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## Present Position

Professor, Department of Instrumentation Engineering, Madras Institute of Technology, Anna University, Chennai from December-2011.

## Previous Positions

- > Associate professor, Department of Instrumentation Engineering, Madras Institute of Technology, Anna University, Chennai during February-2009 and December-2011.
- > Assistant Professor, Department of Instrumentation Engineering, Madras Institute of Technology, Anna University, Chennai during March-1998 and February-2009.

## Previous Additional Responsibility

- > Athenaeum Vice President, , Anna University, Chennai from June-2011.
- > Student Co Operative Society Staff Secretary, , Anna University, Chennai during June-2007 and May-2011.
- > Nss Officer, , Anna University, Chennai during June-2006 and May-2007.

## Other Employment

- > Lecturer, Sri Siddhartha Institute of Technology for 4 Months.
- > Lecturer, Annamalai University for 4 Years 8 months.
- > Lecturer, Crescent Engineering college for 10 Months.

## Degree

- ❖ M.Tech. in Electronics, Cochin University of science and technology, Cochin University (1990 - 1992).
- ❖ B.E. in ELECTRONICS AND INSTRUMENTATION ENGG , Annamalai University, Annamalai University (1986 - 1990).

## Research Degree

- ❖ Ph.D. in Process control from Faculty of Electrical Engineering, Madras Institute of Technology, Anna University (1998 - 2004).  
Title: Nonlinear control of Heat Exchanger.

## Area of Specialisation

- > Process control Instrumentation

## Membership in Professional Organization

- > ISTE
- > ISOI
- > ISA

## Research Guidance

Number of Ph.D Scholars Guided	: 7
Number of Ph.D Scholars Guiding	: 5
Number of M.S (By Research) Students Guided	: 2
Number of M.E./ M.Tech. Projects Guided	: 30
Number of M.E./ M.Tech. Projects Guiding	: 2
Number of Ph.D Scholars Guided as Joint-Supervisor	: 1
Number of M.S (By Research) Students Guided as Joint-Supervisor	: 1

## Papers Published in Journals

Research Papers Published in International Journals	: 27
Research Papers Published in National Journals	: 3

1. N. Pappa and J. Shanmugam, "Control of thermal process using neural networks", International Journal of Advancement of Modelling and Simulation Techniques in Enterprises, Vol. 47, Issue 4, pp. 29-42 (2004).
2. N. Pappa and J. Shanmugam, "Wiener Model based nonlinear PID Controller for Thermal Process", International Journal of Advancement of Modelling and Simulation Techniques in Enterprises, Vol. 59, Issue 4, pp. 41-52 (2004).
3. N. Pappa, G. Kaliraj and J. Shanmugam, "Real time implementation of model predictive neural controller for heat exchanger", International journal on control and intelligent systems, Issue 3, (2005).
4. K. Sujatha and N. Pappa, "Combustion modelling of a water tube boiler using a discriminate radial basis network", ISA Transactions, Vol. 50, Issue 1, pp. 101-110 (2010).

