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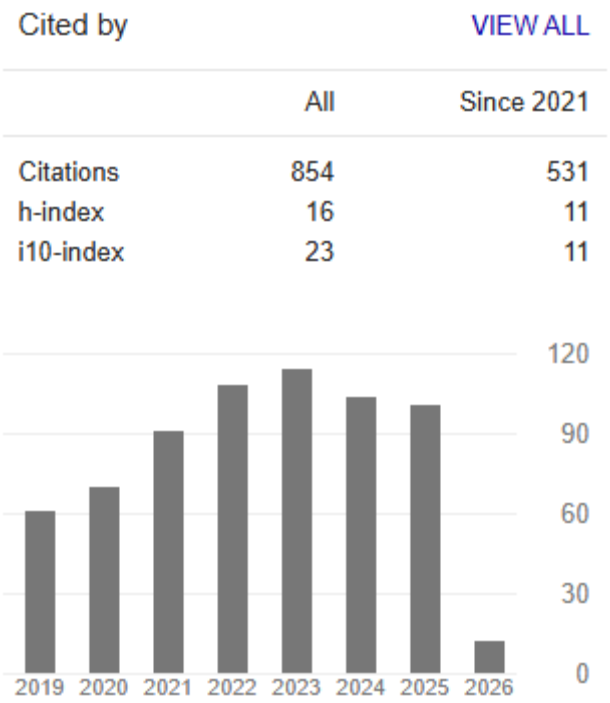

Big Data Analytics: Challenges And Applications For Text, Audio, Video, And Social Media Data

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ABSTRACT

All types of machine automated systems are generating large amount of data in different forms like statistical, text, audio, video, sensor, and bio-metric data that emerges the term Big Data. In this paper we are discussing issues, challenges, and application of these types of Big Data with the consideration of big data dimensions. Here we are discussing social media data analytics, content based analytics, text data analytics, audio, and video data analytics their issues and expected application areas. It will motivate researchers to address these issues of storage, management, and retrieval of data known as Big Data. As well as the usages of Big Data analytics in India is also highlighted.

KEYWORDS

Big Data, Big Data Analytics, Social Media Analytics, Content Based Analytics, Text Analytics, Audio Analytics, Video Analytics.

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REFERENCES

[1] Web content available on the link: ―http://www.sas.com/en_us/insights/big-data/what-is-bigdata.html‖ on the dated: 16-08-2015

[2] Webcontentavailableonthelink:―http://www-01.ibm.com/software/data/bigdata/what-is-bigdata.html‖ on the dated: 16-08-2015

[3] Web content available on the link: ―http://www.dqindia.com/8-innovative-examples-of-big-datausage-in-india/‖ on the dated: 16-08-2015 International Journal on Soft Computing, Artificial Intelligence and Applications (IJSCAI), Vol.5, No.1, February 2016 50

[4] Web content available on the link: ―http://searchbusinessanalytics.techtarget.com/definition/big-dataanalytics‖ on the dated: 16-08-2015

[5] Web content available on the link:―https://www.statsoft.com/textbook/text-mining‖onthe dated: 16- 08-2015

[6] Web content available on the link:―https://www.predictiveanalyticstoday.com/text-analytics‖ onthedated:16-08-2015

[7] Web content available on the link: ―https://gigaom.com/2014/01/24/why-video-is-the-next-big-thingin-big-data/‖ on the dated: 16-08-2015

[8] Web content available on the link: ―http://searchbusinessanalytics.techtarget.com/definition/socialmedia-analytics‖onthedated:16-08-2015

[9] Web content available on the link: ‖http://en.wikipedia.org/wiki/E-commerce_in_India#cite_noteOnline_shopping_touched_new_heights_in_India_in_2012-1‖ on the dated: 16-08-2015.

[10] Amir Gandomi , Murtaza Haider, ―Beyond the hype: Big data concepts, methods, and analytics‖, International Journal of Information Management 35 (2015) 137–144, journal homepage: www.elsevier.com/locate/ijinfomgt

BacteriaIdentificationFromMicroscopicMorphology:ASurvey

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ABSTRACT

Greatknowledgeandexperienceonmicrobiologyarerequiredforaccurate bacteriaidentification. Automation of bacteria identification is required because there might be a shortage ofskilled microbiologistsandcliniciansatatimeofgreatneed.Therehavebeenseveralattemptstoperform automatic background identification. This paper reviews state-of-the-art automatic bacteria identification techniques. This paper also provides discussion on limitations of state- of-the-art automatic bacteria identification systems and recommends future direction of automatic bacteria identification.

