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Forecasting and Quality Control of Confectionery Products with the use of "Water Activity Using the SPSS Method

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Abstract: *Water quality for a specific purpose, usually of drinking or swimming Depending on the suitability, its chemical, of water including physical and biological properties Describes the condition. The quality of water is its of water based on quality of use Refers to chemical, physical and biological properties. Usually through water purification of standards against which attainable conformity can be assessed it is often used to refer to the set. Some of the contaminants in our water are alkaline Intestinal disease, reproductive problems and Health including neurological disorders can lead to problems. Infants, young children, pregnant women, the elderly and the weak especially those with compromised immune systems May be in danger of getting sick. Values closer to 150 mg/L are generally better from an aesthetic point of view. Water below 150 mg/L for soft water and above 200 mg/L Values in are also considered hard water. Sources: In soil and rock material from primarily dissolved carbonate Minerals. Disturbances such as fire, wind blowing, or debris flows can affect stream temperature, turbidity, and other water quality parameters. Geography, geography and climate affect Water quality. Air and water quality and Hawaii for the overall natural environment Number one in the nation. This Massachusetts is second in the division is in place, followed by North There are Dakota, Virginia and Florida. Better for air and water quality Learn more about the states.*

Keywords: *Sulphate, Chloride, Magnesium, Calcium, and TH.*

1. INTRODUCTION

High quality water or "HQW" refers to a body of water, including an ONRW or OSRW, in which, based on pollutants, surface water quality exceeds that required for fish, shellfish, and wildlife, and for recreation and recreation. On the water. Wetlands maintain good water quality or improve degraded water in many ways Aids in: nutrient elimination and Retention, chemical and organic processing of materials and. Sediment Load reduction Water. Pesticides and Fertilizers rainwater or snowmelt or Lakes and by seepage into aquifers Can be transported to streams. Human and animal waste. Sewage and Human from septic systems Waste, the fodder of animals and Harm such as wildlife droppings Drinking water produces microorganisms Lets take it to the sources. Water pollutants can cause disease or poison can act. In poorly treated wastewater Bacteria and parasites in drinking water Cholera and dysentery entered the supply because digestive problems like are how acidic/basic water is a measure of. The range is 0 to 14 goes, 7 is neutral. A pH of less than 7 Indicates acidity, while for 7 A higher pH indicates a base. PH of water is the most important measure of water quality. Although there are some places that boast the cleanest water, such as Canada, Iceland, Antarctica or upstate New York, a team of scientists determined that the cleanest water in the world is Puerto Williams, in the Patagonia region of Chile.Also consider natural alternatives like compost take it! Storm drains and curbside trash regular cleaning: nearby rainwater catchment in basins, storm drains and barriers the disposal of collected garbage is clean Promotes flow and in our waterways reduces the amount of pollution and debris that enters.

2. WATER QUALITY

Reduce ecological demand water works Quality testing and assessment of Future Water Quality Trends Environment resulted in surveillance. It is should be noted that Handbook of large numbers of analytical data Current conditions of data processing Practical quick interpretation of results prevent [8]Decreased cell recovery in beds with low water content is not related to aw, but rather to Microscopic in the matrix surrounding the cells Sudden water and air between the pores Osmotic shock induced by redistribution.[1]Cell used for sucrose wet inoculation Grow Salmonella in TSAN suspensions in 0.1% peptone as described above Produced by harvesting. Disinfection Five-strain suspensions diluted in distilled water was used inoculums. [2] Raw materials, semi-finished products and Water activity indicator of confectionery products Scientific and technical literature on value; "New generation" sold on the Russian market new in value of water activity index of sweeteners Acquisition of test data. [3] One sample for each bacterial culture at intervals the temperature was determined, contaminated food water stored in each Using activity meter. Additionally, Number of viable bacterial cells determines each sample at each time the samples were removed from the container. [4] Microbial Degradation of Foods and Manufacturing Environment Water is a factor in the stability of microorganisms is the main factor. Pathogen and Nutrients for spoilage microorganisms and appropriate aw, pH, redox potential and Temperature is also required. [5] This appears to be true of diabetes symptoms as well. The boiling point of a solution is the relative vapor pressure:point equal to Ratio of water to atmospheric pressure same temperature. [6]Various methods like Hyperion, Water Quality Index and Hazard Scale to study the water quality of the lake was used.It is recommended that controlled urban agriculture should adopt pollution prevention and water reuse along with recycling of nutrients. [7]Drinking water quality and related health Understanding the level of hazards, of drinking water On quality assurance and management To make wise decisions is basic. Using the simplification method For feasible and effective drinking water quality assessment To achieve reliable results very importantSmart decision making. [9]Nonpoint sources Distribution of land cover and water movement, land use and management and/or other human and with its response to natural activities related to in watersheds. Agricultural, Industrial and urban areas Indicated and anthropological proof's non-pointed objects. [10]Quality criteria for protecting beneficial applications that many regulatory companies have provided the most effective water. These can be analyzed the criteria for creating a common Water Quality Index (WQI), which Used to denote a whole. Water Quality conditions. [11]Stream tracking does not provide onlyinadequate information to compare the streams, as Local sources of pollution in water quality consequences the stream cannot be separated from the effects of impurities in the overhead water. [12]The vague artificial assessment usually uses a number to represent water quality and parameters An alternate method of integrating values provides with a variety of quality features, and used in the environmental-grade assessment. [13]Further qualification can be qualified by defining the purpose of the review: The focus will be on the waterSurface freshwater systems are the quality of the system, which includes the ecology -related but most common field topics. [14]

