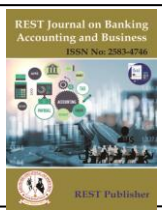
DOI: http://doi.org/10.46632/jbab/1/2/4

REST Journal on Banking, Accounting and Business
Vol: 1(2), 2022
REST Publisher; ISSN: 2583-4746
Website: http://restpublisher.com/journals/jbab/



Understanding MCDM Preference Relations Index Method and Its Application

*Malarvizhi Mani, M. Ramachandran, Chandrasekar Raja, Ashwini Murugan
REST Labs, Kaveripattinam, Krishnagiri, Tamil Nadu, India
*Corresponding author Email: malarvizhirsri@gmail.com

Abstract. Custom table (PSI) method. Priority selection coding was developed by Mania & Butt (2010) to solve MCDM problems. As proposed, it is not necessary to assign comparative importance between attributes. Choosing a desirable machine is an important concern for the manufacturing company. The selection process has some important selection properties and the task of this process is to select the preferred machine from among the multiple candidate machines. The problem of machine selection is a problem that is determined by many characters. This paper solves the problem of machine selection, which generates an optional selection code in a Flexible production cell. A case study is used to demonstrate that the proposed method is effective and feasible. This article explores the use of the MCDM System of Choice (PSI) method to address various decision-making issues commonly encountered during the design phase of a production system life cycle. To demonstrate the feasibility, applicability, and accuracy of the PSI method in solving the decision-making problem at the design stage of the product life cycle, five examples are cited from the literature and compared with the results obtained by past researchers. Research has concluded that the BSI method is logical and highly relevant to material selection issues. The choice of marketing area is an important factor in sales activities. Many factors are required in choosing a marketing area, including rental prices, area, audience, and distance. For a decision to select this marketing area to be effective, the hotel needs a decision support system that can provide the best possible service to guests and deliver the right decision in implementing alternatives, as there are responsibilities and responsibilities of many departments.

1. Introduction

One of the preferred relationships, the Multiplicity Trip dial Ambiguous Optional Relationship (MDFFPR), is a useful form of vague and inaccurate information when the decision-maker (DM) panel expresses its views on alternatives or criteria in decision-making. In our daily lives, we benefit from the use of mathematical optimization algorithms. For example, with GPS systems, shipping companies deliver packages used by financial institutions and airline booking systems to our homes to achieve the "optimal" design associated with upgrades, priority criteria, or restrictions. These include maximum factors such as productivity, strength, reliability, longevity, performance, and usability. Companies often want to cut back Increases in production costs or revenue. In manufacturing, it is often desirable to reduce the amount of material used to package an item to a certain size. Adam is an alternative optimization algorithm for consistent gradient descent to practice on deep learning models. Adam integrates the best features of the Adam Grad and RMS Prop algorithms and provides an optimal algorithm that can handle rare gradients in noise problems. Optimizations solutions help improve resource planning, allocation, and decision-making about planning. They include powerful algorithms that can be solved by Mathematical programming models, control programming, and control-based planning models. Mobile optimization is the process of adjusting your web content to ensure that visitors accessing the site from mobile devices enjoy a personalized experience on their device. Optimal content flows easily between desktop and mobile devices to provide the best experience for the user. A business upgrade is a process of improving a company's performance, productivity, and efficiency. This applies to both internal functions and external products. Marketing Optimization is the process of enhancing a company's marketing efforts, which seeks to maximize the desired business effect. Marketing development is done in each marketing strategy and improves the applicability of those strategies in the overall marketing strategy. Optimization analysis is the process of estimating or determining a company's output volume and maximizing its overall profitability. Two approaches are followed in terms of optimization - gross revenue and total expenditure. Margin revenue and margin cost approach.

