

**Curriculum Vitae of Dr. Mariamma Chacko., Associate Professor,
Department of Ship Technology, CUSAT, Kochi 682 022**

1. Name Dr. MARIAMMA CHACKO
2. Date of Birth 20th July 1961
3. Nationality Indian
4. Occupation HOD and Associate Professor, Department of Ship Technology, CUSAT.
Chirackamalil,
Kizhacombu P.O
5. Address (Permanent) Koothattukulam, Ernakulam (Dist.),
Kerala State
INDIA. PIN 686 662
Chirackamalil
TP VI/913 A,
Rubber Garden
6. Address (Present) Thrikkakara, PIN 682 021
INDIA Tel : (0484)8281712727
7. Professional Qualifications :

Sl. No.	Degree	University	Year	Class/ Division	Specialisation
1	Ph.D	Cochin University of Science and Technology, India	2012		An Error-Localization, Validation and Optimization Tool for Embedded Code Augmentation: an Architecture Oriented Approach
2	M. Tech.	Cochin University of Science and Technology, India	1987	First class	Electronics
3	B. Tech.	Kerala.	1985	First Class with Distinction	Electrical Engineering

8. Details of Employment :

Sl. No.	Organisation	Position	Period	Nature of job	
1	Department of Ship Technology, Cochin University of Science and Technology	a)	HOD & Associate Professor	27-04-2017 to date	Administration Teaching and research
		b)	Associate Professor	01-01-2006 to 26-04-2017	
		c)	Lecturer(S election Grade)	09-09-2000 to 31-12-2005	Teaching, helping administration and research
		d)	Lecturer(S enior Scale)	09-09-1996 to 08-09-2000	
		e)	Lecturer	07-08-1990 to 08-09-1996	
2	Department of Electronics, Cochin University of Science and Technology. (GOI) Project	f)	Research Associate	8-04-'89 to 19-01-'90	Assisting projects and taking classes.
		g)	Project Associate	26-05-'88 to 7-04-'89	
		h)	Jr. Project Associate	2-09-'87 to 26-05-'88	

9. Teaching Experience :

The following subjects for the B. Tech. Course in Naval Architecture & Ship-building (N.A. & S. B.):

- a) Electrical Engineering and Electronics
- b) Instrumentation
- c) Electrical systems onboard ships and shipyards
- d) Computer programming

- Taught the following subjects for M.Tech. Course in Digital Electronics in Department of Electronics, CUSAT

- (a) Microprocessors (8085 & 8086)

10. Projects:

UGC minor project –‘Design and Development of a Microcontroller based On Board Cockpit Display and Data logger for Offshore Vessels.’

Rs. 50,000/-, 2 years 1998-2000: 27-03- 98 to 28-11-2000.

11. Research topics:

Title of the Ph. D thesis : An Error-Localization, Validation and Optimization Tool for Embedded Code Augmentation: an Architecture Oriented Approach

Research works undergoing

1. Sensorless control of Brushless Direct Current (BLDC) motors: - conducting the feasibility study of H infinity controller in the sensorless speed control of BLDC motors.
2. An Improved Converter for Renewable Electrical Energy Systems.
3. Hybrid Optimization Techniques for Electrical Power Transmission Systems.
4. Testing and analysis of object oriented programming.
5. Enhancement of Power harvesting from Renewable Energy sources
6. Power quality issues in ships electrical systems.

12. Text Book :

Writing a text book on “*Electrical Power Generation, Distribution and Utilization in Ships and Shipyards*”. Ninety percentage of the work is over. This book is intended for Naval Architecture and Marine Engineering Students which concentrates on electrical systems in ships and shipyards.

12. Research papers :

List of Research papers presented/ published in National, International Conferences and Journals, is enclosed (**annexure I**).

13. Conferences/workshops attended : See **annexure II**14. Short term courses attended : See **annexure III**

15. Membership of Professional bodies, etc. : Life member of I.S.T.E.,
: Member of Emerald Literati Network
: Member of Academic Council, CUSAT

16. Main Administrative assistances done to the Department : PTA Secretary – 2012-2015 , 2016-to date.
Student’s Training cell co-ordinator-2013-’14.

17. Awards / Certificates :

- a) Proficiency award in the Electrical Engineering branch for the 1985 batch from TKM college of Engineering, Quilon, Kerala.