Keywords

BacteriaIdentification,Cocci,Bacilli,Vibrio,NaïveBayes,MachineLearning.

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https://airccse.org/journal/ijscai/current2014.htmlSourceURL:https://ai

rccse.org/journal/ijscai/papers/3214ijscai01.pdf

REFERENCES

[1] S.Prabakar, et al., "Development of Image Processing Scheme for Bacterial Classification BasedonOptimaDiscriminantFeature",Proceedingsofthe2010InternationalConference of Bioinformatics and Biometrics Engineering, 2010.

[2] L.Frank,"BacterialClassification,StructureandFunction",2009,pp.1-2.

[3] Z.Ying,etal.,"BacteriaClassificationUsingNeuralNetwork",InstituteofBiologyGansu Academy of Sciences, 2011.

[4] O.Richard,etal.,"PatternClassification",2nded.,Wiley-Interscience, 2000.

[5] Y.Huiyong,etal.,"ResearchonInsectIdentificationBasedonPatternRecognition Technology",TaiyuanExtensionStationofApplicationTechnology,2010.

[6] S.Sapna,etal.,"ComparativeStudyofImageSegmentationTechniquesandObjectMatching UsingSegmentation",MethodsandModelsinComputerScience,2009.

[7] T.Wenbing,J.Hai,"ColorImageSegmentation BasedonMeanShiftandNormalizedCuts", ManandCybernetics,2007.

[8] S.Mohsen,etal.,"AClassifiedandComparativeStudyofEdgeDetectionAlgorithms", InformationTechnology:CodingandComputing,2002.

[9] R.Pekka,etal.,"EfficientAutomatedMethodforImage-BasedClassificationofMicrobial Cells",DepartmentofChemistryandBioengineeringTampereUniversityofTechnology,2008.

[10] R.Riries,"AutomaticClassificationofTuberculosisBacteriaUsingNeuralNetwork", InternationalConferenceonElectricalEngineeringand Informatics,2001.

Deep Learning Sentiment Analysis of Amazon.Com Reviews and Ratings

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ABSTRACT

Our study employs sentiment analysis to evaluate the compatibility of Amazon.com reviews with their corresponding ratings. Sentiment analysis is the task of identifying and classifying the sentiment expressed in a piece of text as being positive or negative. On e-commerce websites such as Amazon.com, consumers can submit their reviews along with a specific polarity rating. In some instances, there is a mismatch between the review and the rating. To identify the reviews with mismatched ratings we performed sentiment analysis using deep learning on Amazon.com product review data. Product reviews were converted to vectors using paragraph vector, which then was used to train a recurrent neural network with gated recurrent unit. Our model incorporated both semantic relationship of review text and product information. We also developed a web service application that predicts the rating score for a submitted review using the trained model and if there is a mismatch between predicted rating score and submitted rating score, it provides feedback to the reviewer.

Keywords

Deep Learning, Sentiment Analysis, User Reviews and Ratings

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RoutingWirelessSensorNetworksBasedonSoftComputingParadigms: Survey

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ABSTRACT

Wireless Sensor Networks (WSNs) are defined as dynamic, self-deployed, highly constrained structurednetwork. It`shigh computational environment withlimitedandcontrolled transmission range, processing, as well as limited energy sources. The sever power constraints strongly affect the existence of active nodes and hence the network lifetime. In order to prolong the network life timewehavetoovercomethescarcityinenergyresourcesandpreservetheprocessingofthesensor nodes as long aspossible. Power management approaches efficiently reduce the sensor nodes energyconsumptionindividuallyineachsensornodeandtheadaptiveefficientroutingtechnique has greatly appeals a great attention in research. The potential paradigms of soft- computing (SC) highly addressed their adaptability and compatibility to overwhelm the complex challenges in WSNs. This paper is introducing and surveying some of the Soft Computing proposed routing models for WSNs that optimally prolongs its life time.

