**IMTHIAS AHAMED T. P.**

**Assistant Professor,**

Saudi Aramco Chair in Electrical Power,

Department of Electrical Engineering,

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**Objectives:**

(i) To be an effective teacher who can motivate students to learn and enjoy their studies.

(ii) To make them realize doing research and being in academics is an attractive and interesting career option.

**Research Interest:**

* Application of Machine Learning Algorithms , Power Systems Scheduling problems.

**Courses Taught:**

* C programming, Numerical Techniques, Neural Networks
* Control Systems,Power Systems
* Digital Circuits Lab, Systems and Control Lab, Software Lab.

**Publications:**

Books: 2

Papers in refereed journals: 10

Papers in conference proceedings: 29

Total citation count: 148

**(**[**http://scholar.google.ae/citations?user=yRkDOSgAAAAJ&hl=en**](http://scholar.google.ae/citations?user=yRkDOSgAAAAJ&hl=en)**)**

**Education:**

* ***Doctor of Philosophy*** *in Electrical Engineering –* ***2002 Indian Institute of Science, Bangalore, India*** *(Falls among the top 300 according to the*[*Academic Ranking of World Universities*](http://en.wikipedia.org/wiki/Academic_Ranking_of_World_Universities)*).*

Thesis: ***“Reinforcement Learning Approaches to Automatic Generation Control in Power Systems”.***

*Description: Reinforcement Learning (RL) approaches have been successfully employed for solving difficult control problems. However, it was not applied for power system control problems. In the thesis, we formulated Automatic Generation Control (AGC) problem as stochastic multistage decision making problem. We present a systematic investigation of RL approach to AGC and develop different class of RL based AGC.*

* **Master of Technology** in Electrical Engineering – **1991**

(Major: Electrical Instrumentation and Control)

Regional Engineering College (Currently Known as National Institute of Technology) Calicut University, Kerala, India

Thesis: “*Design of PSS Using Two-Axis Model”*

* **Bachelor Technology** in Electrical and Electronics Engineering – **1988**

(Major: Power Engineering) College of Engineering, University of Kerala, India.

**Experience:**

**22 Years experience in teaching Electrical Engineering and Power System Courses which includes two years in Middle East.**

* ***Assistant Professor*** - (Since July 2010)

Saudi Aramco Chair in Electrical Power, Department of Electrical Engineering, College of Engineering, King Saud University, Riyadh, Saudi Arabia.

* ***Associate Professor*** (July 2001 to June 2010), ***Assistant Professor*** (July 1996 to July 2001), ***Lecturer (***July 1990 to July 1996).

Department of Electrical & Electronics Engineering, T.K.M. College of Engineering, University of Kerala, India.

**Junior/Senior Design Projects supervised**

* An Algorithm for  Load Curtailment in Aggregated Demand Response Program.
* Dynamic Programming Solution to Economic Power Dispatch Considering Losses.
* A Dynamic Programming Approach to Unit Commitment Problem.
* Comparison of R L Algorithms using Shortest Path Problem.
* Simulated Annealing Based Economic Dispatch.
* Reinforcement Learning for Control Problems.
* Fuzzy Controller Design for Automatic Generation Control.

**Other Relevant Experience:**

* **Librarian (In Charge) (April 2008 to December 2008)**

**Duties:**  I was in charge of the central library of TKM College of Engineering which is having more than 50,000 titles, when the then college librarian resigned as a stop gap arrangement.

* **Member, Board of studies in Engineering, Kerala University (2004-2007)**

**Member, Board of studies in Engineering, Cochin University of Science & Technology (2007-2010)**

**Duties:**

1. To draft regulations.
2. To approve scheme and syllabus of the undergraduate course.
3. To review the question papers of previous examinations.
4. To decide on the panel of question paper setters.
5. To assist vice chancellor in any academic matters connected with the faculty of engineering.

* **External Examiner, University of Kerala, India (1992 – 2010)**

**Duties:**  As external examiners, we go to other colleges affiliated to the university and conduct practical examinations.

* **Co-ordinator, Career Guidance Cell (2004-2005)**

**Duties:**

1. To organize programs for development of communication skills to improve

the employability of the students of our college.

1. To organize programs (Group Discussion, Mock interviews, Debate, etc.) for

personality development.