5. S. Sujatha and N. Pappa, "GMC design based on SVM model of batch reactor", International journal of computer applications, pp. 76-79 (2010).
6. S.Sujatha and N.Pappa, "Realization of Nonlinear controllers in Batch Reactor using GA and SVM", International Journal of Chemical Reactor Engineering, Vol. 9, pp. 1-20 (2011).
7. S. Sujatha and N. Pappa, " IMC Design based on SVM model of the Batch Reactor", International j. Engineering systems modelling and simulation, Vol. 3, Issue 3, (2011).
8. S. Geetha Lakshmi and N. Pappa, "Development of hybrid neural network model to predict feeding method in fed-batch cultivation for enhanced recombinant streptokinase productivity in Escherichia Coli", Journal of Chemical Technology and Biotechnology, (2011).
9. S.Sujatha and N.Pappa, " Performance of Gain Scheduled Generic Model Controller Based on BF-PSO for A Batch reactor ", Asian Journal of Scientific Research, Vol. 5, Issue 2, pp. 31-44 (2012).
10. T.Balu and N.Pappa, "Design of Robust PID Controller using Hybrid Algorithm for Reduced Order Interval system", Asian Journal of Scientific Research, Vol. 5, Issue 3, pp. 108-120 (2012).
11. D.Vasanthi, N.Pappa and B.Pranavamoorthy, " Design of a Self tuning Regulator for Temperature Control of a Polymerization Reactor", ISA Transactions, Vol. 51, Issue 1, pp. 1-20 (2012).
12. Vasanthi Damodaran,Pappa Natarajan, Pranavamoorthy, "Neural Network based multi stage modelling of Cylla Haase Polymerisation Reactor", Chemical Product and Process modelling, Vol. 7, Issue 1, pp. 1934 - 1939 (2012).
13. T.Babu and N.Pappa, " Uncertainty quantification an sensitivity analysis for a nonlinear bioreactor", Communications in Computer and Information Science, Vol. 36, pp. 647 - 658 (2012).
14. Padeeswaran Chelliah, Pappa Natarajan, "EE - Hybrid MAC protocol for Wireless sensor networks", Applied Mechanics and Materials, published by Trans Tech Publications, switzerland. Vol. 573, pp. 407 - 411 (2014).
15. Padeeswaran Chelliah, Pappa Natarajan,Jayesh sundar Gopinath, "Hybrid MAC protocol for wireless sensor networks used in time critical application", Computer science and Information technology, pp. 125 - 135 (2014).
16. Sujatha Subramanian, Fathima Ghouse, Pappa Natarajan, "Fault Diagnosis of Batch Reactor using Machine learning methods", Hindawai Publishing , (2014).
17. Anuj Abraham,N.Pappa, "Constrained Predictive Control of GUNT RT 010 and RT 050 laboratory systems", Journal of Control Engineering and Applied Informatics , (2015).
18. Anuj Abraham,N.Pappa, " Reduced Order Model Based GPC for a Binary Distillation Column", Archives of Control Sciences , (2015).

19. Anuj Abraham,N.Pappa, "Model based Generalized Predictive Control scheme applied to a reduced order of multivariable non-linear process", Sadhana - Academy Proceedings in Engineering Science , (2015).
20. Anuj Abraham,N.Pappa, Daniel Honc, Rahul Sharma, "A hybrid method for determination of effective poles using clustering dominant pole algorithm", International Journal of Mathematical, Computational, Natural and Physical Engineering, Vol. 7, Issue 3, pp. 102 - 106 (2015).
21. Ashwini Devi,Anuj Abraham,Sathya R., N.Pappa, "Real time Implementation and Design of a sensor to determine Sulphur Content Variations in Kerosene Mixture", International Journal of Applied Engineering Research, Vol. 10, Issue 55, (2015).
22. P.Bhanu and N.Pappa, "Fuzzy Logic based control of wind turbine driven DFIG", International Journal of Applied Engineering Research, Vol. 10, Issue 10, pp. 9946 - 9952 (2015).
23. Padeeswaran Chelliah, Pappa Natarajan.R.Snega, "Real Time Implementation of Hybrid MAC protocol Design for Energy Efficiency and Reliability", International Journal of Applied Engineering Research, Vol. 10, Issue 20, (2015).
24. Padeeswaran Chelliah, Pappa Natarajan, C. Vijayalakshmi, "Hybrid MAC Protocol Design for WBAN to provide high QoS for patients in Intensive Care unit", International Journal of Applied Engineering Research, Vol. 10, Issue 20, (2015).
25. Anuj Abraham,N.Pappa, "Efficient Technique for Model Order Reduction retaining non-minimum phase characteristics using Clustering Dominant Pole-Zero algorithm", of Electrical Engineering & Technology, (2015).
26. PandeewaranChelliah, N.Pappa, "Hybrid ET-MAC protocol design for energy efficiency and low latency - Cross Layer Approach", Asian journal of Information Technology, (2016).
27. Anuj Abraham,N.Pappa, " Experimental Validation of an enhanced Optimal Adaptive Control Scheme using Dominant Poles for a Variable Area Process ", Journal of Control Engineering and Applied Informatics, (2016).
28. P.Bhanu and N.Pappa, "SVPWM : Torque Level Controlling of Wind Turbine System using Fuzzy and ABC - DQ Transformation", International journal of Fuzzy systems, published by Springer Journal. (2016).
29. P.Bhanu and N.Pappa, "Harmonic Level minimization Using Neuro–Fuzzy-Based SVPWM", IETE Journal of Research, (2017).
30. Anuj Abraham,Pappa, "Model based Generalized Predictive Control scheme applied to a reduced order of multivariable non-linear process", Sadhana - Academy Proceedings in Engineering Science , published by Sadhana. (2018).

