



Balakrishnan Ganesan

Profile

Balakrishnan Ganesan

Professor and Director

Indra Ganesan Institutions

Tiruchirappalli – 620 012, Tamil Nadu, INDIA



Mobile: +91 9442828200

e-mail: balakrishnan.g@gmail.com

Area of Research: Computer Vision, Fuzzy Logic and Image Processing

Academic Credentials:

Programme	Institute	Grade/ Percentage	Year of Completion
Doctor of Philosophy	Universiti Malaysia Sabah, Malaysia	-	June 2006
M.E. Computer Science	PSG College of Technology, Bharathiyar University, India	8.46*	February 2003
B.E. Computer Science	JJ College of Engineering and Technology, Bharathidasan University, India	77.95%	May 2001
HSC	E.R Higher Secondary School, Trichy, India.	89.40 %	May 1997
SSLC	E.R Higher Secondary School, Trichy, India.	90.42 %	May 1995

Academic Experience:

Designation	Institution/ Organization	Period	
		From	To
Professor & Director	Indra Ganesan College of Engineering, Tiruchirappalli, India	May 2012	Till Date
Associate Professor	Indra Ganesan College of Engineering, Tiruchirappalli, India	May 2008	May 2012
Assistant Professor	J. J. College of Engineering and Technology, Tiruchirappalli, India	June 2006	April 2008
Research Officer and Lecturer (Part Time)	School of Engineering and Information Technology, University Malaysia	January 2004	May 2006
Lecturer	J. J. College of Engineering and Technology, Tiruchirappalli, India	February 2003	December 2003

Teaching Capability

- Image Processing / Machine Vision
- Design and Analysis of Algorithm
- Neural networks and Fuzzy Logic
- Programming in C AND C++
- Robotics

Courses / Training Attended

- Undergone three month part-time Course on “Advanced Programming in C / C++”
- Undergone short course on “MATLAB Programming”
- Attended ten day training on installation, maintenance and operation of Robots (FANUC, ABB and ADEPT) in Flexible Manufacturing System in Robotics and Automation Lab in School of Engineering and Information Technology, University Malaysia Sabah.
- Attended five day training on installation, maintenance and operation on Control System Lab (Computer control of inverted pendulum, WALLI Flexible manufacturing system with two mentor robots and CNC machine) in School of Engineering and Information Technology, University Malaysia Sabah.

Projects Undertaken

1. Distributed Project Planner

This project enables the project leader in scheduling the project into modules and distributing these modules among the various programmers. Programmers, in turn after completing their module will submit the coding to the project leader along with the encryption. The programmer may either interact with project leader or among themselves through a message board. This project was implemented in Pentasoft Technologies Limited. It was programmed using Java Servlets with Oracle as backend. After completion, this project work was implemented in Pentasoft Technologies and this project was adjudged as one of the **best projects** in the college.

2. Desktop capturing of many machines.

This project captures the images of the desktops in the remote machines and stores in the server. It can be put into use in applications that require remote surveillance. It is implemented in Java.

3. Implementation of Total Ordering Multicast Protocol using Propagation Tree

This project is concerned with the implementation of a multicast protocol which ensures Atomicity and Total Ordering in Network multicast Communication. Here all messages reach the system in the same order as they were sent. It utilises a new concept called Meta-groups, which organizes the groups into trees. It was implemented in C in Novell Netware Operating system using IPX as transport protocol.

Ph.D. Thesis

On Real Time Stereo Image Processing and Sonification Methodologies Applied towards SVETA

The scope of the work is to build a computer vision system for autonomous navigation of blind people. The system is to provide vision to blinds through hearing (“Seeing through Hearing”). In the research work, the scene, which blind person supposed to see is sonified to the earphones provided to the user, so that they can realize the three dimensional environment with the developed sound. The research is concentrated on critical stereo image processing design for this application using Artificial Intelligence techniques and developing an optimal sound conversion method. Stereo image processing is specially designed as model of human vision. The developed system is named Stereo Vision based Electronic Travel Aid (SVETA). Blind individuals were trained with SVETA and tested for obstacle identification. The SVETA system includes Compact Computing Device, stereo vision sensor mounted headgear and stereo earphones.

NOTE: This project is funded by Ministry of Science, Technology and Innovation, Malaysia, under IRPA Code: 03-02-10-0043/ EA0041 through University Malaysia Sabah (RM 216,000).

