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Evaluation of Cardiovascular Disease Prediction Using Decision making trial and Evaluation Laboratory Method

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Abstract

Predict a patient with heart disease Classify like Logistic Regression and KNN Different algorithms of machine learning We used How to improve the accuracy of this model Very useful for controlling what can be used approach was used predicting myocardial infarction in any given individual. The most important behavior for heart disease and stroke Risk factors include unhealthy diet, physical inactivity Temperament, tobacco use and alcohol harm result in Effects of behavioral risk factors are high Blood pressure, increased blood glucose, increased blood In fat and overweight and obesity manifested in persons. Alternative: Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. Evaluation Preference: Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. From the result it is seen that Abnormal HDL and is got the first rank whereas is the Abnormal TG got is having the lowest rank. The value of the dataset for Range of Cardiovascular Disease Prediction in DEMATEL Method shows that it results in Abnormal HDL and top ranking.

Keywords: Marine Current Energy, MOORA method.

I. Introduction

Having both high LDL cholesterol and low HDL cholesterol Better your risk of heart disease is one. A blood lipid profile is your cholesterol Numbers and your triglycerides, in the blood Numbers and your triglycerides, in the blood another type of fat is a risk factor. CVD A blood test can be used to predict Scientists have found. Science Translational The study, published in the medical journal, CVD door to personalized treatment plans opens. Identify new CVD drugs it can also improve build speed. Neuroscience to predict heart disease risk a useful heart disease using network a predictive system is developed. This system age, Gender, blood pressure, cholesterol and obesity Using 15 clinical parameters viz to predict. What Risk factors for heart disease? The most important behavior for heart disease and stroke Risk factors include unhealthy diet, physical inactivity Temperament, tobacco use and alcohol Harmful. You if there are diagnosed with heart disease, you cannot cure it. But you can contribute to the development of coronary artery disease Treat things. In turn can reduce how the condition affects your body. 1 in 4 deaths each year, According to the CDC, in the United States The leading cause of death is heart disease is the main reason. Approximately 6 million Americans currently have heart disease Dysfunction exists, and that number is 46 by 2030 that percentage will increase to 8 million expected. Chest pain panic attacks and heart attacks although common to both, the characteristics of pain often vary.