## Papers Presented in Programmes

Research Papers Presented in International Programmes	: 38
Research Papers Presented in National Programmes	: 10

1. "Time Optimal Control of a semi Batch chemical Reactor Based on Neural Networks" presented in a National level conference on National Symposium on Systems, organised by I.I.T,Chennai., India .
2. T.Babu and N.Pappa, "Model Reduction of Interval System using Differentiation Techniques" presented in a National level conference on Conference on ATIICCE, organised by St. Peter's Engineering College, India .
3. N Pappa, Muthamil Pavai, Shanmugam J, "An Adaptive Neuro-control for a Nonlinear Process" presented in a National level conference on National Symposium on Intelligent Measurement and Control, organised by Dept of Instrumentation Engineering ,MIT, India from 11-Feb-2000 to 12-Feb-2000.
4. N Pappa and J Shanmugam , "Design of Internal Model Control for Heat Exchanger using Neural Networks" presented in a National level conference on National Conference on Process Identification,Control and Diagnosis, organised by Annamalai University, India from 08-Aug-2003 to 09-Aug-2003.
5. N Pappa and J Shanmugam , "Feedforward Neuro Controller for Industrial Thermal Process Using Artificial Neural Networks" presented in a International level conference on International Conference on Computational Intelligence,Robotics and Autonomous Systems (CIRAS 2003), organised by National University of Singapore, Singapore from 15-Dec-2003 to 18-Dec-2003.
6. N Pappa and J Shanmugam , "Neural Network based Predictor for Control of cascaded Thermal Process" presented in a International level conference on International Conference on Intelligent sensing and Intelligent Processing , organised by Melbourne University, India from 04-Jan-2004 to 07-Jan-2004.
7. R.Anatha Krishnan and N.Pappa, "Fault Diagnosis for a heat Exchanger by Structured Residuals Approach" presented in a National level conference on National Conference on Process Control and Automation , organised by Crescent Engineering College, India from 15-Apr-2005 to 16-Apr-2005.
8. K.Jawaharand N.Pappa , "Modeling and Control of Boiler Drum level " presented in a National level conference on Power Conversion and Industrial Controls (PCIC), organised by NSS College Engineering,Palakkad, India from 08-Jul-2005 to 09-Jul-2005.
9. N Pappa and R Anantha Krishnan, "Real time Fault Diagnosis for a Heat Exchanger a Model Based Approach" presented in a International level conference on IEEE Indicon Conference, organised by IIT Madras and IEEE Madras Section, India from 11-Dec-2005 to 13-Dec-2005.
10. K.Rajagopal and N.Pappa, "Investigation on Neural Models for a Three Tank System" presented in a National level conference on National Conference on Process Identification, Control and Diagnosis (NCPICD), organised by Madras Institute of Technology, India from 16-Dec-2005 to 17-Dec-2005.
11. P.Bhanu and N.Pappa, "Active and Reactive Power control of Wind Turbine driven Doubly Fed Induction Generator" presented in a International level conference on International Conference on Control, Instrumentation, Communication and Computational Technologies (ICCICCT), organised by Nooral Islam University, Kumarcoil, India from 16-Dec-2006 to 17-Feb-2016.