Research Supervision

Degree	Completed	On-going	Total
Ph.D.	13	2	15
PG	21	--	21

Patent

Title : **An Automated Embedded System Based Cloth Pressing Techniques**

Application No. : 202141008637 A

Publication Date : 12/03/2021

Title : **Stereo Vision Based Electronic Travel Aid**

Application No. : 202141042390

Publication Date : 01/10/2021

Funded Research Projects

Sl.No.	Title	Position	Amount	Agency	Status
1	Colour Image Processing applied towards blind navigation	Research member	RM 18,900	University Malaysia Sabah	Completed
2	Sonic Perception for Blind People through Stereo Image to Stereo Sound Transformation	Research member	RM 216,000	Ministry of Science, Technology and Innovation, Malaysia	Completed
3	Design, Development and Experimental Studies of a Stereo Vision based Travel Aid for Blind Navigation	Principal Investigator	Rs. 11,40,000	Department of Science and Technology, Government of India	Completed
4	International Travel Grant		Rs. 66,000	ITS, SERB, DST, Government of India	Completed
5	Legal Awareness Program		Rs. 90,000	National Commission for Women, Government of India	Completed
6	Smart Waste Dissociation Techniques Using Image Processing and Genetic Algorithm		Rs. 43,57,000	SERB SUPRA DST, Government of India	Applied

Funded Consultancy Projects

Sl.No.	Title	Amount	Agency	Status
1	Stereo Vision Technologies for measurement of wheel angles & distance	Rs.50000	AI Robotics Pvt., Ltd., Bangalore	Completed
2	Development & maintenance of Institution Website	Rs. 250000	Shri Indra Ganesan Institute of Medial Science, Tiruchirapllai	Completed
3	Development & Annual Maintenance of Billing Software	Rs. 60000	Sri Ramesh Enterprises, Tiruchirapalli	Completed
4	Integration of software for Bagging /Filling System	Rs. 125000	ACI Automation Pvt. Ltd., Chennai	Completed

Publications

Book Chapters

Total = 2

1. G.Balakrishnan, Book Titled "Computer Programming", published by Charulatha Publications, 2013.
2. R. Vijayanandh and G. Balakrishnan, "Human Skin Region Identification Using Fusion Technique", Information and Communication Technologies, Communications in Computer and Information Science, Published by Springer-Verlag Berlin Heidelberg, 2010, Vol. 101, Part 3, pp. 622-625.

Papers published in the International Journal

Total = 68

1. G.Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "A Stereo Image Processing System for Visually Impaired", International Journal of Signal Processing, United Kingdom, Vol. 2, No.2, 2005, page 136-145.
2. G.Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Image Sonification Methodologies For Blind Navigation", The Journal of Science and Engineering, Tamkang publishers, Taiwan. Volume 10, No. 1, 2006, page 67-76.
3. G.Balakrishnan, G. Sainarayanan, R. Nagarajan, and Sazali Yaacob, "A Stereo Image Processing system for Visually Impaired", International Journal of Information and Communication Engineering, Volume 2, No. 3, 2006, page 136-145.
4. G.Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Wearable Real-Time Stereo Vision for the Visually Impaired", Engineering Letters, International Association of Engineers publishers, Hongkong. Volume 14, No. 2, 2007, page 6-14.
5. G.Balakrishnan and G. Sainarayanan, "Stereo Image Processing Procedure For Vision Rehabilitation", Applied Artificial Intelligence, Taylor & Francis, London, 22:6, 2008, pp. 501-522. (Annexure I)

