



Dr. B. Kannan

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APPOINTMENTS

Head of the Department, Department of Computer Applications <i>Cochin University of Science and Technology</i>	2013 June- 2019 March
Professor <i>Cochin University of Science and Technology</i>	2010 Decem- ber onwards
Associate Professor <i>Cochin University of Science and Technology</i>	2007 Decem- ber onwards
Reader <i>Cochin University of Science and Technology</i>	2004- 2007
Lecturer (Sr. Scale) <i>Cochin University of Science and Technology</i>	1999- 2004
Lecturer <i>Cochin University of Science and Technology</i>	1999
Lecturer <i>Department of Collegiate Education, Kerala</i>	1991-1999
Junior Lecturer <i>Department of Collegiate Education, Kerala</i>	1989

EDUCATION

PhD Futures Studies with Specialization in Graph Algorithms	2006
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<i>University Of Kerala</i>	
M.Tech. Computer & Information Science	1987
<i>Cochin University of Science and Technology</i>	
M.Phil Mathematics	1983
<i>University Of Kerala</i>	
M.Sc. Mathematics	1982
<i>University Of Kerala</i>	

RESEARCH INTERESTS

- **Thesis Title:** “Algorithms for median computation in median graphs and their generalizations using consensus strategies” University of Kerala, 2006
- **Areas of Interest:** Algorithms, Graph Theory, Machine Intelligence, Image Processing, Natural Language Processing, Assistive Technologies

ORGANIZATIONAL POSITIONS HELD

- **Co-ordinator**, IIT Bombay Remote Centre, Cochin University of Science & Technology, Kochi
- **Member, Academic Council**, Cochin University of Science & Technology, Kochi
- **Member, Academic Committee**, Cochin University of Science and Technology, Kochi
- **Member, Board of Studies**, Computer Applications, Cochin University of Science and Technology, Kochi
- **Member, Board of Studies**, Computer Science, Cochin University of Science and Technology, Kochi
- **Member, Board of Studies**, Computer Science, Mahatma Gandhi University, Kottayam
- **Member, Board of Studies**, Computer Science and Applications, University of Calicut
- **Member, Board of Studies**, C.M.S. College (Autonomous), Kottayam
- **Member, Board of Studies**, S.B. College (Autonomous), Changanasseri
- **Member, Board of Studies**, S.H. College Thevara (Autonomous), Kochi
- **Member, Board of Studies**, St. Teresa’s College (Autonomous), Kochi
- **Member, Board of Studies**, Rajagiri College of management and Applied Sciences, Kochi
- **Member, NBA Advisory Committee**, Adi Shankara Institute of Engineering and Technology, Kalady, Ernakulam

OTHER ROLES

- **Chairman**, Ph. D Qualifying Examination and Viva-voce in Computer Science, MG University, Kottayam
- **Chairman**, First and Third Semester Examinations, M Sc. Computer Science and Information Security Examinations, IIITMK, Thiruvananthapuram
- **Subject Expert**, Doctoral Committee meeting, Dept. of Computer Science, Karpagam University, Coimbatore
- **Subject Expert**, Interview Board for post of Assistant Professor in Engineering College, LBS Centre for Science and Technology, Thiruvananthapuram
- **Interview Board Member**, Selection committee of SPEED-IT Fellowship, Department of Future Studies, University of Kerala, Thiruvananthapuram
- **Subject Expert**, Interview Board, Research Admission Committee, Dept. of Computer Science, University of Calicut
- **Doctoral Committee Member**, School of Computer Sciences, MG University, Kottayam
- **External Examiner**, PhD Open Defense, School of Computer Sciences, MG University, Kottayam
- **Examiner**, Viva-voce, Ph. D Qualifying Examination, M G University, Kottayam
- **Examiner**, Ph. D Preliminary Examination in Information Technology, Kannur University
- **External Examiner**, Final Semester Dissertation Evaluation and Viva-voce, PGDKM, Department of Future Studies, University of Kerala, Thiruvananthapuram
- **External Examiner**, Viva-voce, M. Tech, Anna University, Chennai
- **External Examiner**, Final Semester Dissertation Evaluation and Viva-voce, M. Tech in Technology Management, Department of Future Studies, University of Kerala, Thiruvananthapuram
- **External Examiner**, Project Evaluation and Viva-voce, VIth Semester MCA, Centre for Computer Science and Information Technology, Dr. John Mathai Centre, Thrissur
- **External Examiner**, IVth Semester M Sc. Computer Science, Project evaluation and Viva-voce, School of Computer Sciences, MG University, Kottayam
- **External Examiner**, IVth Semester M. Tech Computer Science, Project evaluation and Viva-voce, Department of Computer Science, University of Kerala, Thiruvananthapuram