II. Cardiovascular Disease Prediction

Commonly used for cardiovascular disease (CVD). Total cholesterol in risk prediction scores and High-density lipoprotein cholesterol (HDL-C) and more Includes information on common risk factors. [1] Prospective cohort studies included in the present analysis are included, provided they meet the criteria: Recorded baseline history of cardiovascular disease absent participants was included. [2] CRP levels and incidence among healthy individuals The literature mainly examines cardiovascular diseases Focuses on inadequate measurements, which include CRP and suggesting interactions between CVD. through traditional risk factor measurement. [3] Cardiologists for cardiovascular disease, thoracic Surgeons, Vascular Surgery specialists, neurologists and interventional radiologists Specialists treat the organ system Treatment is given accordingly. [4] Established risk for predicting cardiovascular disease Comparative studies on the relative performance of models often one model is better than the other they say that. Specifically, the Framingham risk score is generally underperforming compared to other models, [5] National Center for Cardiovascular Diseases (NCCD) and the hospital's clinical ethics committee Approved by Objectives of the study and Participants were informed about the methods. [6] Cardiovascular disease risk and blood pressure or blood Potential benefits of fat reduction Provides a simple quantitative method for estimation medications. [7] Because high glycemia readings are CVD is associated with higher cardiovascular disease (CVD) incidence Among the algorithms used to predict risk Adding information about glycemia measurements May be associated with performance improvements It is proposed that [8] Statistically significant factors were Traditional risk variables for early cardiovascular events, Variables related to cardiovascular disease burden, including Number of vascular beds and cardiac blood A History of Days events. [9] Although mortality from cardiovascular disease (CVD) has declined over 4 decades In the United States, CVD morbidity and is a leading cause of death, and sooner Key to developmental morbidity and mortality becomes a factor countries. [10] Cardiovascular disease (CVD) in developed countries today it is the largest single cause of death. So, this a huge financial burden on the health service and then some the incidence of CVD will increase over the decades expected. [11] At the same time, a surveillance system was set up to identify new fatal and fatal cardiovascular disease (CVD) cases and follow-up examination of survivors after the first years. [12] Indicates the source of the data in the web interface the incident cohort was first identified by the Event type in the received group. Hospitalization or death with no evidence of cardiovascular disease in the records using only common practice data Number of identified cases and It also shows the percentage. [13] If lipid levels were included in the prediction model. In fact they are independent in diversity In effect, the above caveats area It casts doubt on whether the model works, or Additionally, cholesterol levels in the study population are measured with considerable error. [14] Cardiovascular disease (CVD), including heart disease and stroke; It is the leading cause of death in the world by a significant margin. Accurately predicting who will develop CVD remains challenging. [16] A multi-task (MT) recurrent neural network Cardiovascular with a task-oriented mechanism Proposed to predict the onset of diseases. [18]. American College of Cardiology/American Heart Association with 5- and 10-year atherosclerosis and cardiovascular disease to assess disease risk and medical treatment to guide results, especially fat regarding the use of reducing drugs. [19] It was hypothesized that IMT measurements may aid cardiovascular disease (CVD) prediction and thereby CVD prediction by traditional risk factors alone improves. However, carotid for CVD risk prediction Appreciation for the use of IMT is conflicting. [21] The ability of the C-index risk score overestimates women who will develop coronary artery disease. Common calibration across deciles of predicted risk was estimated using Hosmer - lem is a goodness-of-fit test. [23] Joint European Union Working Group on Prevention Cardiovascular Disease in Clinical Practice and other societies Australian Citizen for Vascular Disease Prevention and Diabetes International Federation (IDF). [24] Estimates of Cardiovascular disease (CVD) risk prediction information Provide treatment strategies for individual patients can also be used to select. [25] Arterial stiffness is well recognized as an important predictor of the development of cardiovascular disease (CVD) and meta-analysis of prospective cohort studies Analyzes have revealed that associated with increased carotid-femoral pulse wave velocity. [27] Diet, physical activity, smoking and Associated with adiposity Healthy lifestyle factors in cardiovascular disease (CVD) associated with reduced rates is shown.. Several factors reduce CVD risk by 83% in healthy individuals. [28] Cardiovascular disease (CVD) is a major Cause of disease and death. Primary causes of CVD Current Clinical Guidelines for Prevention, Prevention Asymptomatic who may benefit from action the need to diagnose patients emphasize. based on their predicted risk. [29] High with increased cardiovascular disease (CVD) risk Several showed an independent correlation of GGT levels With reports, current CVD risk from GGT Adding metrics to prediction algorithms is CVD Corresponding to improvements in predictive ability A debate is brewing that maybe. [30]

III. DEMATEL

Lack of research that provides a quantitative understanding of the interactions between complex variables expressed. Experimentation and evaluation of decision-making in this research gap can be filled using the lab. The DEMATEL method is structured in complex causal relationships has become a popular method of visualization format. [1] For outsourcing to a telecom company a fuzzy integrated multi-criteria decision-maker method, DEMATEL and Fuzzy ANP multi-criteria Evaluation using decision making techniques and Determining, first, the study for DEMATEL outsourcing selection process between the main criteria determined this method is used to present the relationship. Then, Locality of subscales and subscales weights causal-effect Based on relationships are computed by Fuzzy ANP approach. [2]. When constructing In any strategy map, preferences are assigned among objectives Not necessarily crisp, and the domain of experts in an ambiguous environment It is very significant that knowledge can be extracted, and then such An extended fuzzy DEMATEL is proposed to handle ambiguities. [3] The DEMATEL method provides an opportunity to identify Experimental setup and cause-and-effect relationships Important for s-CO2 power systems according to the scheme Analyze errors and/or problems. Similarly, fuzzy sets are decision-making uncertainties from the word of mouth of characters and experts are released opinions. [4] The original DEMATEL aimed to search Fragment of the World Communities for Integrated Solutions Fragmented and hostile events. In recent years, the DEMATEL method Because it is very popular in Japan of the structure of complex causal relationships Visualization is practical.[5] The DEMATEL method is used in many applications Successfully. There are also some extensions of DEMATEL a recently developed method to increase it skills. The classical or smooth DEMATEL is very useful for revealing cause and effect relationships and may have some difficulty in prioritizing factors that describe uncertainty.[6] The DEMATEL method correlates the parameters Outcomes can be resolved effectively and conflicts between criteria exist It applies to situations; Hence, the criteria here Determining the weight is an accurate choice, while at the same time approximate A set can be analyzed effectively. [7] Analysis of Best subcontractor in literature To select criteria and methods are discussed, and DEMATEL to evaluate it method is proposed to be used. Nature of the relationships between various factors in the selection of subcontractors. [8] Limit to individual Blogs to prevent ambiguity in findings. Bloggers believe that blog design is important it explores key design factors. On the one hand this Evaluation criterion Web page design refers; on the other hand It uses DEMATEL. Analyzing blog design is the first step [9] A Shapley weighting vector can reflect correlations in combinations Expert packages. For coastal erosion factors to express the cause-effect relationship between, SSVNA proposed with DEMATEL method of operator the algorithm used in [10].