**Short Term Courses:**

* *Robust Control, Anna University Madras*, 1991.
* *Power System Simulator as an Educational Tool*, I.I.T. Madras,1991.
* *System Identification and Adaptive Control*, I.I.T. Madras, 1995.
* *Process Control: Theory and Practice*, I.I.T. Madras, 1996.
* *IT Enabled Supply Chain Management*, T.K.M.C.E. Kollam, 2001.
* *Advanced Field Theory and Related Software in Electrical Engineering*, [C.E.T](http://C.E.T/)[.](file:///C:\Documents%20and%20Settings\nazarudeen.aziz\Desktop\C.E.T) [Thirvananthapuram](file:///C:\Documents%20and%20Settings\nazarudeen.aziz\Desktop\C.E.T), 2001.

**Memberships:**

* Member IEEE # 90521380.
* Life Member, Indian Society of Technical Education (ISTE), LM14121.

**References:**

1. **Prof. P. S. Sastry**,

Department of Electrical Engineering,

Indian Institute of Science,

Bangalore-560012, email: sastry[@ee.iisc.ernet.in](mailto:nagendra@ee.iisc.ernet.in)

2. **Prof. V. S. Borkar,**

Indian Institute of Technology Bombay

Mumbai phone: +91 22 22782293, email: [borkar@iitb.ac.in](mailto:borkar@iitb.ac.in)

3. **Prof. Yasin Khan**

Associate Professor,  
 P.O. BOX 800  Department of Electrical Engineering,

College of Engineering, King Saud University  
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4. **Prof. N. Prathapachandran**

Professor, Department of Electrical Engineering,

T. K. M. College of Engineering,

Kollam, Kerala, India.

Email: [nprathapachandran@hotmail.com](mailto:nprathapachandran@hotmail.com)

**Personal Details:**

Date of Birth : 01-02-1966

Nationality : Indian

Passport Number : G0413702

Marital Status : Married

**PUBLICATIONS:**

**Papers in refereed Journals**

1. Ali, Syed Q., Imthias Ahamed T. Parambath, and Nazar H. Malik. "Learning Automata Algorithms for Load Scheduling." Electric Power Components and Systems 41.3 (2013): 286-303.
2. T. P. Imthias Ahamed,  S. Danish Maqbool and  N.H. Malik “Reinforcement Learning Algorithm for Solving Load Commitment Problem Considering a General Load Model” accepted in Journal of Energy and Power Engineering 2012
3. T. P. Imthias Ahamed,  S. Danish Maqbool and  N.H. Malik  "Reinforcement Learning Approaches to Load Scheduling", International Review of Modelling Optimization and Simulation, Vol. 5 No. 5, pp 2160-2168, October 2012
4. Faisal R. Pazheri, Nazar H. Malik, Abdulrehman A. Al-Arainy, Safoora Ottukulotk, Mohd F. Othman,Essam A. Al-Ammar and Imthias Ahamed T. P.,“Use of Renewable Energy Sources in Saudi Arabia through Smart Grid", Journal of Energy and Power Engineering 6 (2012) 1065-1070, July, 2012
5. E. A. Jasmin, T. P. Imthias Ahamed, and V. P. Jagathy Raj. "Reinforcement Learning approaches to Economic Dispatch problem." International Journal of Electrical Power & Energy Systems, Vol.  33, no. 4, pp 836-845, May 2011.
6. E. A. Jasmin, T. P. Imthias Ahamed, V. P. Jagathy Raj, “Reinforcement Learning Solution for Unit Commitment Problem Considering Minimum Start Up and Shut Down Times” International Journal of Recent Trends in Engineering, Vol 3, No.3, May, pp 116 – 120, 2010.
7. T.P. Imthias Ahamed, V. S. Borkar and S. Juneja, “Adaptive Importance Sampling Technique for Markov Chains Using Stochastic Approximation”, Operations Research, Vol. 54, No. 3, pp. 489-504, May-June 2006.
8. T. P. Imthias Ahamed, P. S. Nagendra Rao and P. S. Sastry, “ Neural Network based Automatic Generation Control Design through Reinforcement Learning”, International Journal of Emerging Electric Power Systems, Vol. 6, No. 1, 2006.
9. T.P. Imthias Ahamed, P.S.Nagendra Rao and P.S. Sastry, “Reinforcement Learning Controllers for Automatic Generation Control in Power Systems having Re-heat Units with GRC and Dead-band”, International Journal of Power and Energy Systems, Vol. 26, No. 2, pp 137-146, 2006.
10. T.P. Imthias Ahamed, P.S.Nagendra Rao and P.S. Sastry, “A reinforcement learning approach to automatic generation control”, Electric Power Systems Research, Vol 63, pp 9-26, Aug 2002.
11. T.P. Imthias Ahamed and F. Gajendra, “Dynamic Stability of Power System: A Software package”, Institution of Engineers (India) Electrical, Vol 73, pp. 234-239, October 1992.

