Amal Moustafa[1] et al proposed a novel technique FFP\_USTREAM (Fuzzy Frequent Pattern Ubiquitous Streams) to solve the problem of mining fuzzy association rules from ubiquitous data streams. The suggested FFP\_USTREAM technique could be highly beneficial for managers to make more significant decisions in many real-world scenarios such as calculating the stock needed for retail applications; Establishing treatment protocols for medical applications. Determining preventative measures for road safety applications. They also suggest some possible future works.

1.<https://www.sciencedirect.com/science/article/pii/S1110016815000290>

Ali Yavari [2] et al proposed a profile-based fuzzy association rule mining (PB-FARM) approach for the assessment of risk factors highly correlated with diseases which is Profile-based assessment of diseases affective factors using fuzzy association rule mining approach. A case study in heart diseases and this is a journal. The dataset is10000 and the accuracy is.......... .

2.<https://www.sciencedirect.com/science/article/pii/S1532046421000241>

Peng Li [3] et al proposed a Fuzzy Frequent Pattern mining algorithm based on the Type-2 Fuzzy Set (T2FS) proposed a Fuzzy Association Rules Mining based on Type-2 Fuzzy Sets over Data Stream .The data stream is dynamically divided based on the sliding window method, and the ambiguity is quickly found from the numerical data stream .This is a conference and the accuracy is more than 90%. (2022) 456–462

3.https://www.sciencedirect.com/science/article/pii/S1877050922000552

Suhad Malallah [4] et al proposed a new multi-document English text summarization which is titled as Multi-Document Text Summarization using Fuzzy Logic and Association Rule Mining .the dataset consists of 10 topics, each of the10 documents. Here we divided the dataset into two sets, the first set for training and a second set for testing. Each of them consists of (70) documents where (7) documents from each topic is selected as a train data and all the (100) documents as test data. The results show a good performance of the proposed systems.(2017) 241-258

4.https://www.jrucs-iq.alhadhar.com/index.php/JAUCS/article/view/186

Pramod Pardeshi [5] et al proposed presents a survey on various techniques such as fuzzy logic and rule mining for finding the customer behaviour that helps in better decision making and enhancing the performance of the system is a survey paper called Fuzzy Association Rule Mining- A Survey .This paper surveys recent advancements in web usage mining, emphasizing techniques such as association rule mining, clustering, and fuzzy logic to improve user behavior analysis and system performance. It highlights key methods and their contributions to efficiently handling web log data and extracting meaningful patterns.

5.https://www.academia.edu/download/90128674/7f6e195ad928f26ef73732ff5935b51f255c.pdf

Alsayed M. H. Moawad[6] et al proposed an approach for generating human-like fuzzy association rules based on fuzzy ontology. This is a journal which is titled Fuzzy Ontology-based Approach for Flexible Association Rules Mining .A case study on sales data demonstrates that this method produces more meaningful and reliable rules compared to classical and crisp ontology-based methods. Incorporating fuzzy logic enhances the flexibility and accuracy of data mining, offering better insights from large datasets. Accuracy is 76.9%.2017,328-337, Volume.

6.https://pdfs.semanticscholar.org/e8e6/4af21b3eccbac9338fed4e14451596f53365.pdf

Carmen Kar Hang Lee [7] et al Purposed The emergence of the fast fashion trend to solve the problem urged to consider customers’ preferences in their designs and develop new products in an efficient manner. This research paper is named Fuzzy association rule mining for fashion product development. A case study in a Hong Kong-based fashion company demonstrates that FARM can shorten NPD cycles, enhance design effectiveness, and increase customer satisfaction. The approach provides a more intuitive understanding of data compared to traditional methods .2014,383-399

7.https://www.emerald.com/insight/content/doi/10.1108/IMDS-09-2014-0277/full/html

N S NITHYA[8] et al proposed an information gain based fuzzy association rule mining algorithm to build functions of medical data to reduce the rules. This is a research paper titled Gain ratio based fuzzy weighted association rule mining classifier for medical diagnostic interface .In this paper, gain ratio ranking based fuzzy weighted association rule mining algorithm was proposed. The proposed system can be applied to identify the potential causes of any real time detecting systems.Vol. 39, Part 1,February 2014, 39–52.

