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Evaluation of Hazardous Wastes using PROMETHEE Method

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Abstract. In this from analysis PROMETHEE method is the most ideal solution Short-distance and negative-best Determines Solution with the longest distance from the solution, but comparison of these distances does not consider importance. From the result it is seen that Metal plating waste is got the first rank where as is the Petrochemical is having the lowest rank. Simply defined, hazardous waste is human health or waste that has harmful or harmful properties to the environment. Hazardous wastes are classified Based on their biological, chemical and physical properties. These properties are toxic, reactive, inflammatory, Erosion, infection or radioactive material. Toxic waste is very small or even toxic in trace amounts. Hazardous waste chemicals can be purified by thermal, biological and physical methods. Ion exchange in chemical systems, Includes precipitation, oxidation and reduction and neutralization. High temperature combustion in heating systems, which can not only poison some organic waste but also destroy them. Alternative: Metal plating waste, Petrochemical waste, Pesticides waste, Waste residues. Evaluation Preference: Remark, Non-compatible, Compatible, Non-compatible, Most-Compatible, Compatibility. From the result it is seen that Metal plating waste and is got the first rank whereas is the Petrochemical waste got is having the lowest rank.
Keywords: Hazardous waste, Environmental health, waste management, PROMETHEE

1. Introduction

Solid waste includes municipal solid waste and industrial waste materials and various types of hazardous materials as a result of the production of goods. Conversely, hazardous waste is hazardous or harmful waste is. Discharged into our health or environment, for drinking or agriculture of our waterways, streams, rivers, lakes, chemicals and water bodies Makes it unsafe to use. Animals and plants that drink this water by definition, it is a dangerous substance any substance that may cause serious injury or harm when sent to a person or property. This includes chemicals, ammunition, lethal substances and other substances. Municipal solid waste management is the Waste collection, extraction and secondary storage, transportation, cleaning and final disposal are included. Reactive, toxic, combustible, explosive or corrosive waste is called hazardous waste. Easily understandable; completely understandable or Understandable: Clear explanation. Characterized by clear perception or understanding; rational or clever: The obvious moment of his madness. Clear writing or speech is clear and easy to understand. A clear account of history Mankind. His prose is always clear and compelling. Synonyms: clear, explicit, plain, clear and vivid Words similar to. A plan exceeding the budget implies less control and managers, leaders and broader organizations can negatively affect reputation. In addition, increased costs are additional costs, due to the cost of the opportunity Decreased productivity and liquidity can affect the profit margin due to financial stability. The verb she gave him a hint she wrote, and then she went to the meeting. He wrote down his phone number. The students wrote passionately while the professor was lecturing. She was writing in a notebook.

2. Hazardous waste

Hazardous Waste when waste is improper treatment, Stored, carried or removed or managed, Endanger human health or soil, air and water. Hazardous waste though, emissions and wastes are currently controlled in India, solid wastes are discharged indiscriminately and Poses a risk to health and the environment. With this mind, including environmentally friendly and economically viable disposal Managing hazardous waste is very important, so be the best Advice is provided to develop strategies. Among the various types of waste, solid waste makes a significant contribution to environmental degradation. In industrialized countries in Europe and North America, significant resources are devoted to regulating the production, Purification and disposal of hazardous waste. In developing countries, there are relatively few resources available to tackle environmental health issues. However, a country gets Environmental health concerns regarding high industrial and economic strength, hazardous waste attracting more attention from public health agencies However; the boundaries of the chemical industry are somewhat confusing. Throughout the 1980s, the tightening of environmental controls in industrialized countries was dangerous there was Dramatic increase in the cost of waste disposal. At same time, the debt crisis is affecting many poor countries Left, lower removal costs, subject to foreign demand transfer. The regional network for hazardous waste management has multiple nodes. Various Types of hazardous waste production, potential treatment facilities or potential disposal facilities Nozzles may be sources. The ends are interconnected by traffic Are attached. There must be hazardous waste generated at the sources taken for proper treatment plant. Metal plating waste: Metal Finishing Waste Water Treatment. Wastewater from metal finishing and plotting operations must safely dispose of a variety of heavy metals, oils and other toxins. Wastewater treatment standards are becoming more stringent. Petrochemical waste: Petrochemical wastewater is a general

term for wastewater associated with the oil industry. Petro Sources of chemical waste water are diverse and include oil field production, crude oil refining Can be produced from mills and olefin processing plants, refrigeration, energy equivalents and more. intermittent wastewater. Pesticides waste: Pesticide law defines a "pesticide": a substance or compound that prevents, destroys, repel or reduces any pest. A mixture of any A substance or substance used as a plant regulator, defoliant or desiccant. Waste residues: Residual waste is hazardous industrial waste. Production by industrial, mining and agricultural activities This includes waste materials that are made. It excludes waste from certain coal mining wastes and normal agricultural activities.