2. Preference Selection Index Method

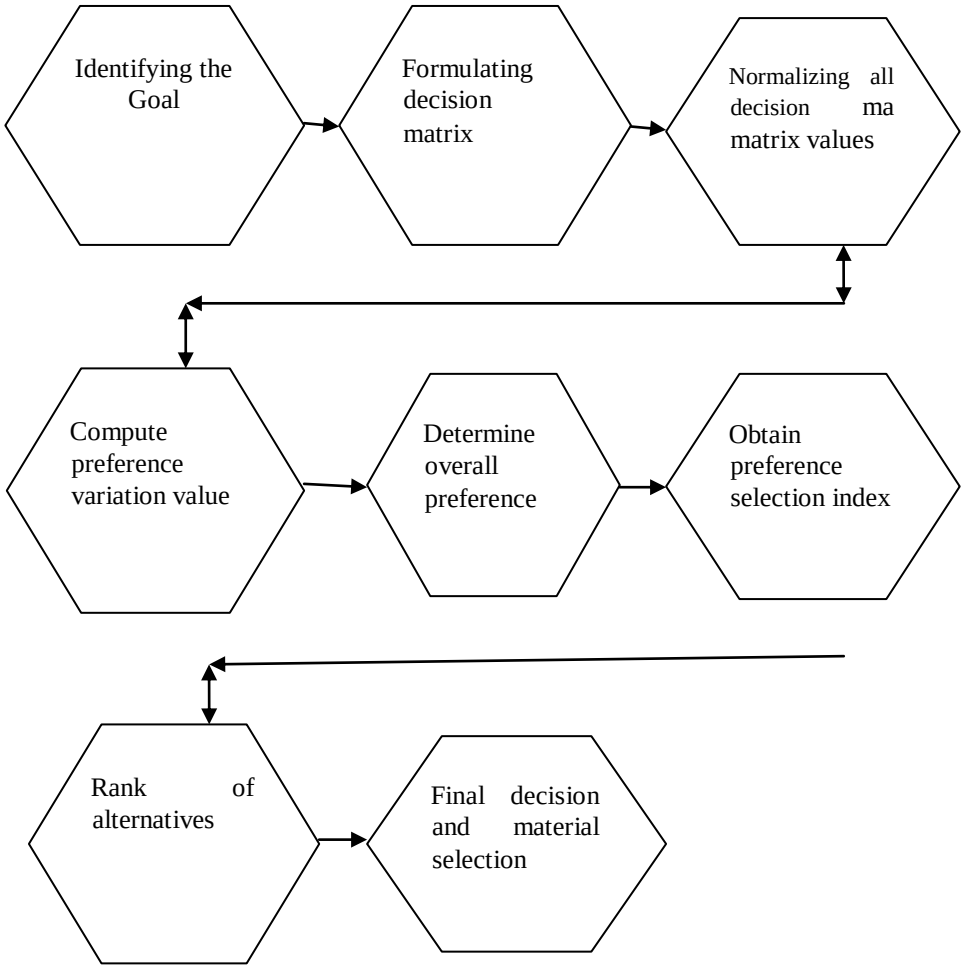


FIGURE 1. Preference Selection Index

Mania and Butt Introduced the PSI system for evaluating and ranking candidates in MADM problems. In this way, it is not necessary to determine the relative relationship between them; however, the overall priority values of the criteria are obtained using the concept of statistics. Problem selecting foreigners by MADM At one end the structure can be summarized as the matrix represents its component rating [1]. The index values for the selected ones and the alternative attribute values are the criteria obtained by the PSI method using Esq. 2-7. However, for in-depth analysis, a mathematical model was proposed to predict the development of a mathematical relationship between the selected criteria and the alternative attribute values associated with the preferred index values. The optional index value indicates that nothing is significant [2]. Considering the DMs an innovative inaccurate final aggregation option can be filled by proposing coding. Mining Contractor Selection Problems The proposed reluctance to deal with weight loss uncertainty and risk problems are described in the ambiguous Process Option Code (HFPSI). This includes the final accumulation approach designed to reduce the weight and errors and data loss of each DM. PSI ranks alternatives by examining performance criteria and proposes the best of all alternatives. [3] The impingement jet is based on four performance criteria for testing the performance of a solar heat collector. Thermal expansion factor, friction expansion factor, performance index, and effective performance. These criteria represent a different trend for each alternative-specific operating condition. In the present study, evaluation alternatives for improving flow and geometric parameters in a solar heat collector are provided with impinging air jets. Implemented and the optimal parameters are set the option was obtained based on the coding system [**4**].

3. Multiplicative Trapezoidal Fuzzy Preference Relation

In 1985, J.J. Buckley introduced the ambiguous environment of the hierarchical process and said that diversity is one of the key components of the triple ambiguity associated with opacity. This is the level of analysis that opens up a new field of research Quality issues. In trapezoidal obscure numbers, the spacing and triangle are very uncertain compared to the blur Numbers. [**5**]. Multiplication trapezoidal ambiguous custom relationships First, the logarithmic minimum square model was proposed to obtain the preferred weights of the MTFPR. The discrepancy between the MTFPR and its expected ambiguous

