iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 2 **Issue:** VI **Month of publication:** June 2014

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

ISSN: 2321-9653

INTERNATIONAL JOURNAL FOR RESEARCH IN APPLIED SCIENCE AND ENGINEERING TECHNOLOGY (IJRASET)

A Bird Eye Review on Reduced Time Complexity by Using Data Mining and Fuzzy Techniques

Rohit Miri[1],DrPriyanka Tripathi[2], S.R.Tandan[3],

[1,3]*Department of Computer Science & Engineering*

Dr. C.V. Raman University, Kota, Bilaspur, India (C.G.)

[2]*Department of Computer Technology*

NITTTR, Bhopal (M.P.)

Abstract: In this paper, we have reviewed various research papers to know the depth knowledge in the field of reduced time complexity by using data mining or fuzzy Logic technique or combined approached. How to discard or eliminate the large data set to small data set. We keep only that data set from large data sets which areimportant or useful for making decision system.

Keywords: Bird Eye Review, Reduced Time Complexity, Data Mining, Fuzzy Logic.

1. INTRODUCTION

Now a day's storage of huge amount of data is not a big problem. The problem is how access the data in fast and efficient manner. We can store huge amount of data by investing less money. Time is very important to every people as compared to money. It is very important to filter those data that are not important in any decision making. If we are not able to filter these data then the operational time will be increases. My aim is to reduce the operation time of large data set by eliminating large data by using fuzzy logic and data mining association algorithm. Now a day's it is very challenging task. Fuzzy logic plays an important role where human being is unable to provide the answer. Data mining is very useful when we need some kind of prediction. When we combined both these technology then we get some excellent result on the field of reduced time complexity.

IJRASET: ISSN: 2321-9653

2. LITERATURE REVIEW

S. No.	Authors	Heading	Work Done	Technology Used	Future work /Drawback	Publication	Year
1.	Mehmet Kaya,RedaAlhajj,, FarukPolat, and AhmetArslan	Efficient Automated Mining of Fuzzy Association Rules	Fuzzy set is calculated automatically by CURE and CLARANS algorithm. Author is not more concentrated on reduced time complexity. Process for finding fuzzy mining association rule is simple by using this.Execution time of both the technique is compared .	CLARANS and CURE. clustering algorithm	Later fuzzy set is calculated by online analytical processing (OLAP) .it uses only one centroid to find the triangular membership function.	Springer	2002
2.	Tzung-Pei Hong, Chan-Sheng Kuo, Shyue-Liang Wang	A fuzzy AprioriTid mining algorithm with reduced computational time	In this paper , the authors are concentrated on reduced time complexity by using the data mining fuzzy based association rule .	AprioriTid and Fuzzy Logic	Now a days, there are fast data mining association rule are available. They uses triangular membership function. They assume the range of the linguistic variable. There will be some mathematical calculation.	Science Direct	2004
3.	Thomas Sudkamp *	Refinement of temporal constraints in fuzzy associations	It reduces the computation cost of the process by using disjunctive generalization and Temporal specification. It is mainly deal with the search of data from large database.	Disjunctive generalization and temporal specification		ELSEVIER	2007
4.	E. Ramaraj, K Ramesh Kumar , N Venkatesan	A Better Performed Transaction Reduction Algorithm for Mining Frequent Item sets from large voluminous Database	They have implemented the data mining association rule by three different algorithm. i.eAprioriTID, TRApriori, HRA. They have reduces the time complexity of algorithm in efficient way. Among three the TRApriori is very fast data mining association algorithm.	AprioriTID , TRApriori, HRA	Authors of this paper suggested for its future work. For further efficiency we can use Eclat algorithm.	National Conference INDIACom	2008
5.	NeeluKhare, NeeruAdlakha, K. R. Pardasani	An Algorithm for Mining Multidimensional Fuzzy Assoiation Rules	Uses multi dimension techniques for fuzzy association rule.	multidimensional association rules	We can use hybrid dimension association rule to apply fuzzy mining association algorithm	*(IJCSIS) International Journal of Computer Science and Information Security,*	*2009*
6.	Jr-Shian	CPDA Based	They partitioned the fuzzy linguistic	cumulative	**They uses the** AprioriTid data	*2009*	**2011**