MEMBER OF PROFESSIONAL BODIES

- **Member:** Association for Computing Machinery (ACM)
- **Life Member:** Computer Society of India (CSI)
- **Life Member:** Indian Science Congress Association (ISCA)

- **Vice-Chairman**, Computer Society of India, Cochin Chapter, Kochi, 2017-18
- **Chairman**, Computer Society of India, Cochin Chapter, Kochi, 2018-19

PROGRAMME COMMITTEES

- **Sessional Chair**, 103rd Indian Science held at University of Mysore, Mysore, 3-7 January, 2016
- **Chair**, International Symposium on Innovations in Natural Computing, INC-2009, CUSAT, Kochi
- **Chair**, National Conference on Indian Language Computing, NCILC-2011, CUSAT, Kochi
- **Chair**, Second National Conference on Indian Language Computing, NCILC-2012, CUSAT, Kochi
- **Programme Committee Member**, International Conference on Data Science and Engineering, ICDSE-2012, CUSAT, Kochi
- **Chair**, Third National Conference on Indian Language Computing, NCILC-2013, CUSAT, Kochi
- **Co-Chair**, International Conference on Data Science and Engineering, ICDSE-2014, CUSAT, Kochi
- **Chair**, Fourth National Conference on Indian Language Computing, NCILC-2014, CUSAT, Kochi
- **Chair**, Fifth National Conference on Indian Language Computing, NCILC-2015, CUSAT, Kochi
- **Chair**, Sixth National Conference on Indian Language Computing, NCILC-2016, CUSAT, Kochi
- **Chair**, International Conference on Data Science and Engineering, ICDSE-2016, CUSAT, Kochi
- **Chair**, Seventh National Conference on Indian Language Computing, NCILC-2017, CUSAT, Kochi
- **Chair**, Eighth National Conference on Indian Language Computing, NCILC-2018, CUSAT, Kochi

ACADEMIC VISITS ABROAD

- **2011** - Visited **Slovenia** as part of the Indo- Slovenian Joint Project for 15 days starting June 10, 2011

INVITED/SPECIAL TALKS

6. **Introduction to Complex Networks**, National Workshop on Complex Networks, Organized by Department of Futures Studies, University Of Kerala, Trivandrum 19-20 January, 2017
5. **Content Based Image Retrieval**, Five day FDP(TEQIP) on Recent Trends in Satellite and Medical Imaging, Organized by College of Engineering, Perumon, July, 2016
4. **Intelligent Systems**, UGC Sponsored Two day National Seminar on Recent Trends in Computer Science, Organized by MES College, Ponnani, 20-21 January, 2016
3. **Sage Programming**, Five Day Workshop on Graph Theory and Computer Applications, Organized by Department of Computer Applications, CUSAT, 08-12 December, 2014
2. **Content Based Image Retrieval**, National Seminar on Recent Trends in Information Technology, Organized by Sree Ayyappa College, Eramalikkara, 7-8 March, 2014
1. **Intelligent Systems: Past, Present & Future**, National Seminar, Organized by KKTMM Government College, Pullut, Thrissur, 24-25 October, 2013

PH.D AWARDED

1. **Julie M David** – PhD “Statistical Machine Learning Techniques for the prediction of Learning Disabilities in School-Age Children” *2013*
2. **Aysha V.** – PhD “Document Image Segmentation and Compression using Artificial Neural Networks and Evolutionary Methods” *2014*
3. **Sindhu M.S.** – PhD “A data Mining Approach for the Identification of Adverse Drug Events (ADE) Resulting from Drug-Drug Interactions (DDI) to Improve Pharmacovigilance” *2014*
4. **Sindhumul S.** – PhD “Improved Feature Extraction and Classification Techniques for Multispectral Brain Magnetic Resonance Images” *2014*
5. **Simily Joseph** – PhD “Classification and Content Based Retrieval of Digital Mammograms and Placental Sonograms” *2014*
6. **Cini Kurian** – PhD “Analysis of Unique Phonemes and Development of Automatic Speech Recognizer for Malayalam Language” *2014*
7. **Abraham V.** – PhD “Content based image retrieval of brain MR images and level based anomaly detection” *2014* (Anna University, Chennai)
8. **Ramkumar R.** – PhD “A Study of some Centrality measures in Graphs” *2015*
9. **Bino Sebastian** – PhD “Mathematical Morphology on Hypergraph spaces and its applications in Image Processing” *2016*
10. **Jino P. J.** – PhD “Offline handwritten Malayalam word recognition using machine learning techniques” *2018*