8.https://www.ias.ac.in/article/fulltext/sadh/039/01/0039-0052

Meenakshi Bansal [9] et al aims to use WFPPM (Weighted Fuzzy Privacy Preserving Mining) to extract sensitive association rules to solve to avoid these crisp boundaries. This journal is titled Sensitivity Association Rule Mining using Weight based Fuzzy Logic .The WFPPM algorithm produces a more succinct set of fuzzy association rules using fuzzy measures and weight as the interestingness (certainty) measure and thus presents a new way for extracting sensitive association rules from items with properties. Vol 9, April-June 2017,1-9.

9.<https://gjeis.com/index.php/GJEIS/article/view/206/199>

Jing Chen [10] et al proposed to study the fuzzy association rules of numerical data flow to solve load classifier for data stream. This paper is titled Fuzzy Association Rule Mining Algorithm Based on Load Classifier. The validity of data stream model based on load balancing is verified by analysis and experiments. The parallelization of fuzzy association rules and its subsequent global frequent patterns are the focus of future research.

10.<https://drive.google.com/file/d/1wiaDOxK8Swa2quS4muU2el3va-5wl1r-/view>

Chien-Liang LIN [11] et al proposed construction projects in Taiwan to solve relations between defect types and quality inspection grades of public. This research paper is titled EXAMINING ASSOCIATION BETWEEN CONSTRUCTION INSPECTION GRADES AND CRITICAL DEFECTS USING DATA MINING AND FUZZY

LOGIC. this paper used 17648 data and Confidence = 93.94% .Association rules and fuzzy logic are applications of machine learning which aim to explore patterns of human preference, behavior and mental model from big data. This research explores the causal relations between defect types and inspection grades of 990 public construction projects by association rules and fuzzy logic. 2018, 24(4): 301–317.

11.<https://journals.vilniustech.lt/index.php/JCEM/article/download/3072/2546>

A.H.M. Sajedul Hoque [12] et al focuses on implication of association rules among the quantitative attributes and categorical attribute of a database to solve employing fuzzy logic and Frequent Pattern (FP) - Growth algorithm. this paper is titled A FUZZY FREQUENT PATTERN-GROWTH ALGORITHM FOR ASSOCIATION RULE MINING . This paper presents implication of fuzzy association rules over three quantitative attributes and a categorical attribute, where quantitative attributes have been split into three intervals using fuzzy logic. These association rules represent the behaviour of the employee of an organization. Vol.5, No.5, September 2015,21-33.

12.<https://www.researchgate.net/profile/Rashed-Mustafa/publication/282775807_A_Fuzzy_Frequent_Pattern-Growth_Algorithm_for_Association_Rule_Mining/links/5693f9cb08aeab58a9a2c6d4/A-Fuzzy-Frequent-Pattern-Growth-Algorithm-for-Association-Rule-Mining.pdf>

M.Kiran Kumar [13] et al propose a novel, comprehensive methodology for accomplishing most extreme protection to solve data misfortune and least overheads (as it were the important tuples are changed).This paper is titled A Study on Privacy Preserving in Big Data Mining Using Fuzzy Logic Approach. However dimensionality decreases is proposed in before work, that isn't be fundamental in our work. The information protection issue is tended to utilizing fluffy set methodology, an absolute change in outlook and another viewpoint of taking a gander at protection issue in information distributing.2020 ,2108-2116.

13.<http://telkomnika.uad.ac.id/index.php/TELKOMNIKA/article/viewFile/10064/7096>

S. Nagaraj [14] et al proposed strategy used a matrix of fuzzification where the input patterns to solve related to level of membership to various classes.This journal is titled A novel fuzzy association rule for efficient data mining of ubiquitous real‑time data . Data Mining Fuzzy Association Rules from a High Speed Ubiquitous Data Streams. A well-organized system appropriate for ubiquitous applications, and fulfilling the FFP\_USTREAM was examined in this paper.2020

14.<https://www.turcomat.org/index.php/turkbilmat/article/download/12112/8823>

Kapil Chaturvedi [15] et al propose a novel approach to AFIRM to solve the concept of Fuzzy c-means clustering. This journal is titled Fuzzy C-Means based Inference Mechanism for Association Rule Mining: A Clinical Data Mining Approach. The first phase scans the given dataset with the corresponding fact dataset and performs preprocess to meet the required format for rule mining then applies FP-growth on a pre-processed dataset in order to find frequent patterns.Vol. 6, No. 6, 2015,103-110.

