

Curriculum Vitae of

Dr. G. Athithan, Adjunct Professor

- a) **Name:** Dr. G. Athithan
- b) **Designation:** DS & DG DRDO (Retd.),
Adjunct Professor, IAS
- c) **Date of Birth:** 30 October 1958
- d) **Education:**

Sl.No.	Degree	Institution/University	Field	Year
1.	B.E. (Hons)	Coimbatore Institute of Technology/Madras University	Electronics and Communications	1981
2.	Ph.D.	Indian Institute of Technology, Bombay	Physics (neural networks)	1997

e) **Research/training experience:**

From	To	Employer	Position held & Service Rendered
29/7/1981	1/8/1982	Bhabha Atomic Research Centre, Trombay, Mumbai	Trainee
2/8/1982	9/10/1988	Indira Gandhi Centre for Atomic Research, Kalpakkam, Tamil Nadu	Scientific Officer – C/SD: Modelling of crystal structures and Penrose tilings; development of computer-aided drafting software; modelling of 3-D engineering objects and piping layouts; development of computer graphics software for hidden line and surface removal.

10/10/1988	31/5/2000	Advanced Numerical Research and Analysis Group, DRDO, Hyderabad	Scientist – C/D/E/F: Development of programming model for PACE series of parallel computers; cryptology of classical ciphers; development of medical data visualisation software and terrain modelling software in Silicon Graphics systems; development of parallel algorithms for neural networks and computational fluid dynamics; simulation of the Hopfield model and solving two problems related to its application for mimicking human memory as part of Ph.D. work; development of scientific data visualisation software in PCs; management of project DRONA to implement an intranet for DRDO.
1/6/2000	6/1/2013	Centre for Artificial Intelligence & Robotics, DRDO, Bengaluru	Scientist - F/G/H(OS)/Associate Director: Management of project for development of information security technologies and solutions; development of information security overlays for information networks of DRDO's user agencies; initiating cyber deterrence technology development; guiding the quality management team to secure ISO certification for the lab.
7/1/2013	11/9/2015	Scientific Analysis Group, DRDO, Delhi	Scientist -H(OS)/Associate Director/Director: Bringing out DRDO information security policy, procedures, and guidelines document; drafting the cyber security part of DRDO's Perspective Plan; launching of project for testing and certification of IT products.
11/9/2015	31/5/2016	CC R&D (SAM), DRDO HQ New Delhi	DS & CC (SAM) and Director, SAG, creating a roadmap for Systems Analysis and Modelling activities; setting up the infrastructure for simulation and

			modelling of defence equipment and also warfare. In Jan 2016, handed over charge of SAG to my successor and was DG (SAM) full-time.
1/6/2016	31/10/2018	DG (MED, CoS& CS), DRDO HQ, New Delhi	DS & DG (MED, CoS& CS), Management of the six labs and two fabrication centres of the MED, CoS& CS cluster; bringing out new and updated cipher policies; review and update of the cluster level Perspective Plan documents; review and guidance of DG level projects of the labs; promoting the development of technologies and solutions in the verticals of the cluster namely, cyber security, artificial intelligence, integrated circuits, sensors, microwave tubes, and key management.
30/8/2019	30/8/2023	DRDO Chair, attached to CAIR, DRDO Bengaluru	DRDO Chair is a post-superannuation advisory role. The assignment was for four years and it provided opportunities to guide DRDO project teams in the areas of artificial intelligence, autonomous systems, cyber security, quantum information technology, and cryptology. During this tenure the monograph on 'Concepts and Practices for Cyber Security' was published in May 2022.

Research Guidance as Co-Supervisor

1. Dr Manuj Sharma, Sc. 'G', ANURAG
(Completed M.Sc. by Research in Computer Science from IISc, Bengaluru)
2. Mr. Anupam Mandal, Sc. 'F', CAIR
(Completed MS in Computer Science from IIT, Chennai)
3. Mr. Arnab Kundu, Sc. 'F', CAIR
(Completed M.Sc. by Research in Computer Science from IISc, Bengaluru)

4. Dr Narayan Panigrahi, Sc. 'G', CAIR
(Completed Ph.D. in Computer Science from IIT, Mumbai)
5. Dr N N R Rangasuri, Sc. 'F', CAIR
(Completed Ph.D. in Computer Science from IISc, Bengaluru)

f) Fields of major scientific interest in order of preference: Cyber Security, Artificial Intelligence, Testing and Certification, Trusted Computing, Neural Networks, Quantum computing and communication, Parallel Processing, Computer Vision, Natural Language Processing

g) Awards: Dr. Athithan was selected as a Young Associate of the Indian Academy of Sciences in 1989. He received the Scientist of the Year award from DRDO for the year 1998. During 2005 he became a senior member of the IEEE. As the leader of his team, he received the Agni Award for Excellence in Self-Reliance for the year 2008 from DRDO. In Sep 2015 he was promoted to the grade of Distinguished Scientist in DRDO. The Amity University, Rajasthan conferred him with Doctor of Philosophy Honoris Causa in Jan 2018.

h) Travels: During his R&D service in the Union Government, he has travelled on duty to Norway, England, Denmark, The Czech Republic, Australia, Russia, Poland, United States, France, and Japan.