Due to these contaminants, Water quality has been altered and overall health aquatic communities in the river is reduced. The importance of drinking water is highly emphasized for public health and the quality of crude water for aquatic organisms. [15]On point sources and toxic compounds More public recognition of pollution from Although received, it remains unresolved in the United States today Most water quality problems are widespread, non-point Includes sources. Mostly, pointless Source pollution in natural water quality parameters A degraded ecosystem caused by imbalances manifests as action. [16]He argued that a continued decline in public confidence in developed countries' water supplies would eventually may lead to disruption of distribution services. On the other hand, Relates to public perception of water quality a better understanding of processes is multi-stakeholder Contributes to processes, which are consumer services and helps improve satisfaction. [17]The average annual ranking is relative to the subsequent year. This test distribution Free and seasonal loading not affected by drops. Interestingly,The work of Hirsch et al. of trends in water quality Motivated by complications, while at the same time windy Farrell's Method for Quality Trends was used. [18]They can be used to prioritize cleanup measures to create better recreation Benefits for a given cost. Any lakes Target them and in what order Determine what needs to be cleaned Findings can be usedAnd more efficient progression levels can be identified. [19]Stream water quality will change over time A methodology for evaluating changes Problems and Choices in Selection. The discussion draws heavily on the teachers' experiences Attracts, about specific methodological choices Conducting theoretical investigations, several water quality Trend detection techniques for records Techniques used and trended [20]Spatial components of concern in river water quality models and attempt to describe temporal changes. In continuous models with components or level variables are gradually incorporated evolution of water quality problems over the past seven decades. [21]Assessing Different criteria for different applications Overall water quality is easy to use Not the thing.

Also, the classification of water quality is different Depending on the contents of water parameters Follows different definitions, and dozen Countless variations have been made. [22]This situation can occur A good water quality index for a particular site When received, and by elements not included in the index Water quality is declining. Another region or it's to similar regulatory agency in area A different number in the integrated index It is common to require water quality variables. [23]Continuous monitoring Water quality data acquisition Difficulties and burden of analysis increases laboratories from the outset. Therefore, variables should be carefully selected according to the location of the water studied and the sampling period. [25]A particular problem in water quality monitoring is a large number of measured variables Complexity associated with analysis. On the behavior of water resources in datasets there is a wealth of information. [26] Emphasizes two dimensions of water quality – dissolved oxygen concentration in water, and water Can be fished - but for other activities Also reports the results. Oxygen concentration, because this is a common universal of water quality in research is measurement. [27] Next, States standard for each pollutant or Develop quantitative water quality criteria, Water quality is often published by the USEPA Based on criteria guidelines. [28]These include traditional water quality methodsManual water sample collection points at different locations, followed by laboratory analysis and water quality regulation techniques. Such approaches take too much time and are no longer considered efficient. [29]Color photographs Limitation of water quality in the river basin Represent, in combination were also chosen to control for variations, Thus water quality is the only basis for differentiation was Technology on heavy metal concentration The information served as an indicator of water [30].