15.<https://www.turcomat.org/index.php/turkbilmat/article/download/12112/8823>

Esra Akgül [16] et al proposed to extract fuzzy rules in the form of “if–then” rules to solve associate customers’ affective needs into product design form elements for both backward and forward KE. This research paper is named An application of Fuzzy Linguistic Summarization and fuzzy association rule mining to Kansei Engineering: a case study on Cradle Design. In the case study, eight product design form elements, six were categorical attributes, two were non-categorical attributes, and twelve adjectives, which were non-categorical attributes were designated. In backward KE, the product design form elements were considered as the inputs while only one adjective was designated the output.2021,1-31.

16.<https://link.springer.com/article/10.1007/s12652-020-01736-2>

Kapil Chaturvedi et al [17] proposed "A Fuzzy Inference Approach for Association Rule Mining" discusses an improved algorithm for Association Inference Rule Mining using fuzzy logic based C-Means clustering. Its goal is to extract inference information from recurring patterns, with a specific emphasis on a clinical dataset.The publication does not include a comparison of the efficiency and efficacy of the suggested approach with other present methods, nor does it provide a thorough description of the particular assessment criteria utilized to measure the approach's achievement.2014, 57-66.

17.<https://www.academia.edu/download/35399779/H016616474.pdf>

Kapil Chaturvedi et al [18] proposed "Fuzzy C-Means based Inference Mechanism for Association Rule Mining: A Clinical Data Mining Approach" discusses a novel approach called AFIRM for association rule mining. In order to extract abstract information from recurring patterns in clinical data mining, it presents a fuzzy inference method. When discussing the paper's shortcomings, a critical analysis might compare the AFIRM method's efficacy and efficiency to other approaches, talk about potential implementation problems, or address any limitations in the experimental setup or data used.2015,103-110.

18. <https://pdfs.semanticscholar.org/8304/adc257905d33c37bd645cfd7629ae0f50d8c.pdf>

Jafarzadeh et al [19] proposed "Provide a New Approach for Mining Fuzzy Association Rules using Apriori Algorithm" introduces a method to automate the determination of the minimum support threshold in association rules mining. The suggested method improves on the Apriori algorithm by automatically determining the minimal support level for better rule extraction through the use of fuzzy logic and clustering techniques.The suggested approach's drawbacks and limitations are not specifically mentioned in the research. Nonetheless, a critical examination can assess the automated threshold determination method's robustness and efficacy or deal with any limitations in the experimental assessment. 2015,707-714.

19.<https://ischolar.sscldl.in/index.php/indjst/article/download/67433/58059>

Akgül et al [20] proposed "An application of fuzzy linguistic summarization and fuzzy association rule mining to Kansei Engineering: a case study on cradle design" explores the application of fuzzy linguistic summarization and fuzzy association rule mining in the context of Kansei Engineering.. Using these methods, the study seeks to identify fuzzy rules that relate product design components to customers' emotional demands. To improve the design process, it also makes use of genetic algorithms and the Apriori algorithm for association rule mining and language summarization, respectively. 2022,2533-2563.

20.<https://idp.springer.com/authorize/casa?redirect_uri=https://link.springer.com/article/10.1007/s12652-021-03292-9&casa_token=n-UgTWp_aRkAAAAA:jc1hWUBuPh2kWJOJVR9dTthQnXvHCwfGw6Nd59nKgPiqIg3bpJM2YN9ST3u23DsKuz-S-RA-Qaj1t4d-Hg>

Parasur Babu et al [21] proposed "Spatial data mining using association rules and fuzzy logic for autonomous exploration of geo-referenced cancer data in Western Tamilnadu, India" explores the application of association rules and fuzzy logic in spatial data mining for analyzing cancer data. By combining fuzzy logic with association rules and employing a geographical information system (GIS) to visualize the data geographically, the study seeks to minimize uncertainty in data mining. By analyzing and interpreting the data using methods including fuzzy logic, association rule mining, and the Apriori algorithm, the research aims to comprehend the relationships between dietary practices and cancer rates.The research's weaknesses and limitations are not specifically mentioned in the publication. The usefulness of the fuzzy logic and association rule mining technique in handling the complexity of cancer epidemiology, as well as the assessment of the findings' generalizability outside of the particular research region, are possible points of criticism.2015,1-11.