IJRASET: ISSN: 2321-9653

	Chen, Hung-Lieh Chou, Ching-Hsue Cheng, Jen-Ya Wang	Fuzzy Association Rules for Learning Achievement Mining	variable by using cumulative probability distribution approach (CPDA) to improve the persuasiveness of universe of disclosure. Later it fuzzifies and applies data mining association rule for frequent pattern. It reduces the operation time of the algorithm.	probability distribution approach (CPDA).	mining association rule to find out the frequent item set by reducing large data set into smaller data set. They can improve their performance by using fast data mining association algorithm like TRApriori, HRApriori.	*International Conference on Machine Learning and Computing IPCSIT vol.3 (2011) © (2011) IACSIT Press, Singapore*	
7.	Arpna Shrivastava1*, R. C. Jain and A. K. Shrivastava	Generating 3rd Level Association Rules Using Fast Apriori Implementation	They perform multilevel data mining association rule in place of single level association rule by using data coding and data cleansing techniques.	data coding and data cleaning techniques.	They uses coding technique to reduce the size of the actual database and searching is very easy due to the data cleaning technique used in this paper. It is difficult to know the coding of each item without linking with the actual name of the item. I thing it required extra storage area when we know the name of the actual item in place of code. We can increase the level of association rule.	SCIENCED OMAIN *international*	*2013*
8.	Hima Suresh1, Dr. Kumudha Raimond	Mining Association Rules From Time Series Data Using Hybrid Approaches	In this paper, the authors are trying to eliminate the redundancy of large data set by using hybrid approach in a time series of quantitative data. They find the frequent item set without candidate generation. They eliminated the procedure of scanning the data again and again. Their approach is suitable for both the large data set and small data set.	Fuzzy Frequent Pattern (FP) growth approach	The approach reduces the search costs to a great extend. FP growth approach provides less execution time compared to FA approach. their approach takes some cost because of the fuzzy FP tree and hybrid approach .	*International Journal Of Computational Engineering Research*	2013
9.	Tzung-Pei Hong, Guo-Cheng Lan, Yi-Hsin Lin, and Shing-Tai	An Effective Gradual Data-Reduction Strategy for Fuzzy Itemset Mining	The authors concentrate on data reduction and prove the efficiency of large data set by experimental result. On experimental result the performance is calculated on time domain. They compared the result of three technique .	Fuzzy Apriori-based techniques	On future work , the author suggested that the performance can be improve the other data mining algorithm by this technique. Maintenance problem of fuzzy logic can be maintained.	*International Journal of Fuzzy Systems*	2013

IJRASET: ISSN: 2321-9653

	Pan						
10.	Usha Rani1, R VijayaPrakash, Dr. A. Govardhan	Mining Multi Level Association Rules Using Fuzzy Logic	Authors use classification technique to linguistic variable of fuzzy logic to improve the performance of large data set.	fuzzy-set concepts to retrieve multilevel association rules	Uses multilevel technique for finding association rule.	International Journal of Emerging Technology and Advanced Engineering	**2013**
11.	RuchiBhargava, Shrikant Lade	Effective Positive Negative Association Rule Mining Using Improved Frequent Pattern Tree	They reduced the time complexity of program without calculating the candidate key. They decomposes the positive and negative association rule into three parts .firstly calculates frequent item set, secondly calculated positive association rule and lastly calculated negative association rule.	FP (Frequent pattern) tree	Performance may be little bit slowly because of FP tree.	International Journal of Advanced Research in Computer Science and Software Engineering	**2013**
12.	Kanu Patel, Vatsal Shah, Jitendra Patel, Jayna Donga,	Comparison of Various Association Rule Mining Algorithm on Frequent Itemsets	They implemented the various data mining association algorithm on the domain runtime, memory usage and minimum support of item set. Found that the FP growth algorithm is better than the traditional algorithm.	*Rule mining; Association rules; multilevel association rules; FP tree;*	Candidate item set need not to be calculated.	International Journal of Advanced Research in Computer Science and Software Engineering	**2013**
13.	N S NITHYA and K DURAISWAMY	Gain ratio based fuzzy weighted association rule mining classifier for medical diagnostic interface	The proposed gain ratio based ranker fuzzy weighted association rule mining reduce the operational time, reduces the exponential growth of rules produced by fuzzy association rule mining and increase the accuracy of the classification.	gain ratio based fuzzy weighted association rule mining	Weighted value can also calculated by automatic expert system. Intrusion detection system is also performed. But we can also improve the operational time.	Indian Academy of Sciences	2014
14.	Mohammed Al-Maolegi1, BassamArkok	AN IMPROVED APRIORI ALGORITHM FOR ASSOCIATION RULES	Authors main focus is to reduce the computational time of process by modifying the actual Apriori algorithm	Modified the actual Apriori algorithm.	They reduce the time complexity by approximate 68 %. But the operational time used for finding the first item set is unchanged.	International Journal on Natural Language Computing (IJNLC)	2014