3. PROMETHEE

PROMETHEE is an excellent method for sequencing limited alternative processes and is selected on frequently conflicting criteria. PROMETHEE is the simplest rating system for fertilization and application compared to other methods for many criteria. Aims to provide a complete ranking of the finite possibilities for changing from good to bad. This The method is based on the implementation of other PROMETHEE methods and most of what the researchers mentioned in this version of PROMETHEE Methods. The basic principle of PROMETHEE II is to compare alternatives to each approved criterion. Based on. Alternatives are evaluated according to different criteria, whether they should be magnified or not reduced. Implementing It is clear that PROMETHEE II needs two additional pieces of information PROMETHEE is more stable than ELECTRE III. This can be explained by the 'individual' nature of the concept of A-qualification in ELECTRE III. Another reason for weak stability is suspensions in priority functions or their resulting derivatives. The second analysis was done considering the level criteria with intermittent priority functions. Average results after using 100 Random Goddess Better methods and their applications than the PROMETHEE family have attracted more attention from educators and practitioners. PROMETHEE is recommended as an excellent method. This method contains a few strengths compared to the analysis hierarchical procedure, namely: PROMETHEE I did not combine good scores on some criteria and bad marks on other criteria, which had fewer pair comparisons and it did not. Using a 9-point scale for artificial limitation estimation. A detailed literature review on MCDA on portfolio issues Given in the next section. Additional methods for our review portfolio selection Insists. In this review, the PROMETHEE method is very much for applications that include portfolio Found to be one of the most widely used outline methods. Problematic. Although relatively few releases are directly related there are advanced methods based on portfolio selection methods found that this type of method is contextually appropriate considering the analysis and its irreversibility. Based on this analysis, recommendations have been made to integrate several useful AHP features with PROMETHEE, specifically the design and weight determination of the decision hierarchy. As a result of mixing the basic features of the two methods, Functional integrations can reach the MCA. Extensive literature review has been conducted to analyze the alternatives selected In addition to its applications by the manufacturer and in various fields, To understand the PROMETHEE method, its advantages and limitations. PROMETHEE-GAIA methods A apply to the listed problems of possible alternatives. They are suitable for decision makers to choose from Better compromises. On the other hand, in real-world applications the set is often evaluated the type is also broken down into clusters or sections that need to have additional controls. ‘The problem is usually the selection of the subgroup of alternatives, the many constraints between the clusters to be checked and within it. The criteria that have the greatest effect on mining method selection are determined by sensitivity analysis. This paper is divided into five sections Is divided. In the "Introduction" section, the problem examined is discussed. Section "AHP and PROMETHEE Methods" two proposed Briefly describes the approaches. In the "AHPPROMETHEE Integrated Method" section, the proposed system for mining The AHP-PROMETHEE integrated approach exam is given in detail.

TABLE 1. Hazardous waste

	Remark	**Non compatible**	**Compatible**	**Non compatible**	**Most compatible**	**Compatibility**
Metal plating waste	1350	1400	7.5	5.34	93.5	0.087
Petrochemical waste	2450	2100	8.5	5.85	97.3	0.098
Pesticides waste	1900	2200	4.5	6.96	76.7	0.097
Waste residues	1100	1800	11.5	10.5	86.4	0.092
Max	2450	2200	11.5	10.5	97.3	0.098
Min	1100	1400	4.5	5.34	76.7	0.087
max-Min	1350	800	7	5.16	20.6	0.011
	1350	800	7	5.16	20.6	0.011

This table 1 shows that the value of dataset for Hazardous Waste Alternative: Metal plating waste, petrochemical waste, pesticide waste, waste residues.Evaluation Preference: Remark, Non-compatible, Compatible, Non-compatible, Most-Compatible, Compatibility.