**Papers in Conference Proceedings**

1. S. D. Maqbool, T. P. Imthias Ahamed and N. H. Malik, "Optimized Load Scheduling Considering Maximum Demand and Real Time Pricing", 15th Saudi Technical Exchange Meeting (STEM 2012), Dec 17-19, 2012, Dhahran, Saudi Arabia.
2. P.G.Latha, T.P.Imthias Ahamed and P.S. Sreejith “A Reinforcement Learning approach to Hydrothermal Scheduling Problem”, accepted in  12th International Conference on Intelligent Systems Design and Applications (ISDA 2012)  Cochin, India, Nov 27-29 2012.
3. Muhammad Babar, T. P. Imthias Ahamed, Aqueel Shah  and N.H.Malik, “An Algorithm for  Load Curtailment in Aggregated Demand Response Program”, accepted in   Saudi Arabia Smart Grid 2012 Conference & Exhibition, Jeddah, Saudi Arabia, 8th – 11th December 2012
4. S. Maqbool, T. P. Imthias Ahamed, S. Q. Ali, F. R. Pazheri and N. Malik “Comparison of Pursuit and ε- Greedy Algorithm for Load Scheduling under Real Time Pricing”, IEEE  International Power and Energy Conference (PECon2012), 2 Dec  - 5 Dec 2012, Kota Kinabalu, Malaysia.
5. S. Q. Ali, S. Maqbool, T. P. Imthias Ahamed, and N. Malik, “Pursuit algorithm for optimized load scheduling,” in 2012 IEEE International Power Engineering and Optimization Conference (PEOCO2012), Malacca, Malaysia, June 2012.
6. F. R. Pazheri, M. F. Othman, N. H. Malik and T. P. Imthias Ahammed, “Effect of Renewable Penetration on Economic Power Dispatch in Presence of Energy Storage*,”* IEEE International Conference on Power and Energy (PECON2012), pp. 818-821, December 2012, Malaysia.
7. T. P. Imthias Ahamed, S. Danish Maqbool, Essam A. Al Ammar and N.H. Malik, “A Simulated Annealing Algorithm for Demand Response”. Innovative Smart Grid Technologies (ISGT-EUROPE 2011), Manchester, United Kingdom, 5 – 7 Dec, 2011.
8. S. Danish Maqbool, Imthias Ahamed, N.H. Malik, “Analysis of Adaptability of Reinforcement Learning Approach” 14th IEEE International Multitopic Conference (INMIC 2011), 22-24 Dec 2011, Karachi, Pakistan.
9. F. R. Pazheri, Hammad Khan, Imthias Ahamed, “Smart Grid Implementation Across The Globe: A Survey”, 2011 IEEE PES International conference on Innovative Smart Grid Technologies (ISGT 2011) , 1-3 Dec 2011, Kerala, India.
10. P.G.Latha, S.R.Anand Imthias Ahamed, “Improvement of Demand Response using Mixed Pumped Storage Hydro Plant”, 2011 IEEE PES International conference on Innovative Smart Grid Technologies (ISGT 2011) , 1-3 Dec 2011, Kerala, India.
11. T. P. Imthias Ahamed,  S. Danish Maqbool and  N.H. Malik  "A Reinforcement Learning Approach to Demand Response", Centenary Conference – EE, IISc, at IISc, Bangalore, India 15-17 Dec 2011.
12. T. P. Imthias Ahmed and F.R. Pazheri and Jasmin E. A., “Reinforcement Learning solution for Economic scheduling with stochastic cost function”, IEEE RAICS 2011, September 22 - 24, 2011, Kerala, India.
13. S. Danish Maqbool, T. P. Imthias Ahamed, Essam Al-Ammar and N.H.Malik, “Demand Response in Saudi Arabia”, 2nd International Conference on Electric Power and Energy Conversion Systems (EPECS’11), Nov. 15-17, 2011, Sharjah, UAE.
14. T. P. Imthias Ahamed, E. A. Jasmin, Essam A. Al-Ammar, “Reinforcement Learning in Power System Scheduling and Control: A Unified Perspective” IEEE Symposium on Computer and Informatics (ISCI 2011), Malyasia, 2011
15. T. P. Imthias Ahamed, E. A. Jasmin, Faisal R. Pazheri, Essam A. Al-Ammar, “Reinforcement Learning solution to Economic Dispatch using Pursuit algorithm”, 2011 IEEE GCC Conference & Exhibition , Dubai, 2011