TABLE 1. Cardiovascular Disease Prediction

	Abnormal TG	Abnormal TC	Abnormal LDL	Abnormal HDL	Abnormal FPG	Sum
Abnormal TG	0	6	7	6	5	24
Abnormal TC	5	0	7	3	9	24
Abnormal LDL	8	5	0	6	7	26
Abnormal HDL	9	6	5	0	3	23
Abnormal FPG	8	5	7	5	0	25

Table 1 show that DEMATEL Decision Alternative: Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. Evaluation Preference: Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. Abnormal TG it is seen that Abnormal LDL is showing the highest value for Abnormal FPG the lowest value. Abnormal TC it is seen that Abnormal FPG is showing the highest value for Abnormal HDL the lowest value. Abnormal LDL it is seen that Abnormal TG is showing the highest value for Abnormal TC is showing the lowest value. Abnormal HDL it is seen that Abnormal TG is showing the highest value for Abnormal FPG lowest value. Abnormal FPG it is seen that Abnormal TG is showing the highest value for Abnormal TC& Abnormal HDL lowest value.

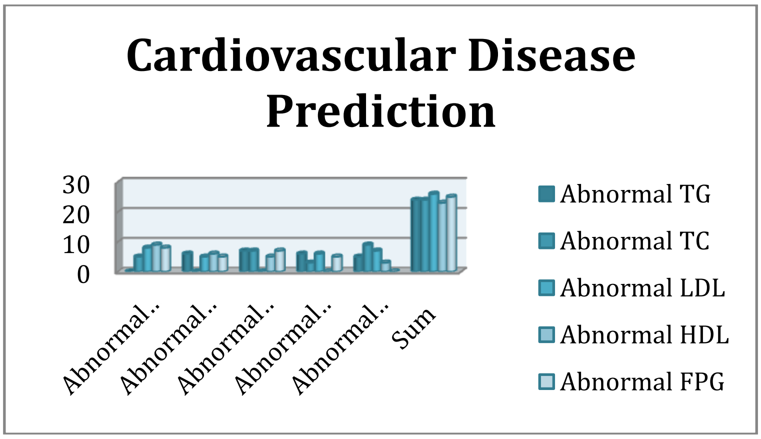

FIGURE 1. Cardiovascular Disease Prediction

Figure 1 show that DEMATEL Decision Alternative: Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. Evaluation Preference: Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG.

TABLE 2. Normalization of direct relation matrix

Normalisation of direct relation matrix					
	Abnormal TG	Abnormal TC	Abnormal LDL	Abnormal HDL	Abnormal FPG
Abnormal TG	0	0.545454545	0.636363636	0.545454545	0.45454545
Abnormal TC	0.454545	0	0.636363636	0.272727273	0.81818182
Abnormal LDL	0.727273	0.454545455	0	0.545454545	0.63636364
Abnormal HDL	0.818182	0.545454545	0.454545455	0	0.27272727
Abnormal FPG	0.727273	0.454545455	0.636363636	0.454545455	0

Table 2 shows that the Normalizing of direct relation matrix in Fond of the Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG of all the data set is zero.