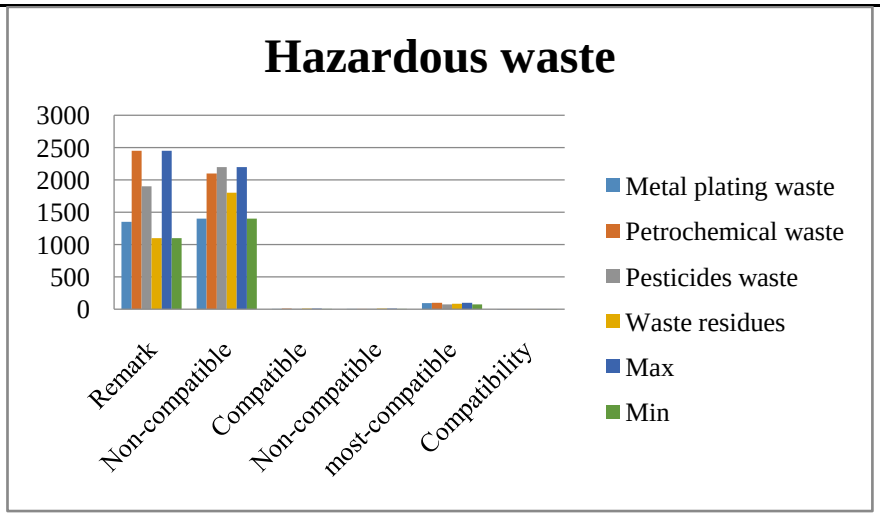

FIGURE 1. Hazardous waste

Figure 1.Shows that the value of dataset for Hazardous Waste Alternative: Metal plating waste, petrochemical waste, pesticides Waste, waste residue. Rating Option: Feedback, Incompatible, Compatible, Incompatible, Most-Compatible, Compatibility.

TABLE 2. Hazardous waste in Normalized Matrix

	Remark	Non compatible	Compatible	Non compatible	Most compatible	Compatibility
Metal plating waste	0.185185	0	0.428571	0	0.815534	0
Petrochemical waste	1	0.875	0.571429	0.098837	1	1
Pesticides waste	0.592593	1	0	0.313953	0	0.909091
Waste residues	0	0.5	1	1	0.470874	0.454545

This table 2 upgraded the values of normalized matrix for Hazardous waste using promethean. This value calculated from the dataset values.

TABLE 3. Hazardous wasteinPair Wise Comparison

	Remark	Non compatible	Compatible	Non compatible	Most compatible	Compatibility
D12	-0.81481	-0.875	-0.14286	-0.09884	-0.18447	-1
D13	-0.40741	-1	0.428571	-0.31395	0.815534	-0.90909
D14	0.185185	-0.5	-0.57143	-1	0.34466	-0.45455
D21	0.814815	0.875	0.142857	0.098837	0.184466	1
D23	0.407407	-0.125	0.571429	-0.21512	1	0.090909
D24	1	0.375	-0.42857	-0.90116	0.529126	0.545455
D31	0.407407	1	-0.42857	0.313953	-0.81553	0.909091
D32	-0.40741	0.125	-0.57143	0.215116	-1	-0.09091
D34	0.592593	0.5	-1	-0.68605	-0.47087	0.454545
D41	-0.18519	0.5	0.571429	1	-0.34466	0.454545
D42	-1	-0.375	0.428571	0.901163	-0.52913	-0.54545
D43	-0.59259	-0.5	1	0.686047	0.470874	-0.45455

This table 3 shows that the values of pair wise comparison for marine current energy plant using promethean.
Find the pair wise comparison value for Remark, Non-compatible, Compatible, Non-compatible, Most-Compatible, and Compatibility.

TABLE 4. Hazardous wastein Preference Value

	0.2336	0.1652	0.3355	0.1021	0.0424	0.1212	
D12	0	0	0	0	0	0	0
D13	0	0	0.143786	0	0.034579	0	0.178364
D14	0.043259	0	0	0	0.014614	0	0.057873
D21	0.190341	0.14455	0.047929	0.010091	0.007821	0.1212	0.521932
D23	0.09517	0	0.191714	0	0.0424	0.011018	0.340303
D24	0.2336	0.06195	0	0	0.022435	0.066109	0.384094
D31	0.09517	0.1652	0	0.032055	0	0.110182	0.402607
D32	0	0.02065	0	0.021963	0	0	0.042613
D34	0.13843	0.0826	0	0	0	0.055091	0.276121
D41	0	0.0826	0.191714	0.1021	0	0.055091	0.431505
D42	0	0	0.143786	0.092009	0	0	0.235794
D43	0	0	0.3355	0.070045	0.019965	0	0.42551

This table 4 calculated the value of Preference Value for Hazardous waste using promethean. Find preference value for Remark, Non-compatible, Compatible, Non-compatible, Most-Compatible, and Compatibility.

TABLE 5. Hazardous wastein positive flow

positive flow	
Metal plating waste	0.252365
Petrochemical waste	0.415443
Pesticides waste	0.24045
Waste residues	0.36427

This table 5 calculated the value of positive flow for Hazardous waste using promethean. Find preference value for Metal plating waste, Petrochemical waste, Pesticides waste, Waste residues.

TABLE 6. Hazardous wastein negative flow

Negative Flow	
Metal plating waste	0.452015
Petrochemical waste	0.092802
Pesticides waste	0.314726
Waste residues	0.412985

This table 5 calculated the value of negative flow for Hazardous waste using promethean. Find preference value for Metal plating waste, Petrochemical waste, Pesticides waste, Waste residues.