16. Faisal Pazheri, Abdulrehman Al-Arainy, Essam Al-Ammar,Safoora O.K.Imthias A, “Smart Grid Can Make Saudi Arabia Megawatt Exporter”, APPEEC 2011, China
17. Jasmin E.A., Imthias Ahamed T.P., Jagthy Raj V.P., “ Efficient Reinforcement Learning solution to Unit Commitment Problem through state aggregation” , Proceedings of International Conference on Control, Communications and Computing (ICCC 2010),
18. Jasmin E.A., Imthias Ahamed T.P., Jagthy Raj V.P., "Reinforcement Learning Solution for Unit Commitment Problem through Pursuit Method," International Conference on Advances in Computing, Control, and Telecommunication Technologies, 2009
19. E. A. Jasmin, T. P. Imthias Ahamed, V. P. Jagathy Raj, “Reinforcement Learning and Applications” Proceedings of National conference (NCRIT), Govt. Rajiv Gandhi Institute of Technology, Kottayam, March 2009.
20. E. A. Jasmin, T. P. Imthias Ahamed, V. P. Jagathy Raj, “Reinforcement Learning solution to Unit Commitment Problem of NTPS II ”, Proceedings of Kerala Science Congress, January 2009.
21. E.A.Jasmin, T.P.Imthias Ahamed, V.P.Jagathy Raj, “Neural Network solution to Economic Dispatch through Reinforcement Learning”, Proceedings of National Power System Conference , IIT Bombay, December 2008.
22. E.A.Jasmin, T.P.Imthias Ahamed, V.P.Jagathy Raj, “Reinforcement Learning Approach to Economic Dispatch considering Transmission losses” Proceedings of IEEE International Conference (TENCON 2008), University of Hyderabad, November 2008.
23. T.P.Imthias Ahamed, J. A. Jaleel, “Simulation of artificial neural network controller for automatic generation control of hydro electric power system” Proceedings of IEEE International Conference (TENCON 2008), University of Hyderabad, pp 1-4 November 2008.
24. E.A.Jasmin, T.P.Imthias Ahamed, V.P.Jagathy Raj, “Comparison of ε-greedy and pursuit algorithms for Reinforcement solution of Unit Commitment”, Proceedings of IEEE International Conference (INDICON 2007), CPRI Bangalore, October 2007.
25. E. A. Jasmin, T. P. Imthias Ahamed and V.P. Jagathiraj, “Economic Dispatch using Learning Automata” Proceedings of the National Conference of Electrical Systems and Control Technologies - ESCT 2007 NIT Calicut, India.
26. T. P. Imthias Ahamed “A Reinforcement Learning Approach to Unit Commitment Problem”, Proceedings of National Power Systems Conference 2006 (IIT Roorkee)
27. T.P. Imthias Ahamed, P.S.Nagendra Rao and P.S. Sastry, “A Reinforcement Learning Based Automatic Generation Control for an Interconnected Power System”, Proceedings of the International Conference on Power System 2004 (Kathmandu, Nepal)
28. T. P. Imthias Ahamed and P.S.Sastry and P. S. Nagendra Rao, “*A New Reinforcement Learning based Automatic Generation Controller for Hydro-Thermal Power Systems”,* Proceedings of The International Conference: IEEE TENCON 2003 (Bangalore, India)
29. T.P. Imthias Ahamed, P.S.Nagendra Rao and P.S. Sastry, “*A Neural Network based Reinforcement Learning Controller for Automatic Generation Control”,* Proceedings of the National Power System Conference- 2002, (I.I.T. Kharagpur)

**Books**

* 1. T. P. Imthias Ahamed and B.Premlet, “*Introduction to Electrical Engineering 3rd Edition”,* Phasor Books- 2008
  2. T. P. Imthias Ahamed , “*Introduction to MATLAB and SIMULINK”,* Phasor Books 2007