12. N Pappa and S Ramakrishnan, "Autotuning of Fuzzy Inference System with Reinforcement Learning for Control of Continuous Processes " presented in a International level conference on American Control Conference (ACC), organised by American Automatic Control Council, USA from 11-Jul-2007 to 13-Jul-2007.
13. T.Babu and N.Pappa, "Large Scale Modeling of Interval Systems" presented in a National level conference on National Conference on Instrumentation & Control Engineering (ICECON), organised by NIT,Trichy, India from 27-Dec-2007 to 29-Dec-2007.
14. T Babu and N.Pappa, "Biased Model Reduction of Discrete Interval System" presented in a International level conference on IEEE INDICON, organised by IIT Kanpur, Kanpur from 11-Dec-2008 to 13-Dec-2008.
15. S.Sujatha and N.Pappa, " Predictive Control of Reactor using Neural Network" presented in a International level conference on International Conference on Trends in Industrial Measurements and Automation (TIMA), organised by Madras Institute of Technology, India from 04-Jan-2009 to 06-Jan-2009.
16. S.Sujatha and N.Pappa, "Modeling of a MIMO Process Using Support Vector Machine" presented in a International level conference on Trends in Industrial Measurement and Automation (TIMA), organised by Madras Institute of Technology, India from 04-Jan-2009 to 06-Jan-2009.
17. S GeethaLakshmi and N pappa, "Artificial Neural Network based soft sensor for fermentation of Recombinant Pichia Pastoris" presented in a International level conference on IEEE International conference on Advances in Computer Engineering, organised by The Association of Computer Electronics and Electrical Engineers (ACEEE), India from 20-Jun-2010 to 21-Jun-2010.
18. "Artificial Neural Network based soft sensor for fermentation of Recombinant Pichia Pastoris" presented in a International level conference on Advances in Computer Engineering, India from 21-Jun-2010 to 22-Jun-2010.
19. K Sujatha and N Pappa, "Intelligent Sensor for Temperature Measurement in Power Station Boilers" presented in a National level conference on Intelligent Information Retrieval, organised by PSG Tech,Coimbatore, India from 24-Sep-2010 to 25-Sep-2010.
20. N.Pappa and K.Sujatha , "Intelligent Combustion Quality Monitoring in Power Station Boilers using Multilayer Perceptron " presented in a International level conference on International Conference on System Modelling, Optimization and Advanced Process Automation (SYMOPA), organised by CDAC,Trivandrum,Kerala, India from 18-Dec-2010 to 19-Dec-2010.
21. "Combustion Quality Estimation in power Station Boilers using SVM Based Feature Reduction and Radial Basis Function Classifier" presented in a International level conference on Trends in Industrial Measurements and Automation, India from 06-Jan-2011 to 08-Jan-2011.
22. S GeethaLakshmi and N pappa, "Optimization of fed-batch process for Recombinant Protein Production in Escherichia Coil using Genetic Algorithm" presented in a International level conference on International Conference on Process Automation, Control and Computing (PACC), organised by Coimbatore Institute of Technology (CIT), India from 20-Jul-2011 to 22-Jul-2011.

