 3rd 2019.
6. "Controller Design Using Matlab", during Micro Electro-Mechanical Systems and Mechatronics STTP organized by Mechanical Department of FCRIT Vashi held on 2nd-7th Jan 2018.
7. "Scilab/Xcos for Control System Engineering" during two days workshop on 'Open source tools for Engineering Research ' organized by EXTC department and IETE-ETSA students forum of FCRIT Vashi on June 2016.
8. "Simulation tutorials on Sliding mode Controllers" for Short term Training Programme on "Software tools for Engineering Researchers", held at FCRIT Vashi on October 2015.

9. "Introduction to Simulink and its Block sets" during MSBTE sponsored Content updating program on 'Simulation Software', held at Agnel Polytechnic, Vashi on Dec-2014.
10. "Control System Analysis and Design using Matlab" during the ISTE Approved Short term Training Programme titled, "Workshop on Advanced control system Applications", held at FCRIT Vashi on April 2012.
11. "Matlab and its Application" during AICTE-ISTE approved two weeks training session organized under KJSP-ISTE chapter, K.J. Somaiya polytechnic, Vidyavihar, on December 2011.

**18. Brief of Ph.D. thesis:**

**Title:** Network and Matrix Decomposition Based Acceleration of Circuit Simulation Using FPGA

The main objective of the work is to develop strategies for performing high-performance circuit simulation using FPGA by exploiting its parallel and distributed computational capabilities. The targeted circuit simulation problems are the real-time simulation of power electronic converters and the acceleration of the harmonic balance (HB) algorithm.

The main contributions can be summarized as follows:

1. Proposed a generic multiport decomposition based technique for the real-time simulation of power electronic converters using FPGA.
2. Developed a Python-based utility that takes the netlist of each multiport as input and precomputes the system matrices and expressions to improve the adaptability of the technique for various converter topologies.
3. Proposed strategies for the implementation of an easily scalable real-time model for the modular-multilevel-converter using FPGA.
4. Developed a Spice2HBequations module in C++ which can take circuit netlist as input and pre-compute the required data structures to implement the HB algorithm on FPGA.
5. Proposed strategies for the implementation of HB algorithm on FPGA using the column-dependency(data-flow) graph for the sparse-tiled LU decomposition with two approaches:
  - (a) All the HB algorithm computations in the programmable logic (PL) by extracting multiple levels of parallelism.
  - (b) A scalable approach with only the matrix-matrix multiplication operation of the sparse-tiled LU decomposition is on the PL by extracting tile-level and column-level parallelism.

**Research Interests:** FPGA-based Reconfigurable Computing, Real-Time Simulation, Mathematical Modelling, and Control of Electrical Systems etc.