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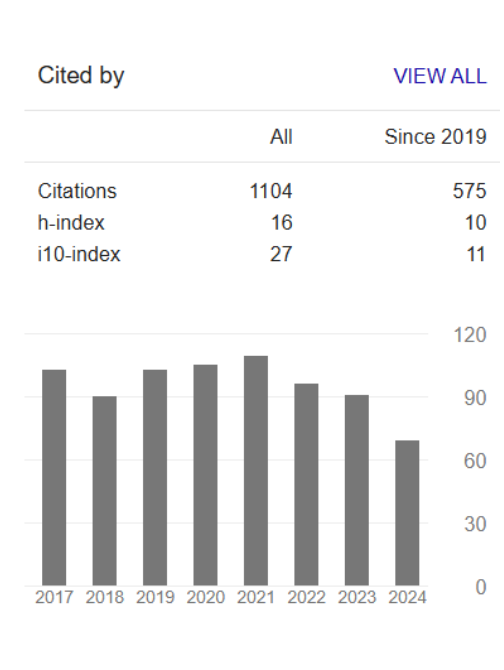

COMPARATIVE ANALYSIS OF AHP AND FUZZY AHP MODELS FOR MULTICRITERIA INVENTORY CLASSIFICATION

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ABSTRACT

A systematic approach to the inventory control and classification may have a significant influence on company competitiveness. In practice, all inventories cannot be controlled with equal attention. In order to efficiently control the inventory items and to determine the suitable ordering policies for them, multicriteria inventory classification is used. Analytical Hierarchy Process (AHP) is one of the best ways for deciding among the complex criteria structure in different levels. Fuzzy Analytical Hierarchy Process (FAHP) is a synthetic extension of classical AHP method when the fuzziness of the decision makers is considered. In this paper, a comparative analysis of AHP and FAHP for multi-criteria inventory classification model has been presented. To accredit the proposed models, those were implemented for the 351 raw materials of switch gear section of Energypac Engineering Limited (EEL), a large power engineering company of Bangladesh.

KEYWORDS

Analytic Hierarchy Process, Chang's Extent Analysis, Inventory Classification

For More Details: https://wireilla.com/papers/ijfls/V1N1/1011ijfls01.pdf

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Bipolar Fuzzy Hypergraphs

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Abstract

In this paper, we define some basic concepts of bipolar fuzzy hypergraphs, cut level bipolar fuzzy hypergraphs, dual bipolar fuzzy hypergraphs and bipolar fuzzy transversal. Also some basic theorems related to the stated graphs have been presented.

Keywords:

Bipolar fuzzy hypergraphs, cut level bipolar fuzzy hypergraphs, bipolar fuzzy transversal.

For More Details: https://wireilla.com/papers/ijfls/V2N1/2112ijfls03.pdf

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A NEW OPERATION ON HEXAGONAL FUZZY NUMBER

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ABSTRACT:

The Fuzzy set Theory has been applied in many fields such as Management, Engineering etc. Inthis paper a new operation on Hexagonal Fuzzy number is defined where the methods of addition, subtraction, and multiplication has been modified with some conditions. The main aim of this paper is to introduce a new operation for addition, subtraction and multiplication of Hexagonal Fuzzy number on the basis of alpha cut sets of fuzzy numbers.

KEYWORDS:

Fuzzy arithmetic, Hexagonal fuzzy numbers, Function principles

For More Details: https://wireilla.com/papers/ijfls/V3N3/3313ijfls02.pdf

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COMPARISON OF DIFFERENT T-NORM OPERATORS IN CLASSIFICATION PROBLEMS

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ABSTRACT

Fuzzy rule based classification systems are one of the most popular fuzzy modeling systems used in pattern classification problems. This paper investigates the effect of applying nine different T-norms in fuzzy rule based classification systems. In the recent researches, fuzzy versions of confidence and support merits from the field of data mining have been widely used for both rules selecting and weighting in the construction of fuzzy rule based classification systems. For calculating these merits the product has been usually used as a T-norm. In this paper different T-norms have been used for calculating the confidence and support measures. Therefore, the calculations in rule selection and rule weighting steps (in the process of constructing the fuzzy rule based classification systems) are modified by employing these T-norms. Consequently, these changes in calculation results in altering the overall accuracy of rule based classification systems. Experimental results obtained on some well-known data sets show that the best performance is produced by employing the Aczel-Alsina operator in terms of the classification accuracy, the second best operator is Dubois-Prade and the third best operator is Dombi. In experiments, we have used 12 data sets with numerical attributes from the University of California, Irvine machine learning repository (UCI).

KEYWORDS

Pattern classification, Fuzzy systems, T-norm operators.

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Brain Tumor Segmentation using hybrid Genetic Algorithm and Artificial Neural Network Fuzzy Inference System (ANFIS)

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ABSTRACT

Medical image segmentation plays an important role in treatment planning, identifying tumors, tumor volume, patient follow up and computer guided surgery. There are various techniques for medical image segmentation. This paper presents a image segmentation technique for locating brain tumor(AstrocytomaA type of brain tumor).Proposed work has been divided in two phases- In the first phase MRI image database(Astrocytoma grade I to IV) is collected and then preprocessing is done to improve quality of image. Second-phase includes three steps-Feature extraction, Feature selection and Image segmentation. For feature extraction proposed work uses GLCM (Grey Level co-occurrence matrix).To improve accuracy only a subset of feature is selected using hybrid Genetic algorithm(Genetic Algorithm+fuzzy rough set) and based on these features fuzzy rules and membership functions are defined for segmenting brain tumor from MRI images of .ANFIS is a adaptive network which combines benefits of both fuzzy and neural network .Finally, a comparative analysis is performed between ANFIS, neural network, Fuzzy ,FCM,K-NN, DWT+SOM,DWT+PCA+KN, Texture combined +ANN, Texture Combined+ SVM in terms of sensitivity ,specificity ,accuracy.