IJRASET: ISSN: 2321-9653

15.	ZHIYONG MA,+, QINGYING QIU AND PEIEN FENG	CPM Algorithm for Mining Association Rules from Databases of Engineering Design Instances	It uses tree data structure to find the frequent pattern of large database to the bottom of leaf of the tree. It compresses the actual large database by using the Boolean matrix.	CPM (comparative pattern mapping) TCM (transaction combination matrix) ACM (attribute combination matrix)	They uses three complex techniques CPM,TCM ,ACM to reduces the size of database. I think ,Its algorithm takes some more time for the operation due to three complex technique used .	JOURNAL OF INFORMATION SCIENCE AND ENGINEERING	2014
16.	K. Sathesh Kumar and M. Hemalatha	An Innovative Potential on Rule Optimization using Fuzzy Artificial Bee Colony	They use classification technique to apply fuzzy data mining association rule to improve the performance of large data set.	FABCO(Fuzzy Artificial Bee Colony Optimization)	It optimizes the data set by using ABC (Artificial Bee Colony). Technique is very strong but they can reduce the data set more.	Research Journal of Applied Sciences, Engineering and Technology	2014

3. CONCLUSION

In this paper we have presented the literature review in the field of reduced time complexity by using data mining and fuzzy logic techniques and found that still we can improve the operational of time of large data sets. Some of the paper presented strong logic for the same. Many papers have given their future work to improve the performance of their paper. We can also reduce the time complexity of any large data set from the past research work. We can reduce the large data set up to 70% and take less than 30% without affecting the result.

4. ACKNOWLEDGEMENTS

I would like to thank my research guide Dr. Priyanka Tripathi for her fruitful support throughout the research work. I also like to thank my wife Pushpa and cute Bobo for their motivation and co-operation received time to time.

References

[1] Mohammed Al-Maolegi ,BassamArkok “An improved apriori algorithm for Association rules” international journal on natural language computing volume 3 , no-1 , febuary 2014.

[2] N S Nithya and K Duraiswami “Gain ratio based fuzzy weighted association rule mining classifier for medical diagnostic interface” vol 39 part 1 ,febuary 2014 , pp 39-52 .

[3] K Sathesh Kumar and M Hemlatha “An innovative potential on rule optimization using fuzzy artificial bee colony” Research journal of applied science , engineering and Technology.. volume 2627-2633 , ISSN:2040-7459, E-issn:2040-7467, April 05 2014.