3. RESULTS AND DISCUSSION

TABLE 1. Statistics

Statistics								
		sulphate	**chloride**	**magnesium**	**calcium**	**PH**	**TDS**	**TH**
N	Valid	15	15	15	15	15	15	15
	Missing	0	0	0	0	0	0	0
Mean		111.47	308.4	269.93	191.47	4.01E+00	791.67	516.27
Std. Error of Mean		9.394	14.557	24.856	23.623	0.431152	37.915	51.374
Median		108	289	284	165	3.80E+00	843	548
Mode		61a	248a	298	69a	2.4000a	513a	159a
Std. Deviation		36.385	56.377	96.266	91.493	1.67E+00	146.846	198.97
Variance		1.32E+03	3.18E+03	9267.067	8.37E+03	2.788	2.16E+04	3.96E+04
Skewness		0.28	0.871	-0.207	0.342	-0.178	-0.697	-0.236
Std. Error of Skewness		0.58	0.58	0.58	0.58	0.58	0.58	0.58
Kurtosis		-1.271	-0.283	-0.912	-1.093	-1.194	-0.728	-0.681
Std. Error of Kurtosis		1.121	1.121	1.121	1.121	1.121	1.121	1.121
Range		109	180	310	279	5.4	451	665
Minimum		61	248	111	69	1	513	159
Maximum		170	428	421	348	6.4	964	824
Sum		1672	4626	4049	2872	60.2	11875	7744
Percentiles	10	64.6	248.6	126.6	70.8	1.66E+00	545.4	216
	20	76.2	252.8	149.6	101.4	2.40E+00	608.4	282
	25	77	264	168	111	2.40E+00	654	354
	30	81.8	271.2	230.4	123.8	2.72E+00	726.8	374
	40	94.2	282.6	251	157.4	3.38E+00	791.8	519.8
	50	108	289	284	165	3.80E+00	843	548
	60	121.4	297.6	298	222.6	4.78E+00	855.2	587.4
	70	133	349.4	330.8	248.2	5.48E+00	876.2	622.2
	75	149	359	354	249	5.80E+00	921	643
	80	156.2	363	358	298.6	5.80E+00	937.8	678.2
	90	165.8	407.6	408.4	333.6	6.10E+00	959.8	816.8

Table 1 shows the statistics values for analysis N, range, minimum, maximum, mean, standard deviation, Skewness Mode, Kurtosis, Percentiles, Sum, Std. Error of Kurtosis**.** Calcium, chloride, magnesium, PH, sulphate, TDS, TH.

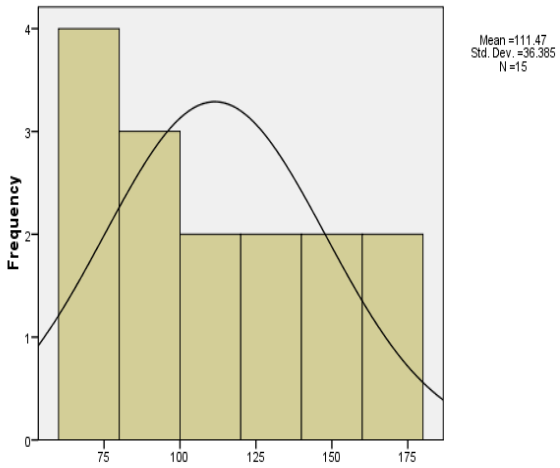

FIGURE 1. Sulphate

Figure 1 shows a histogram plot for Sulphate from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 75 to175 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution

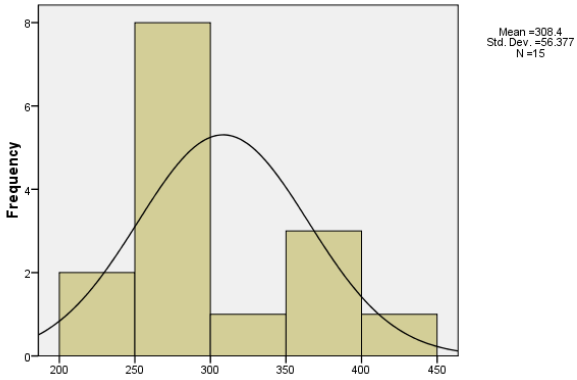

FIGURE 2. Chloride

Figure 2 shows a histogram plot for chloride from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 200 to 450 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution.

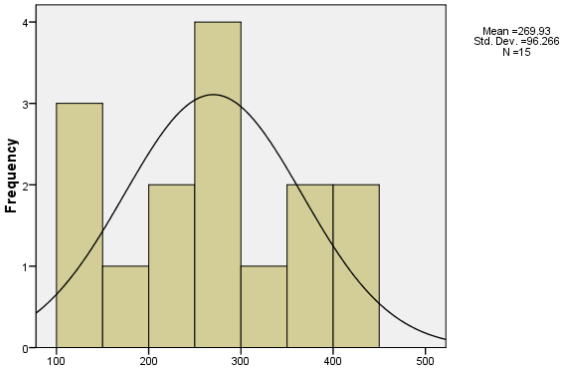

FIGURE 3. Magnesium

Figure 3 shows a histogram plot for Magnesium from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 100 to 500 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution.