optional interaction. Then an iteration algorithm is created [**6**]. Triangular and trapezoidal obscure numbers are commonly used in many applications. Operators used for nonlinear operations such as multiplication, division, and inverse are approximate real operators. The error introduced by approximations is generally considered to be small and acceptable. Triangle obscure numbers are a special case of Trapezoidal fuzzy Numbers, in which the model is a dot instead of a flat line. [7] Results for triangular obscure numbers can be extended to trapezoidal obscure numbers using a different value for the left and right mode location. Kaufman used the right pages in expressions and a similar extension approach And Gupta in their arithmetic development Operators for triangular and trapezoidal physics Numbers. Trapezoidal expression of truth the product is limited to O (n2 "-2) and O (n) for the new approximation [**8**]. The index model was developed to determine weight Contracts, depending on the type of optional contact with intuitive mutual relations, and multiplication trapezoidal is not a vague optional relationship [**9**]. Pair comparison metrics provide basic concepts about ambiguous pair's Comparative metrics, maximum eigenvector system, typhoid ambiguous numbers, and restricted ambiguous arithmetic, in both theoretical and utility papers to keep the calculations simple. This allows you to work only with obscure numbers of a particular type because triangular obscure numbers are a specific case of Trapezoidal obscure numbers, Trapezoidal obscure numbers are used in 1985, J.J. Buckley introduced the ambiguous environment of the hierarchical process and said that diversity is one of the key components of the triple ambiguity associated with opacity. This is the level of analysis that opens up a new field of research Quality issues. In trapezoidal obscure numbers, the spacing and triangle are very uncertain compared to the blur Numbers. [**5**]. Multiplication trapezoidal ambiguous custom relationships First, the logarithmic minimum square model was proposed to obtain the preferred weights of the MTFPR. The discrepancy between the MTFPR and its expected ambiguous optional interaction. Then an iteration algorithm is created [**6**]. Triangular and trapezoidal obscure numbers are commonly used in many applications. Operators used for nonlinear operations such as multiplication, division, and inverse are approximate real operators. The error introduced by approximations is generally considered to be small and acceptable. Triangle obscure numbers are a special case of Trapezoidal fuzzy Numbers, in which the model is a dot instead of a flat line. [7] Results for triangular obscure numbers can be extended to trapezoidal obscure numbers using a different value for the left and right mode location. Kaufman used the right pages in expressions and a similar extension approach And Gupta in their arithmetic development Operators for triangular and trapezoidal physics Numbers. Trapezoidal expression of truth the product is limited to O (n2 "-2) and O (n) for the new approximation [**8**]. The index model was developed to determine weight Contracts, depending on the type of optional contact with intuitive mutual relations, and multiplication trapezoidal is not a vague optional relationship [**9**]. Pair comparison metrics provide basic concepts about ambiguous pair's Comparative metrics, maximum eigenvector system, typhoid ambiguous numbers, and restricted ambiguous arithmetic, in both theoretical and utility papers to keep the calculations simple. This allows you to work only with obscure numbers of a particular type because triangular obscure numbers are a specific case Trapezoidal obscure numbers, Trapezoidal obscure numbers are used [**10**].

4. Fuzzy Preference Relations

Herrera-Veitma 2004 vague option proposed The pairing must be executed according to the linguistic variables Comparison, then a mapping value can be obtained; This value represents the size of the first alternative option of Herrera, Cyclone, and Luke's vague custom relationships, if n is the estimated object, only n 1 pair of comparisons are required to obtain the relative weight of each object, while AHP n (n) n-1) / 2 times the decision It will take less time to greatly improve ability. [11] Vague Custom Relationship (CFPR) approach. In the CFPR, only n - 1 is required when the relative importance of the n parameters is required. Comparisons should be made [12]. Atanasov is the new stability code of intuitive ambiguous choice Relationships (AIFPR) was introduced to determine the sustainability of AIFPR and then a cumulative regression Algorithm I is designed to adjust the stability of AIFPR with unacceptable stability. Then, the stability and acceptable stability of IV-AIFPR are defined. To objectively determine the weight of decision makers (DMs), an optimization model was established [13]. Pair comparisons based on change of admission. Obscure Priority relationships help deliver values to a decision maker, a set of criteria, and alternatives. The value indicates the size of the option for the first replacement on the second alternative. Two main types of option Relationships apply - (1) Multiply custom relationships, and (2) Vague optional relationships [14]. This section used ambiguous custom relationships and incomplete linguistic custom relationships. The decision-making system of basic custom relationships. Then three different pairs of rows will determine the rules of the algorithm team [**15**].