KEYWORDS

WirelessSensorNetwork,Routing,SoftComputing

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https://airccse.org/journal/ijscai/current2013.htmlSourceURL:https://ai

rccse.org/journal/ijscai/papers/2413ijscai03.pdf

REFERENCES

[1] IFAkyildiz,WSu,YSankarasubramaniamandECayirci(2002) “Wirelesssensor networks: asurvey”,ComputerNetworksVol.38, No.4,pp.393 – 422.

[2] Averkin, A. N., Belenki, A. G., & Zubkov, G. (2007) “Soft Computing in Wireless Sensors Networks”, In Conference of European Society for Fuzzy Logic and Technology (EUSFLAT), No.1, pp. 387-390.

[3] Zheng,J.,&Jamalipour,A.(2009)”Wirelesssensornetworks:anetworkingperspective”, publishedbyAJohn&Sons,Inc.,Wiley. com

[4] Romer,K.,&Mattern,F,(2004)”Thedesignspaceofwirelesssensornetworks”,Wireless Communications, IEEE, Vol. 11, No. 6, pp. 54–61.

[5] Yoneki,E.,&Bacon,J.(2005)”AsurveyofWirelessSensorNetworktechnologies:research trends and middleware’s role”, University of Cambridge TR, 646.

[6] Seah, W. K., Eu, Z. A., & Tan, H. P. (2009)”Wireless sensor networks powered by ambient energy harvesting (WSN-HEAP)-Survey and challenges”, Proceedings of the 1st International Conference on Wireless Communications, Vehicular Technology, Information Theory and Aerospace & Electronic Systems Technology (Wireless VITAE), pp.1-5.

[7] Kulkarni,R.V.,Forster,A.,&Venayagamoorthy,G.K.(2011)”Computationalintelligencein wirelesssensornetworks:Asurvey”,CommunicationsSurveys&Tutorials,IEEE,Vol.13,No.1, pp. 68– 96.

[8] A.Alkhatib and G.Baicher, (2012)”An Overview of Wireless Sensor Networks”, 2012 International Conference on Computer Networks and Communication Systems (CNCS 2012) IPCSIT, Vol. 35.

[9] Park,J.,&Sahni,S.(2005)”MaximumLifetimeRoutingInWirelessSensorNetworks” Computer&InformationScience&Engineering, UniversityofFlorida.

[10] Datta,N.N.,&Gopinath,K.(2006)”Asurveyofroutingalgorithmsforwirelesssensor networks”,JournaloftheIndian InstituteofScience, Vol.86,pp. 569-598.

FuzzyLogicBasedDirectTorqueControlofInductionMotorWith Space Vector Modulation

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ABSTRACT

The induction motors have wide range of applications for due to its well-known advantages like brushlessstructures,low costsandrobustperformances.Overthepastyears,manykindofcontrol methods are proposed for the induction motors and direct torque control has gained huge importance inside of them due to fast dynamic torque responses and simple control structures. However, the direct torque control method has still some handicaps against the other control methods and most of the important ofthesehandicaps is high torque ripple. This paper suggests a newapproach,Fuzzylogicbasedspacevectormodulation,onthedirecttorquecontrolledinduction motorsandaimoftheapproachistoovercomehightorque rippledisadvantagesof conventionaldirecttorquecontrol. Inordertotest andcomparetheproposeddirect torquecontrol methodwithconventionaldirecttorquecontrolmethodsimulations,inMatlab/Simulink,havebeen carried out in different working conditions. The simulation results showed that a significant improvementinthedynamictorqueandspeedresponseswhencomparedtotheconventionaldirect torque control method.

KEYWORDS

Directtorquecontrol,Fuzzylogiccontrol,Space vectormodulation,Inductionmotor control.

Volume URL :

https://airccse.org/journal/ijscai/current2013.htmlSourceURL:https://ai

rccse.org/journal/ijscai/papers/2613ijscai03.pdf

REFERENCES

[1] CigdemDemirAndB'UlentYener,"AutomatedCancerDiagnosisBasedOnHistopathologicalImages: A Systematic Survey", Technical Report, Rensselaer Polytechnic Institute, Department Of Computer Science, Tr-05-09. 1

[2] S.Waheed,R.A.Moffitt,Q.Chaudryl,A.N.Young,andM.D.Wang"ComputerAided HistopathologicalClassificationofCancerSubtypes",1-4244-1509-8/07,2007IEEE.