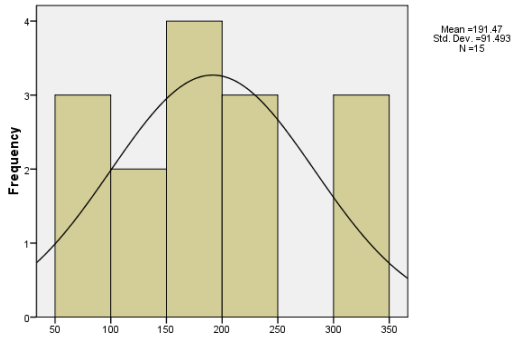

FIGURE 4. Calcium

Figure 4 shows a histogram plot for Calcium from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 50 to 350 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution.

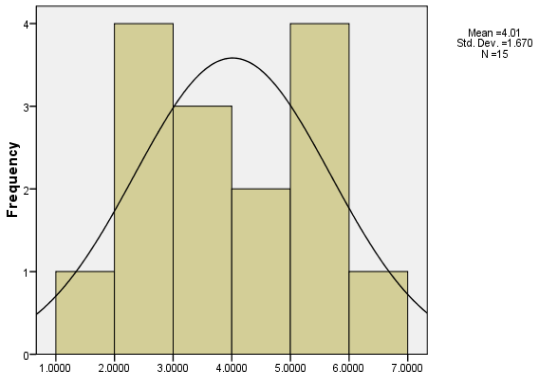

FIGURE 5.PH

Figure 5 shows a histogram plot for PH from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 1000 to 7000 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution.

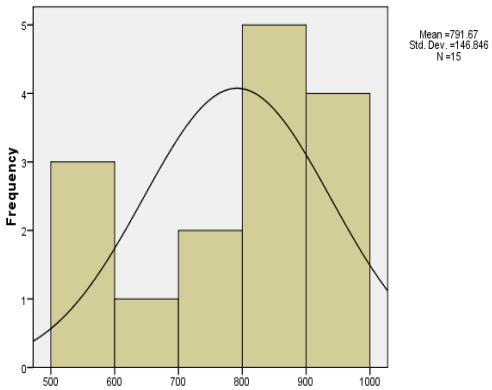

FIGURE 6.TDS

Figure 6 shows a histogram plot for TDS from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 600 to 1000 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution.

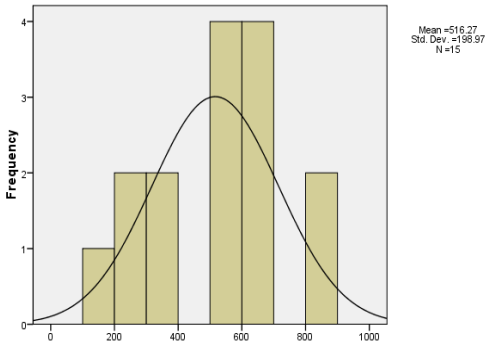

FIGURE 7.TH

Figure 7 shows a histogram plot for TH from the figure where it can be clearly seen that the data is slightly skewed to the right due to high values for 200 to 400 normal crows, while all other values are under the normal curve, the sample substantially follows a normal distribution.

TABLE 2. Descriptive Statistics

	N	**Range**	**Minimum**	**Maximum**	**Sum**	**Mean**	**Std. Deviation**	**Variance**
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
calcium	15	279	69	348	2872	191.47	91.493	8.37E+03
chloride	15	180	248	428	4626	308.4	56.377	3.18E+03
magnesium	15	310	111	421	4049	269.93	96.266	9.27E+03
PH	15	5.4	1	6.4	60.2	4.01E+00	1.669845	2.788
sulphate	15	109	61	170	1672	111.47	36.385	1.32E+03
TDS	15	451	513	964	11875	791.67	146.846	2.16E+04
TH	15	665	159	824	7744	516.27	198.97	3.96E+04
Valid N (listwise)	15							

Table 2 shows the descriptive statistics values for analysis N, range, minimum, maximum, mean, standard deviation, Skewness, Kurtosis**.** Calcium, chloride, magnesium, PH, sulphate, TDS, TH.