[4]zhiyong MA , QingyingQiu and PeieenFeng “CPM algorithm for mining associaotion rules from databases of engineering design+n instances.” Journal of information science and engineering vol30 , 463-481 (2014)

[5]Arpnashrivastava , R . C Jain and A K shrivatava “Generating 3rd level association rule using fast apriori implementation.”British journal of mathematics and computer science. Volume 4(2):241-251, 2014

[6] Neelukhare ,neeruadlakha, K R pardasani “An algorithm

IJRASET: ISSN: 2321-9653

for mining multidentional fuzzy association rule" international journal of computer science and information security vol 5, no-1 ,2009

[7] Thomas sudkomp "Refinement of temporal constraints in fuzzy association " volume 48(2008) 14 June 2007

[8] Tiberiu Ban , Fuzzy computing for complexity level of evaluation tests. StudiaUniv, Babes-Bolai, Informatics, Volume LVIII number 1, 2013

[9]Tzung-Pei Honga,Chan-Sheng Kuob,Shyue-Liang Wangc "A fuzzy AprioriTid mining algorithm with reduced computational time" Volume 5, Issue 1, December 2004, Pages 1–1

[10] Tzung-pei-Hang, Guo-Cheng lan, Yi-Hsinlin and Shing-tai pan. An effective gradual data reduction strategy for fuzzy item set mining international journal of fuzzy systems ,vol 15 no2 June 2013.

[11]Usha Rani, R VijayaPrakkash, Dr A. Gavardhan,Mining Multi-level association Rules using fuzzy, International journal of emerging technology and advanced engineering. Volume 3, issue 8, August 2013.

[12] RuchiBhargava ,Shrikant lade , Effective positive negative association rule mining using improved frequent pattern tree. International journal of advanced research in computer science and software engineering. Volume 3 , issue 4 April 2013 .

[13] DharmendraKumar , Deepak Bhardwaj rise of data mining: Current and Future application areas. IJCSI international journal of computer science issue vol 8 issue 5 No1 September 2011.

[14] KanuPatel ,Vatsalshal , jitendrapatel , jayna donga comparision of various association rule mining algorithm on frequent item sets. International journal of advanced research in computer Science and software engineering Vol-3 issue II Nov 2013 .

[15] JrShianchen hung liehchou, ChingHsue Cheng, jen-ya Wang CPDA Based Fuzzy association rules for learning achievement mining, 2009 international conference on machine learning and computing IPCSIT vol3 (2011) IACSIT PRESS SINGAPUR.

[16]E Ramaraj, K Rameshkumar, N Venkatesan"A better performed transaction Reduction algorithm for mining frequent item set from large voluminous database"Volume 5, Issue 1, December 2004, Pages 1–10

[17] R. Agrawal, T. Imielinksi and A. Swami, "Mining association rules between sets Submitted manuscript 24 of items in large database," The 1993 ACM SIGMOD Conference, Washington DC,USA, 1993.

[18] R. Agrawal, T. Imielinksi and A. Swami, "Database mining: a performance perspective," IEEE Transactions on Knowledge and Data Engineering, Vol. 5, No.6, 1993, pp. 914-925.

[19] R. Agrawal, R. Srikant and Q. Vu, "Mining association rules with item constraints," The Third International Conference on Knowledge Discovery in Databases and Data Mining, Newport Beach, California, August 1997.

[20] R. Agrawal and R. Srikant, "Fast algorithm for mining association rules," The International Conference on Very Large Data Bases, 1994, pp. 487-499.

[21] A. F. Blishun, "Fuzzy learning models in expert systems," Fuzzy Sets and Systems, Vol. 22, 1987, pp 57-70.

[22] C. H. Cai, W. C. Fu, C. H. Cheng and W. W. Kwong, "Mining association rules with weighted items," The International Database Engineering and Applications Symposium, 1998, pp. 68-77.

[23] L. M. de Campos and S. Moral, "Learning rules for a fuzzy inference model," Fuzzy Sets and Systems, Vol. 59, 1993, pp.247-257.

[24] R. L. P. Chang and T. Pavliddis, "Fuzzy decision tree algorithms," IEEE Transactions on Systems, Man and Cybernetics, Vol. 7, 1977, pp. 28-35. Submitted manuscript 25

IJRASET: ISSN: 2321-9653

[25] M. Delgado and A. Gonzalez, "An inductive learning procedure to identify fuzzy systems," Fuzzy Sets and Systems, Vol. 55, 1993, pp. 121-132.