5. Multi-Criteria Decision Making

When there are n criteria or alternatives in the result matrix, the pair hierarchical comparison method of the analytical hierarchical process (AHP) with the n (n-1) / 2 method is often used for evaluation or ranking. But when the number or relative size of the criteria increases, the performance stability and consequently the group decreases. To solve such problems, this study uses horizontal, vertical, and oblique pair comparisons, the algorithm being determined by several criteria through an incomplete linguistic custom relationship model [16]. Multiple decision-making criteria can meet the requirement. To obtain a complete matrix, it is necessary to compare n (n-1) / 2 methods when using the AHP method and when the matrix is in. In 1 method, it can be obtained quickly and it does not create random problems so the decision-making process is complete and very efficient can also be used to evaluate this model Implementing criterion weight and optimal replacement system Evaluation [17]. Multiple criterion analysis Sustainable energy decision-making methods have become popular due to the many dimensions and complexity of the stability goal of socioeconomic and biophysical systems. [18]

This article reviewed various criteria for static energy. Criteria for power supply systems have been shortened; the criterion system should be fully reflected in the Essential attribute of and full performance Energy systems. [19] Extensive evaluation function Many Criteria can give better results than a sum this is the method of determining alternative custom orders [20]. Contemporary supply management should be maintained for a long period, Collaborate With suppliers, and use less but more reliable suppliers. So, choosing the right supplier, scanning the order of the price list and depending on the range of factors that cover both the quantity and quality of the selection is more than that. There are comprehensive criteria for the proposed decision-making approaches for supplier selection, such as analytic hierarchy (AHP), analytic network processing (ANP), the case-based rationale (CBR), data envelope analysis (DEA), and ambiguous package theory. Genetic algorithm (GA), Mathematical programming, [**21**]

6. Optimization

Jets at the heat absorber surface study the heat transfer and friction properties of air and generate data to record flow and geometric parameters as well as the Nussel number and friction factor. The test rig display is used to test and improve the parameters associated with the impinging air jet in a given rectangular tube. The test, ASHRAE standards PSI, deploys alternatives by examining performance criteria and proposing the best for specific operating conditions [22]. In the present study, the sorting of alternative ways to improve the flow and geometric parameters in a solar heat collector was provided by Target. Implemented and the optimal parameters are set the option was obtained based on the coding system [**23**]. The optimization algorithm can also be used to determine the optimal set of scanning parameters. Optimization algorithms are classified as traditional and global optimization algorithms. In the calculation of the local or traditional optimization algorithm, descendants and Hessians are required, and there is zero probability of obtaining a universal solution. [24] Alternatively, universal or naturally inspired optimization algorithms can be used, with a variety of well-established global optimization algorithms available. To obtain a globally optimal solution used to solve both linear and non-linear problems [**25**]. Energy consumption upgrades and forecast significant problems in smart homes. Recent studies show that the problem is still unresolved, and countless amounts of energy are wasted. According to green energy standards, the design of buildings will ultimately reduce energy consumption, but various optimization techniques are used successfully with optimization techniques so that we can achieve the maximum benefit of energy savings. A model follow-up neural network was conducted based on the proposed linear function, feed-forward for ton-sigmoid function, and energy consumption in the smart home. Forecasting [**26**]. Uncertainty Information, they are divided into two types. Then, a two-level mathematical optimization model is developed based on the multiple consistencies expected to evaluate the missing information; complete information can be obtained more scientifically and effectively than some exit methods. The rest of this sheet is sorted as follows. Supplementary ideas are introduced. A two-level upgrade process for evaluating missing information about InPLPRs has been proposed. The decision-making process is based on the multi-level uniform optimization model for InPLPR. [**27**].

7. Conclusion

The innovative inaccurate final integration option can be completed by proposing the code considering the DMs. Mining Contractor Selection Problems the proposed reluctance to deal with weight loss uncertainty and risk problems is described in the ambiguous Process Option Code (HFPSI). This includes the final accumulation approach designed to reduce the weight and errors and data loss of each DM. Triangular and trapezoidal obscure numbers are commonly used in many applications. Operators used for nonlinear operations such as multiplication, division, and inverse are approximate real operators. The error introduced by approximations is generally considered to be small and acceptable. Triangle Obscure Numbers Trephine is a special case of obscure numbers in which the mode is a dot instead of a flat line. Results for triangular obscure numbers can be extended to triplicate obscure numbers using different values for left and right mode locations. Pair comparisons based on admission change. Vague priority relationships help to provide a criterion and alternative way of assigning values to a decision-maker. Due to the many dimensions and complexity of socio-economic and biophysical systems aimed at sustainability, many criterion analysis methods have become popular in decision-making for sustainable energy. The test, ASHRAE standards PSI, deploys alternatives by examining performance criteria and proposes the best for specific operating conditions. In the present study, alternative ways to improve the flow and geometric parameters in a solar heat collector were provided by AirNet.