PATENTS FILED

- Kumar Moorakkal Bhaskaran Santosh, Balakrishnan Kannan and Neelakantapillai Sunilkumar, “ Portable Agriculture Network System” 2017

List of Journal Publications

- [1] Kannan Balakrishnan, Divya Lekha Sindhu, and Sunil Kumar R. “Analysis of co-authorship network based on some betweenness centrality concepts”. In: *International Journal of Data Science* 4.2 (2019), pp. 162–179.
- [2] Jestin Joy, Kannan Balakrishnan, and M Sreeraj. “SignQuiz: A Quiz Based Tool for Learning Fingerspelled Signs in Indian Sign Language Using ASLR”. In: *IEEE Access* 7 (2019), pp. 28363–28371.
- [3] Sunil Kumar and Kannan Balakrishnan. “Betweenness centrality in Cartesian product of graphs”. In: *AKCE International Journal of Graphs and Combinatorics* (2019).
- [4] Sunil Kumar Raghavan Unnithan and Kannan Balakrishnan. “Betweenness centrality in convex amalgamation of graphs”. In: *Journal of Algebra Combinatorics Discrete Structures and Applications* 6.1 (2019).
- [5] Divya Sindhu Lekha, Sruthi K S, Kannan Balakrishnan, and Sreekumar A. “Profile Closeness in Complex Networks”. In: *arXiv preprint arXiv:1903.06232* (2019).
- [6] Jestin Joy, Kannan Balakrishnan, and Sreeraj Madhavankutty. “Developing a bilingual mobile dictionary for Indian Sign Language and gathering users experience with SignDict”. In: *Assistive Technology* (2018), pp. 1–8.
- [7] S Reshmi and Kannan Balakrishnan. “EMPOWERING CHATBOTS WITH BUSINESS INTELLIGENCE BY BIG DATA INTEGRATION”. In: *International Journal of Advanced Research in Computer Science* 9.1 (2018).
- [8] Sunil Kumar and Kannan Balakrishnan. “Betweenness Centrality in Cartesian Product of Graphs”. In: *Electronic Notes in Discrete Mathematics* 63 (2017), pp. 287–294.
- [9] Sunil Kumar and Kannan Balakrishnan. “On the number of geodesics of Petersen graph $GP(n, 2)$ ”. In: *Electronic Notes in Discrete Mathematics* 63 (2017), pp. 295–302.
- [10] Bino Sebastian Vadakkenveetil, Avittathur Unnikrishnan, Kannan Balakrishnan, and Ramkumar Padinjare Pisharath Balakrishna. “Morphological filtering on hypergraphs”. In: *Discrete Applied Mathematics* 216 (2017), pp. 307–320.
- [11] Jomy John, K Balakrishnan, and KV Pramod. “Handwritten Malayalam character recognition with a novel gradient based feature descriptor and a comparative study using SVM and ELM”. In: *Int. J. Adv. Eng. Technol. Sci.* 2.3 (2016), pp. 13–20.
- [12] S Reshmi and Kannan Balakrishnan. “Implementation of an inquisitive chatbot for database supported knowledge bases”. In: *sāadhanā* 41.10 (2016), pp. 1173–1178.