TABLE 3. Calculate the total relation matrix

Calculate the total relation matrix					
	Abnormal TG	Abnormal TC	Abnormal LDL	Abnormal HDL	Abnormal FPG
Abnormal TG	0	0.545454545	0.636363636	0.545454545	0.454545455
Abnormal TC	0.454545	0	0.636363636	0.272727273	0.818181818
Abnormal LDL	0.727273	0.454545455	0	0.545454545	0.636363636
Abnormal HDL	0.818182	0.545454545	0.454545455	0	0.272727273
Abnormal FPG	0.727273	0.454545455	0.636363636	0.454545455	0

Table 3 shows that the Calculate the total relation matrix in Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. The diagonal value of all the data set is zero.

TABLE 4. I

I				
1	0	0	0	0
0	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1

Table 4 Shows the T= Y(I-Y)-1, I= Identity matrix in Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. is the common Value.

TABLE 5. Y

Y				
0	0.54545455	0.636364	0.545455	0.454545
0.45454545	0	0.636364	0.272727	0.818182
0.72727273	0.45454545	0	0.545455	0.636364
0.81818182	0.54545455	0.454545	0	0.272727
0.72727273	0.45454545	0.636364	0.454545	0

Table 5 Shows the Y Value in Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. is the Calculate the total relation matrix Value and Y Value is the same value.

TABLE 6. I-Y

I-Y				
1	-0.54545	-0.63636	-0.54545	-0.45455
-0.45455	1	-0.63636	-0.27273	-0.81818
-0.72727	-0.45455	1	-0.54545	-0.63636
-0.81818	-0.54545	-0.45455	1	-0.27273
-0.72727	-0.45455	-0.63636	-0.45455	1

Table 6 Shows the I-Y Value Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. table 4 T= Y(I-Y)-1, I= Identity matrix and table 5 Y Value Subtraction Value.

TABLE 7. (I-Y)-1

(I-Y)-1				
0.271523	-0.24503	-0.28477	-0.21854	-0.317880795
-0.42339	0.383614	-0.27958	-0.34759	-0.151296121
-0.33687	-0.31345	0.292744	-0.24092	-0.288997162
-0.24999	-0.21593	-0.33419	0.449574	-0.380359508
-0.32298	-0.30146	-0.2998	-0.26589	0.343245033

Table 7 shows the (I-Y)-1 Value Make the Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. Table 6 shown the Minverse Value.

TABLE 8. Total Relation matrix (T)

Total Relation matrix (T)				
-0.728476821	-0.24503	-0.28477	-0.21854	-0.31788
-0.423386944	-0.61639	-0.27958	-0.34759	-0.1513
-0.336868496	-0.31345	-0.70726	-0.24092	-0.289
-0.249990539	-0.21593	-0.33419	-0.55043	-0.38036
-0.322980132	-0.30146	-0.2998	-0.26589	-0.65675

Table 8 shows that the total relation matrix the direct relation matrix is multiplied with the inverse of the value that the direct relation matrix is subtracted from the identity matrix.

TABLE 9. Ri & Ci

Ri	Ci
-1.7947	-2.0617
-1.81824	-1.69226
-1.88749	-1.9056
-1.7309	-1.62337
-1.84689	-1.79529

Table 9 shows the Ri, Ci Value in Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. RI is the highest value -1.88749 lowest values -1.7309. Ci is the highest value -2.0617 lowest value -1.62337.

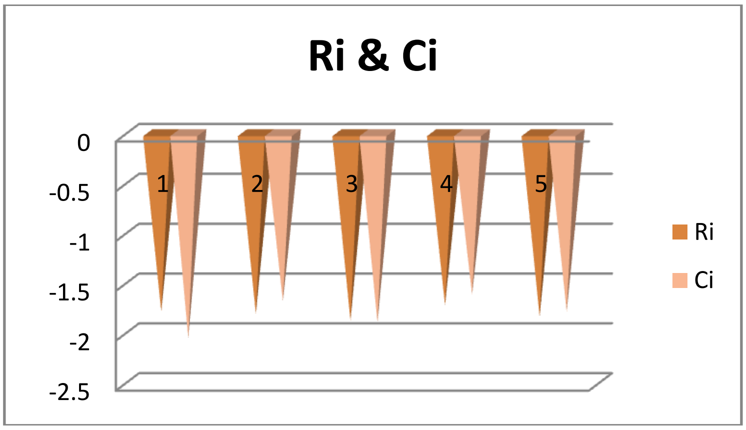

FIGURE 2. Ri & Ci

Figure 2 shows the RI, Ci Value in Abnormal TG, Abnormal TC, Abnormal LDL, Abnormal HDL And extraordinary FPG. RI is the highest value -1.88749 lowest values -1.7309. Ci is the highest value -2.0617 lowest value -1.62337.

