



# **iJRASET**

International Journal For Research in  
Applied Science and Engineering Technology



---

# **INTERNATIONAL JOURNAL FOR RESEARCH**

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

---

**Volume: 3**

**Issue: V**

**Month of publication: May 2015**

**DOI:**

**[www.ijraset.com](http://www.ijraset.com)**

**Call:  08813907089**

**E-mail ID: [ijraset@gmail.com](mailto:ijraset@gmail.com)**

# **A Survey Paper on Association Rule Mining using Fuzzy Logic**

Mimanshu Gupta<sup>1</sup>, Beerendra Kumar<sup>2</sup>, Rohit Miri<sup>3</sup>

<sup>1</sup> College of Science and Engineering, Department Of Computer Engineering, India

<sup>2</sup> College of Science and Engineering, Department Of Computer Engineering, India

<sup>3</sup> Dr. C V Raman Universities, Department Of Computer Engineering, India

**Abstract - To study the Fuzzy Logic and Data mining Association rules from different journals. Our aim is to reduce large data sets to smaller data set by using or applying fuzzy logic association rules and also to forecast from large data set. Data plays important role in every field. Without it we can't programme anything. It means without any variable we can't performed any function or methods. We need data sets before doing the research work. Data must be real or actual data. We can integrate these two technologies i.e Data Mining and Fuzzy Logic.**

**Keywords – Fuzzy Logic, Triangular Function and Data Mining**

## **I. INTRODUCTION**

Now a day's fuzzy logic and data mining plays an important role on the field of research. The past data tells the future result of forecast. If we have past data then we can find many interesting things. The interesting things may be pattern data, prediction of data or association dependence among attributes or data sets. Before we can build or develop algorithm the survey of literature is very important. The literature reviews tells the past research work and technology used. We can get idea to improve the past work or way to do research. So we are performing the survey of fuzzy mining association rules. We have using the two latest technology Data mining and Fuzzy Logic. Fuzzy Logic is used in the field of Engineering application in Washing Machine, Boiler Controller, Electrical controller and many other device controller. It is very important to read the published research paper before preparing the own research paper. We get the new or latest ideas in it. Some of the published research paper also provided the future work to the reader. Researcher gets the objective or aim of their research paper. Now a days every company or industries have their own database whether it is small, medium or large. From their data we can predict the future requirement or result. Data mining technics itself categorize in different ways i.e Classification techniques, clustering Techniques, association Rules, Time series data etc. where we dig out the interesting criteria from the huge database or data warehouse.

## **II. LITERATURE REVIEW**

S.No.	Authors	Heading	Work Done	Technology Used	Future work /Drawback	Publication	Year
-------	---------	---------	-----------	-----------------	-----------------------	-------------	------

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

1.	J. Preethi	Temporal Outlier Detection using Fuzzy logic and Evolutionary Computation	She has done comparison of efficiency by using two technologies. First technology apply mining association rule by using genetic algorithm. The second technology used is fuzzy mining association rule. They compared both the technology and found that the accuracy or efficiency of fuzzy logic is more as compare to genetic algorithm.	Genetic and fuzzy based mining algorithm.	Data size increases the complexity of both the technology.	Proceedings of International Conference on Optical Imaging Sensor and Security, Coimbatore, Tamil Nadu, India, July 2-3, 2013	February 2013
2.	Jesús Alcalá-Fdez*, Rafael Alcalá, María José Gacto, Francisco Herrera	Learning the membership function contexts for mining fuzzy association rules by using genetic algorithms	Authors are try to define the range or domain of linguistic variable of fuzzy logic by using genetic algorithm. It is based on the 2-tuples linguistic representation model i.e age and weight. allowing us to adjust the context associated to the linguistic term membership functions	Genetic and fuzzy based mining algorithm.	The learning scheme together with the 2-tuples linguistic representation model and the used fitness function offers a good mechanism to obtain MFs with a good trade-off between fuzzy supports and suitability, allowing us to mine out a larger number of interesting fuzzy association rules.	(Science Direct)	2008