TABLE 3. Correlations

Correlations							
	sulphate	chloride	magnesium	calcium	PH	TDS	TH
sulphate	1	0.288	-0.087	0.06	0.381	.532*	0.17
chloride	0.288	1	-0.348	-0.181	0.087	0.119	-.648**
magnesium	-0.087	-0.348	1	-0.041	0.046	-0.221	0.343
calcium	0.06	-0.181	-0.041	1	-.629*	0.198	-0.133
PH	0.381	0.087	0.046	-.629*	1	0.313	0.169
TDS	.532*	0.119	-0.221	0.198	0.313	1	0.02
TH	0.17	-.648**	0.343	-0.133	0.169	0.02	1

Table 3 shows the correlation between the sulphates for has the highest correlation value of 0.381has the lowest correlation value of 0.06. Chloride for has the highest correlation value of -.648**has the lowest correlation value of 0.087. Magnesium for has the highest correlation value of -0.348has the lowest correlation value of -0.041. Calcium

for has the highest correlation value of -.629*has the lowest correlation value of 0.06. PH for has the highest correlation value of -.629*has the lowest correlation value of 0.046. TDSfor has the highest correlation value of .532*has the lowest correlation value of 0.02. TH for has the highest correlation value of -.648**has the lowest correlation value of 0.02.

TABLE 4. Reliability Statistics

Cronbach's Alphaa	Cronbach's Alpha Based on Standardized Items	N of Items
-0.016	0.13	7
a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.		

Table 4 shows Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is -0.016which indicates 10 % reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis

4. CONCLUSION

Microbial Degradation of Foods and Manufacturing Environment Water is a factor in the stability of microorganisms is the main factor. Pathogen and Nutrients for spoilage microorganisms and appropriate aw, pH, redox potential and Temperature is also required. Stream tracking does not provide onlyinadequate information to compare the streams, as Local sources of pollution in water quality consequences the stream cannot be separated from the effects of impurities in the overhead water.Due to these contaminants, Water quality has been altered and overall health aquatic communities in the river is reduced. The importance of drinking water is highly emphasized for public health and the quality of crude water for aquatic organisms. Due to these contaminants, Water quality has been altered and overall health aquatic communities in the river is reduced. The importance of drinking water is highly emphasized for public health and the quality of crude water for aquatic organisms. [15] On point sources and toxic compounds More public recognition of pollution from Although received, it remains unresolved in the United States today Most water quality problems are widespread, non-point Includes sources. Mostly, pointless Source pollution in natural water quality parameters A degraded ecosystem caused by imbalances manifests as action.

REFERENCES

[1]. Beuchat, Larry R., and David A. Mann. "Survival of Salmonella in cookie and cracker sandwiches containing inoculated, low–water activity fillings." Journal of food protection 78, no. 10 (2015): 1828-1834.

[2]. Beuchat, Larry R., David A. Mann, Christine A. Kelly, and Ynes R. Ortega. "Retention of viability of Salmonella in sucrose as affected by type of inoculum, water activity, and storage temperature." Journal of food protection 80, no. 9 (2017): 1408-1414.

[3]. Plotnikova, I. V., I. M. Zharkova, G. O. Magomedov, M. G. Magomedov, A. A. Khvostov, and E. N. Miroshnichenko. "Forecasting and quality control of confectionery products with the use of “water activity” indicator." In IOP Conference Series: Earth and Environmental Science, vol. 640, no. 6, p. 062003. IOP Publishing, 2021.

[4]. Hokunan, Hidekazu, Kento Koyama, Mayumi Hasegawa, Shuso Kawamura, and Shigenobu Koseki. "Survival kinetics of Salmonella enterica and enterohemorrhagic Escherichia coli on a plastic surface at low relative humidity and on low–water activity foods." Journal of food protection 79, no. 10 (2016): 1680-1692.

[5]. Beuchat, Larry R., EvangeliaKomitopoulou, Harry Beckers, Roy P. Betts, François Bourdichon, Séamus Fanning, Han M. Joosten, and Benno H. TerKuile. "Low–water activity foods: increased concern as vehicles of foodborne pathogens." Journal of food protection 76, no. 1 (2013): 150-172.

[6]. Grover, D. W. "The keeping properties of confectionery as influenced by its water vapour pressure." Journal of the Society of Chemical Industry 66, no. 7 (1947): 201-205.