21.<https://www.researchgate.net/profile/Janani-Selvaraj-3/publication/281578820_Spatial_data_mining_using_association_rules_and_fuzzy_logic_for_autonomous_exploration_of_geo-referenced_cancer_data_in_Western_Tamilnadu_India/links/55f124f408aef559dc46f603/Spatial-data-mining-using-association-rules-and-fuzzy-logic-for-autonomous-exploration-of-geo-referenced-cancer-data-in-Western-Tamilnadu-India.pdf?origin=journalDetail&_tp=eyJwYWdlIjoiam91cm5hbERldGFpbCJ9>

Pang et al [22] proposed "Association rule mining with fuzzy linguistic information based on attribute partial ordered structure" presents an approach for association rule mining using fuzzy linguistic information. The study proposes a method based on fuzzy linguistic attribute partial ordered structure diagram to mine attribute associations hidden in linguistic concept knowledge. By extracting non-redundant association rules and displaying them for better comprehension, it seeks to overcome the difficulties associated with association rule mining using fuzzy linguistic data. Discussing the method's generalizability beyond the particular datasets used in the experiments, assessing the approach's scalability and efficiency for larger and more complex datasets, or addressing any issues or biases that might arise in the fuzzy linguistic information extraction process are some possible areas for criticism when discussing the method's shortcomings.2023,17447-17472.

22.<https://www.researchsquare.com/article/rs-2550078/latest.pdf>

Banswal et al [23] proposed"SPACS: Students’ Performance Analysis and Counseling System using Fuzzy logic and Association Rule Mining" introduces a system designed to analyze students' academic performance and provide counseling based on critical factors affecting their performance. The SPACS system makes use of a fuzzy expert system to pinpoint important variables influencing academic achievement and provides guidance according to those variables. Incorporating data mining methods such association rule mining, the study seeks to improve results accuracy and lower system complexity. The research is deficient in addressing any biases or limits in the fuzzy expert system's knowledge base, evaluating the efficacy of the system's counseling suggestions, and describing the system's scalability and generalizability beyond the particular dataset employed.2016,732-742.

23.<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=da469ea2b419fa3de8e9ddaa36720c791f104b1b>

Kar et al [24] proposed"Comparative Analysis of Mining Fuzzy Association Rule using Genetic Algorithm" discusses a comparative analysis between two genetic fuzzy algorithms: Genetic Cooperative-Competitive Learning Algorithm (GFS.GCCL) and Structural Learning Algorithm on Vague Environment (SLAVE) for mining fuzzy association rules. The SLAVE method outperforms the GFS.GCCL algorithm, according to the study's evaluation of both algorithms using two real-world datasets, the Iris and Wine datasets.The performance of the genetic fuzzy algorithms on the real-world datasets is not thoroughly discussed in the publication with regard to the particular parameters or criteria that were employed. Furthermore, it offers little information on the methods' scalability or computational complexity.2019,1-5.

24.<https://www.researchgate.net/profile/Mir-Kabir-3/publication/332587684_Comparative_Analysis_of_Mining_Fuzzy_Association_Rule_using_Genetic_Algorithm/links/5facacb8299bf18c5b69ff6b/Comparative-Analysis-of-Mining-Fuzzy-Association-Rule-using-Genetic-Algorithm.pdf>

Patil et al [25] proposed "Mining Fuzzy Association Rules from Web Usage Quantitative Data" explores the application of fuzzy data mining algorithms to extract association rules from quantitative Web log files in the context of web usage mining. In order to create fuzzy association rules, the study focuses on creating membership functions that convert quantitative values into fuzzy words. The algorithm's performance is illustrated by experimental findings, which differ in terms of support and confidence levels. pitfalls in the suggested method for obtaining fuzzy association rules from quantitative online usage data. However, there may be room for criticism in the areas of computing efficiency and scalability of the fuzzy data mining technique, as well as the requirement for a more thorough assessment of the algorithm's performance on a larger variety of datasets.2016.

25.<https://airccj.org/CSCP/vol6/csit65108.pdf>

Nivedha et al [26] proposed "Improving Phishing URL Detection Using Fuzzy Association Mining" discusses the application of fuzzy association mining to enhance the detection of phishing URLs. The work focuses on collecting important data from URLs, such the length of the host, the amount of dots, etc., and utilizes associative rule mining to distinguish between phishing and authentic URLs. An approach for mining fuzzy-based logic association rules is presented, which uses characteristics transformed to fuzzy membership values to categorize URLs. The assessment technique used to determine if the suggested fuzzy association mining strategy is effective in identifying phishing URLs is not thoroughly discussed in the research. Furthermore, it doesn't address any potential restrictions or difficulties encountered while putting the fuzzy-based logic association rule mining technique into practice.2017,21-31.