23. S GeethaLakshmi,, S Narendran N Pappa and S Ramalingam, "Generic Model Control of the Specific Growth Rate in the Production of Recombinant Streptokinase in Escherichia Coil" presented in a International level conference on International Conference on Modern Trends in Instrumentation and Control (ICIC), organised by PSG College of Technology, India from 02-Sep-2011 to 02-Sep-2011.
24. N Pappa and S Sujatha, "GA Based Optimal Control of A Batch Reactor with SVM Tuned GMC" presented in a International level conference on IEEE International Conference on Control Applications (CCA), organised by IEEE, USA from 28-Sep-2011 to 30-Sep-2011.
25. N Pappa and D Vasanthi, "Artificial Neural Network Tuned Cascade Control for Temperature Control of Polymerization Reactor" presented in a International level conference on IEEE Multiconference on System and Control (MSC), organised by IEEE, USA from 28-Sep-2011 to 30-Sep-2011.
26. S GeethaLakshmi,, S Narendran N Pappa and S Ramalingam, "Artificail Neural Network based Soft Sensor for Recombinanat Streptokinase Production in Escherichia Coli" presented in a International level conference on Indian Chemical Engineering Congress (CHEMCON), organised by Indian Institute of Chemical Engineers , India from 27-Dec-2011 to 29-Dec-2011.
27. T.Elakkiya and N.Pappa, "Closed loop identification of the inverted pendulum using subspace method" presented in a International level conference on Mathematical Modeling and Applied Soft Computing, organised by CIT, India from 11-Jul-2012 to 13-Jul-2012.
28. C.Shanthi, K.Elavarasi and N.Pappa, "Soft Sensor for Two Phase Flow Measurement" presented in a International level conference on International Conference on Mathematical Modeling and Applied Soft Computing (MMASC) , organised by Coimbatore Institute of Technology (CIT), India from 11-Jul-2012 to 13-Jul-2012.
29. C.Shanthi, J.Aswini and N.Pappa, "Digital Image processing based two-phase flow measurement" presented in a International level conference on International conference of Mathematical modeling and Applied soft computing , organised by CIT, India from 11-Jul-2012 to 13-Jul-2012.
30. Anuj Abraham and N. Pappa, "An Improved MRAC Scheme for Non-linear Design of Adaption Gain '&#947;' using Heuristic Algorithms" presented in a International level conference on Advances in Control and Optimization of Dynamical Systems (ACODS-2014), organised by Indian Institute of Technology Kanpur, India from 13-Mar-2013 to 15-Mar-2014.
31. C.Shanthi, J.Aswini and N.Pappa, "Digital Image Processing Based Flow Regime Identification of Gas/Liquid Two - Phase Flow" presented in a International level conference on Proceedings of IFAC-DYCOPS, organised by IIT Bombay, India from 18-Dec-2013 to 20-Dec-2013.
32. B.Pranavamoorthy, D.Vasanthi and N.Pappa, "Online Estimation and Adaptive Temperature Control of Polymerisation Reactor" presented in a International level conference on DYCOPS, organised by IIT Bombay, India from 18-Dec-2013 to 20-Dec-2013.
33. Anuj Abraham, Pappa.N , "Model Order Reduction using Cluster Dominant Pole Algorithm" presented in a International level conference on 8th International Conference on Trends in Industrial Measurements and Automation (TIMA), organised by Madras Institute of Technology, India from 22-Dec-2013 to 24-Dec-2013.