A complete list of published books/monographs/research papers etc.

Books

1. NNR Rangasuri, M Narasimha Murty, and G Athithan; 'Outlier Detection: Techniques and Applications', Springer Verlag, 2019
2. G. Athithan and Saibal K. Pal; 'Concepts and Practices for Cyber Security', Published by DRDO/DESIDOC, 2022.

Research papers in Journals:

1. Vijaykumar, D. Sahoo and G. Athithan, 'Characterisation and decoration of the two-dimensional Penrose lattice', Physical Review B, 34, No. 10, 1986.
2. Vijaykumar and G. Athithan, 'Local-environment dependence of the electronic structure of the Penrose lattice', Physical Review B, 35, No. 2, 1987.
3. G. Amarendra, G. Ananthkrishna and G. Athithan, 'Critical magnetic properties of two-dimensional Penrose lattice', Mater. Sci. Forum 22-24, 453, 1988.
4. G. Amarendra, G. Ananthkrishna and G. Athithan, 'Critical behaviour of the Ising model on a two-dimensional Penrose lattice', Europhysics Letters 5 (2), pp. 181-184 1988.
5. K. Neelakantan, P.P. Ghosh, M.S. Ganagi, G. Athithan, M.V. Atre and G. Venkataraman, 'Performance characteristics of a hypercube type parallel computer', Current Science, 59, 982, 1990.

6. G. Venkataraman and G. Athithan, 'Spin glass, the travelling salesman problem neural networks and all that', *Pramana - J. Physics*, 36, p. 1, 1991.
7. K. Neelakantan, G. Athithan and P.P. Ghosh, 'The role of compilers in computer system performance', *Current Science*, 60, p. 650, 1991.
8. M.S. Ganagi, K.P. Singh, G. Athithan and M.V. Atre, 'A fluid dynamics study on ANURAG's parallel computer PACE-8', *Current Science*, 60, No. 12, p. 694, 1991.
9. G. Athithan, 'Speed-up factors for simulation of neural networks on a parallel computer', *Current Science*, 62, No. 8, p. 25, 1992.
10. N. Ramesh and G. Athithan, 'Visualisation of three-dimensional data by volume rendering', *Current Science*, 64, No. 4, p. 252, 1993.
11. R.S. Ramesh, G. Athithan and K. Thiruvengadam, 'An automated approach to solve simple substitution ciphers', *Cryptologia*, XVII, No. 2, p. 202, 1993.
12. R. Sundar, N. Venkataramanan, N. Srinivasan, N. Ramesh, and G. Athithan, 'ANAMICA: A Medical Data Visualisation and Characterisation System', *Defence Science Journal*, 43, No. 3, pp. 243-252, 1993.
13. T. Sony Roy, G. Athithan, M.S. Ganagi and A.S. Reddy, 'A new method to solve non-linear equations', *Information processing letters*, 50, pp. 75-79, 1994.
14. G. Athithan, 'Neural network models for spatio-temporal associative memory', *Current Science*, 68, No. 9, pp. 917-929, 1995.
15. G. Athithan, 'A comparative study of two learning rules for associative memory', *Pramana - J. Phys.*, 45, No. 6, p. 569, 1995.
16. G. Athithan and T. Sony Roy, 'Hyperspherical neighbourhoods and pattern recognition using neural networks', *Information Processing Letters*, 59, pp. 223-228, 1996.
17. G. Athithan and C. Dasgupta, 'On the problem of spurious patterns in neural associative memory models', *IEEE Transactions on Neural Networks*, 8, No. 6, pp. 1483-1491, 1997.
18. G. Athithan, 'Associative memory of low activity patterns without the problem of spurious attractors', *Current Science*, 76, 4, pp. 540-547, 1999.
19. G. Athithan, 'A local and neurobiologically plausible method of learning correlated patterns', *Neural Networks*, 15 pp. 327-335, 2002.
20. G. Athithan and N. Sitaram, 'A Policy-driven approach for information security management', *IETE Golden Jubilee Compendium: Evolution and Perspective*, pp. 87-95, 2003
21. N. Rangasuri, M. Narasimha Murty, and G. Athithan, "Data Mining Techniques for Outlier Detection", Book Chapter in 'Visual Analytics and Interactive Technologies: Data, Text, and Web Mining Applications', Eds. Qingyu Zhang, Richard Segall, and Mei Cao, Oct 2010.
22. Varun Krishna, N. N. R. Rangasuri, and G. Athithan, "A Comparative Survey of Algorithms for Frequent Subgraph Discovery", *Current Science*, Vol. 100, No. 2, Jan 2011.