6. Kanisha Johnny and G.Balakrishnan, "Human Computer Interactions using Adaptive Speech-Text-Speech Conversions", CiIT International Journal of Digital Signal Processing, India, 2010, ISSN 0974 – 9594, pp. 196-199.
7. R. Vijayanant, G. Balakrishnan, "A Hybrid Approach to Human Skin Region Detection", ICTACT Journal on Image and Video Processing, India, 2011, ISSN 0976-9102, Vol.1, Issue. 3, 2010, pp. 143-149.
8. P. Subarajam, G. Balakrishnan, "Indian Sign Language Recognition System to aid Deaf dumb People", International Journal of Technology and Engineering System, Vol 1. No.2 July 2010, pp. 146-150
9. R. Vijayanant, G. Balakrishnan, "Skin Region Detection Using Hillclimbing Segmentation with Fuzzy C-Means Algorithm", International Journal of Advanced Engineering & Application, India, 2011, Vol. II, pp. 200-205.
10. R. Vijayanant, G. Balakrishnan, "A Hybrid Particle Swarm Optimization Algorithm to Human Skin Region Detection" Journal of Computing, NY, USA, 2011 Vol 3, Issue 5, pp. 54-60.
11. R. Vijayanant, G. Balakrishnan, "Performance Analysis of Human Skin Region Detection Techniques with Face detection Application", International Journal on Modelling and Optimization, Singapore, Vol.1, No. 3, 2011, pp. 236-242.
12. N. Balaji Raja, G. Balakrishnan, "An Improved Algorithm of Graph and Clustering based Association Rule Mining (GCBARM) in Discovering of Frequent Itemsets", In: Proceedings of IMS Manthan: The Journal of Innovation" in Volume-VI, Issue-II, Dec-2011, pp. 196-202.
13. S. Lokesh , G. Balakrishnan, "Speech enhancement using MEL-LPC spectrum and Vector Quantisation for ASR", European Journal of Scientific Research, Vol. 73, No.2, Feb -2012, pp. 202-209. (Impact factor: 0.03)

14. S. Lokesh , G. Balakrishnan, “Robust speech Feature Prediction Using MEL-LPC to Improve Recognition Accuracy”, Information Technology Journal, ISSN 1812-5638, Vol. 11, No. 11, 2012, pp. 1644-1649. (Impact Factor: 0.36)
15. R. Vijayanandh and G. Balakrishnan, “Hillclimbing Segmentation with Fuzzy CMean Based Human Skin Region Detection Using Bayes Rule”, European Journal of Scientific Research, ISSN 1450-216X, Vol. 76, No.1, 2012, pp. 95 – 107.
16. R. Vijayanandh and G. Balakrishnan, “Performance Measure of Human Skin Region Detection Based on Hybrid Particle Swarm Optimization”, International Journal of Computer Theory and Engineering, ISSN 1793-8201, Vol. 4, No. 5, October 2012, pp. 857 – 861.
17. S. Kanchana and G .Balakrishnan, “An Integrated Methodology for Palm Segmentation in Palmprint Recognition System”, European Journal of Scientific Research, ISSN 1450-216X Vol.73 No.1 (2012), pp. 73-78.
18. P. Subha Rajam and G. Balakrishnan, “[Recognition of the Tamil sign alphabet using image processing technique with angular-based analysis of left hand to aid deaf-dumb people](#)”, [International Journal of Information and Communication Technology](#), Vol. 4, No. 1, 2012, pp. 76-88.
19. Chitra, S & Balakrishnan, G 2012, ‘A survey of face recognition on feature extraction process of dimensionality reduction techniques’, Journal of Theoretical and Applied Information Technology, Vol.36, No.1, pp. 92-100.
20. S. Mohan Kumar and G Balakrishnan, “Classification of Microcalcification in Digital Mammogram using Stochastic Neighbor Embedding and KNN Classifier”, International Journal of Computer Applications, No. 1, 2012, pp. 5-9.

- 21.** S Mohan Kumar and G. Balakrishnan, "Statistical Features Based Classification of Microcalcification in Digital Mammogram Using Stochastic Neighbor Embedding", International Journal of Advanced Information Science and Technology, ISSN: 2319:2682, Vol.7, No.7, November 2012, pp. 20-26.
- 22.** S Mohan Kumar and G. Balakrishnan, "Breast Cancer Diagnostic System Based on Discrete Wavelet Transform and Stochastic Neighbor Embedding", European Journal of Scientific Research, ISSN 1450-216X, Vol. 87, No. 3, October 2012, pp. 301-310.
- 23.** R. Vijayanant and G. Balakrishnan, "Hill Climbing Segmentation with Fuzzy C-Means Based Human Skin Region Detection Using Bayes Rule", European Journal of Scientific Research, Vol. 76, No. 1, 2012, pp. 95-107.
- 24.** S. Chitra and G. Balakrishnan, "Comparative study for two color spaces HSCbCr and YCbCr in skin color detection" Journal of Applied Mathematical Sciences, Vol. 6, no. 85, 2012, pp. 4229 – 4238, ISSN 1312-885X
- 25.** S. Chitra and G. Balakrishnan, "A survey of face recognition on feature extraction process of dimensionality reduction techniques", Journal of Theoretical and Applied Information Technology, Vol. 36, No.1, 2012, pp. 92-100, ISSN: 1992-8645.
- 26.** R. Vijayanant and G. Balakrishnan, "Performance measure of Human Skin Region Detection based on Hybrid Particle Swarm Optimization", International Journal of Computer Theory and Engineering, Vol. 4, No. 5, Oct 2012, pp. 857-861.
- 27.** Subha Rajam, P & Balakrishnan, G "Recognition of Tamil Sign Language Alphabet using Image Processing to aid Deaf-Dumb People", Procedia Engineering, Elsevier publisher, Vol. 30, 2012, pp. 861-868.
- 28.** Chitra, S & Balakrishnan, G 2012, 'Comparative study for two color spaces HSCbCr and YCbCr in skin color detection', Journal of Applied Mathematical Sciences, Vol. 6, no. 85, pp. 4229 – 4238, Annexure – II.