[7]. Bhateria, Rachna, and Disha Jain. "Water quality assessment of lake water: a review." Sustainable Water Resources Management 2, no. 2 (2016): 161-173.

[8]. Štambuk-Giljanović, Nives. "Water quality evaluation by index in Dalmatia." Water Research 33, no. 16 (1999): 3423-3440.

[9]. Li, Peiyue, and Jianhua Wu. "Drinking water quality and public health." Exposure and Health 11, no. 2 (2019): 73-79.

[10]. Dalai, Sasmita, Pradeep Tangade, Vikas Singh, Ankita Jain, Surbhi Priyadarshi, and Jagriti Yadav. "Assessment and Comparison of Periodontal Status and Its Impact on Oral Health-Related Quality of Life among Urban and Rural

Adults of Uttar Pradesh: A Cross-Sectional Study." Journal of Primary Care Dentistry and Oral Health¦ Volume 3, no. 3 (2022): 76.
[11]. Rathor, Ketan, Sushant Lenka, Kartik A. Pandya, B. S. Gokulakrishna, Susheel Sriram Ananthan, and Zoheib Tufail Khan. "A Detailed View on industrial Safety and Health Analytics using Machine Learning Hybrid Ensemble Techniques." In 2022 International Conference on Edge Computing and Applications (ICECAA), pp. 1166-1169. IEEE, 2022.
[12]. Ritchie, Jerry C., Paul V. Zimba, and James H. Everitt. "Remote sensing techniques to assess water quality." Photogrammetric engineering & remote sensing 69, no. 6 (2003): 695-704.
[13]. Shanmugasundar, G., and R. Sivaramakrishnan. "Software Development for an Inverse Kinematics of Seven-Degrees of Freedom Newly Designed Articulated Inspection Robot." International Journal of Computer Applications 975 (2012): 8887.
[14]. Said, Ahmend, David K. Stevens, and Gerald Sehlke. "An innovative index for evaluating water quality in streams." Environmental management 34, no. 3 (2004): 406-414.
[15]. Smith, Richard A., Gregory E. Schwarz, and Richard B. Alexander. "Regional interpretation of water-quality monitoring data." Water resources research 33, no. 12 (1997): 2781-2798.
[16]. Rathor, Ketan, Keyur Patil, Mandiga Sahasra Sai Tarun, Shashwat Nikam, Devanshi Patel, and Sasanapuri Ranjit. "A Novel and Efficient Method to Detect the Face Coverings to Ensurethe Safety using Comparison Analysis." In 2022 International Conference on Edge Computing and Applications (ICECAA), pp. 1664-1667. IEEE, 2022.
[17]. Chinnasami Sivaji; M. Ramachandran; Vidhya Prasanth, "Machinability analysis in Drilling Composites and drilling woven GFRepoxy composites using the SPSS Method", REST Journal on Advances in Mechanical Engineering, 2(1), 2023: ,17-25.
[18]. Icaga, Yilmaz. "Fuzzy evaluation of water quality classification." Ecological Indicators 7, no. 3 (2007): 710-718.
[19]. Beck, M. Bruce. "Water quality modeling: a review of the analysis of uncertainty." Water resources research 23, no. 8 (1987): 1393-1442.
[20]. Ouyang, Y., P. Nkedi-Kizza, Q. T. Wu, D. Shinde, and C. H. Huang. "Assessment of seasonal variations in surface water quality." Water research 40, no. 20 (2006): 3800-3810.
[21]. Krishna, S. Rama, Ketan Rathor, Jarabala Ranga, Anita Soni, D. Srinivas, and Anil Kumar. "Artificial Intelligence Integrated with Big Data Analytics for Enhanced Marketing." In 2023 International Conference on Inventive Computation Technologies (ICICT), pp. 1073-1077. IEEE, 2023.
