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International Journal For Research in  
Applied Science and Engineering Technology



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# **INTERNATIONAL JOURNAL FOR RESEARCH**

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

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**Volume: 4**

**Issue: V**

**Month of publication: May 2016**

**DOI:**

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

# **A Review on Fuzzy Mining Association Rule Techniques**

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**Abstract:** In this paper, we have gone through various research details in order to find how we mine the large item set and the way to reduce it and also how we design fuzzy association rule for better mining. There are various technique available that are used to mine dataset of large item set but fuzzy mining association rule is better than others. The advantages and the limitations of fuzzy mining association rule will also be discussed in this paper.

**Keywords:** Association rules Mining, Data Mining, Fuzzy Logic, Apriori Algorithm.

## **I. INTRODUCTION**

In the recent years, storing the large amount of data is not a big problem but the main problem is to mine that large item set and reduce it in the desired item set. Various techniques are used for mining that large item set and reducing in smaller item set. Fuzzy mining association rule is one the technique which is used for it. In this paper, our main aim is to study the features and importance of fuzzy mining association rule technique and their advantages and disadvantages.

## **II. LITERATURE REVIEW**

S. No	Author	Heading	Work Done	Technology Used	Future Work/Drawback Publication	Publication	Year
1	Tzung-Pei Hong and Yeong-Chyi Lee	An Overview of Mining Fuzzy Association Rules	They present a review on some fuzzy mining concept and technique related to association rule discovery.	Mining Fuzzy Association Rules	Author find fuzzy mining approaches to get smoother result than conventional mining technique and these approaches make fuzzy mining promising in real applications.	Springer 2008	2008
2	A.M.Khattak, A. M. Khan, Sung young Lee*, and Young-Koo Lee	Analyzing Association Rule Mining and Clustering on Sales Day Data with XLMiner and Weka	In this paper, author compares the result of Apriori and K-Mean algorithm with Weka and XLMiner for transactional data of sales.	Association Rule Mining, Clustering, Visualization, Weka, XLMiner.	It used two techniques Apriori and K-Means algorithms implemented in Weka and XLMiner to monitor the sales data and plan for extending their work with new algorithm to improve it.	IJDTA	2010

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3	Dr (Mrs.). Sujni Paul	An optimized distributed association Rule mining algorithm in parallel and Distributed data mining with xml data For improved response time	They use an Optimized Distributed Association Rule mining algorithm for geographically distributed data to reduce communication costs.	Association rules, Apriori algorithm, parallel and distributed data mining, XML data, response time.	The response time is calculated in this environment using XML data. The response time is improved and mining is done very well.	IJCSIT	2010
4	Pratima Gautam, K. R. Pardasan i	A novel approach for discovery Multi level fuzzy association Rule mining	They implement a model of mining multilevel association rules .It use top down approach and fuzzy boundary value in place of sharp boundary intervals.	Association rules, multilevel rules.	This algorithm generates large itemset level by level and derives fuzzy association rules from transaction dataset.	Journal of computing	2010
5	V.Umarani, Dr.M.Pu nithavalli ,	A study on effective mining of Association rules from huge Databases	Author main focus on technique that is used to improve the efficiency of association rule mining from huge database.	Association rules, sampling, apriori, fptree, partitioning Clustering	Every day the corporate database store more and more data, so to handle them reasonably, Association rules are required which are analyzed to mine them.	IJCSR	2010
6	Dr. Varun Kumar, Anupam a Chadha	Mining Association Rules in Student's Assessment Data	In this paper, author presents a case study of a university that dealing with data and discovers the factor that affects the academic result and increase the success rate of student.	Higher education, Data mining, Data pre-processing, Knowledge discovery, Association rules	In this paper, author focuses on the improvement of the result of the student by association rule mining technique. Here various factor like student interest, curriculum, teaching and assessment all are mined to improve performance.	IJCSI	2012
7	Anubha Sharma Nirupam a Tiwari	Design & Analysis of Fuzzy based Association Rule Mining	This paper find all co-occurrence relationship data items by fuzzy apriori association rule mining technique and its result shown better performance than previous work.	Data Mining, Fuzzy Apriori Association, Association Rule Mining, Fuzzy Apriori Association with Leverage.	This Fuzzy Apriori and Fuzzy Apriori with leverage techniques show better performance. We can enhance these works for multi-level association rule mining.	IJCAIT	2013
8	R. Prabam nieswari	A Combined Approach for Mining Fuzzy Frequent Item set	This paper hybridizes the fuzzy with frequent item set to mine multidimensional data and also compare the previous fuzzy apriori with suggested fuzzy apriori.	Data Mining , FCM, Association Rules, Frequent item set Fuzzy frequent item set	This algorithm determines the frequent fuzzy item set. In future, it uses numerical attribute for finding fuzzy record and frequent item set.	IJCA	2013