TABLE 7. Hazardous wastein net flow

Net flow	
Metal plating waste	-0.19965
Petrochemical waste	0.322641
Pesticides waste	-0.07428
Waste residues	-0.04872

Table 2 shows thatfrom the result it is seen that Pesticides waste and is got the first value whereas is the Metal plating waste got is having the lowest value

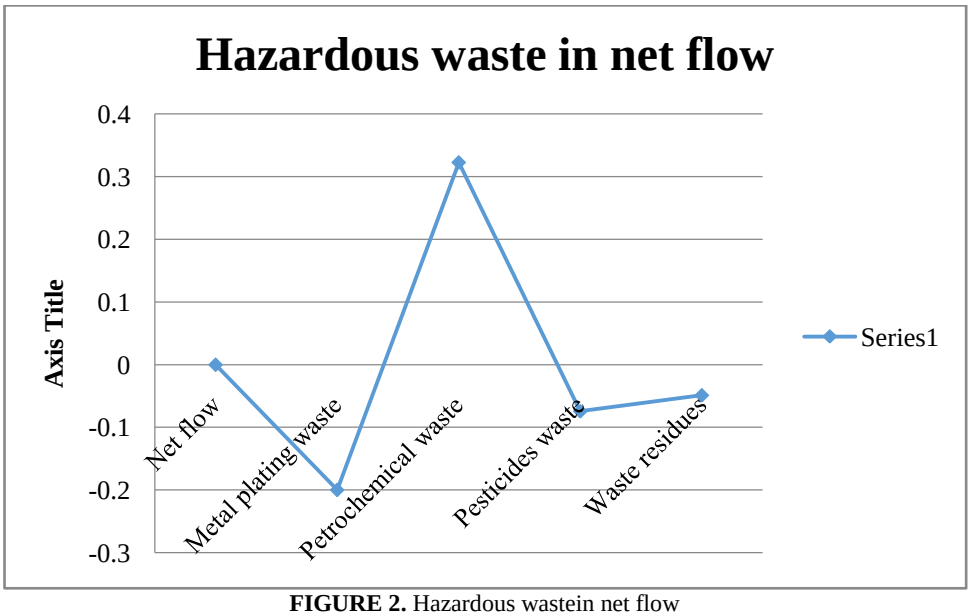

FIGURE 2. Hazardous wastein net flow

Figure 2 shows thatfrom the result it is seen that Pesticides waste and is got the first rank whereas is the Metal plating waste got is having the lowest rank.

TABLE 8. Hazardous wastein Rank

Rank	
Metal plating waste	4
Petrochemical waste	1
Pesticides waste	3
Waste residues	2

Table 8from the result it is seen that Metal plating waste and is got the first rank whereas is the Petrochemical waste got is having the lowest rank.

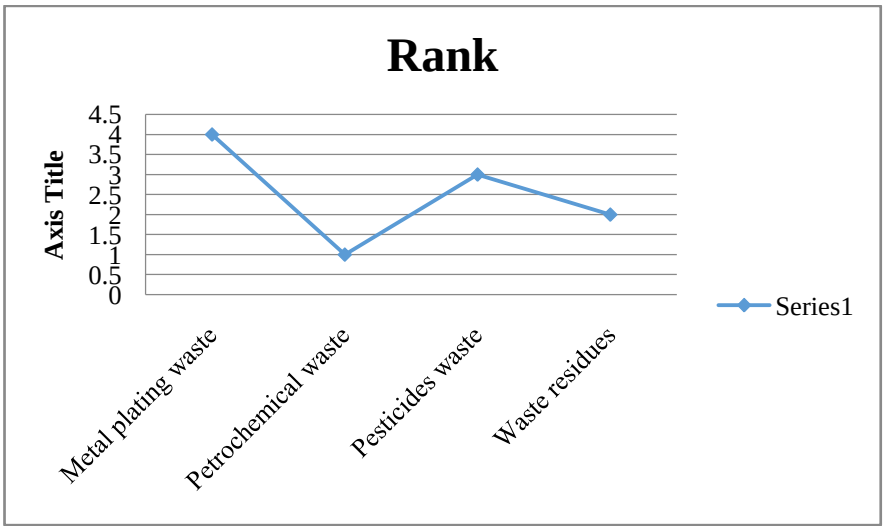

FIGURE 3. Hazardous wastein Rank

Figure 3from the result it is seen that Metal plating waste and is got the first rank whereas is the Petrochemical waste got is having the lowest rank.