[22]. Poole, Geoffrey C., Jason B. Dunham, Druscilla M. Keenan, Sally T. Sauter, DALE A. McCullough, Christopher Mebane, Jeffrey C. Lockwood et al. "The case for regime-based water quality standards." BioScience 54, no. 2 (2004): 155-161.
[23]. K. R. Chandru, D. S. Robinson Smart, M. Ramachandran, Chinnasami Sivaji. “Integrating the Digital Twin of Decision Support Systems in Aeronautics.” REST Journal on Advances in Mechanical Engineering 2(2),(2023):12-23. DOI: https://doi.org/10.46632/jame/2/2/3
[24]. Jain, Ankita, Pradeep Tangade, Vikas Singh, Priyanka Yadav, and Jagriti Yadav. "Comparative evaluation of audio-visual and verbal education method on OHRQoL, dental anxiety, dental neglect of diabetes mellitus patients attending a teaching hospital in India." Indian Journal of Dental Research 32, no. 3 (2021): 354.
[25]. de FrançaDoria, Miguel. "Factors influencing public perception of drinking water quality." Water policy 12, no. 1 (2010): 1-19.
[26]. Selvi, S., and R. Anbuselvi. "Popularity (Hit Rate) Based Replica Creation for Enhancing the Availability in Cloud Storage." International Journal of Intelligent Engineering & Systems 11, no. 2 (2018).
[27]. Kumar, Ashish, Ketan Rathor, Snehit Vaddi, Devanshi Patel, Preethi Vanjarapu, and Manichandra Maddi. "ECG Based Early Heart Attack Prediction Using Neural Networks." In 2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC), pp. 1080-1083. IEEE, 2022.
[28]. Shanmugasundar, G., Vishal Fegade, Miroslav Mahdal, and Kanak Kalita. "Optimization of Variable Stiffness Joint in Robot Manipulator Using a Novel NSWOA-MARCOS Approach." Processes 10, no. 6 (2022): 1074.
[29]. Van Belle, Gerald, and James P. Hughes. "Nonparametric tests for trend in water quality." Water resources research 20, no. 1 (1984): 127-136.
[30]. Selvi, S. Annal Ezhil, and R. Anbuselvi. "RAAES: reliability-assured and availability-enhanced storage for cloud environment." International Journal of Pure and Applied Mathematics 118, no. 9 (2018): 103-112.
[31]. Egan, Kevin J., Joseph A. Herriges, Catherine L. Kling, and John A. Downing. "Valuing water quality as a function of water quality measures." American Journal of Agricultural Economics 91, no. 1 (2009): 106-123.
[32]. Gayathri, B. "Gray Wolf Optimisation Based Energy Efficient Green Cloud Computing." Journal of Algebraic Statistics 13, no. 1 (2022): 932-940.
[33]. Hirsch, Robert M., Richard B. Alexander, and Richard A. Smith. "Selection of methods for the detection and estimation of trends in water quality." Water resources research 27, no. 5 (1991): 803-813.
[34]. Selvi, S., and R. Anbuselvix. "OPTIMIZING THE STORAGE SPACE AND COST WITH RELIABILITY ASSURANCE BY REPLICA REDUCTION ON CLOUD STORAGE SYSTEM." International Journal of Advanced Research in Computer Science 8, no. 8 (2017).
[35]. Rauch, Wolfgang, MogensHenze, L. Koncsos, P. Reichert, P. Shanahan, L. Somlyódy, and Peter Vanrolleghem. "River water quality modelling: I. State of the art." Water Science and Technology 38, no. 11 (1998): 237-244.