- [13] Kannan Balakrishnan, Manoj Changat, Anandavally K Lakshmikuttyamma, Joseph Mathew, Henry Martyn Mulder, Prasanth G Narasimha-Shenoi, and N Narayanan. “Axiomatic characterization of the interval function of a block graph”. In: *Discrete Mathematics* 338.6 (2015), pp. 885–894.
- [14] Kannan Balakrishnan, Boštjan Brešar, Manoj Changat, Sandi Klavžar, Aleksander Vesel, and Petra Žigert Pleteršek. “Equal opportunity networks, distance-balanced graphs, and Wiener game”. In: *Discrete Optimization* 12 (2014), pp. 150–154.
- [15] Julie M David and Kannan Balakrishnan. “Learning disability prediction tool using ANN and ANFIS”. In: *Soft Computing* 18.6 (2014), pp. 1093–1112.
- [16] Balakrishnan Kannan, Vesel Aleksander, Žigert Pleteršek Petra, Changat Manoj, Brešar Bostjan, and Klavzar Sandi. “Equal opportunity networks, distance-balanced graphs, and Wiener game”. In: *Discrete Optimization* 12 (2014), pp. 150–154.
- [17] Balakrishnan Kannan, Changat Manoj, Martyn Mulder Henry, and Subhamathi R Ajitha. “Axiomatic Characterization of the Antimedial Function on Paths and Hypercubes”. In: *Discrete Mathematics, Algorithms and Applications December 2014* 4.04 (2014).
- [18] Sunil Kumar Raghavan Unnithan, Balakrishnan Kannan, and Madambi Jathavedan. “Betweenness centrality in Some classes of graphs”. In: *International Journal of Combinatorics* 2014 (2014).
- [19] Bino Sebastian, A Unnikrishnan, Kannan Balakrishnan, and PB Ramkumar. “Mathematical morphology on hypergraphs using vertex-hyperedge correspondence”. In: *ISRN Discrete Mathematics* 2014 (2014).
- [20] Abraham Varghese, Kannan Balakrishnan, Reji Rajan Varghese, and Joseph S Paul. “Content-based image retrieval of axial brain slices using a novel lbp with a ternary encoding”. In: *The Computer Journal* 57.9 (2014), pp. 1383–1394.
- [21] Julie M David and Kannan Balakrishnan. “Performance improvement of fuzzy and neuro fuzzy systems: prediction of learning disabilities in school-age children”. In: *International Journal of Intelligent Systems and Applications* 5.12 (2013), p. 34.
- [22] John Jomy, Kannan Balakrishnan, and KV Pramod. “A System for Offline Recognition of Handwritten Characters in Malayalam Script”. In: *International Journal of Image, Graphics and Signal Processing* 5.4 (2013), p. 53.
- [23] Simily Joseph, Kannan Balakrishnan, MB Nair, and Reji Rajan Varghese. “Ultrasound image despeckling using local binary pattern weighted linear filtering”. In: *International Journal of Information Technology and Computer Science (IJITCS)* 5.6 (2013), p. 1.

- [24] Balakrishnan Kannan, Varghese Abraham, Varghese R Reji, and Paul S Joseph. “Content Based Image Retrieval of Brain MR Images across Different Classes”. In: *International Journal of Electrical, Robotics, Electronics and Communications Engineering Vol:7 No:8, 2013* (2013).
- [25] Balakrishnan Kannan, Kumar Anil, and S Sindhumol. “Spectral clustering independent component analysis for tissue classification from brain MRI”. In: *Biomedical Signal Processing and Control* 8 8 (2013), pp. 667–674.
- [26] Balakrishnan Kannan and Kurian Cini. “Connected digit speech recognition system for Malayalam language”. In: *Sadhana* 38 (2013), pp. 1339–1346.
- [27] Balakrishnan Kannan, John Jomy, and KV Pramod. “A System for Offline Recognition of Handwritten Characters in Malayalam Script”. In: *I.J. Image, Graphics and Signal Processing, 2013*, 4 (2013), pp. 53–59.
- [28] Balakrishnan Kannan and David M Julie. “Performance Improvement of Fuzzy and Neuro Fuzzy Systems: Prediction of Learning Disabilities in School-age Children”. In: *I.J. Intelligent Systems and Applications, 2013*, 12, 34-52 (2013).
- [29] Balakrishnan Kannan, Joseph Simily, MR Balachandran Nair, and Rajan Varghese Reji. “Ultrasound Image Despeckling using Local Binary Pattern Weighted Linear Filtering”. In: *I.J. Information Technology and Computer Science, 2013* 6 (2013), pp. 1–9.
- [30] CINI KURIAN and KANNAN BALAKRISHNAN. “Connected digit speech recognition system for Malayalam language”. In: *Sadhana* (2013), pp. 1–8.
- [31] Phil Antony Mingo, KA Rafidha Rehiman, and Kannan Balakrishnan. “An Autonomous Framework for Classifier Selection in Weka”. In: *International Journal Of Engineering And Computer Science* 2.3 (2013), pp. 696–703.
- [32] MS Sindhu and B Kannan. “Detecting Signals of Drug-Drug Interactions Using Association Rule Mining Methodology”. In: *IJCSIT International Journal of Computer Science and Information Technologies* 4.4 (2013), pp. 590–594.
- [33] MS Sindhu and B Kannan. “Investigating the factors affecting drug-drug interactions”. In: *Int J Pharm Bio Sci* 4.4 (2013), pp. 467–476.
- [34] S Sindhumol, Kannan Balakrishnan, and Anil Kumar. “Brain Tissue Classification from Multispectral MRI by Wavelet based Principal Component Analysis.” In: *International Journal of Image, Graphics & Signal Processing* 5.8 (2013).
- [35] S Sindhumol, Anil Kumar, and Kannan Balakrishnan. “Automated brain tissue classification by multisignal wavelet decomposition and independent component analysis”. In: *ISRN Biomedical Imaging* 2013 (2013).
- [36] S Sindhumol, Anil Kumar, and Kannan Balakrishnan. “Spectral clustering independent component analysis for tissue classification from brain MRI”. In: *Biomedical Signal Processing and Control* 8.6 (2013), pp. 667–674.