Date: 10-04-2017

(Mariamma Chacko)

Annxure I

LIST OF PUBLICATIONS

1. K. Vinida and Mariamma Chacko, "An optimized speed controller for electrical thrusters in an Autonomous Underwater Vehicle", Accepted for publication in *International Journal of Power Electronics and Drive Systems*.
2. K. Vinida and Mariamma Chacko, "An optimized H infinity strategy for robust control of sensorless BLDC propulsion motor in submarines for improved maneuverability", *2016 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)*, December 14-17, Trivandrum, Kerala, pp. 1-6, 2016.
3. Sandhya N, Philip Samuel and Mariamma Chacko, "Data Triggered Programming Model for Text Processing in Big Data", *Journal of Network and Innovative Computing*, Vol.4, pp.220-228, 2016.
4. K. Vinida and Mariamma Chacko, "A novel strategy using H infinity theory with optimum weight selection for the robust control of sensorless brushless DC motor", *IEEE 7th International Symposium on Sensorless Control for Electrical Drives (SLED 2016)*, Fiji, ISSN: 2166-6733, pp.1-5, June 5th-6th 2016.
5. K. Vinida and Mariamma Chacko, "Sensorless Control of Brushless DC motors and H ∞ Control Theory Applications – A Literature Review", *IOSR Journal of Electrical and Electronics Engineering*, Vol.11, Issue 1 Ver. IV, pp. 19-25, (Jan. – Feb. 2016).
6. Mariamma Chacko and K. Poulose Jacob, "A Compiler Integrated Assistance for Optimum Data Allocation in Banked Memory Embedded Processors", *SERSC International Journal of Software Engineering and Its Applications*, Vol. 6, No. 1, pp.1-18, January, 2012.
7. Mariamma Chacko, and K. Poulose Jacob, "Validation of microcontroller codes: an architecture oriented approach", *Emerald International Journal of Intelligent Computing and Cybernetics*, Vol. 4 Iss: 4, pp.442 – 464, 2011.
8. Mariamma Chacko and K. Poulose Jacob, "Optimization of Bank Switching Instructions in Microcontrollers having Partitioned Memory Architectures", *CiiT International journal of Software Engineering and Technology*, Vol.1, No.3, pp. 120-126, June 2009.
9. Mariamma Chacko and Poulose Jacob, "Validation of Embedded Software through Static Analysis of Machine Codes", in *Proc. of IEEE International Advance Computing Conference*, Patiala, India, , pp. 488-493, March 2009.
10. Mariamma Chacko and Poulose Jacob , "Optimization of Bank Switching Instructions in Embedded Systems through Static Analysis of Machine Codes", in *Proc. of IEEE International Advance Computing Conference*, Patiala, India, pp.548-552, March 2009.
11. Mariamma Chacko, James Kurian , P.R.S. Pillai and Poulose Jacob K, "An On Board Operation Support Information System and Data Logger for Sea Going Vessels with an Ethernet Interface", *Journal of Shipstechnic*, Vol XVIII, pp. 85-94, 2002.

12. Mariamma Chacko, James Kurian and Paulose Jacob K., "Design and Implementation of a Microcontroller Based Onboard Cockpit Display and Data Logger for Sea Going Small Crafts", *Proceedings of the International Conference on Ship and Marine Technology*, p123-130, December 2000.
13. Mariamma Chacko, K. Paulose Jacob, C.S. Sridhar and K.G. Balakrishnan, "A Novel Clustering Approach to Support Software Fault Tolerance", *International Journal of Information Science and Technology*, vol.3, No.4, July 1994.
14. K.G. Menon, Mariamma Chacko, Babu P. Anto and C.S. Sridhar , "A Microprocessor based position controller for a Laser optical grating", *TENCON'89 4th IEEE region 10, International Conference*, 1989.
15. Leena Thomas, Mariamma Chacko, Babu P. Anto and C.S. Sridhar, "Hardware Implementation of FFT-8086 based system", *TENCON'89 4th IEEE region 10, International Conference*, 1989.
16. Rajkumar K., Jayakrishnan V., Lorance K.M., Mariamma Chacko, Babu P. Anto and C.S. Sridhar, "A Universal Fully Programmable 16-Channel data acquisition system", *National symposium on Instrumentation(NSI-13)*, 1988.

Annxure II

Conferences/seminars attended.

- 1 **National Seminar on *Intelligent Systems- A Technology Demand*.**
Centre for Artificial intelligence, Department of Electronics, CUSAT, Kochi, October 12-13, 2000.
- 2 ***International Conference on Ship and Marine Technology (SMART 2000)***
Department of Ship Technology, CUSAT, Kochi ,19-20th December 2000.
- 3 ***2009 IEEE International Advance Computing Conference (IACC'09)***
6-7th March 2009, Patiala, India.
- 4 ***National Conference on Software Engineering (NCSOFT)***
Organized by Department of Computer Science, CUSAT in association with Computer Society of India, May 24-25, 2010, Cochin University of Science and Technology, Cochin, India
5. ***Workshop on Marine Corrosion and its Prevention***
Organized by DST Purse Scheme, Department of Ship Technology, CUSAT, Kochi, 24th March, 2012.
- 6 ***International Seminar on Developments of Maritime, Offshore, Oil and Gas Industry***
Organized by Middle East Alumni of Ship Technology (MAST) & Department of Ship Technology, CUSAT, Kochi, 7th Aug 2014.
7. ***Workshop on Building Online Course using Moodle***
Organized by Centre for Employee Empowerment and Skill Acquisition (CEESA) and Centre for Information Resource Management , (CRIM) , CUSAT, Kochi , 06-07 August 2015.
8. ***2016IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)***
Organized by **IEEE PEDES 2016** Organizing Committee, December 14-17, 2016, Trivandrum, Kerala.
9. ***Seminar on Inland waterways System in India (IWSI)- its perspectives and problems***
Conducted by Department of Ship Technology, CUSAT, 4th March, 2017.