4. Conclusion

With this mind, much of managing hazardous waste, including environmentally friendly and economically viable disposal Is important, so advice is given to develop better strategies. Among the various types of waste, solid waste makes a significant contribution to environmental degradation. In industrialized countries in Europe and North America, significant resources are devoted to regulating the production, Purification and disposal of hazardous waste. In developing countries, there are relatively few resources available to tackle environmental health issues. Aims to provide a complete ranking of the finite possibilities for changing from good to bad. This method implements other PROMETHEE methods Based and most of the methods mentioned by the researchers in this edition of PROMETHEE. Of PROMETHEE II The basic principle is based on comparing alternatives to each approved criterion. Alternatives are evaluated according to different criteria, whether they should be magnified or not reduced. Implementing It is clear that PROMETHEE II needs two additional pieces of information PROMETHEE is more stable than ELECTRE III. This can be explained by the 'individual' nature of the concept of A-qualification in ELECTRE III. Another reason for weak stability is suspensions in priority functions or their resulting derivatives. FIGURE 3from the result it is seen that Metal plating waste and is got the first rank whereas is the Petrochemical waste got is having the lowest rank.

Reference

[1]. Falatoonitoosi, Elham, Shamsuddin Ahmed, and Shahryar Sorooshian. "Expanded DEMATEL for determining cause and effect group in bidirectional relations." The Scientific World Journal 2014 (2014).

[2]. Mavi, Reza Kiani, and Craig Standing. "Critical success factors of sustainable project management in construction: A fuzzy DEMATEL-ANP approach." Journal of cleaner production 194 (2018): 751-765.

[3]. Gandhi, Sumeet, Sachin Kumar Mangla, Pradeep Kumar, and Dinesh Kumar. "Evaluating factors in implementation of successful green supply chain management using DEMATEL: A case study." International strategic management review 3, no. 1-2 (2015): 96-109.

[4]. 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.

[5]. Uygun, Özer, Hasan Kaçamak, and ÜnalAtakanKahraman. "An integrated DEMATEL and Fuzzy ANP techniques for evaluation and selection of outsourcing provider for a telecommunication company." Computers & Industrial Engineering 86 (2015): 137-146.

[6]. Yogeesh, N. "Graphical Representation of Mathematical Equations Using Open Source Software." Journal of Advances and Scholarly Researches in Allied Education (JASRAE) 16, no. 5 (2019).

[7]. Lin, Kuo-Ping, Ming-Lang Tseng, and Ping-Feng Pai. "Sustainable supply chain management using approximate fuzzy DEMATEL method." Resources, Conservation and Recycling 128 (2018): 134-142.

[8]. Garg, Chandra Prakash. "Modeling the e-waste mitigation strategies using Grey-theory and DEMATEL framework." Journal of Cleaner Production 281 (2021): 124035.