- [37] Bijo S Anand, Kannan Balakrishnan, Manoj Changat, and Iztok Peterin. “Atoms and clique separators in graph products”. In: *Applicable Analysis and Discrete Mathematics* (2012), pp. 46–62.
- [38] Kannan Balakrishnan, Manoj Changat, Henry Martyn Mulder, and Ajitha R Subhamathi. “Axiomatic characterization of the antimedial function on paths and hypercubes”. In: *Discrete Mathematics, Algorithms and Applications* 4.04 (2012), p. 1250054.
- [39] Kannan Balakrishnan, Manoj Changat, Henry Martyn Mulder, and Ajitha R Subhamathi. “Consensus strategies for signed profiles on graphs”. In: *Ars Mathematica Contemporanea* 6.1 (2012).
- [40] Kannan Balakrishnan, Boštjan Brešar, Manoj Changat, Sandi Klavžar, Iztok Peterin, Ajitha R Subhamathi, et al. “Almost self-centered median and chordal graphs”. In: *Taiwanese Journal of Mathematics* 16.5 (2012), pp. 1911–1922.
- [41] Julie M David and Kannan Balakrishnan. “Attribute Reduction and Missing Value Imputing with ANN: Prediction of Learning Disabilities”. In: *Int. J. of Neural Computing, Springer-Verlag London Limited, DOI* 10 (2012), pp. 1757–1763.
- [42] Jomy John, Kannan Balakrishnan, et al. “Malayalam Character Recognition System for Camera Enabled Mobile Devices.” In: *International Journal of Advanced Research in Computer Science* 3.6 (2012).
- [43] Simily Joseph and Kannan Balakrishnan. “Multi Query Image Retrieval System with Application to Mammogram Images.” In: *International Journal of Advanced Research in Computer Science* 3.3 (2012).
- [44] M David Julie and Balakrishnan Kannan. “Attribute reduction and missing value imputing with ANN: prediction of learning disabilities”. In: *Neural Computing and Applications* 21.7 (2012), pp. 1757–1763.
- [45] Balakrishnan Kannan, John Jomy, and KV Pramod. “Unconstrained handwritten Malayalam character recognition using wavelet transform and support vector machine classifier”. In: (2012).
- [46] Balakrishnan Kannan, Ram Kumar, et al. “Median Sets and Median Number of a Graph”. In: (2012).
- [47] R Ram Kumar and B Kannan. “Median sets and median number of a graph”. In: *ISRN Discrete Mathematics* 2012 (2012).
- [48] V Sebastian, A Unnikrishnan, and Kannan Balakrishnan. “Gray level co-occurrence matrices: generalisation and some new features”. In: *International Journal of Computer Science, Engineering and Information Technology (IJCEIT), Vol.2, No.2, April 2012* (2012).
- [49] Abraham Varghese and Balakrishnan Kannan. “Edge Enhancement using Co-Occurrence Features of LBP Coded Low Contrast MR Images”. In: *Digital Image Processing* 4.8 (2012), pp. 406–408.