[3] Olcay Sertel, Umit V. Catalyurek, Hiroyuki Shimada, and Metin N. Gurcan, " Computer-aided Prognosis of Neuroblastoma: Detection of Mitosis and Karyorrhexis Cells in Digitized Histological Images",31stAnnualInternationalConferenceoftheIEEEEMBSMinneapolis,Minnesota,USA, September2-6,2009

[4] AjayBasavanhallya,ElaineYu,JunXu,ShridarGanesan,MichaelFeldman,JohnTomaszewski,Anant Madabhushi, "Incorporating Domain Knowledge for Tubule Detection in Breast Histopathology Using O'Callaghan Neighborhoods", Medical Imaging 2011: Computer-Aided Diagnosis, Proc. of SPIEVol. 7963, 796310, doi: 10.1117/12.878092

[5] Jun Xu, Andrew Janowczyk, Sharat Chandran, Anant Madabhushi, "A Weighted Mean Shift, Normalized Cuts Initialized Color Gradient Based Geodesic Active Contour Model: Applications to HistopathologyImageSegmentation",MedicalImaging2010: ImageProcessing,Proc.ofSPIEVol.7623, 76230Y, doi: 10.1117/12.845602

[6] H.Fatakdawala,J.Xu,A.Basavanhally,G.Bhanot,S.Ganesan,M.Feldman,J.E.Tomaszewski, and A. Madabhushi, "Expectation maximization driven geodesic active contour with overlap resolution (emagacor): application to lymphocyte segmentation on breast cancer histopathology," Biomedical Engineering,IEEETransactionson,InPress.2009NinthIEEEInternationalConferenceonBioinformatics and Bioengineering

[7] Jean-Romain Dalle, Wee Kheng Leow, Daniel Racoceanu, Adina Eunice Tutac, Thomas C. Putti, "Automatic Breast Cancer Grading of Histopathological Images", 30th Annual International IEEE EMBS Conference Vancouver, British Columbia, Canada, August 20-24, 2008

[8] Baochuan Pang, Yi Zhang, Qianqing Chen, Zhifan Gao, Qinmu Peng, Xinge You,"Cell Nucleus Segmentation in Color Histopathological Imagery Using Convolutional Networks", 978-1-4244- 7210-9/10, 2010 IEEE

[9] S.Naik,S.Doyle,S.Agner,A.Madabhushi,M.Feldman,andJ.Tomaszewski,"Automatedglandand nuclei segmentation for grading of prostate and breastcancer histopathology," in Biomedical Imaging: From Nano to Macro, 2008. ISBI 2008. 5th IEEE International Symposium on, pp. 284– 287, May 2008.

[10] Scott Doyle, ShannonAgner, Anant Madabhushi,Michael Feldman, John Tomaszewski, "Automated GradingOfBreastCancerHistopathologyUsingSpectralClusteringwithTexturalandArchitecturalImage Features", 978-1-4244-2003-2/08, 2008 IEEE.

AStudyonGraphStorageDatabaseofNOSQL

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ABSTRACT

Big Data is used to store huge volume of both structured and unstructured data which is so large andishardtoprocessusingcurrent/traditionaldatabasetoolsandsoftwaretechnologies.Thegoal of Big Data Storage Management is to ensure a high levelof data quality and availability for business intellect and big data analytics applications. Graph database which is not most popular NoSQL database compare to relational database yet but it is a most powerful NoSQL database which can handle large volume of data in very efficient way. It is very difficult to manage large volumeofdatausing traditional technology. Data retrieval timemaybe moreas perdatabase size gets increase. As solution of that NoSQL databases are available. This paper describe what is big datastoragemanagement,dimensionsofbigdata,typesofdata,whatisstructuredandunstructured data, what is NoSQL database, types of NoSQL database, basic structure of graph database, advantages, disadvantages and application area and comparison of various graph database.