Annxure III

Short term courses attended

- 1) AICTE All India winter School on
'Advances in Medical Instrumentation'.
At Model Engineering college, Thrikkakara, Kochi. From 14-12-1998 to 24 -12-1998.
- 2) UGC refresher course on
'Advances in Computer Science'.
At Department of Computer science, CUSAT, Kochi. From 22-02-1999 to 15-03-1999.
- 3) AICTE/ISTE short term course on
'Digital Signal Processing And Emerging Applications'.
At Department of Electronics Engg. At Model Engineering college, Kochi. From 16-08-2001 to 29-08-2001.
- 4) AICTE/ISTE short term course on
'High performance Cluster Computing using open source software'.
At Department of computer science and Engg. At Model Engineering college, Kochi. From 17-12-2001 to 29-12-2001.
- 5) ISTE/AICTE All India short-term course on
'Emerging Technologies in Energy Management with emphasis on Recent Advances in Non Conventional Energy Sources'.
At Division of Electrical Engineering, School of Engineering, CUSAT from March 15-27, 2004.
- 6) ISTE/AICTE short-term course on
'Modelling and optimization techniques in Engineering'
At Division of Electronics Engineering, School of Engineering, CUSAT from 18th - 30th October 2010.
- 7) ISTE short-term training programme on
'Safety Aspects in Engineering-Need & Practices'
At Division of Safety and Fire Engineering, School of Engineering, CUSAT from 28th March to 8th April 2011.
- 8) AICTE sponsored short-term course on
Recent Trends and Developments in Microwave Engineering & Communication
Dept. of Electronics, Model Engineering College, Thrikkakara from 20th May to 2nd June, 2013
- 9) AICTE sponsored Faculty Development Programme on
Using Intranet & Linux Tools for Empowering Engineering Faculty
Dept. of Computer Science and Engineering, Model Engineering College, Thrikkakara from 10th June to 22nd June, 2013.

TEACHING/RESEARCH EXPERIENCE

As a faculty of Ship Technology I have been teaching the following subjects.

- a. Electrical engg. & Electronics
- b. Electrical systems on board Ships and Shipyards
- c. Instrumentation
- d. Computer Science.

Supervising four number of research scholars.

My PhD Thesis is entitled “An Error-Localization, Validation and Optimization Tool for Embedded Code Augmentation: an Architecture Oriented Approach”. This dissertation contributes to an architecture oriented code validation, error localization and optimization technique assisting the embedded system designer in software debugging, to make it more effective at early detection of software bugs that are otherwise hard to detect. Validation is accomplished by testing the compliance of rules of inferences formulated for the target processor, using slicing techniques on the control flow graph generated from machine code. An algorithm to assist the compiler to eliminate the redundant bank switching codes and decide on optimum data allocation to banked memory is presented. The focus of this work is to develop methods that automatically localize faults as well as optimize the code and thus improve the debugging process as well as quality of the code.

A UGC minor research project on Design and Development of a MICROCONTROLLER BASED ON BOARD COCKPIT DISPLAY AND DATA LOGGER FOR OFFSHORE VESSELS (amount sanctioned- Rs. 50,000/-) have undertaken and successfully completed. The results are presented in International Conference on Ship and Marine Technology (SMART 2000). Department of Ship Technology, CUSAT, Kochi 19-20th December 2000.

I have been working as Project Associate and Research Associate in the Department of Electronics, CUSAT in GOI projects from 2-9-'87 to 19-010'90. That time I was engaged in developing systems using Microprocessors. My works include the following.

- i. A Universal Fully Programmable 16-channel Data Acquisition System based on a 16-bit microprocessor is developed for monitoring the usual signals involved in the industrial process environment. The system is fully programmable with programmable filters, programmable amplifier, and programmable channel selection. User interactive software for input, output and system control is also developed.
- ii. A Microprocessor based position controller for a Laser optical grating: A stepper motor controlled by a dedicated microprocessor system tunes the position of optical grating used in the optical study of Laser. The monitor program makes the system user friendly and the user can operate the system very easily.
- iii. Hardware implementation of FFT-8086-based system: The system developed around SDK-86 can compute the FFT of any number of points provided the system has sufficient memory capacity. A scheme for implementing this hardware on a PC is also envisaged.