23. N. Panigrahi, B. K. Mohan, and G. Athithan, "Pre-processing Algorithm for Rectification of Geometric Distortions in Satellite Images", Defence Science Journal, Vol. 61, No. 2, March 2011, pp. 174 – 179.
24. N. Panigrahi, B. K. Mohan, and G Athithan, "Differential Geometric Approach to Change Detection Using Remotely Sensed Images", Journal of Advances in Information Technology, Vol. 2, No. 3, (2011), 134-138, Aug 2011.
25. N N R Rangasuri, M. Narasimha Murty, and G. Athithan, "A Ranking-based Algorithm for Detection of Outliers in Categorical Data", International Journal of Hybrid Intelligence, Vol. 11, No. 1, pp 1-11, Jan 2014
26. N N R Rangasuri, M. Narasimha Murty, and G. Athithan, "Detecting Outliers in Categorical Data through Rough Clustering", Natural Computing, Springer, Feb 2016.
27. Paromita Choudhury, K. R. Prasanna Kumar, Sukumar Nandi, and G. Athithan. "An empirical approach towards characterization of encrypted and unencrypted VoIP traffic", Multimedia Tools and Applications, 79(1), 2020
28. Bhupendra Singh, G. Athithan, and Rajesh Pillai, "On extensions of the one-time-pad", IACR Cryptology ePrint, 2021
29. R. Bhattacharjee, Rajesh R., K. R. Prasanna Kumar, M. Vinu Paul, G. Athithan, and A. V. Sahadevan, "Scalable flow probe architecture for 100 Gbps+ rates on commodity hardware: Design considerations and approach", Journal of Parallel and Distributed Computing, 2021

Conferences / Seminars:

1. G. Athithan and R.S. Ravi, 'SURGEN: A surface modeller', National symposium on applications of computers in chemical engineering, IGCAR, Kalpakkam, 1986.
2. R. Sundar and G. Athithan, "A parallel algorithm for constructing isovalue surfaces", Proceedings of the Seminar on 'Supercomputing for Scientific Visualisation', BARC, Bombay, 1994.
3. G. Athithan and R. S. Ramesh, "Numerical study of a hierarchical learning rule for the Hopfield model", Proc. Of 7th ICIAP, Bari, Italy, S. Impedovo (ed.) World Scientific, pp 675-678, 1994.
4. N. Srinivasan and G. Athithan, "Reconstruction of terrains from their isoelevation contours", International Symposium on Snow and Related Manifestations, SASE, Manali, 1994.
5. G. Athithan, 'Associative storage of complex sequences in recurrent neural networks', Proceedings of IEEE International Conference on Neural Networks, 4, Perth, Australia, p. 1971, 1995.
6. Manuj Sharma, Anupam Mandal, B. Shankar Rao, and G. Athithan, "VME bus-based memory channel architecture for high performance computing ", Proceedings of International Conference on High Performance Computing, Calcutta, pp.45-54,1999.

7. D. Manjunath, K.R. Prasanna Kumar, H.C. Vijayalakshmi, and G. Athithan, 'Design and implementation of information gathering tool for VOIP collaboration' 2004 International Conference on Signal Processing and Communications (SPCOM 2004), IISc, Bengaluru, December 11-14, 2004.
8. G. Athithan and N. Sitaram, 'Embedded System Security', Indo-Australian Conference on IT Security, IIT Madras, February 16-18, 2005.
9. G. Athithan, Chitra Viswanathan, and Shailesh Chansarkar, 'Network Security: Concepts and Technologies', National Conference in Computer Networking and Communications (RTCNC 2006), BA Institute of Technology, Sathyamanaglam, Tamil Nadu, March 10-11, 2006.
10. Vartika Singh, D. R. Lakshminarasimhaiah, Yogesh Mishra, Chitra Viswanathan, and G. Athithan "An Implementation and Evaluation of Online Disk Encryption for Windows Systems", Second International Conference on Information Systems Security (ICISS 2006), Kolkata 17-21 December 2006, (Springer Verlag LNCS 4332).
11. G. Athithan and Philip Abraham, "An Overview of Solutions for Tamper-proofing of Application Software", National Conference on Cyber Security", Bengaluru, 8-10 March 2007.
12. Anupam Mandal, C Chandra Sekhar, K R Prasanna Kumar, and G. Athithan, "Detection of positions of packet loss in reconstructed VoIP speech", Workshop on Image and Signal Processing (WISP 2007), IIT Guwahati, India, December 2007.
13. Vinu Paul, Raktim Bhattacharjee, R. Rajesh, A. V. Sahadevan, and G. Athithan, "Webmail Traffic Analysis for Audit Requirements" International Conference on Communication, Convergence, and Broadband Networking (ICCBN 2008), Bengaluru, India, July 2008.
14. G. Athithan, "Advanced Early Warning System for Cyberspace", REFLECT'08, Defence Electronics in DRDO, Bengaluru, India 16-18 October 2008.
15. G. Santhosh Kumar, Vinu Paul, G. Athithan, and K Poulouse Jacob, "Routing Protocol Enhancement for Handling Node Mobility in Wireless Sensor Networks", IEEE TenCon 2008, University of Hyderabad, India, November 2008.
16. Annapurna Agrawal, K R Prasanna Kumar, and G. Athithan, "SIP/RTP Session Analysis and Tracking for VoIP Logging", 16'th International Conference on Networks (ICON 2008), New Delhi, India, December, 2008.
17. G. Athithan, "Some directions for Computational Intelligence from Models of Human