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9	Roshani Parate, Sitendra Tamarkar	A Novel Approach to Mine Frequent Item sets Of Process Models for Cloud Computing Using Association Rule Mining	They present the modified apriori algorithm that applied in dying process model to generate frequent pattern and remove the drawback of apriori algorithm, in term of execution time.	Frequent Pattern; Priori; Coloring Process; Pattern Candidates.	This algorithm is better than FP Growth tree algorithm and TFPF algorithm. This method works perfectly for data that has been supervised.	IJESIT	2013
10	Harendra Singh, Sitendra Tamrakar	A Novel Approach to Mine Frequent Item sets of Process Models for Dyeing Process using Association Rule Mining	Author is concentrating in evaluating and analyzing the usefulness and application of the association rule mining algorithm.	frequent pattern mining dyeing process model, confidence, database, association rule	By using constraints can further reduce the size of item sets generated and improve mining efficiency. this method is mostly used in retail industry	IJCER	2013
11	Tzung-Pei Hong, Guo-Cheng Lan, Yi-Hsin Lin, and Shing-Tai Pan	An Effective Gradual Data-Reduction Strategy for Fuzzy Item set Mining	They present an efficient mining approach to speed up the efficiency of finding fuzzy frequent item sets from dataset.	Data mining, fuzzy data mining, fuzzy frequent Item set, pruning.	Here gradual data reduction fuzzy mining approach is used to speed up the efficiency to find frequent fuzzy item sets in quantitative databases.	IJFS	2013
12	Mohammed Al-Maolegi, Bassam Arkok2	An improved apriori algorithm for Association rules	Author present a experimental result which shows improved apriori reduce the time consumed by 67.38% in comparison on original apriori and make more efficient.	Apriori, Improved Apriori, Frequent item set, Support, Candidate item set, Time consuming.	Improved Apriori reduces the time consuming by 67.38%.	IJNLC	2014
13	T. Karthikeyan and N. Ravikumar	A Survey on Association Rule Mining	In this paper, author done the survey in the area of association rule and present the previous research and their advantages and disadvantages.	Data Mining, Association rule, Frequent item sets	The algorithm enhanced to reduce complexity execution time, and improve the accuracy. Association rule mining technique is used to reduce data and minimize harmful impact and increase benefits.	IJARCE	2014

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14	Anubha Sharma, Nirupam a tiwari	Efficient fuzzy apriori association rule mining to find co-occurrence relationship	This paper find all co-occurrence relationship data items by fuzzy apriori association rule mining technique and its result shown better performance than previous work.	Data Mining, Association Rule Mining, Fuzzy Apriori Association, Fuzzy Apriori Association with Leverage	This Fuzzy Apriori and Fuzzy Apriori with leverage techniques show better performance. We can enhance these work for multi-level association rule mining and also can be enhanced to generate multi-dimensional association rules	IJSWS	2014
15	Sushmita Acharjee, Rohit Miri, Asha Miri	Prediction of Data Sets by using Fuzzy Mining Association Rule	In this paper, author produce an algorithm for quantitative data based on association rules by using mean, standard deviation and Boundary values.	fuzzy logic, Data Mining, Support , Confidence	This paper design a fusion model to reduce dataset and improve member-ship function,.Here dataset prediction is also done by fuzzy mining and provide maximum accuracy.	IJRASET	2015
16	Rohit Miri, Priyanka Tripathi, Keshri Verma, S.R.Tand an4	Novel Algorithm to Reduced Computational Data Sets for Fuzzy Association Rule	They perform the elimination of those items set which are not important for finding any association rule. They use pseudo code or algorithm to achieve these tasks.	Fuzzy Logic, Data Mining, Novel algorithm, Row counts	This algorithm reduces the large item set into smaller item set by finding fuzzy association rules. And also compare the data Mining association rule with fuzzy classification or clustering technique.	IJRASET	2015
17	Gajendra Singh Rajput, Nayna Sharma, Shashank Swami	An Efficient Fuzzy Association Rule Mining Technique	This paper find all co-occurrence relationship data items by fuzzy association rule mining technique and its result shown better performance than previous work.	Data Mining, Association Rule Mining, FP Mining, and FARM.	This approach is used for web recommendation more accurately. its result shown the algorithm is better than previous in time consumption, performance and quality.	IJARCC	2015
18	Mr. Gaurav P. Wankhad e, Prof. Ms. V. M. Deshmuk h	An Efficient Technique for mining Association rules using Enhanced Apriori Algorithm	It concentrates on the tendency of customer on the basis of frequently purchased item sets by enhanced apriori algorithm. And it is useful predictor with lower number of scan.	Association rules, Apriori, Enhanced Apriori, Frequent item set, and Support.	This algorithm take less time to generate the frequent item set rather than original apriori .The enhanced apriori algorithm reduces the time by 40%.	IJRITCC	2015



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19	P. Alagesh Kannan, Dr. E. Ramaraj	A novel approach to mine Frequent patterns from large Volume of dataset using mdl Reduction algorithm	They present MDL based reduction in frequent pattern. It provides good reduction of frequent pattern for all type of data.	Frequent item sets, Pattern Mining, MDL, Minimum Description Length, Interestingness, Data Mining, Association Rule Mining and ARM	According to result it is concluded that MDL based algorithm reduces the size of frequent sets at great level.	IJCET	2016
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### III. CONCLUSION

In this paper we have presented the literature review in the field of reduction of large item set, frequent item set in smaller item set by using Fuzzy mining association rules techniques. We can improve fuzzy mining association rules by generating some new rules that will give better result for reduction of large item set. There are many future works in this field given in research paper in order to improve their performance. In this paper, our main aim is to study the features and the importance of fuzzy mining association rule technique and their advantages and disadvantages.

### IV. ACKNOWLEDGEMENTS

I would like to thank my research guide Mr. Rohit Miri for his fruitful support throughout the research work. I also like to thank my mom and dad for inspiring me for that work, motivating me and co-operating time to time. I would also thank to my friends for supporting me.

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