Reference

[1]. Vahdani, Behnam, S. Meysam Mousavi, and Sadoullah Ebrahimnejad. "Soft computing-based preference selection index method for human resource management." Journal of Intelligent & Fuzzy Systems 26, no. 1 (2014): 393-403.

[2]. Madić, Miloš, Jurgita Antucheviciene, Miroslav Radovanović, and Dušan Petković. "Determination of laser cutting process conditions using the preference selection index method." Optics & Laser Technology 89 (2017): 214-220.

[3]. Borujeni, Mohammad Panahi, and Hossein Gitinavard. "Evaluating the sustainable mining contractor selection problems: An imprecise last aggregation preference selection index method." Journal of Sustainable Mining 16, no. 4 (2017): 207-218.

[4]. Nomani, M. Z. M., and Zafar Hussain. "Innovation technology in health care management in the context of Indian environmental planning and sustainable development." International journal on emerging technologies 11, no. 2 (2020): 560-564.

[5]. Khan, Mudassir. "Big data analytics emerging trends, technology and innovations for the future business in the global market." International Journal of Scientific Research and Review 8, no. 2 (2019): 745-750.

[6]. Chauhan, Ranchan, Tej Singh, N. S. Thakur, and Amar Patnaik. "Optimization of parameters in solar thermal collector provided with impinging air jets based upon preference selection index method." Renewable energy 99 (2016): 118-126.

[7]. Subaveerapandiyan, A. "A Study of Teacher Educators' Skill and ICT Integration in Online Teaching during the Pandemic Situation in India." Library Philosophy and Practice (e-journal) (2021).

[8]. Wu, Peng, Ligang Zhou, Tong Zheng, and Huayou Chen. "A fuzzy group decision making and its application based on compatibility with multiplicative trapezoidal fuzzy preference relations." International Journal of Fuzzy Systems 19, no. 3 (2017): 683-701.

[9]. Kumar Pandey, Rakesh, Shrey Aggarwal, Griesha Nath, Anil Kumar, and Behzad Vaferi. "Metaheuristic algorithm integrated neural networks for well-test analyses of petroleum reservoirs." Scientific Reports 12, no. 1 (2022): 1-16.

[10]. Wu, Peng, Ligang Zhou, Tong Zheng, and Huayou Chen. "A fuzzy group decision making and its application based on compatibility with multiplicative trapezoidal fuzzy preference relations." International Journal of Fuzzy Systems 19, no. 3 (2017): 683-701.

[11]. Khan, Mudassir, and Mohd Dilshad Ansari. "Security and privacy issue of big data over the cloud computing: a comprehensive analysis." IJRTE-Scopus Indexed 7, no. 6s (2019): 413-417.

[12]. Nomani, M. Z. M., Ajaz Afzal Lone, Alaa KK Alhalboosi, Aijaj A. Raj, and Zubair Ahmed. "Health care services under consumer protection laws of union territories of Jammu and Kashmir: a socio-legal mapping." EXECUTIVE EDITOR 11, no. 01 (2020): 139

[13]. Nakamori, Taizo, and Akira Suzuki. "Preference of three collembolan species for fruit-bodies of three species of basidiomycete fungi." Pedobiologia 49, no. 2 (2005): 119-125.

[14]. Subaveerapandiyan, A. "Awareness And Usage of Swayam Courses Among Library And Information Science Students: A Survey." Library Philosophy and Practice (e-journal) (2020).

[15]. Giachetti, Ronald E., and Robert E. Young. "Analysis of the error in the standard approximation used for multiplication of triangular and trapezoidal fuzzy numbers and the development of a new approximation." Fuzzy sets and systems 91, no. 1 (1997): 1-13.

[16]. Kumar, Anil, Rajabov Sherzod Umurzoqovich, Nguyen Duc Duong, Pratik Kanani, Arulmani Kuppusamy, M. Praneesh, and Minh Ngyen Hieu. "An intrusion identification and prevention for cloud computing: From the perspective of deep learning." Optik 270 (2022): 170044.

[17]. Khan, Mudassir, and Mohd Dilshad Ansari. "Multi-criteria software quality model selection based on divergence measure and score function." Journal of Intelligent & Fuzzy Systems 38, no. 3 (2020): 3179-3188.

[18]. Jian, Shao Yong, Si Jun Tao, and Xin Ren Huang. "Preference selection index method for machine selection in a flexible manufacturing cell." In Advanced Materials Research, vol. 1078, pp. 290-293. Trans Tech Publications Ltd, 2015.