KEYWORDS

BigData,GraphDatabase,NoSQL,Neo4j,graph

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URL:https://aircconline.com/ijscai/V5N1/5116ijscai04.pdf

REFERENCES

[1] Smita Agrawal, JaiPrakash Verma, Brijesh Mahidhariya, Nimesh Patel and Atul Patel ,2015. “Survey On Mongodb: An Open-Source Document Database.International” Journal of Advanced Research in Engineering and Technology (IJARET).Volume:6,Issue:12,Pages:1-11.

[2] Raj,Pethuru,etal."High-PerformanceBig-DataAnalytics."

[3] Castelltort, Arnaud, and Anne Laurent. "Representing history in graph-oriented nosql databases: A versioning system." Digital Information Management (ICDIM), 2013 Eighth International Conference on. IEEE, 2013.

[4] Bajpayee,Roshni,SonaliPriyaSinha,andVinodKumar."BigData:ABriefinvestigationon NoSQL Databases." (2015)

[5] http://neo4j.com/

[6] http://en.wikipedia.org/wiki/Graph_database

[7] E-BookofGraphDatabasebyIanRobinson,JimWebber&EmilEifrem

[8] http://en.wikipedia.org/wiki/NoSQL

[9] http://www.3pillarglobal.com/insights/exploring-the-different-types-of-nosql-databases

[10] http://www.looiconsulting.com/home/enterprise-big-data/

Pattern DetectionwithRareItem-SetMining

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ABSTRACT

Thediscoveryofnewandinterestingpatternsinlargedatasets,knownasdatamining,drawsmore andmoreinterestasthequantitiesofavailabledataareexploding.Dataminingtechniquesmaybe applied to different domains and fields such as computer science, health sector, insurances, homeland security, banking and finance, etc. In this paper we are interested by the discovery of a specificcategoryofpatterns,knownasrareandnon-presentpatterns.Wepresentanovelapproach towards the discovery of non-present patterns using rare item-set mining.

KEYWORDS

Datamining,rarepatterns,security,intrusiondetection,item-set

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SourceURL:https://airccse.org/journal/ijscai/papers/0812ijscai01.pdf

REFERENCES

[1] Adda, M., Wu, L., & Feng, Y. (2007). Rare item-set mining. Proceedings of the Sixth International Conference on Machine Learning and Applications (pp. 73–80). Washington, DC, USA: IEEE Computer Society.

[2] Agrawal, R., & Srikant, R. (1994). Fast algorithms for mining association rules in Large Databases.Proceedingsofthe20th International ConferenceonVeryLargeDataBases (pp.487– 499). San Francisco, CA, USA: Morgan Kaufmann Publishers Inc.

[3] Agrawal, R., Imieliński, T., & Swami, A. (1993). Mining association rules between sets of items in large databases. Proceedings of the 1993 ACM SIGMOD international conference on Management of data (pp. 207–216). Washington, D.C., United States: ACM.

[4] Amor,N., Benferhat, S., & Elouedi, Z. (2004). NaiveBayes vsdecision trees in intrusion detection systems. ACM Symposium on Applied Computing (pp. 420–424). New York: ACM Press.

[5] Barbara, D., Couto, J., Jajodia, S., & Wu, N. (2001). Adam: a testbed for exploring the use of data mining in intrusion detection. Special Section on Data Mining for Intrusion Detection and Threat Analysis , 15–24.

[6] Chan, P., Mahoney, M., & Arshad, M. (2003). A machine learning approach to anomaly detection. Florida Institute of Technology.

[7] Denning, D. (1987). An intrusion-detection model. IEEE Transactions on Software Engineering , 222–232.

[8] DongJun, Z., Guojun, M., & Xindong, W. (2008). An Intrusion Detection Model Based on MiningDataStreams. Proceedings ofThe2008 International Conference onDataMining,DMIN (pp. 398–403). Las Vegas: CSREA Press.

[9] Gou, M., Norihiro, S., & Ryuichi, Y. (2002). A framework for dynamic evidence based medicine using data mining. Proceedings of the 15th IEEE Symposium on Computer-Based Medical Systems (p. 117). Maribor, Slovenia: IEEE.

[10] Haglin,D.J.,&Manning,A.M.(2007).Onminimalinfrequentitem-setmining.Proceedings of the 2007 International Conference on Data Mining, DMIN 2007 (pp. 141–147). Las Vegas, Nevada, USA: CSREA Press.