TABLE 10. RI+Ci & Ri-Ci & Rank &Identity

Ri+Ci	Ri-Ci	Rank	Identity
-3.8564	0.267001	5	effect
-3.5105	-0.12598	2	effect
-3.79309	0.018108	4	effect
-3.35427	-0.10753	1	effect
-3.64218	-0.0516	3	effect

Table 10 shows the Calculation of Ri+Ci and Ri-Ci to Get the Cause and Effect. the final result of this paper the Abnormal HDL is in 1st rank effect , Abnormal TC is in 2nd rank effect, Abnormal FPG is in 3rd rank effect, Abnormal LDL is in 4th rank cause, Abnormal TG is in 5th rank cause. The final result is done by using the DEMATEL method.

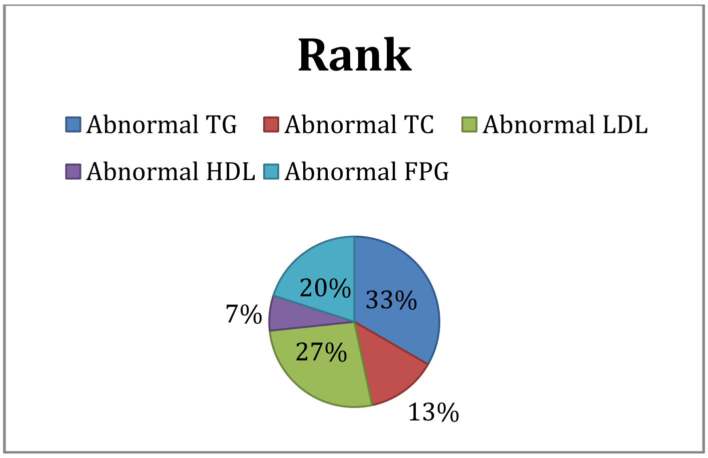

FIGURE 3. Rank

Figure 3 shows the final result of this paper the Abnormal HDL is in 1st rank effect , Abnormal TC is in 2nd rank effect, Abnormal FPG is in 3rd rank effect, Abnormal LDL is in 4th rank cause, Abnormal TG is in 5th rank cause. The final result is done by using the DEMATEL method.

TABLE 11. T matrix

T matrix				
-0.72848	-0.24503	-0.28477	-0.21854	-0.31788
-0.42339	-0.61639	-0.27958	-0.34759	-0.1513
-0.33687	-0.31345	-0.70726	-0.24092	-0.289
-0.24999	-0.21593	-0.33419	-0.55043	-0.38036
-0.32298	-0.30146	-0.2998	-0.26589	-0.65675

Table 11 shows the T Matrix Value calculate the average of the matrix and its threshold value (alpha) = Alpha - 0.36312885525071 If the T Matrix value is greater than threshold value then bold it.

IV. Conclusion

CRP levels and incidence among healthy individuals the literature mainly examines cardiovascular diseases Focuses on inadequate measurements, which include CRP and suggesting interactions between CVD. Cardiologists for cardiovascular disease, thoracic Surgeons, Vascular Surgery specialists, neurologists and interventional radiologists Specialists treat the organ system Treatment is given accordingly. At the same time, a surveillance system was set up to identify new fatal and fatal cardiovascular disease (CVD) cases and follow-up examination of survivors after the first years. When constructing In any strategy map, preferences are assigned among objectives Not necessarily crisp, and the domain of experts in an ambiguous environment It is very significant that knowledge can be extracted, and then such An extended fuzzy DEMATEL is proposed to handle ambiguities. The DEMATEL method provides an opportunity to identify Experimental setup and cause-and-effect relationships Important for s-CO2 power systems according to the scheme Analyze errors and/or problems. Similarly, fuzzy sets are decision-making uncertainties from the word of mouth of characters and experts are released opinions. From the result it is seen that Abnormal HDL and is got the first rank whereas is the Abnormal TG got is having the lowest rank.

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