[19]. Krishna Kumar TP, M. Ramachandran, Vimala Saravanan, "A Risk Assessment of Emergency management using (WASPAS) MCDM Method", Recent trends in Management and Commerce, 2(3), (2022):36-43

[20]. Suhasini, S., J. M. SheelaLavanya, M. Parameswari, G. Manikandan, and S. Gracia Nissi. "Input Based Resource Allocation in Motion Estimation using Re-configurable Architecture." In 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)(I-SMAC), pp. 1091-1095. IEEE, 2021.

[21]. Yogeesh, N. "Mathematical maxima program to show Corona (COVID-19) disease spread over a period." TUMBE Group of International Journals 3, no. 1 (2020).

[22]. Chou, Ch-Ch. "The canonical representation of multiplication operation on triangular fuzzy numbers." Computers & Mathematics with Applications 45, no. 10-11 (2003): 1601-1610.

[23]. Kshirsagar, Pravin R., and Sudhir G. Akojwar. "Prediction of neurological disorders using optimized neural network." In 2016 International Conference on Signal Processing, Communication, Power and Embedded System (SCOPES), pp. 1695-1699. IEEE, 2016.

[24]. Shahare, Neha S., and D. M. Yadav. "Feature Extraction Using GLSM for DDSM Mammogram Images." In Computational Intelligence in Healthcare, pp. 317-325. Springer, Cham, 2021.

[25]. Hsu, Shu-Chen, and Tien-Chin Wang. "Solving multi-criteria decision making with incomplete linguistic preference relations." Expert Systems with Applications 38, no. 9 (2011): 10882-10888.

[26]. Krishna Kumar TP, M. Ramachandran, Vimala Saravanan, "Candidate Selection for a Project Using Weight Sum Method", Data Analytics and Artificial Intelligence, 1(1), (2021):53-59

[27]. Nomani, Md Zafar Mahfooz, and Rehana Parveen. "Medico-legal insights into COVID-19 pandemic and the platter of health law reform in India." International Journal of Pharmaceutical Research (2020): 2328-2332.

[28]. Patel, D. A., K. D. Kikani, and K. N. Jha. "Hazard assessment using consistent fuzzy preference relations approach." Journal of Construction Engineering and Management 142, no. 12 (2016): 04016067.

[29]. William, P., N. Yogeesh, S. Vimala, and Pratik Gite. "Blockchain Technology for Data Privacy using Contract Mechanism for 5G Networks." In 2022 3rd International Conference on Intelligent Engineering and Management (ICIEM), pp. 461-465. IEEE, 2022.

[30]. Kshirsagar, Pravin R., Anil N. Rakhonde, and Pranav Chippalkatti. "MRI image based brain tumor detection using machine learning." Test Engineering and Management 81 (2020): 3672-3680.

[31]. Wan, Shu-ping, Gai-li Xu, and Jiu-ying Dong. "A novel method for group decision making with interval-valued Atanassov intuitionist fuzzy preference relations." Information Sciences 372 (2016): 53-71.

[32]. Yogeesh, N. "Study on Clustering Method Based on K-Means Algorithm." Journal of Advances and Scholarly Researches in Allied Education (JASRAE) 17, no. 1 (2020).

[33]. Kistler, Claudia, Daniel Hegglin, Hanno Würbel, and Barbara König. "Preference for structured environment in zebrafish (Danio rerio) and checker barbs (Puntius oligolepis)." Applied Animal Behaviour Science 135, no. 4 (2011): 318-327.

[34]. Dr. N. subash, M. Ramachandran, Vimala Saravanan, Vidhya prasanth, "An Investigation on Tabu Search Algorithms Optimization", Electrical and Automation Engineering, 1(1), (2022):13-20

[35]. Ganvir, N. N., and AD Jadhav SCOE. "Pune "Explore the Performance of the ARM Processor Using JPEG" International Journal on Computer Science and Engineering." (2010).

[36]. Leszczyński, Bogumił, Jolanta Warchoł, and Seweryn Niraz. "The influence of phenolic compounds on the preference of winter wheat cultivars by cereal aphids." International Journal of Tropical Insect Science 6, no. 2 (1985): 157-158.

[37]. Kshirsagar, Pravin, Akshay Pote, K. K. Paliwal, Vaibhav Hendre, Pranav Chippalkatti, and Nikhil Dhabekar. "A review on IOT based health care monitoring system." ICCCE 2019 (2020): 95-100.

[38]. Al-Wesabi, Fahd N., Areej A. Malibari, Anwer Mustafa Hilal, Nadhem NEMRI, Anil Kumar, and Deepak Gupta. "Intelligent ensemble of voting based solid fuel classification model for energy harvesting from agricultural residues." Sustainable Energy Technologies and Assessments 52 (2022): 102040.