AnSOM-based AutomaticFacialExpressionRecognition System

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ABSTRACT

Recently, a number of applications of automatic facial expression recognition systems havesurfaced in many different research fields. The automatic facial expression recognition problemisaverychallengingproblembecauseitinvolvesinthreesub-problems:1)facedetection, 2) facial expression feature extraction, and 3) expression classification. Thispaper presents an automatic facial expression recognition system based on self-organizing feature maps, which provides an effective solution to the aforementioned three sub-problems. The performance of the proposed system was computed on twowell-known facial expression databases. The average correct recognition rates were over 90%.

KEYWORDS

ImpulseNoise,Nonlinearfilter,AdaptiveFilters, DecisionBasedFilters.

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https://airccse.org/journal/ijscai/current2013.htmlSourceURL:https://airccse.org/journal/ijscai/papers/2413ijscai05.pdf

REFERENCES

[1] G.W.CottrellandJ.Metcalfe,"EMPATH:Face,gender,andemotionrecognitionusing holons,"AdvancesinNeural InformationProcessingSystems,vol.3,pp.564-571,1991.

[2] K.Mase,"Recognitionoffacialexpressionfromopticalflow,"IEICETrans.,vol.E74,no.10, pp.3474-3483,1991.

[3] D. Terzopoulos and K. Waters, "Analysis and synthesis of facial image sequences using physical and anatomical models," IEEE Trans. Pattern Anal. Machine Intell., vol. 15, pp. 569-579,1993.

[4] I. A. Essa and A. Pentland, "A vision system for observing and extracting facial action parameters," in Proc. Computer Vision and Pattern Recognition, pp. 76-83, 1994.

[5] K. Matsuno, C. Lee, and S. Tsuji, "Recognition of human facial expressions without feature extraction," ECCV, pp. 513-520, 1994.

[6] T. Darrel, I. Essa, and A. P. Pentland, "Correlation and interpolation networks for real-time expressionanalysis/synthesis,"AdvancesinNeuralInformationProcessingSystems(NIPS)7,MIT Press,1995.

[7] Y. Yacoob and L. D. Davis, "Recognizing human facial expressions from long image sequencesusingopticalflow,"IEEETrans.onPatternAnalysisandMachineIntelligence,vol.18, no. 6, pp. 636-642, 1996.

[8] M.Rosenblum,Y. Yacoob,L.S.Davis, "Human expression recognition from motion usinga radial basis function network architecture,"IEEE Trans. on Neural Networks, vol. 7, no. 5, pp. 1121-1138, 1996.

[9] S.KimuraandM.Yachida,"Facialexpressionrecognitionanditsdegreeestimation,"inProc. Computer Vision and Pattern Recognition, pp. 295-300, 1997.

[10] C. L. Huang and Y. M. Huang, "Facial expression recognition using model-based feature extraction and action parameters classification," Journal of Visual Communication and Image Representation, vol. 8, no. 3, pp. 278-290, 1997.

Multi-PopulationMethodswithAdaptiveMutationforMulti-Modal Optimization Problems

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ABSTRACT

This paper presents an efficient scheme to locate multiple peaks on multi-modal optimization problems by using genetic algorithms (GAs). The premature convergence problem shows due to thelossofdiversity,themulti-populationtechniquecanbeappliedtomaintain thediversityinthe population and the convergence capacity ofGAs. The proposed scheme is the combination of multi-population with adaptive mutation operator, which determines two different mutation probabilities for different sites of the solutions. The probabilities are updated by the fitness and distributionofsolutionsinthesearchspaceduring theevolutionprocess.Theexperimentalresults demonstrate the performance of the proposed algorithm based on a set of benchmark problems in comparison with relevant algorithms.

KEYWORDS

Multi-population approaches, adaptive mutation operator, multi-modal function optimization, genetic algorithms

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https://airccse.org/journal/ijscai/current2013.htmlSourceURL:https://ai

rccse.org/journal/ijscai/papers/0413scai01.pdf

REFERENCES

[1] P.J. Angeline, (1995) "Adaptive and Self-adaptive evolutionary computations," In M. Palaniswami and Y. Attikiouzel, editors, Computational Intelligence: A dynamic system perspective, pp. 152- 163. IEEE Press.