29. G.Balakrishnan and M. Vijayasathy, "Depth Map Calculation using Improved Stereo Matching Algorithm", Archives Des Sciences, ISSN 1661-464X, Vol 66, No. 1, Jan 2013, pp. 29-38. (Impact Factor: 0.474)
30. N. Balaji Raja and G. Balakrishnan, "Discovering of Frequent Itemsets an Improved Algorithm of Graph and Clustering Based Association Rule Mining", European Journal of Scientific Research, ISSN 1450-216X, Vol. 94, Issue 2, Jan 2013, pp. 226-235.
31. N. Balajiraja and G. Balakrishnan, "An Algorithm for Mining Multiple Level Fuzzy Association Rules (MMLFAR) Using Grouped Transaction Items", Archives Des Sciences, ISSN 1661-464X, Vol 66, No. 1, Jan 2013, pp. 635-653. (Impact Factor: 0.474)
32. N. Balajiraja and G. Balakrishnan, "An Improved Association Rule Mining Algorithm to k-frequent Itemsets", Wulfenia Journal, ISSN 1561-882X, Vol. 20, No.1, Jan 2013, pp. 181-195.
33. Kanisha Johnny and G.Balakrishnan, "Speech Recognition Using MFCC and Multiclass Support Vector Machine", Archives Des Sciences, ISSN 1661-464X, Vol. 66, No. 1, Jan 2013, pp. 250-260.
34. G.Balakrishnan and M. Vijayasathy, "Real Time Stereo Matching Algorithm for Depth Calculation using Rank Transform", Wulfenia Journal, ISSN 1561-882X, Vol. 20, No. 2, Feb 2013, pp. 64-74.
35. M.Vijayasathy and G.Balakrishnan, " Improved Stereo Matching Algorithm For Depth Map Calculation ", Information-an International Interdisciplinary journal, Int Information Inst- Published(Annexure- I(Version 2013.1.1), Sl.no: 3635) pp.7689-7698 Vol No16, October 2013.
36. S.Lokesh and Dr.G.Balakrishnan," Fast Vector Quantization Codebook Generation Based on Observance Parameter and Improved Clustering Algorithm", Archives Des Sciences, vol.66, No.2, 2013, pp.368-376.

37. S Mohan Kumar and G. Balakrishnan, "Categorization of Benign And Malignant Digital Mammograms Using Mass Classification – SNE and DWT", Karpagam Journal of Computer Science, ISSN No: 0973-2926, Volume-07, Issue-04, June-July-2013, Page Numbers: 237-243.
38. S Mohan Kumar and G. Balakrishnan, "Classification of Micro Calcification And Categorization of Breast Abnormalities - Benign and Malignant In Digital Mammograms Using SNE And DWT", Karpagam Journal of Computer Science, ISSN No: 0973-2926, Volume-07, Issue-05, July-August-2013, Page No:253 to 259.
39. N. Balaji Raja N and G. Balakrishnan, "Multilevel Value Fuzzy Cluster based Association Rule Mining", International Information Institute Journal, Vol. 16, No. 13, 2013, pp. 8229-8234.
40. S Mohan Kumar and G. Balakrishnan, "The Performance Evaluation of the Breast Mass classification CAD System Based on DWT, SNE and SVM", International Journal of Emerging Technology and Advanced Engineering, ISSN 2250–2459, Volume 3, Issue 10, October 2013, Page Numbers:581-587. (IF:1.932)
41. S Mohan Kumar and G. Balakrishnan, "The Performance Evaluation of the Breast Microcalcification CAD System Based on DWT, SNE AND SVM", CiiT International Journal of Digital Image Processing Print: ISSN 0974 – 9691 & Online: ISSN 0974 – 9586, Vol. 5, No 11, November 2013, PP 483 – PP 487. (IF:0.652)
42. Subha Rajam P. and Balakrishnan, G "Design and Development of Tamil Sign Alphabets using Image processing with Right hand palm to aid Deaf-Dumb People", IETE Journal of Research, Medknow publisher, Vol 59, No.6, 2013, pp. 53-62. (Annexure – I)
43. Vijayasathy, M, Balakrishnan, G & Prabakaran, R 2013, 'Improved Stereo Matching Algorithm For Depth Map Calculation', Information an International Interdisciplinary Journal, vol. 16, no.10, pp. 7689-7698. (Annexure- I (Version 2013.1.1), Sl.no: 3635)