26.<https://theijes.com/papers/vol6-issue4/D0604012131.pdf>

Zhang et al [27] proposed "A fuzzy logic based method to acquire user threshold of minimum-support for mining association rules" discusses a fuzzy mining strategy with database-independent minimum-support for association rule mining. It solves the problem of users defining the minimum-support criterion without being familiar with the database beforehand.The precise fuzzy logic methods or algorithms used in the suggested fuzzy mining strategy are not thoroughly discussed in the study. To emphasize the special benefits of the suggested strategy, it might also be helpful to provide a more thorough study and comparison with current approaches.2004,1-16

<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=3a01165976db6f549b33aae64a11211f1f6f1b8a>

Zheng et al [28] proposed "Dynamic optimisation based fuzzy association rule mining method" discusses a novel approach called DOFARM for improving the performance of association rule mining algorithms.It solves the problem of users defining the minimum-support criterion without being familiar with the database beforehand.The precise fuzzy logic methods or algorithms used in the suggested fuzzy mining strategy are not thoroughly discussed in the study. To emphasize the special benefits of the suggested strategy, it might also be helpful to provide a more thorough study and comparison with current approaches.2019,2187-2198.

<https://idp.springer.com/authorize/casa?redirect_uri=https://link.springer.com/article/10.1007/s13042-018-0806-9&casa_token=7ZB6-q0JouoAAAAA:RgtI63VklRGoKlC9JKoGO-YGQOmJCKfiGzH54AO9tILUBkHrpe550qLjhCEmv30UT5pjdadi9JnwVSMgWg>

Kim et al [29] proposed "Futuristic data-driven scenario building: Incorporating text mining and fuzzy association rule mining into fuzzy cognitive map" explores the integration of text mining and fuzzy association rule mining into fuzzy cognitive maps for scenario building. The paper proposes the use of futuristic data extracted from online communities to enhance scenario development by addressing subjectivity and myopia issues in previous modeling techniques.The paper lacks a detailed discussion on the specific text mining and fuzzy association rule mining techniques utilized in the proposed methodology. Furthermore, a more thorough explanation of the limitations or challenges encountered during the implementation of the approach would enhance the paper's credibility and practical applicability.2016,311-323.

<https://www.academia.edu/download/51792748/2016_ESWA_Futuristic_data-driven_scenario_building.pdf>

Arora et al [30] proposed "Study about Rule Mining for Multiple Tables with Fuzzy Data" focuses on mining association rules in databases with multiple tables and fuzzy data.By merging existing algorithms, it seeks to create a new algorithm that can handle data from several tables that each represent distinct entities and connections. The goal of the study is to obtain pertinent results from database tables that include imprecise data. The particular pairing of the Extended Apriori and Apriori star algorithms suggested in the new method is not thoroughly explained in the publication. More information on the process for handling fuzzy data from several tables and how the algorithm handles the difficulties of mining association rules in such complicated datasets would be helpful.2022,38-47.

<https://www.researchgate.net/profile/Priyanka-Gandhi-2/publication/360201730_Study_about_Rule_Mining_for_Multiple_Tables_with_Fuzzy_Data/links/62b01c1f938bee3e3f438799/Study-about-Rule-Mining-for-Multiple-Tables-with-Fuzzy-Data.pdf>

Febriyanti et al [31] proposed"Fraud Detection on Event Logs Using Fuzzy Association Rule Learning" discusses the use of process mining with a Fuzzy Association Rule approach for detecting fraud in business processes. It focuses on applying fuzzy association rules to compare event logs with the business's Standard Operating Procedure (SOP) in order to detect fraud. The application of fuzzy theory of multi-attribute decision making for determining fraud weight is also introduced in this study.The specific fuzzy association rule learning algorithm utilized for fraud detection and how it handles the difficulties of identifying fraud in dynamic business processes are not well explained in the research. It could also be helpful to include further details on the assessment process that was employed to determine how well the suggested strategy detected fraud in comparison to more conventional techniques.2017,149-154.

<https://www.academia.edu/download/76447305/32-2017.pdf>

Mirzakhanov [32] proposed "Fuzzy logic in association rule mining: limited effectiveness analysis" presents a comparative analysis of fuzzy and non-fuzzy association rule mining (ARM) in terms of their effectiveness. It investigates the use of fuzzy and non-fuzzy ARM in associative classification and assesses how well the corresponding classifiers are in classifying data. The study shows that fuzzy ARM has a special capacity to handle inconsistent data, which enables fuzzy classifiers to communicate both class predictions and their certainty in the output. However, fuzzy ARM may not be the only technology that benefits from fundamental effectiveness comparison.2024,1-15.

<https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=+Fuzzy+logic+in+association+rule+mining%3A+limited++effectiveness+analysis&btnG=>