[36]. Bordalo, A. A., W. Nilsumranchit, and K. Chalermwat. "Water quality and uses of the Bangpakong River (Eastern Thailand)." Water Research 35, no. 15 (2001): 3635-3642.
[37]. Swamee, Prabhata K., and Aditya Tyagi. "Improved method for aggregation of water quality subindices." Journal of environmental engineering 133, no. 2 (2007): 220-225.
[38]. Bharti, Rajendra Kumar, D. Suganthi, S. K. Abirami, Relangi Anil Kumar, B. Gayathri, and S. Kayathri. "Optimal Extreme Learning Machine based Traffic Congestion Control System in Vehicular Network." In 2022 6th International Conference on Electronics, Communication and Aerospace Technology, pp. 597-603. IEEE, 2022.
[39]. Deepakfranklin, P. "Survey on Methods of Obtaining Biomedical Parameters from PPG Signal." Turkish Journal of Computer and Mathematics Education (TURCOMAT) 12, no. 10 (2021): 2684-2692.
[40]. Km, R., and S. Shankar. "Secure image transformation using remote sensing encryption algorithm." Int. J. Sci. Eng. Res 5 (2014).
[41]. Manjunath, C. R., Ketan Rathor, Nandini Kulkarni, Prashant Pandurang Patil, Manoj S. Patil, and Jasdeep Singh. "Cloud Based DDOS Attack Detection Using Machine Learning Architectures: Understanding the Potential for Scientific Applications." International Journal of Intelligent Systems and Applications in Engineering 10, no. 2s (2022): 268-271.
[42]. Kachroud, Moez, FabienneTrolard, Mohamed Kefi, SihemJebari, and GuilhemBourrié. "Water quality indices: Challenges and application limits in the literature." Water 11, no. 2 (2019): 361.
[43]. Boyacioglu, Hülya. "Surface water quality assessment using factor analysis." Water Sa 32, no. 3 (2006): 389-393.
[44]. Keiser, David A., and Joseph S. Shapiro. "Consequences of the Clean Water Act and the demand for water quality." The Quarterly Journal of Economics 134, no. 1 (2019): 349-396.
[45]. Shanmugasundar, G., R. Sivaramakrishnan, R. Sridhar, and M. Rajmohan. "Computer aided modelling and static analysis of an inspection robot." Applied Mechanics and Materials 766 (2015): 1055-1060.
[46]. Mohankumar, v., and d. Hemanand. "structural, electronic and nonlinear optical properties of fluorophenol and nitrophenol molecules in effect of ortho, para and meta position."
[47]. Singh, Vikas, D. J. Bhaskar, R. Chandan Agali, Mallika Kishore, Safalya S. Kadtane, and Harender Singh. "Adenomatoid Odontogenic tumour: Report of a case and review of literature." International Journal of Scientific Study 1, no. 4 (2014): 63-66.
[48]. Parry, Roberta. "Agricultural phosphorus and water quality: A US Environmental Protection Agency perspective." Journal of Environmental Quality 27, no. 2 (1998): 258-261.
[49]. Gopu, Arunkumar, and NeelaNarayanan Venkataraman. "Virtual machine placement using multi-objective bat algorithm with decomposition in distributed cloud: Moba/d for vmp." International Journal of Applied Metaheuristic Computing (IJAMC) 12, no. 4 (2021): 62-77.
[50]. Siva Shankar, S., Bui Thanh Hung, Prasun Chakrabarti, Tulika Chakrabarti, and Gayatri Parasa. "A novel optimization based deep learning with artificial intelligence approach to detect intrusion attack in network system." Education and Information Technologies (2023): 1-25.
[51]. Vijayakumar, N., and and R. Ramya. "The real time monitoring of water quality in IoT environment." In 2015 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS), pp. 1-5. IEEE, 2015.
[52]. Gayathri, B. "Green cloud computing." (2012): 114-118.
[53]. Hemanand, D., N. P. G. Bhavani, Shahanaz Ayub, Mohd Wazih Ahmad, S. Narayanan, and Anandakumar Haldorai. "Multilayer vectorization to develop a deeper image feature learning model." Automatika 64, no. 2 (2023): 355-364.
[54]. Greenley, Douglas A., Richard G. Walsh, and Robert A. Young. "Option value: empirical evidence from a case study of recreation and water quality." The quarterly journal of economics 96, no. 4 (1981): 657-673.
[55]. Shanmugasundar, G., S. Sri Sabarinath, K. Ramesh Babu, and M. Srividhya. "Analysis of occupational health and safety measures of employee in material manufacturing industry using statistical methods." Materials Today: Proceedings 46 (2021): 3259-3262.
[56]. Tandon, Vaibhav, Vikram Arora, Amit Tirth, Vipul Yadav, Vikas Singh, and Manu Batra. "Effects of diabetes mellitus on periodontal diseases in the adult population of Moradabad." J Dent 29, no. 1 (2015): 5-8.
[57]. Gopu, Arunkumar, Neelanarayanan Venkataraman, and M. Nalini. "Toward the Internet of Things and Its Applications: A Review on Recent Innovations and Challenges." Cognitive Computing for Internet of Medical Things (2022): 1-21.
[58]. Rathor, Ketan, Anshul Mandawat, Kartik A. Pandya, Bhanu Teja, Falak Khan, and Zoheib Tufail Khan. "Management of Shipment Content using Novel Practices of Supply Chain Management and Big Data Analytics." In 2022 International Conference on Augmented Intelligence and Sustainable Systems (ICAISS), pp. 884-887. IEEE, 2022.
[59]. Gopu, Arunkumar, Neelanarayanan Venkataraman, and M. Nalini. "Toward the Internet of Things and Its Applications: A Review on Recent Innovations and Challenges." Cognitive Computing for Internet of Medical Things (2022): 1-21.
[60]. Hemanand, D., and N. Sankar Ram. "QoS Routing for Mobile ADHOC Network Environment." Research Journal of Applied Sciences, Engineering and Technology 11, no. 9 (2015): 1013-1018.