Keywords:

ANFIS, Brain tumor(Astrocytoma), sensitivity, specificity, accuracy, MR images, Neural network, Fuzzy, ANFIS,FCM,K-NN, GLCM, Genetic algorithm.

For More Details: https://wireilla.com/papers/ijfls/V2N4/2412ijfls03.pdf

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INTERVAL-VALUED INTUITIONISTIC FUZZY CLOSED IDEALS OF BG-ALGEBRA AND THEIR PRODUCTS

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ABSTRACT

In this paper, we apply the concept of an interval-valued intuitionistic fuzzy set to ideals and closed ideals in BG-algebras. The notion of an interval-valued intuitionistic fuzzy closed ideal of a BG-algebra is introduced, and some related properties are investigated. Also, the product of interval-valued inntuitionistic fuzzy BG-algebra is investgated.

KEYWORDS AND PHRASES

BG-algebras, interval-valued intuitionistic fuzzy sets (IVIFSs), IVIF-ideals, IVIFC-ideals, homomorphism, equivalence relation, upper(lower)-level cuts, product of BG-algebra.

For More Details: https://wireilla.com/papers/ijfls/V2N2/2212ijfls03.pdf

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A FUZZY MODEL FOR ANALOGICAL PROBLEM SOLVING

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ABSTRACT

In this paper we develop a fuzzy model for the description of the process of Analogical Reasoning by representing its main steps as fuzzy subsets of a set of linguistic labels characterizing the individuals' performance in each step and we use the Shannon- Wiener diversity index as a measure of the individuals' abilities in analogical problem solving. This model is compared with a stochastic model presented in author's earlier papers by introducing a finite Markov chain on the steps of the process of Analogical Reasoning. A classroom experiment is also presented to illustrate the use of our results in practice.

KEYWORDS

Fuzzy Sets, Analogical Reasoning, Problem Solving

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Application of Neuro-Fuzzy Expert System for the Probe and Prognosis of Thyroid Disorder

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Abstract

Thyroid disorders are common disorders of the thyroid gland. Thyroid disorders include such diseases and conditions as graves disease, thyroid nodules, Hashimoto's thyroiditis, trauma to the thyroid, thyroid cancer and birth defects. These include being born with a defective thyroid gland or without a thyroid gland. Thyroid disorder can be caused by hyperthyroidism, thyroid cancer, goiter, hyperparathyroidism and postpartum thyroiditis. Thyroid disorder are usually characterized by life threatening symptoms such as insomnia, irritability, nervousness, unexplained weight loss, heat sensitivity, increased perspiration, thinning of skin, warm skin, fine hair, brittle hair and thinning hair. Neuro-Fuzzy Logic explores approximation techniques from neural networks to finds the parameter of a fuzzy system. This paper which demonstrates the practical application of Information Technology (IT) in the health sector, has presented a hybrid neuro-fuzzy Expert System to help in diagnosis of thyroid disorder using a set of symptoms. The system designed is an interactive system that tells the patient his current condition as regards thyroid disorder.

Keywords

Neural network, Fuzzy logic, Diagnosis, Prognosis, Thyroid Disorder

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Framing Fuzzy Rules using Support Sets for Effective Heart Disease Diagnosis

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ABSTRACT

Significance and relevance of certain features are obtained by various techniques. Feature subset selection involves summarizing mutual associations between class decisions and attribute values in a pre-classified database. In this paper genetic algorithm is used to find the relevant set of features by optimizing the fitness function and using the operators like crossover and mutation. Fuzzy logic is a form of knowledge representation suitable for notions that cannot be defined precisely, but which depend upon their contexts. In this work the fuzzy rules are framed with the help of support sets. The classification done using fuzzy inference system provides results that are better than other techniques.

Keywords

Genetic Algorithms, Fuzzy logic, Medical data, Disease diagnosis.

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On Intuitionistic Fuzzy Transportation Problem Using Hexagonal Intuitionistic Fuzzy Numbers

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ABSTRACT

In this paper we introduce Hexagonal intuitionistic fuzzy number with its membership and non membership functions. The main objective of this paper is to introduce an Intuitionistic Fuzzy Transportation problem with hexagonal intuitionistic fuzzy number. The arithmetic operations on hexagonal intuitionistic fuzzy numbers are performed. Based on this new intuitionistic fuzzy number, we obtain a initial basic feasible solution and optimal solution of intuitionistic fuzzy transportation problem. The solutions are illustrated with suitable example.

KEYWORDS

Intuitionistic fuzzy number, Hexagonal Intuitionistic fuzzy number, Hexagonal Intuitionistic Fuzzy Transportation problem, Initial Basic Feasible Solution, Optimal Solution.

For More Details: https://wireilla.com/papers/ijfls/V5N1/5115ijfls02.pdf

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