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

3.	Nandita Rane1, Madhuri Rao	Association Rule Mining on Type 2 Diabetes using FP-growth association rule	They used fuzzy mining association rule to early detection of diabetics. they used large data sets from medical center and perform data mining association rule on this data sets. The method not only can find direct factors but also find indirect factors that cause type 2 diabetes mellitus which may help health doctors to explore their data and understand the discovered rules better.	FP-growth association rule	----- --	International Journal Of Engineering And Computer Science	August 2013
4.	Zaiuddin Shahid kammal Khaiuz Zaman Khan, Muhammad Ijaz Khan	Research on Association Rule Mining	Authors try to explore the application of fuzzy mining association rule. They explained the usefulness of important of association rule from last 15 years. Much research has been done on mining association rule. On the field of latest research it plays vital role for prediction of data set, association rule among the attributes. Uncertainty condition has been solved by using fuzzy association rule.	Fuzzy techniques	They describe the fuzzy mining association rule.	Advances in Computational Mathematics and its Applications (ACMA)	2012

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

5.	Jr-Shian Chen <sup>1</sup> , Hung-Lieh Chou <sup>2,3</sup> , Ching-Hsue Cheng <sup>2</sup> , Jen-Ya Wang	CPDA Based Fuzzy Association Rules for Learning Achievement Mining	They defined the domain of fuzzy linguistic variable by using cumulative probability distribution approach (CPDA) by using mean and standard deviation.	Cumulative probability distribution approach (CPDA).	They uses the AprioriTid data 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.	2009 International Conference on Machine Learning and Computing IPCSIT vol.3 (2011) © (2011) IACSIT Press, Singapore	2011
6.	E. Ramaraj, K Ramesh Kumar , N Venkatesan	A Better Performed Transaction Reduction Algorithm for Mining Frequent Item sets from large voluminous Database	They have proposed three mining association rule. i.e AprioriTID, 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

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

7.	Tzung-Pei Hong, Chan-Sheng Kuo, Shyue-Liang Wang	A fuzzy Apriori mining algorithm with reduced computational time	In this paper, the authors are concentrated on reduced computational time by using fuzzy mining association rule.	Apriori and Fuzzy Logic	Now a days, there are fast data mining association rule are available. They use triangular membership function. They assume the range of the linguistic variable. There will be some mathematical calculation.	Science Direct	2004
----	--	--	---	-------------------------	--	----------------	------

### III. CONCLUSION

In this paper we have presented the literature review in the field of fuzzy mining association rules using different technology and found that still we can predict the result from 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 large data set to smaller set from the past research work. From the above survey paper we can predict the early diabetes of the person.

### REFERENCES

- [1] J.Preethi "Temporal Outlier Detection using Fuzzy Logic and Evolutionary Computation" Proceedings International Conference on Optical Imaging Sensor and Security, Coimbatore, Tamil Nadu, India, July 2-3, 2013.
- [2] Jesús Alcalá-Fdez\*, Rafael Alcalá, María José Gacto, Francisco Herrera "Learning the membership function contexts for mining fuzzy association rules by using genetic algorithms(Science Direct)2008.
- [3] Ziauddin, Shahid Kammal Khaiuz Zaman Khan, Muhammm "Research on Association Rule Mining" Advances in Computational Mathematics and its Applications (ACMA), 2012
- [4] Nandita Rane1, Madhuri Rao "Association Rule Mining on Type 2 Diabetes using FP-growth association rule International Journal Of Engineering And Computer Science, August 2013.
- [5] Mohammed Al-Maolegi, Bassam Arkok "An improved apriori algorithm for Association rules" international journal on natural language computing volume 3 ,no-1 , february 2014.
- [6] N S Nithya and K Duraiswami "Gain ratio based fuzzy weighted association rule mining classifier for medical diagnostic interface" vol 39 part 1 , february 2014 , pp 39-52 .
- [7] 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.
- [8] zhiyong MA , Qingying Qiu and Peieen Feng "CPM algorithm for mining associaotion rules from databases of engineering design+n instances." Journal of information science and engineering vol 30 , 463-481 (2014)
- [9] Arpna shrivastava , R . C Jain and A K shrivatava "Generating 3<sup>rd</sup> level association rule using fast apriori implementation." British journal of mathematics and computer science. Volume 4(2):241-251,2014
- [10] Neelu khare , neeru adlakha, K R pardasani "An algorithm for mining multidentional fuzzy association rule" international journal of computer science and information security vol 5, no-1 ,2009
- [11] Thomas sudkomp "Refinement of temporal constraints in fuzzy association" volume 48(2008) 14 June 2007
- [12] Tiberiu Ban, Fuzzy computing for complexity level of evaluation tests. Studia Univ, Babes-Bolai, Informatics, Volume LVIII number1, 2013
- [13] -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
- [14] Tzung-pei-Hang, Guo-Cheng lan, Yi-Hsin lin and Shing-tai pan. An effective gradual data reduction strategy for fuzzy item set mining international journal of fuzzy systems , vol 15 no2 June2013.