[2] T.B¨ack,(1992)"Self-AdaptationinGeneticAlgorithms,"InProc.ofthe1stEuropeanConf. on Artificial Life, pp. 263-271.

[3] T. Back and M. Sch¨utz, (1996) "Intelligent mutation rate control in canonical genetic algorithms," In Foundation of Intellignet Systems, Springer, pp. 158-167.

[4] M.Bessaou,A.Paetrowski,andP.Siarry(2000)"Islandmodelcooperatingwithspeciationfor multimodaloptimization,"InProc.ofthe6thInt.Conf.onParallelProblemSolvingfromNature, pp.16-20.

[5] J. Branke, T. Kaubler, C. Schmidt, and H. Schmeck, (2000) "A multi-population approach to dynamicoptimization problems," In Proc. of the 4th Int. Conf. on Adaptive Comput. Des Manuf, pp.299-308.

[6] L.Davis, (1989)"Adaptingoperatorprobabilities ingeneticalgorithms,"Proc.ofthe3rd Int. Conf. on Genetic Algorithms, pp. 61-69.

[7] L.Davis,(1991)"HankbookofGeneticAlgorithms,"VanNostrand Reinhold.

[8] A.EEiben,R.Hinterding,andZ.Michalewicz,(1999)"ParameterControlinEvolutionary Algorithms,"IEEETrans. onEvol.Comput., 3(2):pp.124-141.

[9] A.E. Eiben, Z. Michalewicz, M. Schoenauer, and J.E. Smith. (2007) Parameter Controlin Evolutionary Algorithms, Parameter setting in Evolutionary Algorithms, Chapter 2, Springer Verlag, pp. 19-46.

[10] T.C.Fogarty,(1989)"Varingtheprobabilityofmutationingeneticalgorithms,"InProc.of the 3rd Int. Conf. on Genetic Algorithms, pp. 104-109.

ANovelMultiplicativeModelofMultiCriteriaAnalysisforRobotSelection

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ABSTRACT

Selection of an industrial robot for a specific purpose is one of the most challenging problems in modern manufacturing atmosphere. The selection decisions become more multifaceted due to continuous incorporation of advanced features and facilities as the decision makers in the manufacturingenvironmentaretoassesawidevarietiesofalternativesbasedonasetofconflicting criteria. To assist the selection procedure various Multiple Criteria Decision Making (MCDM) approaches are available. The present investigation endeavours to mitigate and unravel the robot selection dilemma employing the newly proposed Multiplicative Model of Multiple Criteria Analysis (MMMCA) approach. MMMCA is a novel model in which all performance ratings are converted into numerical values greater than and equal to unity and converting all non-benefit rating into benefit category. Each normalized weight is used as the index of corresponding normalized ratings those are multiplied to obtain the resultant score. The best alternative is associatedwiththehighestresultantscore.Areallifeexampleiscitedinordertodemonstrateand validatetheapplicability,potentiality,suitability,flexibilityandvalidityoftheproposedmodel.At last sensitivity analysis is carried out for making dynamic decision

KEYWORDS

MultiplicativeModelofMultipleCriteriaAnalysis,IndustrialRobotSelection,Sensitivity Analysis

VolumeURL:https://airccse.org/journal/ijscai/current.html

SourceURL:https://airccse.org/journal/ijscai/papers/1212scai01.pdf

[1] MacCrimmon, K. R. (1968) “Decision making among Multiple-attribute Alternatives: A SurveyandConsolidatedApproach”,MemorandumRM-4823-ARPA,RandCorp.,SantaMonica, CA.

[2] Jones, M.S., Malmborg, C.J. & Agee, M.H. (1985) “Decision support system used for robot selection”, Industrial Engineering, Vol. 17, pp.66–73.

[3] Nnaji, B.O. (1988) “Evaluation methodology for performance and system economics for robotic devices”, Computers and Industrial Engineering, Vol.14, pp.27–39.

[4] Agrawal, V.P., Khohl, V. & Gupta, S. (1991) “Computer aided robot selection: the multiple attribute decision making approach”, International Journal of Production Research, Vol. 29, pp.1629–1644.