34. Anuj Abraham and N.Pappa, "Model Order Reduction using Cluster Dominant Pole Algorithm" presented in a International level conference on Trends in Industrial measurements and Automation, organised by MIT, India from 22-Dec-2013 to 24-Dec-2013.
35. Anuj Abraham, Pappa.N , "An Improved MRAC Scheme for Non-linear Design of Adaption Gain '8947;' using Heuristic Algorithms" presented in a International level conference on Proceedings of the Third International Conference on Advances in Control and Optimization of Dynamical Systems (ACODS), organised by IIT KANPUR, India from 13-Mar-2014 to 15-Mar-2014.
36. S.Priyadrsini, S.Ganesnan, C.Shanthi and N.Pappa, "Model based object recognition for Particle Size Distribution" presented in a International level conference on IEEE International conference ICACCCT, organised by Syed Ammal Engineering College, India from 08-May-2014 to 10-May-2014.
37. M.Sandhiya and N.Pappa, "Evolutionary Algorithms based Fuzzy Logic Controller for Pressurised Water Nuclear Reactor" presented in a International level conference on IEEE International Conference on Advanced Communication ,Control and Computing Technologies, organised by Syed Ammal Engineering College, India from 08-May-2014 to 10-May-2014.
38. K.Hemavathy,N.Pappa and S.Kumar, "Comparison of Indirect Vector Control and Direct Torque Control Applied to Induction Motor Drive" presented in a International level conference on IEEE International Conference on Advanced Communication ,Control and Computing Technologies, organised by Syed Ammal Engineering College, India from 08-May-2014 to 10-May-2014.
39. Anuj Abraham and Pappa N., Lijin V Jacob and Lijo V Jacob, "Design of a finite element based sensor for determination of sulphur content in crude oil" presented in a International level conference on International Conference on Advances in Design and Manufacturing , organised by NIT, Trichy, India from 05-Dec-2014 to 07-Dec-2014.
40. Vetriselvi,Anuj Abraham and N.pappa, "Systematic approach in tuning PID controller for a high purity control of Binary Distillation column based on reduced order model: A Case study" presented in a International level conference on International Conference on Electrical, Electronics and Computer Engineering - ICEECE , organised by Vivekanandha College of Engineering for Women, Tiruchengode, India from 11-Mar-2015 to 12-Mar-2015.
41. P.Bhanu and N.Pappa, "Control of Wind Turbine driven DFIG" presented in a National level conference on 2nd National Conference on Recent Trends in Instrumentation and Control (RTIC), organised by Madras Institute of Technology, India from 13-Mar-2015 to 14-Mar-2015.
42. Anuj Abraham, N Pappa, Daniel Honc and Rahul Sharma, "A hybrid method for determination of effective poles using clustering dominant pole algorithm" presented in a International level conference on XIII International Conference on Electrical Engineering, Computer Science and Technology, WASET, organised by Prague, Czech Republic from 23-Mar-2015 to 24-Mar-2015.
43. P.Bhanu and N.Pappa, "Simulation Comparisons and implementation of different wind generator systems" presented in a International level conference on International Conference ICEECE, organised by Vivekananda College of Engineering, India from 22-Mar-2016 to 23-Mar-2016.



44. Anuj Abraham, Pappa, N , "Dominant pole based CDPA algorithm for reduced order modeling of a binary distillation column process" presented in a International level conference on International Conference on Electrical, Electronics and Computer Engineering, organised by Vivekanandha College of Engineering for Women, India from 22-Mar-2016 to 23-Mar-2016.
45. Daniel Honc, Rahul Sharma K., Anuj Abraham, František Dušek, Natarajan Pappa, "Teaching and practising Model Predictive Control" presented in a International level conference on Symposium on Advances in Control Education ( ACE), organised by IFAC , Bratislava - Slovakia from 01-Jun-2016 to 03-Jun-2016.
46. Anuj Abraham and N. Pappa, "An optimal centralised Predictive Control Scheme Applied to a Non – Square MIMO Benchmark Problem" presented in a International level conference on Adaptation and Learning in COntrol and Signal Processing ( ALCOSP), organised by Eindhoven University of Technology, Netherlands from 29-Jun-2016 to 01-Jul-2016.
47. Ganesh M,Anuj Abraham and N. Pappa, "Estimation of variation in Vapour Liquid Equilibrium Constants for modeling a Multicomponent Crude Distillation Column" presented in a International level conference on Adaptation and Learning in COntrol and Signal Processing ( ALCOSP), organised by Eindhoven University of Technology, Netherlands from 29-Jun-2016 to 01-Jul-2016.
48. S.Sujatha and N.Pappa, "An Application of SVM for Process Modeling and Optimization of Batch Reactor with GA" presented in a International level conference on International Conference on MIPSCCON, organised by GMR Institute of Technology, AP, India from 07-Apr-2018 to 11-Apr-2011.

## Current Sponsored Projects

1. "On-Line Implementation model predictive control (MPC) Scheme on a Bioreactor", funded by CTDT Anna University ( July-2017 - December-1969 ). Project Cost: 25000.00.