[26] W. J. Frawley, G. Piatetsky-Shapiro and C. J. Matheus, "Knowledge discovery in databases: an overview," The AAAI Workshop on Knowledge Discovery in Databases, 1991, pp. 1-27.

[27] A.Gonzalez, "A learning methodology in uncertain and imprecise environments," International Journal of Intelligent Systems, Vol. 10, 1995, pp. 57-371.

[28] T. P. Hong, C. H. Chen, Y. L. Wu and Y. C. Lee, "Using divide-and-conquer GA strategy in fuzzy data mining", The Ninth IEEE Symposium on Computers and Communications, 2004.

[29] T. P. Hong and J. B. Chen, "Finding relevant attributes and membership functions," Fuzzy Sets and Systems, Vol. 103, No. 3, 1999, pp.389-404.

[30] T. P. Hong and J. B. Chen, "Processing individual fuzzy attributes for fuzzy rule induction," Fuzzy Sets and Systems, Vol. 112, No. 1, 2000, pp. 127-140.

[31] T. P. Hong and C. Y. Lee, "Induction of fuzzy rules and membership functions from training examples," Fuzzy Sets and Systems, Vol. 84, 1996, pp. 33-47.

[32] T. P. Hong, C. S. Kuo, and S. C. Chi, "Mining association rules from quantitative data," Intelligent Data Analysis, Vol. 3, No. 5, 1999, pp. 363-376. A. Kandel, Fuzzy Expert Systems, CRC Press, Boca Raton, 1992, pp.8-19. Submitted manuscript 26

[33] H. Mannila, "Methods and problems in data mining," The International Conference on Database Theory, 1997.

[34] R. Srikant and R. Agrawal, "Mining quantitative association rules in large relational tables," The 1996 ACM SIGMOD International Conference on Management of Data, Monreal, Canada, June 1996, pp. 1-12.

[35] C. H. Wang, J. F. Liu, T. P. Hong and S. S. Tseng, "A fuzzy inductive learning strategy for modular rules," Fuzzy Sets and Systems, Vol.103, No. 1, 1999, pp.91-105.

[36] S. Yue, E. Tsang, D. Yeung and D. Shi, "Mining fuzzy association rules with weighted items," The IEEE International Conference on Systems, Man and Cybernetics, 2000, pp. 1906-1911.

[37] L. A. Zadeh, "Fuzzy sets," Information and Control, Vol. 8, No. 3, 1965, pp. 338-353.

[38]Mehmet Kaya1,*, Reda Alhajj1,**, Faruk Polat2, and Ahmet Arslan3 "Efficient Automated Mining**of FuzzyAssociation Rules** "DEXA 2002, LNCS 2453, pp. 133-142, 2002.

IJRASET: ISSN: 2321-9653

ISSN: 2321-9653



RohitMiriis currently pursuing Ph.D. and H.O.D of Computer Science and Engineering, Dr. C.V. Raman University, Bilaspur, India. He received his B.E. degree in Computer Science and Engineering from the NIT, Raipur (formally known as Government Engineering College, Raipur) in 2004, and M. Tech degree in Computer Science from College of Engineering, Pune Maharashtra, India. IN 2008 .His research interests include application of Artificial intelligence in robotics, Web Technologies, Data mining & Warehousing ,Cellular Technology.