- [50] Abraham Varghese, Reji Rajan Varghese, Kannan Balakrishnan, and Joseph S Paul. “Level identification of brain MR images using histogram of a LBP variant”. In: *Computational Intelligence & Computing Research (ICCIC), 2012 IEEE International Conference on*. IEEE. 2012, pp. 1–4.
- [51] Julie M David and Kannan Balakrishnan. “Prediction of Key Symptoms of Learning Disabilities in School-Age Children Using Rough Sets”. In: *International Journal of Computer and Electrical Engineering* 3.1 (2011), p. 163.
- [52] Simily Joseph and Kannan Balakrishnan. “Local binary patterns, haar wavelet features and haralick texture features for mammogram image classification using artificial neural networks”. In: *Advances in Computing and Information Technology*. Springer, Berlin, Heidelberg, 2011, pp. 107–114.
- [53] Simily Joseph and Kannan Balakrishnan. “Multi-query content based image retrieval system using local binary patterns”. In: *International Journal of Computer Applications* 17.7 (2011), pp. 1–5.
- [54] Balakrishnan Kannan and Kurian Cini. “Automated Transcription System for Malayalam Language”. In: *International Journal of Computer Applications* 19.5 (2011).
- [55] Balakrishnan Kannan and Kurian Cini. “Malayalam Isolated Digit Recognition using HMM and PLP cepstral coefficient”. In: *International Journal of Advanced Information Technology (IJAIT) Vol. 1, No.5, October 2011* (2011).
- [56] Balakrishnan Kannan and M David Julie. “Attribute reduction and missing value imputing with ANN: prediction of learning disabilities”. In: *Neural Comput & Applic (2012)* 21 (2011), pp. 1757–1763.
- [57] Balakrishnan Kannan, Joseph Simily, John Jomy, and Vijayaraghavan K Pramod. “Content Based Image Retrieval System for Malayalam Handwritten Characters”. In: *Neural Computing and Applications Vol 21(7), pp 1757-1763*. IEEE. 2011.
- [58] Cini Kurian and Kannan Balakrishnan. “Automated Transcription System for Malayalam Language”. In: *International Journal of Computer Applications* 19.5 (2011), pp. 5–10.
- [59] Cini Kurian and Kannan Balakrishnan. “Perceptual Linear Predictive Cepstral Coefficient for Malayalam Isolated Digit Recognition”. In: *Trends in Computer Science, Engineering and Information Technology*. Springer, Berlin, Heidelberg, 2011, pp. 534–541.
- [60] Abraham Varghese, Reji Rajan Varghese, Balakrishnan Kannan, and JS Paul. “Identification of Region of Interest using Local Binary Pattern with Ternary Encoding”. In: *Digital Image Processing* 3.16 (2011), pp. 1050–1052.

- [61] V Aysha, Kannan Balakrishnan, and S Babu Sundar. “Parallel genetic algorithm for document image compression optimization”. In: *Electronics and Information Engineering (ICEIE), 2010 International Conference On*. Vol. 2. IEEE. 2010, pp. V2–483.
- [62] Kannan Balakrishnan, B Brešar, M Kovše, Manoj Changat, Ajitha R Subhamathi, and S Klavžar. “Simultaneous embeddings of graphs as median and antimedian subgraphs”. In: *Networks* 56.2 (2010), pp. 90–94.
- [63] Kannan Balakrishnan, Boštjan Brešar, Manoj Changat, Sandi Klavžar, Matjaž Kovše, and Ajitha R Subhamathi. “Computing median and antimedian sets in median graphs”. In: *Algorithmica* 57.2 (2010), pp. 207–216.
- [64] Kannan Balakrishnan, Manoj Changat, and Henry Martyn Mulder. “The plurality strategy on graphs”. In: *Australasian J. Combin* 46 (2010), pp. 191–202.
- [65] Julie M David and Kannan Balakrishnan. “Machine learning approach for prediction of learning disabilities in school age children”. In: *Int. J. of Computer Applications, ISSN-0975-8887* 9.10 (2010).
- [66] M David Julie and B Kannan. “Significance of classification techniques in prediction of learning disabilities in school age children”. In: *Int J Artif Intell Appl* 1.4 (2010), pp. 111–120.
- [67] Kannan Balakrishnan, Boštjan Brešar, Manoj Changat, Wilfried Imrich, Sandi Klavžar, Matjaž Kovše, and Ajitha R Subhamathi. “On the remoteness function in median graphs”. In: *Discrete Applied Mathematics* 157.18 (2009), pp. 3679–3688.
- [68] Kannan Balakrishnan, Manoj Changat, Iztok Peterin, Simon Špacapan, Primož Šparl, and Ajitha R Subhamathi. “Strongly distance-balanced graphs and graph products”. In: *European Journal of Combinatorics* 30.5 (2009), pp. 1048–1053.
- [69] Kannan Balakrishnan, Manoj Changat, and Sandi Klavžar. “The median function on graphs with bounded profiles”. In: *Discrete Applied Mathematics* 156.15 (2008), pp. 2882–2889.
- [70] Kannan Balakrishnan, Manoj Changat, Sandi Klavzar, Joseph Mathews, Iztok Peterin, GN Prasanth, and Simon Spacapan. “Antimedian graphs”. In: *Australasian Journal of Combinatorics* 41 (2008), p. 159.
- [71] Balakrishnan Kannan, Brešar Boštjan, Changat Manoj, Sandi Klavžar, Kovše Matjaž, and Subhamathi R Ajitha. “Computing median and antimedian sets in median graphs”. In: (2008).
- [72] Balakrishnan Kannan, Brešar Bostjan, Changat Manoj, Klavzar Sandi, Kovse Matjaz, and Subhamathi R Ajitha. “On the generalized obnoxious center problem: antimedian subsets”. In: (2008).