[9]. Kumar Pandey, Rakesh, Anil Kumar, Ajay Mandal, and Behzad Vaferi. "Employing deep learning neural networks for characterizing dual-porosity reservoirs based on pressure transient tests." Journal of Energy Resources Technology 144, no. 11 (2022): 113002.
[10]. Patil, Sachin K., and Ravi Kant. "A hybrid approach based on fuzzy DEMATEL and FMCDM to predict success of knowledge management adoption in supply chain." Applied Soft Computing 18 (2014): 126-135.
[11]. Tzeng, Gwo-Hshiung, and Chi-Yo Huang. "Combined DEMATEL technique with hybrid MCDM methods for creating the aspired intelligent global manufacturing & logistics systems." Annals of Operations Research 197, no. 1 (2012): 159-190.
[12]. Kshirsagar, Pravin, and Sudhir Akojwar. "Classification & detection of neurological disorders using ICA & AR as feature extractor." Int. J. Ser. Eng. Sci. IJSES 1, no. 1 (2015).
[13]. Farooqui, Nafees Akhter, and Ritika Amit Kumar Mishra. "Analysis of Antioxidant and Rutin Content in Buckwheat Flour Bread by Machine Learning Approach." *Design Engineering* (2021): 17188-17201.
[14]. Vujanović, Davor, Vladimir Momčilović, NebojšaBojović, and Vladimir Papić. "Evaluation of vehicle fleet maintenance management indicators by application of DEMATEL and ANP." Expert Systems with Applications 39, no. 12 (2012): 10552-10563.
[15]. Yogeesh, N. "Graphical representation of Solutions to Initial and boundary value problems Of Second Order Linear Differential Equation Using FOOS (Free & Open Source Software)-Maxima." International Research Journal of Management Science and Technology (IRJMST) 5, no. 7 (2014).
[16]. Tseng, Ming-Lang. "Application of ANP and DEMATEL to evaluate the decision-making of municipal solid waste management in Metro Manila." Environmental monitoring and assessment 156, no. 1 (2009): 181-197.
[17]. Kapoor, Nishant Raj, Ashok Kumar, Anuj Kumar, Anil Kumar, and Krishna Kumar. "Transmission Probability of SARS-CoV-2 in Office Environment Using Artificial Neural Network." IEEE Access 10 (2022): 121204-121229.
[18]. Hsu, Chia-Wei, Tsai-Chi Kuo, Sheng-Hung Chen, and Allen H. Hu. "Using DEMATEL to develop a carbon management model of supplier selection in green supply chain management." Journal of cleaner production 56 (2013): 164-172.
[19]. Shieh, Jiunn-I., and Hsin-Hung Wu. "Measures of consistency for DEMATEL method." Communications in Statistics-Simulation and Computation 45, no. 3 (2016): 781-790.
[20]. Shitharth, S., Pratiksha Meshram, Pravin R. Kshirsagar, Hariprasath Manoharan, Vineet Tirth, and Venkatesa Prabhu Sundramurthy. "Impact of Big Data Analysis on Nanosensors for Applied Sciences using Neural Networks." Journal of Nanomaterials 2021 (2021).
[21]. Han, Yuzhen, and Yong Deng. "An enhanced fuzzy evidential DEMATEL method with its application to identify critical success factors." Soft computing 22, no. 15 (2018): 5073-5090.
[22]. Gupta, Yogesh, Ghanshyam Raghuwanshi, Abdullah Ali H. Ahmadini, Utkarsh Sharma, Amit Kumar Mishra, Wali Khan Mashwani, Pinar Goktas, Shokrya S. Alshqaq, and Oluwafemi Samson Balogun. "Impact of Weather Predictions on COVID-19 Infection Rate by Using Deep Learning Models." *Complexity* 2021 (2021).
[23]. Anilkumar, Sruthy. "A Study on Impact of Migration on Socio Economic Empowerment of Inbound Female Migrant Labors in Ernakulam District." International Journal of Innovative Research in Science, Engineering and Technology 7, no. 10 (2018): 10464-10468.
[24]. Fan, Zhi-Ping, Wei-Lan Suo, and Bo Feng. "Identifying risk factors of IT outsourcing using interdependent information: An extended DEMATEL method." Expert systems with Applications 39, no. 3 (2012): 3832-3840.
[25]. Yogeesh, N. "Solving Linear System of Equations with Various Examples by Using GAUSS Method." International Journal of Research and Analytical Reviews (IJRAR) 2, no. 4 (2015).
[26]. Rastogi, Shreya, Amit Kumar Mishra, and Loveleen Gaur. "Detection of DeepFakes Using Local Features and Convolutional Neural Network." In *DeepFakes*, pp. 73-89. CRC Press.
[27]. Hu, Hsiu-Yuan, Yu-Cheng Lee, Tieh-Min Yen, and Chih-Hung Tsai. "Using BPNN and DEMATEL to modify importance–performance analysis model–A study of the computer industry." Expert systems with applications 36, no. 6 (2009): 9969-9979.
[28]. Mehbodniya, Abolfazl, Julian L. Webber, and Sathishkumar Karupusamy. "Improving the geo-drone-based route for effective communication and connection stability improvement in the emergency area ad-hoc network." Sustainable Energy Technologies and Assessments 53 (2022): 102558.
[29]. KEYWORD, USING DENSITY OF. "WEB GRAPH BASED SEARCH BY USING DENSITY OF KEYWORD AND AGE FACTOR." (2013).
[30]. Brans, Jean-Pierre, PhVincke, and Bertrand Mareschal. "How to select and how to rank projects: The PROMETHEE method." European journal of operational research 24, no. 2 (1986): 228-238.
[31]. Sundaramurthy, Shanmugam, C. Saravanabhavan, and Pravin Kshirsagar. "Prediction and classification of rheumatoid arthritis using ensemble machine learning approaches." In 2020 International Conference on Decision Aid Sciences and Application (DASA), pp. 17-21. IEEE, 2020.
[32]. Singh, Ninni, Vinit Kumar Gunjan, Amit Kumar Mishra, Ram Krishn Mishra, and Nishad Nawaz. "SeisTutor: A Custom-Tailored Intelligent Tutoring System and Sustainable Education." Sustainability 14, no. 7 (2022): 4167.
[33]. Behzadian, Majid, Reza BaradaranKazemzadeh, Amir Albadvi, and Mohammad Aghdasi. "PROMETHEE: A comprehensive literature review on methodologies and applications." European journal of Operational research 200, no. 1 (2010): 198-215.