44. Michael & Balakrishnan, 2014, "Human Motion Tracking using Gaussian Mixture Method and Beta-Likelihood Matching", IOSR Journal of Computer Engineering, e-ISSN: 2278-0661, pp. 44-52, 2014.
45. Vijayarathy, M & Balakrishnan, G 2014, 'Rank Transform Based Real Time Stereo Matching For Depth Calculation', Journal of Convergence Information Technology, vol. 9, no. 2, pp.79-89. (Annexure-II (Version 2013.2.1), S.NO: 9947)
46. Vijayarathy, M, Balakrishnan, G, Hariharan Ramshankar & Shreyas Prakash 2014, 'An Improved Way to Compute Depth Maps For Multi-View Videos', IOSR Journal of Computer Engineering (IOSR-JCE), vol. 3, no. 1, pp. 66-72. e-ISSN: 2278-0661, p-ISSN: 2278-8727.
47. S. Kanchana and G. Balakrishnan, "An Efficient Biometric Recognition Using Radial Interpolation Function Based Fuzzy Minutiae Palmprint Feature Selection", International Journal of Applied Engineering and Research, Vol. 9, No. 24, 2014, pp. 28457-28473.
48. S. Kanchana and G. Balakrishnan, "Palm-Print Pattern Matching Based on Features Using Rabin-Karp for Person Identification", The Scientific World Journal, Vol. 2015, Article ID 382697, 2015, pp. 1-8.
49. S. Kanchana and G. Balakrishnan, "A Novel Gaussian Measure Curvelet Based Feature Segmentation and Extraction /for Palmprint Images", Indian Journal of Science and Technology, Vol. 8, No. 15, Article ID 64965, 2015, pp. 1-7.
50. S. Chitra and G. Balakrishnan, "Facial Gender Detection based on Trapezoid", International Journal of Advanced Research Trends in Engineering and Technology, Vol-II , Special Issue 2015, pp. 15-21, ISSN 2394-3785.

51. Chitra, S & Balakrishnan, G 2015, 'Facial Gender Detection based on Trapezoid', International Journal of Advanced Research Trends in Engineering and Technology, Vol.II, 2015, pp. 15-21.
52. Karthikeyan, D & Balakrishnan, G 2015, 'Feature Vector Fusion for Image based Human Age Estimation', World Academy of Science, Engineering and Technology, International Journal of Computer, Electrical, Automation, Control and Information Engineering, vol. 9, no. 12, pp. 2586-2593. Impact factor- 0.967 (Annexure – II, List of journals Version 2016.2).
53. Michael & Balakrishnan "Surveillance of Human Tracking using Gaussian Beta-Likelihood Matching and Kalman Filter", International Journal of Applied Engineering Research ISSN 0973-4562 Volume 10, Number 14 (2015) pp 34375-34382.
54. Michael & Balakrishnan "Optimization of Multi-Target Tracking and Occlusion Handling Using Mean Shift Method" International Journal of Advanced Research in Computer Science and Software Engineering , Volume 5, Issue 9, September 2015, pp. 53-60.
55. Michael & Balakrishnan, "Comparative Analysis of Multiple Target Tracking Methods", International Journal of Advances in Intelligent Informatics e-ISSN: 2442-6571, Vol 2, No. 2(2016), pp. 65-76.
56. S. Chitra and G. Balakrishnan, "Robust Face Detection Using Delaunay Triangle Based Geometrical Facial Features", International Journal of Innovation and Scientific Research, Vol. 22, No. 2, 2016, pp. 456-467, ISSN 2351-8014.
57. S. Chitra and G. Balakrishnan, "Age Estimation Based on Wrinkle Texture Seed Point Technique", Journal of Advances in Natural and Applied Sciences Vo. 10, No. 8, 2016, pp. 100-107, ISSN :1995-0772 EISSN: 1998-1090.
58. S. Kanchana and G. Balakrishnan, "Performance Analysis of Palmprint Pattern Recognition Techniques", Advances in Natural and Applied Sciences, Vol.10, No.4, 2016, pp.151-159.