memory and language faculties”, International Conference on Sensors, Security, Software, and Intelligent Systems (ISSIS 2009), CIT, Coimbatore, 8-10, January, 2009.

18. Anupam Mandal, K R Prasanna Kumar, G. Athithan, and C Chandra Sekhar, “A Graphical Model Based Decoder for Recognition of Loss-Concealed VoIP Speech”, 7th International Conference on Advances in Pattern Recognition (ICAPR 2009), Indian Statistical Institute, Kolkata, India, February, 2009.

19. Biswajit Paul, G. Athithan, and M Narasimha Murty, “Speeding up *Adaboost* Classifier with Random Projection”, 7th International Conference on Advances in Pattern Recognition (ICAPR 2009), Indian Statistical Institute, Kolkata, India, February, 2009.

20. N. Panigrahi, B. K. Mohan, and G. Athithan, “Terrain Modelling using Dominant Points”, IEEE 2nd International Advanced Computing Conference (IACC), Chandigarh, India, Feb 2010.

21. Paromita Chowdhury, Anupam Mandal, K. R. Prasanna Kumar, and G. Athithan, “A Framework for VoIP Speech Data Generation Using Asterisk”, Proceedings of International Conference on Devices and Communications (IDeCom – 11), Feb 2011.

22. N. Panigrahi, B. K. Mohan, and G. Athithan, “Classification of Changed Pixels in Satellite Images using Gaussian and Hessian Functions”, Proceedings of International Conference on VLSI, Communications, and Instrumentation (ICVCI), April 2011.

23. Paromita Chowdhury, Anupam Mandal, K. R. Prasanna Kumar, and G. Athithan, “A Mechanism to Recover Voice from Logged VoIP sessions based on RTP”, IEEE 12th International Conference on Internet Multimedia Systems Architecture and Applications (IMSAA), Bengaluru, 2011

24. Varun Krishna, N N R Rangasuri, and G Athithan, “MuGram: An Approach for Multi-labelled Graph Matching”, International Conference on Recent Advances in Computing and Software Systems (RACSS), Chennai, India, 2012.

25. N N R Rangasuri, M. Narasimha Murty, and G Athithan, “An algorithm for Mining Outliers in Categorical Data Through Ranking”, IEEE 12th International Conference on Hybrid Intelligence Systems (HIS 2012), Pune, India, 2012.

26. N N R Rangasuri, M. Narasimha Murty, and G Athithan, “Unsupervised Feature Selection for Outlier Detection in Categorical Data using Mutual Information”, IEEE 12th International Conference on Hybrid Intelligence Systems (HIS 2012), Pune, India, 2012.

27. Paromita Choudhury, K. R. Prasanna Kumar, G. Athithan, and Sukumar Nandi, “Analysis of VBR coded VoIP for traffic classification”, IEEE ICACCI, 2013.

28. N N R Rangasuri, M. Narasimha Murty, and G Athithan, "Mining Anomalous Sub-graphs in Graph Data Using Non-Negative Matrix Factorisation", International Conference on Pattern Recognition and Machine Intelligence, ISI, Kolkata, 2013.
29. N N R Rangasuri, M. Narasimha Murty, and G Athithan, "A Rough Clustering Algorithm for Mining Outliers in Categorical Data", International Conference on Pattern Recognition and Machine Intelligence, ISI, Kolkata, 2013.
30. N N R Rangasuri, M. Narasimha Murty, and G Athithan, "Characterising Temporal Anomalies in Evolving Networks" Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), Taiwan, 2014.