[34]. Narayanan, M. "An Efficient Method to Classify the Peer-to-Peer Network Videos and Video Servers Over Video on Demand Services." In Innovations in Electronics and Communication Engineering, pp. 187-195. Springer, Singapore, 2019.
[35]. De Keyser, Wim, and Peter Peeters. "A note on the use of PROMETHEE multicriteria methods." European journal of operational research 89, no. 3 (1996): 457-461.
[36]. Saaran, Viraat, Vaishali Kushwaha, Sachi Gupta, and Gaurav Agarwal. "A Literature Review on Generative Adversarial Networks with Its Applications in Healthcare." In Congress on Intelligent Systems, pp. 215-225. Springer, Singapore, 2020.
[37]. 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.
[38]. Albadvi, Amir, S. Kamal Chaharsooghi, and Akbar Esfahanipour. "Decision making in stock trading: An application of PROMETHEE." European journal of operational research 177, no. 2 (2007): 673-683.
[39]. Vetschera, Rudolf, and Adiel Teixeira De Almeida. "A PROMETHEE-based approach to portfolio selection problems." Computers & Operations Research 39, no. 5 (2012): 1010-1020.
[40]. Sindhu, B., and Sruthy Anilkumar. "Perception of rural people towards digital transactions with special reference to card payment." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020171. AIP Publishing LLC, 2022.
[41]. Macharis, Cathy, Johan Springael, Klaas De Brucker, and Alain Verbeke. "PROMETHEE and AHP: The design of operational synergies in multicriteria analysis.: Strengthening PROMETHEE with ideas of AHP." European journal of operational research 153, no. 2 (2004): 307-317.
[42]. Khan, Hera, Ayush Srivastav, and Amit Kumar Mishra. "Multiclass Intent Analysis: Beyond the Conventional Polarities." ECS Transactions 107, no. 1 (2022): 7119.
[43]. Gupta, Sachi, and Gaurav Agarwal. "Hybrid fuzzy-based Deep Remora Reinforcement Learning Based Task Scheduling in Heterogeneous Multicore-processor." Microprocessors and Microsystems 92 (2022): 104544.
[44]. Kshirsagar, Pravin, and Dr Sudhir Akojwar. "Classification and Prediction of Epilepsy using FFBPNN with PSO." In IEEE international conference on communication networks, vol. 17. 2015.
[45]. Varma, D. Arvind, and M. Narayanan. "Identifying malicious nodes in mobile ad-hoc networks using polynomial reduction algorithm." In 2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT), pp. 1179-1184. IEEE, 2016.
[46]. Anand, Gapesh, and RambabuKodali. "Selection of lean manufacturing systems using the PROMETHEE." Journal of modelling in management (2008).
[47]. Brans, J. Pierre, and Bertrand Mareschal. "PROMETHEE V: MCDM problems with segmentation constraints." INFOR: Information Systems and Operational Research 30, no. 2 (1992): 85-96.
[48]. 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.
[49]. Briggs, Th, P. L. Kunsch, and Bertrand Mareschal. "Nuclear waste management: an application of the multicriteria PROMETHEE methods." European Journal of Operational Research 44, no. 1 (1990): 1-10.
[50]. 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.
[51]. Agarwal, Gaurav, Hari Om, and Sachi Gupta. "A learning framework of modified deep recurrent neural network for classification and recognition of voice mood." International Journal of Adaptive Control and Signal Processing 36, no. 8 (2022): 1835-1859.
[52]. Khan, Hera, Ayush Srivastav, Amit Kumar Mishra, and Tien Anh Tran. "Machine learning methods for estimating permeability of a reservoir." International Journal of System Assurance Engineering and Management (2022): 1-14.
[53]. Bogdanovic, Dejan, Djordje Nikolic, and Ivana Ilic. "Mining method selection by integrated AHP and PROMETHEE method." Anais da Academia Brasileira de Ciências 84 (2012): 219-233.
[54]. Akojwar, Sudhir G., and Pravin R. Kshirsagar. "Performance evolution of optimization techniques for mathematical benchmark functions." International Journal of Computers 1 (2016).
[55]. Liao, Huchang, and Zeshui Xu. "Multi-criteria decision making with intuitionistic fuzzy PROMETHEE." Journal of Intelligent & Fuzzy Systems 27, no. 4 (2014): 1703-1717.
[56]. Rajalingam, B., R. Santhoshkumar, P. Santosh Kumar Patra, M. Narayanan, G. Govinda Rajulu, and T. Poongothai. "Multimodality Medical Images for Healthcare Disease Analysis." Medical Imaging and Health Informatics (2022): 209-235.
[57]. Chen, Ying-Hsiu, Tien-Chin Wang, and Chao-Yen Wu. "Strategic decisions using the fuzzy PROMETHEE for ARE outsourcing." Expert Systems with Applications 38, no. 10 (2011): 13216-13222.
[58]. Nautiyal, Aditi, and Amit Kumar Mishra. "Machine learning approach for intelligent prediction of petroleum upstream stuck pipe challenge in oil and gas industry." Environment, Development and Sustainability (2022): 1-27.
[59]. 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.