59. B. Kanisha and G. Balakrishnan, "Speech Recognition with Advanced MFCC and Linear SVM", International Journal of Emerging Research in Management & Technology, Vol 5, No.4, 2016, pp. 35-39.
60. B. Kanisha and G. Balakrishnan, "Speech Recognition with Advanced Feature Extraction Methods Using Adaptive particle swarm Optimisation", International Journal of Intelligent Engineering and Systems, Vol.9, No.4, 2016, pp. 21-30.
61. Chitra, S & Balakrishnan, G 2016, 'Dual Local Binary Pattern based Gender Detection from Facial Image', Asian Journal of Research in Social Sciences and Humanities, Vol.6, pp 1-14, Annexure – I.
62. Chitra, S & Balakrishnan, G 2016, 'Spectral Clustered Rayleigh Classifier Technique for Face and Gender Detection', Journal of Computational and Theoretical Nanoscience, Vol. 13 No. 12, pp. 9183-9189 Annexure – I.
63. Karthikeyan, D & Balakrishnan, G 2017, 'Feature Selection Using Meta Heuristic Algorithm for Human Age Estimation', Journal of Computational and Theoretical Nanoscience, vol. 14, no. 5, pp. 2495-2500, Impact factor -1.666 (Annexure – I, List of journals Version 2016.2).
64. Karthikeyan, D & Balakrishnan, G 2017, 'A Comprehensive Age Estimation on Face Images using Hybrid Filter Based Feature Extraction', Biomedical Research, Print ISSN: 0970938X, Impact factor- 0.226 (Annexure – I, List of journals Version 2016.2), pp. 472-480.
65. Kavitha and Balakrishnan, 2017, 'Effective stereo matching methodologies for stereo vision application', International Journal of Engineering Technology & Computer Research, ISSN NO:2348-2117, Vol. 3, Issue 3, pp. 18-24, IMPACT FACTOR 3.983.

66. Michael & Balakrishnan “Global Energy Minimization and Optimization of Multi Target Tracking” Journal of Computational and Theoretical Nanoscience ISSN:1546-1955(print), Vol. 14, No. 1, January 2017, pp. 704-714.
67. Nancy V, Balakrishnan G, ‘Thermal Image-Based Object Classification for Guiding the Visually Impaired’, The Computer Journal, e-ISSN : 0010-4620, 2020, Accepted for publication.
68. Nancy V, Balakrishnan G, ‘Thermal Image based Object Detection and Identification based on Environmental Condition’, Journal of Environmental Protection and Ecology , ISSN : 1311-5065, Accepted for Publication, 2020.

Papers Presented in Conferences / Seminars

Total = 38

1. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, “Blind Navigation Using Stereopsis with Fuzzy Rule Base”, Proceedings of the second International Conference on Artificial Intelligence in Engineering and Technology, Malaysia, 2004, pp. 232-237.
2. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, “NAVI — Applying Stereo Vision Technology For Visual Rehabilitation”, Proceedings of the International Federation for Medical and Biological Engineering Kuala Lumpur International Conference on Biomedical Engineering, Malaysia, 2004, pp. 341-344.
3. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, “Object Discrimination using Stereo Vision for Blind through Stereo Sonification”, Indian Conference on Computer Vision, Graphics and Image Processing, India, 2004, pp. 234-239.
4. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, “Stereopsis Method for Visually Impaired to identify Obstacles based on Distance”, IEEE Proceedings of International Conference on Image and Graphics ICIG 2004, China, 2004, pp. 580-583.

5. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Stereo Vision for Visual Rehabilitation using Image Sonification with Musical Tones", International Conference on Advanced Computing and Communication, India, 2004, pp. 3-8.
6. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Stereo Camera based Artificial Vision for Blind through Hearing", Proceedings of the 10th International Symposium on Artificial life and Robotics, Japan, 2005, pp. 739-742. **(Awarded as best paper)**
7. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Stereo Vision Based Navigation for Visually Impaired People", International Conference on Mechatronics, Malaysia, 2005, pp. 594-601.
8. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Distance Determination Using Stereo Correspondence for Blind Navigation Using Stereo Cameras", International Conference On Robotics, Vision, Information And Signal Processing, Malaysia, 2005, pp. 465-469.
9. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "On Stereo Processing Procedure Applied Towards Blind Navigation Aid – SVETA", Eighth IEEE International Symposium on Signal Processing and its Applications, Australia, 2005, pp. 567-570.
10. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "A Support System for Visually Impaired persons to understand environmental information using acoustic interface", 1st International Workshop on Artificial Life and Robotics AROB 2005, Malaysia, 2005, pp.31-36.
11. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Fuzzy Matching Scheme for Stereo Vision based Electronic Travel Aid", IEEE TENCON 2005, Australia, 2005, pp. 1135-1140.

12. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Stereo Image to Stereo Sound Methods for Vision Based ETA", IEEE Proceedings on First International Conference on Computers, Communications & Signal Processing CCSP 2005, Malaysia, 2005, pp. 193-196
13. G. Balakrishnan, G. Sainarayanan, R. Nagarajan and Sazali Yaccob, "Musical Sonification Method Applied towards Stereo Vision based Electronic Travel Aid", International Conference on Intelligent Systems ICIS 2005, 2005, Malaysia, pp. 1-5.
14. Balajiraja, G. Balakrishnan, "Evaluation of Rule Likeness Measures for a Learning Environment", The International Conference on Operations Research applications in Engineering and Management ICOREM 2009, India, May 27-29 2009, pp. 1682-1690.
15. R. Vijayanant, G. Balakrishnan, "Multi-Objective Image Color Segmentation Using Clustering Algorithms", National conference on Soft Computing, Image Processing, Network and Data Management, NCSINDM'09, India, March 2009, pp. 224-229.
16. P. Subarajam, G. Balakrishnan, "Indian Sign Language Recognition System to aid Deaf dumb People", The second International Conference on Computing, Communication and Networking Technologies, India, Indexed by IEEE Computer Society, 2010, pp. 1-9.
17. S. Lokesh , G. Balakrishnan, "Computer Interaction to Human through Photorealistic Facial Model for Inter-process Communication", The second International Conference on Computing, Communication and Networking Technologies, India, Indexed by IEEE Computer Society, 2010, pp. 1-7.
18. R. Vijayanant and G. Balakrishnan, "Human Face Detection using Color Spaces and Region Property Measures", 11th International Conference on Control, Automation, Robotics and Vision, Singapore, 2010 Indexed by IEEE Computer Society, pp. 1605-1610.
19. Kanisha Johnny and G. Balakrishnan "Speech Transaction for Blinds Using speech-Text-Speech Conversions", The First International Conference on Computer Science and Information Technology, Bangalore, India, published by Springer (LNCS), 2011 Vol. 131, pp. 43-48.

20. R. Vijayanant and G. Balakrishnan, "Human Skin Region Detection using Particle Swarm Optimization", 4th IEEE Conference on Computer Science and Information Technology, China, 2011, Vol. 6, pp. 117-121.
21. Balaji Raja N and Balakrishnan G, "A Model of Algorithmic Approach to Itemsets Using Association Rules", 3rd International Conference on Conference on Electronics Computer Technology, Kanyakumari, India, 2011 pp. 6-10. (Indexed by IEEE Computer Society)
22. Kanchana and Dr.G.Balakrishnan, "Robust approach for Palm (ROI) Extraction in palmprint recognition system", International Conference on Signal, Image Processing and Applications, Chennai, India, 2011, pp. 22-26. (Indexed by Springerlink)
23. P. Subarajam, G. Balakrishnan, "Recognition of Tamil Sign Language Alphabet using Image Processing for Deaf-Dumb People", International Conference on Communication Technology and System Design, Coimbatore, India, 2011, pp. 861-868. (Indexed by ScienceDirect)
24. P. Subarajam, G. Balakrishnan, "Real Time Indian Sign Language Recognition System to Aid Deaf-Dumb People" 13th IEEE International Conference on Communication Technology, Jinan, China, 2011. pp. 737-742. (Indexed by IEEE Computer Society)
25. P. Subarajam, G. Balakrishnan," Recognition of Tamil Sign Alphabet using Image Processing Technique with Angle to aid Deaf-Dumb People" International Conference on Information and Communication Technology, Singapore, 2011, pp. 57-62.
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34. B. Kanisha and G. Balakrishnan, "Advanced Human Computer Interactions with Integrative Speech recognition and speech synthesis methods", International Conference on Human Computer Interaction, 2013, pp. 81-87.
35. S. Chitra and G. Balakrishnan, "A Comparative Study On Face, Age And Gender Detection Using Region Based Feature Extraction Techniques", Proceedings of International Conference On Emerging Enhancements in Engineering and Technology, 2016, pp. 16-22, ISBN: 978-93-5254-672-5.