[39]. Shi, Yu, Briana Cameron, Xian Gu, Michael Kane, Peter Peduzzi, and Denise A. Esserman. "Two-stage randomized trial design for testing treatment, preference, and self-selection effects for count outcomes." Statistics in Medicine 39, no. 25 (2020): 3653-3683.

[40]. Yogeesh, N. "Mathematical approach to representation of locations using k-means clustering algorithm." International Journal of Mathematics And its Applications 9, no. 1 (2021): 127-136.

[41]. Manjula Selvam, M. Ramachandran, Vimala Saravanan, "Nelder–Mead Simplex Search Method - A Study", Data Analytics and Artificial Intelligence, 2(2), (2022):117-122

[42]. Elizondo-Quiroga, Armando, Adriana Flores-Suarez, Darwin Elizondo-Quiroga, Gustavo Ponce-Garcia, Bradley J. Blitvich, Juan Francisco Contreras-Cordero, Jose Ignacio Gonzalez-Rojas, Roberto Mercado-Hernandez, Barry J. Beaty, and Ildefonso Fernandez-Salas. "Host-feeding preference of Culex quinquefasciatus in Monterrey, northeastern Mexico." Journal of the American Mosquito Control Association 22, no. 4 (2006): 654-661.

[43]. Ganvir, Neha N., and D. M. Yadav. "Clustered Micro-Calcifications Extraction From Mammogram Images Using Cellular Automata Segmentation With Anisotropic Diffusion Filtering." International Journal of Scientific & Technology Research. ISSN: 2277-8616.

[44]. Gupta, Krishnakumar, Vishal Fegade, Jeevan Kittur, M. Ramachandran, S. Madhu, S. Chinnasami, and M. Amudha. "A review on effect of cooling rate in fiber reinforced polymeric composites." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020106. AIP Publishing LLC, 2022.

[45]. Manikandan, G., and S. Srinivasan. "An efficient algorithm for mining spatially co-located moving objects." American Journal of Applied Sciences 10, no. 3 (2013): 195-208.

[46]. Wu, Peng, Ligang Zhou, Tong Zheng, and Huayou Chen. "A fuzzy group decision making and its application based on compatibility with multiplicative trapezoidal fuzzy preference relations." International Journal of Fuzzy Systems 19, no. 3 (2017): 683-701.

[47]. Sekar, K. R., Mohd AnulHaq, Anil Kumar, R. Shalini, and S. Poojalaxmi. "An improved ranking methodology for malignant carcinoma in multicriterian decision making using hesitant VIKOR fuzzy." Theoretical Computer Science 929 (2022): 81-94.

[48]. Hafezalkotob, Arian, and Ashkan Hafezalkotob. "Interval target-based VIKOR method supported on interval distance and preference degree for machine selection." Engineering Applications of Artificial Intelligence 57 (2017): 184-196.

[49]. Vimala Saravanan, M. Ramachandran, Manjula Selvam, "Interaction between Technical and Economic Benefits in Distributed Generation", Electrical and Automation Engineering, 1(2), (2022):83-91

[50]. Akojwar, Sudhir G., and Pravin R. Kshirsagar. "Performance evolution of optimization techniques for mathematical benchmark functions." International Journal of Computers 1 (2016).

[51]. Subaveerapandiyan, A., Priyanka Sinha, and Jeremiah Emeka Emeka Ugwulebo. "Digital literacy skills among African library and information science professionals–an exploratory study." Global Knowledge, Memory and Communication ahead-of-print (2022).

[52]. Manikandan, G., and S. Srinivasan. "Mining spatially co-located objects from vehicle moving data." Eur J Sci Res 68, no. 3 (2012): 352-366.

[53]. Wang, Jiang-Jiang, You-Yin Jing, Chun-Fa Zhang, and Jun-Hong Zhao. "Review on multi-criteria decision analysis aid in sustainable energy decision-making." Renewable and sustainable energy reviews 13, no. 9 (2009): 2263-2278.

[54]. Fegade, Vishal, Krishnakumar Gupta, M. Ramachandran, S. Madhu, C. Sathiyaraj, R. Kurinji< alar, and M. Amudha. "A study on various fire retardant additives used for fire reinforced polymeric composites." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020107. AIP Publishing LLC, 2022.

[55]. Ganvir, Neha N., and D. M. Yadav. "Filtering method for pre-processing mammogram images for breast cancer detection." International Journal of Engineering and Advanced Technology. ISSN (2019): 2249-8958.

[56]. Akojwar, Dr Sudhir, Pravin Kshirsagar, and Vijetalaxmi Pai. "Feature extraction of EEG signals using wavelet and principal component analysis." In National Conference on Research Trends In Electronics, Computer Science & Information Technology and Doctoral Research Meet. 2014.