[60]. Agarwal, Gaurav, Vikas Maheshkar, Sushila Maheshkar, and Sachi Gupta. "Vocal Mood Recognition: Text Dependent Sequential and Parallel Approach." In Applications of Artificial Intelligence Techniques in Engineering, pp. 131-142. Springer, Singapore, 2019.
[61]. Yogeesh, N. "Mathematical maxima program to show Corona (COVID-19) disease spread over a period." TUMBE Group of International Journals 3, no. 1 (2020).
[62]. Corrente, Salvatore, Salvatore Greco, and Roman Słowiński. "Multiple criteria hierarchy process with ELECTRE and PROMETHEE." Omega 41, no. 5 (2013): 820-846.
[63]. 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.
[64]. Arya, Vishakha, Amit Kumar Mishra Mishra, and Alfonso González-Briones. "Analysis of sentiments on the onset of Covid-19 using Machine Learning Techniques." ADCAIJ: Advances in Distributed Computing and Artificial Intelligence Journal 11, no. 1: 45-63.
[65]. Mareschal, Bertrand, and Yves De Smet. "Visual PROMETHEE: Developments of the PROMETHEE & GAIA multicriteria decision aid methods." In 2009 IEEE International conference on industrial engineering and engineering management, pp. 1646-1649. IEEE, 2009.
[66]. 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.
[67]. Halouani, Nesrin, Habib Chabchoub, and J-M. Martel. "PROMETHEE-MD-2T method for project selection." European Journal of Operational Research 195, no. 3 (2009): 841-849.
[68]. Singh, Prabhat Kumar, Gaurav Agarwal, and Sachi Gupta. "A new ranking technique for ranking phase of search engine: Size based ranking algorithm (SBRA)." International Journal of Computer Applications 82, no. 5 (2013).
[69]. 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.
[70]. Farooqui, Nafees Akhter, Amit Kumar Mishra, and Ritika Mehra. "Automatic crop disease recognition by improved abnormality segmentation along with heuristic-based concatenated deep learning model." Intelligent Decision Technologies Preprint: 1-23.
[71]. Brans, Jean-Pierre, and PhVincke. "Note—A Preference Ranking Organisation Method: (The PROMETHEE Method for Multiple Criteria Decision-Making)." Management science 31, no. 6 (1985): 647-656.
[72]. Santhoshkumar, R., B. Rajalingam, P. Santosh Kumar Patra, M. Narayanan, T. Poongothai, N. Satheesh, G. Jawaherlal Nehru, and G. Govinda Rajulu. "Robust emotion recognition on hand crafted features in static action sequences." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020215. AIP Publishing LLC, 2022.
[73]. Feng, Feng, Zeshui Xu, Hamido Fujita, and Meiqi Liang. "Enhancing PROMETHEE method with intuitionistic fuzzy soft sets." International Journal of Intelligent Systems 35, no. 7 (2020): 1071-1104.
[74]. 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).
[75]. Farooqui, Nafees Akhter, Amit Kumar Mishra, and Ritika Mehra. "Concatenated deep features with modified LSTM for enhanced crop disease classification." International Journal of Intelligent Robotics and Applications (2022): 1-25.
[76]. Hyde, Kylie, Holger R. Maier, and Christopher Colby. "Incorporating uncertainty in the PROMETHEE MCDA method." Journal of Multi-Criteria Decision Analysis 12, no. 4-5 (2003): 245-259.
[77]. Gupta, Sachi, Gaurav Agarwal, and Vikas Kumar. "An efficient and robust genetic algorithm for multiprocessor task scheduling." International Journal of Computer Theory and Engineering 5, no. 2 (2013): 377.
[78]. 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.
[79]. Abedi, Maysam, S. Ali Torabi, Gholam-Hossain Norouzi, Mohammad Hamzeh, and Gholam-Reza Elyasi. "PROMETHEE II: a knowledge-driven method for copper exploration." Computers & Geosciences 46 (2012): 255-263.
[80]. Mishra, Amit Kumar, and Shweta Paliwal. "Mitigating cyber threats through integration of feature selection and stacking ensemble learning: the LGBM and random forest intrusion detection perspective." Cluster Computing (2022): 1-12.
[81]. 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.
[82]. Lopes, Ana Paula F., María M. Muñoz, and PilarAlarcón-Urbistondo. "Regional tourism competitiveness using the PROMETHEE approach." Annals of Tourism Research 73 (2018): 1-13.