**Literature Review**

Amal Moustafa et al. [1] 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.

Ali Yavari et al. [2] 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. This paper presented a three-phase PB-FARM approach for the assessment of risk factors associated with diseases.

Peng Li et al. [3] 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%.

Suhad Malallah et al. [4] 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.

Pramod Pardeshi et al. [5] introduced a novel approach for brain tumour detection using the ultra-light learning architecture (UL-DLA) and gray-level co-occurrence matrix (GLCM) for extracting in-depth and textural features, respectively. The resulting hybrid feature space (HFC) and a support vector machine performed exceptionally on a T1-weighted MRI dataset, achieving a 99.23% average detection rate and a 0.99% F1 measure.

Alsayed M. H. Moawadet al. [6] 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%.

Carmen Kar Hang Lee et al. [7] a study optimized epileptic seizure recognition using deep learning, achieving a notable test accuracy of 0.993 with the Conv1D + LSTM architecture. The investigation provided insights into the variable responses of different deep learning models to feature scaling, PCA, and feature selection methods, aiming to enhance epileptic seizure recognition for improved patient outcomes.

N S NITHYAet al. [8] investigated the use of machine learning to predict pelvic tilt and lumbar angle in women experiencing urinary incontinence. AdaBoost exhibited high accuracy (R2 = 0.944) for pelvic tilt prediction, suggesting potential advancements in assessing pelvic floor dysfunction.

Meenakshi Bansal et al. [9] convolutional neural networks (CNNs) were employed to classify monkeypox skin lesions, achieving a remarkable 95.3% accuracy after optimization with the grey wolf optimizer (GWO). This proposed approach offers an effective method for expedited and accurate monkeypox diagnosis, with significant implications for public health outcomes.

Jing Chen et al. [10] 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.

Chien-Liang LIN et al. [11] proposed construction projects in Taiwan to solve relations between defect types and quality inspection grades of public. 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.

A.H.M. Sajedul Hoque et al. [12] introduced a machine-learning framework for predicting the hepatitis C virus in Egyptian healthcare workers, showcasing improved accuracies after sequential forward selection (SFS). After hyperparameter tuning with only four features, the random forest (RF) classifier achieved 94.88% accuracy.

M.Kiran Kumar et al. [13] applied an end-to-end machine-learning paradigm, leveraging automated machine learning (AutoML), for landslide susceptibility mapping in the Three Gorges Reservoir area. The AutoML-based stacked ensemble model outperformed classical ML approaches, achieving the highest AUC at 0.954. This user-friendly solution provides an efficient alternative for landslide susceptibility mapping, particularly for practitioners with limited ML expertise.

S. Nagaraj et al. [14] supervised classification and remote sensing were employed to analyze landslide evolution in the Mianyuan River Basin after the 2008 Wenchuan earthquake. The random forest algorithm exhibited an 87% average accuracy in landslide identification, emphasizing the importance of long-term monitoring after significant seismic events.

Kapil Chaturvedi et al. [15] 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.

Esra Akgül et al. [16 the study used remote sensing and supervised classification to examine a decade of postearthquake landslide evolution in the Mianyuan River Basin after the 2008 Wenchuan earthquake. The random forest algorithm achieved an 87% average accuracy, revealing temporal patterns and underscoring the importance of prolonged monitoring for understanding landslide dynamics following major seismic events

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.

Kapil Chaturvedi et al. [18] the challenge of diagnosing gynaecological diseases, including pregnancy and conditions such as polycystic ovarian syndrome, ovarian cysts, and menopause, was addressed. A novel method using artificial neural networks (ANN) to predict pregnancy success achieved a remarkable 96.5% classification accuracy, accommodating patients with various hormone levels and infertility-related factors.

Jafarzadeh et al. [19] emphasizing the need for timely diagnosis to avoid long-term complications. A binary decision tree methodology optimized testing sequences for more effective patient evaluation, demonstrating high efficiency with a 95.4% accuracy rate when applied to 50 patients.

Akgül et al. [20]focused on renal failure, proposing a decision support system based on a multilayer perceptron (MLP) neural network with 32 input variables. The system’s architecture was optimized iteratively, yielding promising results for quick and accurate renal failure cause prediction. Neural networks were also suggested for diagnosing pharyngitis ,, achieving a reported correct diagnosis rate of 95.4%.

Parasur Babu et al. [21] aimed to predict heart conditions using various classifiers and feature selection techniques. The extreme gradient boosting classifier achieved the highest accuracy of 81%, emphasizing the importance of early heart disease detection.

Pang et al. [22] explored machine-learning algorithms for heart disease prediction, proposing a hybrid approach combining feature selection and optimization techniques with various classifiers. The optimized model achieved an impressive accuracy of 99.65%, outperforming other methods.

Banswal et al. [23] proposed a novel diagnostic system for heart disease using logistic regression and K-nearest neighbours algorithms. The KNN algorithm outperformed other models, achieving an accuracy of 87.5%.

Kar et al. [24] developed a heart disease prediction model using machine-learning techniques, combining outlier detection, data balancing, and prediction methods. The model achieved high accuracies, demonstrating potential for clinical decision support.

Patil et al. [25]aimed to predict heart disease using machine-learning algorithms. Random forest proved the most effective model, showing potential as a decision support system for medical practitioners in clinical settings.

Nivedha et al. [26] The paper presents a novel approach to fuzzy association rule mining using AFS theory . By addressing the limitations of existing methods, particularly in defining membership functions and logic operators, the proposed algorithm aligns closely with human intuition and demonstrates promising results on the Iris dataset. this paper accuracy 98%. This research significantly contributes to the field by introducing a flexible and powerful framework for knowledge discovery from complex data systems.et al.

Zhang et al. [27] the paper a novel approach to fauzzy accociation rule mining . This paper accuracy 71.05%.The paper introduces MOOFARM, a multi-objective optimisation algorithm for fuzzy association rule mining, improving both quantity and quality performance metrics simultaneously.over all,This paper presents a valuable contribution to the field of fuzzy association rule mining and lays a solid foundation for further advancements in this area.et al.

Zheng et al. [28] presents the paper, a noveloptimized fuzzy association rule mining (OFARM) method isproposed to mine association rules from quantitative data.The approach is validated with three different datasets, demonstrating its effectiveness in extracting high-quality association rules from quantitative data. Overall, OFARM offers a promising solution for mining associations in datasets with continuous variables.

Kim et al. [29] it presents Association RUle Mininget al. [ARM] algorithm.The authors find that the AprioriHybrid algorithm outperforms the Apriori and AprioriTid algorithms due to its improved speed and accuracy. The paper emphasizes the importance of ARM in diverse fields such as healthcare, banking, and marketing, illustrating its wide-ranging applications and potential for future research.et al.

Arora et al. [30] it presents fuzzy logic and Genetic Algorithm in Association Rule Mining .The paper includes a practical implementation, demonstrating the effectiveness of this hybrid approach in a medical context. Overall, the study contributes valuable insights into enhancing association rule mining techniques to manage large datasets and improve decision-making processes

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