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

- [15] Usha Rani, R Vijaya Prakkash, Dr Gavardhan, Multi-level association Rules using fuzzy, International journal of emerging technology and advanced engineering. Volume 3, issue 8, August 2013
- [16] Ruchi Bhargava , 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 .
- [17] Dharmendra Kumar , 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.
- [18] Kanu Patel , Vatsal shal , jitendra patel , jayna donga comparison 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.
- [19] Jr Shian chen hung lieh chou, Ching Hsue Cheng, jen-nya Wang CPDA Based Fuzzy association rules for learning achievement mining, 2009 international conference on machine learning and computing IPCSIT vol3 (2011) IACSIT PRESS SINGAPUR.
- [20] 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, December2004,Pages1–10
- [21] R. Agrawal, T. Imielinski 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.
- [22] R. Agrawal, T. Imielinski and A. Swami, "Database mining: a performance perspective," IEEE Transactions on Knowledge and Data Engineering, Vol. 5, No.6, 1993, pp. 914-925.
- [23] 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,August1997.
- [24] R. Agrawal and R. Srikant, "Fast algorithm for mining association rules," The International Conference on Very Large DataBases,1994,pp.487-499.
- [25] A. F. Blishun, "Fuzzy learning models in expert systems," Fuzzy Sets and Systems, Vol. 22, 1987, pp 57-70.
- [26] 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.
- [27] L. M. de Campos and S. Moral, "Learning rules for a fuzzy inference model," Fuzzy Sets and Systems, Vol. 59, 1993, pp.247-257.
- [28] R. L. P. Chang and T. Pavlidis, "Fuzzy decision tree algorithms," IEEE Transactions on Systems, Man and Cybernetics, Vol. 7, 1977, pp. 28-35. Submitted manuscript 25
- [29] M. Delgado and A. Gonzalez, "An inductive learning procedure to identify fuzzy systems," Fuzzy Sets and Systems, Vol. 55, 1993, pp. 121-132
- [30] 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.
- [31] A .Gonzalez, "A learning methodology in uncertain and imprecise environments," International Journal of Intelligent Systems, Vol. 10, 1995, pp. 57-371.
- [32] 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.
- [33] 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.
- [34] 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.
- [35] 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.
- [36] 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
- [37] H. Mannila, "Methods and problems in data mining," The International Conference on Database Theory, 1997.
- [38] 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,June1996,pp.1-12.
- [39] 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.



Mimanshu Gupta received the B.E. and persuing M.TECH. degrees in Computer Engineering from SR Group of Institution College, Jhansi (UP)



Beerendra Kumar persuing Ph.d. from Bundelkhand University Jhansi. He has received B.Tech. (Bachelor of Technology) degree in Computer Science and Information Technology from Institute of Engineering and Technology, Rohilkhand University, Bareilly (U.P), India in 2006. He has completed his M.Tech. (Master of Technology) in Computer Science from SCS, Devi Ahilya University, Indore, India in 2008.He is associate member of Computer Society of India(CSI).He has seven years of teaching experience. His subjects of interest include Computer Networking, Theory of Computer Science, Data Mining, Operating Systems and Analysis & Design of Algorithms. He has published five research papers in national conferences and six research paper in international journal. His research areas are Intelligence web Mining, Privacy preserving Data Mining, Secure Multiparty Computations and Neural Networks.

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)



Rohit Miri is 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. He has more than 35 international research papers and more than 5 conference paper.



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)