[5] Chen,S.-H.(1985)“Rankingfuzzynumberswith maximizingsetandminimizingset”,Fuzzy Sets and Systems, Vol.17, pp.113–129.

[6] Wang, T.C. & Chang, T.H. (2007) “Application of TOPSIS in evaluating initial training aircraft under a fuzzy environment”, Expert Systems with Applications, Vol.33, pp.870–880.

[7] KahramanC.,CevikS.,AtesN.Y.&Gu¨lbayM.(2007)“Fuzzymulti-criteriaevaluationof industrialroboticsystems”,Computers&IndustrialEngineering,Vol.52,No.4,pp.414–433.

[8] Narasimhan, R. & Vickery, S.K. (1988) “An experimental evaluation of articulation of preferencesinmultiplecriteriondecision-making(MCDM)methods”,DecisionSciences,Vol.19, pp.880–888.

[9] Fisher,E.L.&Maimon,O.Z.(1988)Specification&selectionofrobots,InA.Kusiak(Ed), Artificial intelligence implications for CIM. Bedboard, UK: IFS Publication.

[10] Boubekri,N.,Sahoui,M.&Lakrib,C.(1991)“Developmentofanexpertsystemforindustrial robotselection”,Computersand IndustrialEngineering,Vol.20,pp.119–127.

IntervalType-2FuzzyLogicforFireOutbreakDetection

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ABSTRACT

ThispaperemployedanIntervalType-2FuzzyLogic(IT2FL)inthedetectionoffireoutbreakusing environmental parameters. Fireoutbreak data capturing device(FODCD) is developed and used in capturingenvironmental parametervalues.TheFODCDiscomprisedofDHT11temperaturesensor, MQ-2smokesensor,LM393Flamesensor,andESP8266Wi-FimoduleconnectedtoArduinonano v3.0.board.Anandroidapplicationisdevelopedusing AndroidStudio3.0totestthefunctionalityof thesystem.Experimentalresultindicatesthat,withthetemperaturevalueof40.657oC,Smokevalue of 77.86%, and Flame value of 762.95ppm (part per million), with a threshold T = 0.8, the IT2FL predictedfireoutbreakat0.778(78%).IT2FLisevaluatedusingtheTruePositiveRate(TPR),False Positive Rate (FPR), Accuracy, Error Rate (ER),Precision, and Recall performance metrics. The performanceresultshowsthat,thesystemperformsoptimallywhenthresholdTiskeptbetweenan optimal range of 0.8 and 0.85.

KEYWORDS

IntervalType-2FuzzyLogic,FireOutbreakDetection,EnvironmentalParameter,TypeReduction Algorithm

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REFERENCES

[1] Bezdek, J. (1993). Fuzzy models–what are they, and why? IEEE Trans. on Fuzzy Systems, volume 1, 1-5.

[2] Chu, X. J. (2010). Design of Fire Detection Algorithm Based on Fuzzy Logic and using Wireless Sensors. Canada: Ottawa-Carleton Institute of Electrical and Computer Engineering (OCIECE).

[3] Hagras,H.(2007).Type-2FLCs: Anewgeneration offuzzycontrollers, IEEEComputational Intelligence Magazine, volume 2, 30-43.

[4] Jantzen, J. (1999). Design OfFuzzy Controllers. Denmark: Technical University ofDenmark, Department of Automation.

[5] Karnik, N. N., Mendel, J. M. (2001). Centroid of a type-2 fuzzy set. Information Sciences, volume132,195-220.[6]Khule,V.,Jangle,N.N.(2017).Designandimplementationofafireand obstacle detection and control system using fuzzy logic with notification system to avoid automobileaccidents.10thInternationalConferenceonRecentTrendsinEngineeringScienceand Management. India: Newton's School of Science and Technology, 307-313.

[7] Liang, Q., Mendel, J. M. (2000). Interval Type-2 Fuzzy Logic Systems: Theory and Design. IEEE Transaction on Fuzzy Systems, volume 8, 535-550.

[8] Mamdani, E. H., Assilian, S. (1975). An experiment in linguistic synthesis with a fuzzy logic controller. International Journal of Man-Machine Studies , 1-13.