## Sponsored Projects Completed

1. "Investigation of field programmable gate array (FPGA)implementation of adaptive control schemes", funded by DST FAST TRACK (December-2008 - June-2011). Project Cost: 582000.00.
2. "Development of Advanced control algorithms", funded by DIT - CDAC (January-2010 - December-2012). Project Cost: 2507000.00.
3. "Antenna Test measurement System", funded by Amphenol Antenna Solutions (December-2013 - April-2014). Project Cost: 20000.00.
4. "Hand gesture Based Smart Wheelchair", funded by CTDT Anna University (June-2013 - January-2014). Project Cost: 25000.00.
5. "Fire Fighter Locator using FPGA", funded by CTDT Anna University (June-2017 - November-2017). Project Cost: 25000.00.
6. "soft sensor for Biomass Measurement", funded by CTDT Anna University (June-2017 - November-2017). Project Cost: 25000.00.

## Programme Attended

1. Participated in a International level conference on "American Control Conference" organized by IEEE, Newyork, USA from 11-Jul-2007 to 13-Jul-2011.
2. Participated in a International level conference on "IEEE International Conference on Control Applications (CCA)" organized by Colorado University, DENVER, USA from 28-Sep-2011 to 30-Sep-2011.
3. Participated in a International level conference on "Advances in Design and Manufacturing (ICAD&M)" organized by NIT Trichy, India from 05-Dec-2014 to 07-Dec-2016.
4. Participated in a International level conference on "Adaptation and Learning in COnTrol and Signal Processing ( ALCOSP)" organized by Eindhoven University of Technology, Netherlands from 29-Jun-2016 to 01-Jul-2016.

## Special Repräsentations

1. Staff Selection Examiner in Teachers Recruitment Board from 01-Jun-2015 to 23-Feb-2018.
2. Group Selection Expert in TNPSC from 15-Jun-2015 to 23-Feb-2018.

## Honours

1. "BEST TEACHER AWARD" given by MIT from INDIA (2016).

## Experience Abroad

1. Visited National University of Singapore, Singapore from 15-Dec-2003 to 18-Dec-2003. Purpose of visit :Presented Research Paper in the International Conference on Computational Intelligent, Robotics and Autonomous Systems (CIRAS 2003).
2. Visited IEEE, New York, USA from 09-Jul-2007 to 13-Jul-2007. Purpose of visit :Presented Research Paper in the International Conference on American Control Conference (ACC 2007).
3. Visited Melbourne University of Technology, Melbourne, Australia from 03-Dec-2007 to 10-Dec-2007. Purpose of visit :undergone Training on wireless sensor networks.
4. Visited TUHH, Hamburg, Hamburg, Germany from 20-Nov-2010 to 30-Nov-2010. Purpose of visit :Carried out Joint Research Project .
5. Visited University of Denver, Denver, CO, USA from 28-Sep-2011 to 30-Sep-2011. Purpose of visit :Presented Research Paper in the IEEE International Conference on Multi System Conference(MSC).
6. Visited Eindhoven University of Technology, Netherlands from 29-Jun-2016 to 01-Jul-2016. Purpose of visit :Presented Research Paper in the IEEE International Conference on Adaptation and Learning in COnTrol and Signal Processing.

## Invited Lectures

1. Delivered a Lecture on "PLC and SCADA programming" in Workshop organized by Sathyabama University, Chennai (29-Jan-2014).
2. Delivered a Lecture on "Optimal Control and LQR controller Design" in Faculty Development Training Program organized by SSN college of Engineering, Chennai (05-Jan-2015).
3. Delivered a Lecture on "Over view of Virtual instrumentation" in Inaugration organized by Jerusalem College of Engineering , Chennai (27-Feb-2015).
4. Delivered a Lecture on "System Identification and process modelling" in TEQIP Program on Recent Advances in Process Modelling, Control and Optimization Techniques organized by E & I Dept.,Pondicherry Engineering College, Pondicherry (16-Jun-2016).