[57]. Vimala Saravanan, M. Ramachandran, Chandrasekar Raja, "A Study on Aircraft Structure and Application of Static Force", REST Journal on Advances in Mechanical Engineering, 1(1), (2022):1-6

[58]. Ho, William, Xiaowei Xu, and Prasanta K. Dey. "Multi-criteria decision making approaches for supplier evaluation and selection: A literature review." European Journal of operational research 202, no. 1 (2010): 16-24.

[59]. Chauhan, Sameer Singh, Emmanuel S. Pilli, Ramesh Chandra Joshi, and Girdhari Singh. "Upb: User preference based brokering for service ranking and selection in federated cloud." In 2018 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS), pp. 1-6. IEEE, 2018.

[60]. Revathy, G., Saleh A. Alghamdi, Sultan M. Alahmari, Saud R. Yonbawi, Anil Kumar, and Mohd Anul Haq. "Sentiment analysis using machine learning: Progress in the machine intelligence for data science." Sustainable Energy Technologies and Assessments 53 (2022): 102557.

[61]. Manikandan, G., and S. Srinivasan. "Mining of spatial co-location pattern implementation by FP growth." Ind. J. Comput. Sci. Eng 3 (2012): 344-348.

[62]. Singh, Tej, Sachin Tejyan, Amar Patnaik, Ranchan Chauhan, and Gusztáv Fekete. "Optimal design of needlepunched nonwoven fiber reinforced epoxy composites using improved preference selection index approach." Journal of Materials Research and Technology 9, no. 4 (2020): 7583-7591.

[63]. Subaveerapandiyan, A., and Priyanka Sinha. "Digital Literacy and Reading Habits of The DMI-St. Eugene University Students." Journal of Indian Library Association 58, no. 3 (2022): 195-208.

[64]. Nomani, Md Zafar Mahfooz, and Rehana Parveen. "Prevention of chronic diseases in climate change scenario in India." Environmental justice 13, no. 4 (2020): 97-100.

[65]. Pickard, A. Simon, Caitlyn Wilke, Eunmi Jung, Sneh Patel, Knut Stavem, and Todd A. Lee. "Use of a preference-based measure of health (EQ-5D) in COPD and asthma." Respiratory medicine 102, no. 4 (2008): 519-536.

[66]. Bidgar, Poonam, and Neha Shahare. "Key based visual cryptography scheme using novel secret sharing technique with steganography." IOSR J. Electron. Commun. Eng.(IOSR-JECE) 8, no. 2 (2013): 11-18.

[67]. Deepa, N., Asmat Parveen, Anjum Khurshid, M. Ramachandran, C. Sathiyaraj, and C. Vimala. "A study on issues and preventive measures taken to control Covid-19." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020226. AIP Publishing LLC, 2022.

[68]. Bhuvaneswari, G., and G. Manikandan. "An intelligent intrusion detection system for secure wireless communication using IPSO and negative selection classifier." Cluster Computing 22, no. 5 (2019): 12429-12441.

[69]. Pathak, Vimal Kumar, Ramanpreet Singh, and Swati Gangwar. "Optimization of three-dimensional scanning process conditions using preference selection index and metaheuristic method." Measurement 146 (2019): 653-667.

[70]. Kumar, Anil, Saleh A. Alghamdi, Abolfazl Mehbodniya, Julian L. Webber, and Shavkatov Navruzbek Shavkatovich. "Smart power consumption management and alert system using IoT on big data." Sustainable Energy Technologies and Assessments 53 (2022): 102555.

[71]. Nomani, M. Z. M., and Madiha Tahreem. "Constitutionality and legality of corona virus (COVID-19) in India: limits of sanction and extent of liberation." International journal on emerging technologies 11, no. 3 (2020): 14-18.

[72]. Shah, Abdul Salam, Haidawati Nasir, Muhammad Fayaz, Adidah Lajis, Israr Ullah, and Asadullah Shah. "Dynamic user preference parameters selection and energy consumption optimization for smart homes using deep extreme learning machine and bat algorithm." IEEE Access 8 (2020): 204744-204762.

[73]. Subaveerapandiyan, A., and N. Sakthivel. "A Study of Obstacles in Plagiarism Software Subscribing by Colleges in Tamil Nadu." (2022).

[74]. Wang, Peng, Peide Liu, and Francisco Chiclana. "Multi-stage consistency optimization algorithm for decision making with incomplete probabilistic linguistic preference relation." Information Sciences 556 (2021): 361-388.