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37. Kanisha Johnny and G. Balakrishnan, "Speech Processing With Combined Use of MFCC and LC for Wide Band Coding", Fifth International Conference on Wireless, Mobile Networks & Application, India, 2013, pp. 18-23.
38. Michael & Balakrishnan "An Improved Motion Detection and Tracking of Active Blob for Video Surviellance " Published IEEE Computer Society presented at 4th ICCCNT 2013,Vivekananda College of Engineering for Womens, July 4-6,2013.

Public Lectures Presented

- Presented many lectures in Artificial Intelligence Research Group, School of Engineering and Information Technology, University Malaysia Sabah in the area of **Vision systems, Image processing, Neural networks, Matlab, Fuzzy logic and Pattern classification.**
- Addressed live demonstration of vision substitutive system in **All India Radio, Tiruchirapalli.**
- Presented **Guest lecture** in New Horizon College of Engineering, Bangalore, Karnataka in the area of Image Processing applied towards research.
- Presented Lectures in various colleges in Tiruchirapalli.
- Gave public address to 4000 +2 students in joint venture with leading news daily regarding their engineering scopes after their higher studies.
- Gave special lectures in All India Radio, Tiruchirapalli, and Kodaikanal Rainbow FM.
- Conducted several workshops, Seminars in Indra Ganesan College of Engineering.

Awards and Merits

- Secured **Eighth place** overall academically in Higher Secondary School out of 650 students.
- Secured Overall **Second** rank in First year and Final year of BE
- Secured overall **Second** rank in B.E among 80 students.
- Got Overall **Fourth** Rank in ME among 15 students.
- Got **Best paper award** in Japan International Conference in 2005.
- Won **Silver medal** in IPTA R&D EXPO 2005 Research Competition held at Kuala Lumpur, Malaysia in 2005.
- Won **Fourth Place** in National level PSG Alumini Project Expo 2013 held at Coimbatore in 2013
- **Recognised supervisor** for PhD under Trichy Anna University. Recognition Number 01.04.02.406
- **Recognised Supervisor** for PhD under Bharathiyar University, Coimbatore, and Karpagam University, Coimbatore.
- **Doctoral Committee member** for PhD students under Sathyabama university, Chennai and Mother Therasa university, Kodaikanal, Anna University Trichy.
- **Selected for Fast track Young Scientist award from Department of Science and Technology, India.**
- **Centre head** for Computer Science Research Centre in Indra Ganesan College of Engineering.
- **Voluntary Blood Donor** Award from Government of Tamilnadu in 2017
- **Covid 19 Meritorious service** award by Indian Red cross in 2021

Professional Membership

- Member of IEEE
- Member of ISTE
- Member of CSI (India)
- Member of IAENG
- Senior member IACSIT
- Member of IE

Additional Responsibilities:

- Have been an active member in Second International Conference on Artificial Intelligence in Engineering and Technology, 2004, held at University Malaysia Sabah, Malaysia.
- Organised National and International conferences in Indra Ganesan College of Engineering
- Participated in many science fairs, exhibitions and workshops and international conferences.
- Technical reviewer for various International Journals and Conferences.
- Member of Indian Red Cross, Trichy Chapter
- Founder member of Rotary Club of Tiruchirapalli Elite

Countries visited

- Malaysia
- Singapore
- Thailand
- China
- Hong Kong
- Nepal
- Sri Lanka