- [73] Balakrishnan Kannan, Brešar Bostjan, Changat Manoj, Imrich Wilfried, Klavzar Sandi, Kovse Matjaz, and Subhamathi R Ajitha. “Median graphs, the remoteness function, periphery transversals, and geodetic number two”. In: (2008).
- [74] Balakrishnan Kannan, Changat Manoj, Peterin Iztok, Spacapan Simon, Sparl Primoz, and Subhamathi R Ajitha. “Strongly distance-balanced graphs and graph products”. In: (2008).
- [75] Balakrishnan Kannan, Klavzar Sandi, and Changat Manoj. “The median function on graphs with bounded profiles”. In: (2007).
- [76] MI Jinnah and B Kannan. “On semi-idempotents in rings”. In: *Proceedings of the Japan Academy, Series A, Mathematical Sciences* 62.6 (1986), pp. 211–212.

Conference publications

- [1] P J Jino, Kannan Balakrishnan, and Ujjwal Bhattacharya. “Offline Handwritten Malayalam Word Recognition Using a Deep Architecture”. In: *Soft Computing for Problem Solving*. Springer, Singapore. 2019, pp. 913–925.
- [2] M B Santhosh Kumar and Kannan Balakrishnan. “Development of a Model Recommender System for Agriculture Using Apriori Algorithm”. In: *Cognitive Informatics and Soft Computing*. Springer, Singapore. 2019, pp. 153–163.
- [3] MB Santosh Kumar, VG Renumol, and Kannan Balakrishnan. “Design and Development of a Knowledge-Based System for Diagnosing Diseases in Banana Plants”. In: *Advances in Machine Learning and Data Science*. Springer, Singapore, 2018, pp. 239–250.
- [4] S Reshmi and Kannan Balakrishnan. “Enhancing Inquisitiveness of Chatbots Through NER Integration”. In: *2018 International Conference on Data Science and Engineering (ICDSE)*. IEEE. 2018, pp. 1–5.
- [5] PJ Jino and Kannan Balakrishnan. “Combined approach for binarization of offline handwritten documents”. In: *Electronics and Communication Systems (ICECS), 2017 4th International Conference on*. IEEE. 2017, pp. 23–27.
- [6] PJ Jino, Jomy John, and Kannan Balakrishnan. “Offline handwritten Malayalam character recognition using stacked LSTM”. In: *Intelligent Computing, Instrumentation and Control Technologies (ICICICT), 2017 International Conference on*. IEEE. 2017, pp. 1587–1590.
- [7] Manoj Changat, Kannan Balakrishnan, Ram Kumar, GN Prasanth, and A Sreekumar. “On the Center Sets of Some Graph Classes”. In: *Conference on Algorithms and Discrete Applied Mathematics*. Springer, Cham. 2016, pp. 240–253.
- [8] KM Harsha, O Facila Chinchu, Cini Kurian, and Kannan Balakrishnan. “A Comparative study of HMM and SVM in Malayalam Digit Recognition”. In: *3rd National Conference on Indian Language Computing organised by Dept. of Computer Applications, CUSAT*. 2013.
- [9] MS Sheethal, B Kannan, Abraham Varghese, and T Sobha. “Intelligent classification technique of human brain MRI with efficient wavelet based feature extraction using local binary pattern”. In: *Control Communication and Computing (ICCC), 2013 International Conference on*. IEEE. 2013, pp. 368–372.
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