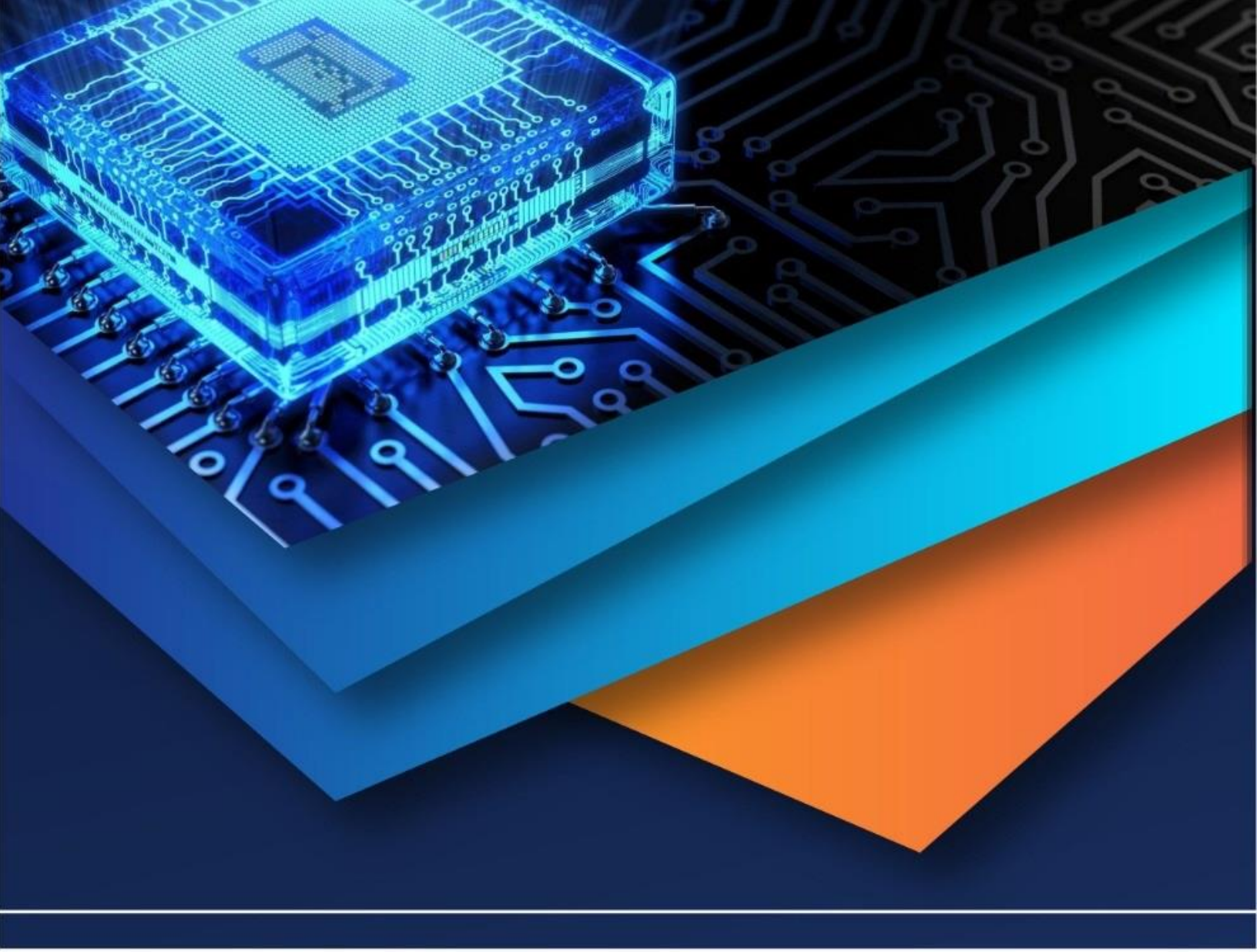


Dr Priyanka Tripathi is working as an Associate Professor in the Department of Computer Application at National Institute of Technical Teachers Training and Research, Bhopal. She has also worked on various projects in Tata Consultancy Services. She has done MCA in Govt Engineering College Raipur. Ph.D from Maulana Azad National Institute of Technology, Bhopal. Working in the area of web Technology,networking, agile computing. Presented various paper in International Conferences at USA, Thailand etc. Also Chaired sessions in international conferences.



S.R. Tandanis currently Ph.D. and Assistant Professor in the Department of Computer Science and Engineering, Dr. C.V. Raman University, Bilaspur, India. He received his B.E. degree in Computer Science and Engineering from the NIT, Raipur (formally known as Government Engineering College, Raipur) in 2006, and M. Tech degree in Computer Science from Birla Institute of Technology, Mesra Ranchi, India (JH) In 2009. His research interests include application of Artificial intelligence in robotics, Soft Computing, Dynamic path planning and Mobile robot navigation in cluttered environments, Mobile Computing.

IJRASET: ISSN: 2321-9653



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)