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Medical Decision Making Support System For Prediction Of Malnutrition In Children Using AI/ML

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Abstract: Child malnutrition condition can be considered as a major health issue for a country since the children are the unborn pool which directly affects the profitable growth of the country. Proper nutrition is an essential element for the survival, growth, and development of children in society. Malnutrition is a global problem in moment's life. The primary target of this miracle is children under five times of age and substantially for developing countries. In this system, a data wisdom approach is proposed to prognosticate the malnutrition status of children under five times of age grounded on the training data-sets. Training data-sets downloaded from www.kaagle.com. Some retired factors were uprooted with the use of data mining ways. Bracket ways used for malnutrition status vaticination. We use algorithm "Bayesian classifier" for vaticination. The results shown on GUI. By testing and validating the knowledge, preventative conduct can be taken with the help of medical experts to reduce the malnutrition condition among children for applicable countries. We make this as real time operation useful for the society. To make real time operation we use technologies similar as "Visual Studio" as frontal end technology and "SQL Server" as end technology. Both the tools are important tools to work with real time operation. This system defines how data wisdom bracket ways can classify malnutrition status for children under five times of age. Generally, our system will attain the most robust results to prognosticate the malnutrition status grounded on clinical data- sets.

Crucial words: Data wisdom, Child Malnutrition, Naïve Bayes algorithm, GUI, Malnutrition vaticination, Data Mining

I. INTRODUCTION

In the moment's world nutrition is most important and children should take proper nutrition for proper growth, development and survival. Current system is homemade process of child analysis and leads to less accurate results and not an applicable system for malnutrition vaticination. Current system is involves tedious tasks and involves further time and further precious. There are numerous factors which goods children malnutrition similar as age, gender, height, weight, WAZ, HAZ, WHZ etc.. Malnutrition discovery is important in moment's world. Current system is homemade process of child analysis and leads to less accurate results and not an applicable system for malnutrition vaticination. Current system is involving tedious tasks and involves further time and further precious. There is no robotization for malnutrition status vaticination of children. System classifies children into suppressed, light, wasted, and nutritive oedema statuses. We use parameters similar as age, gender, height, weight, WAZ, HAZ, WHZ etc. Classifiers used for malnutrition vaticination of children. We use effective classifiers similar as Bayesian classifier, KNN classifier or Random timber classifier. We collect data- sets from online sources similar as "kaagle.com", "Dataworld.com" etc. We can develop this as operation useful for croakers. We use effective technologies similar as "visual plant" and "sql server" for operation development. Data wisdom algorithms are generally grounded on mathematics and statistics. The main advantage of machine literacy also a traditional software is that there is not a written law that shows the system how to make the decision to choose the right object between two different bone

because it is hard to handle every situation on an object. Machine literacy works for that. It substantially uses the given data to make intelligent opinions, give unborn prognostications, or to descry anomalies. moment it's used in colorful operations similar as independent buses, virtual sidekicks, search machine results, relating objects, advertising, prophetic analysis, etc. It can be distributed into three sub-fields called machine literacy ways are Supervised Learning, Unsupervised literacy, and underpinning literacy. System uses data wisdom algorithms for vaticination.

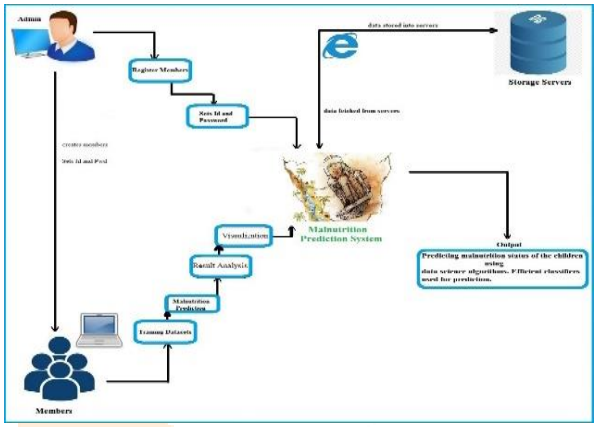


Fig. System Design

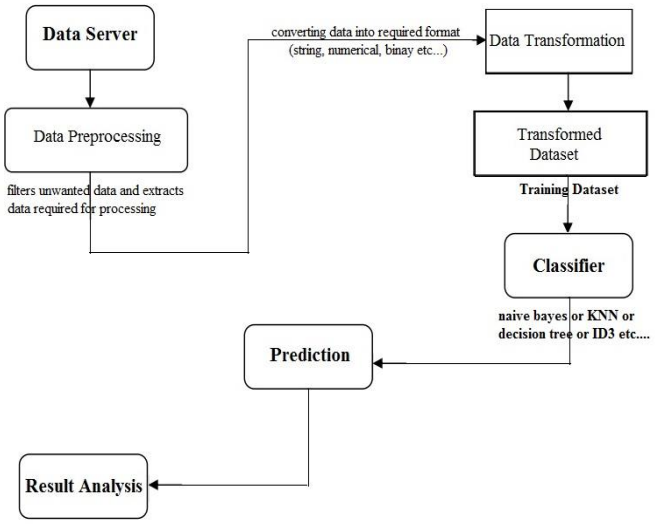
II. METHODOLOGY

Data Science-- Data wisdom is a process of assaying data from different perspective s and birth of useful information from the reused data. Data booby-trapping applied on n number of fields and used to break real world problems. Data wisdom supports numerous ways. In the design we use “Data Science Bracket Rules” to reuse data and for vaticination.

Bracket Rules (Classifiers) principally bracket is used to classify each point in a set of data into one of the predefined set of classes or groups. Bracket styles make use of fine ways for problem working.

Ex: Employee statuses in a company (leaves or stay)

To prognosticate which current workers are presumably to leave in the future. In the design we use either “naive bayes” or “KNN” or “decision tree” classifier to reuse the data and for vaticination. These specified algorithms are most effective and takes lower time for processing data. These algorithm works for n numbers of parameters.



Methodology

Navie Bayes Algorithm

Step 1: overlook the dataset (storehouse waiters).

Retrieval of needed data for mining from the waiters similar as database, pall, exceed distance etc.

Step 2: Calculate the probability of each trait value. (n, n_c, m, p)

Then for each trait we calculate the probability of circumstance using the following formula. (mentioned in the coming step). For each class (complaint) we should apply the formulae.

Step 3: Apply the formulae

P (attributevalue(ai) /subjectvalue(vj) = (n_c + mp)/(n+m)

Where

n = the number of training exemplifications for which v = vj

nc = number of exemplifications for which v = vj and a = ai

p = a priori estimate for P(aijvj)

m = the original sample size

Step 4: Multiply the chances by p

For each class, then we multiple the results of each trait with p and final results are used for bracket.

Step 5: Compare the values and classify the trait values to one of the predefined sets of class.

Step 6: Result Analysis

Naïve Bayes Algorithm

Then we make a real time operation useful for the society. This design figure using Microsoft technologies. Medical datasets trained using Naive Bayes algorithm and we got veritably good results. Naive Bayes algorithm is programmed in such a way that, it works for dynamic datasets. Naive Bayes algorithm sense is written and it's our own library.
We're getting around of accurate results and it takes around 11386 milli seconds for prediction.

Contraints	Naïve Bayes Algorithm
Accuracy	89.9624060150376%
Efficiency	11386
Precision	89.9624060150376%
Recall	10.0375939849624%

RESULTS

Fig: Home page

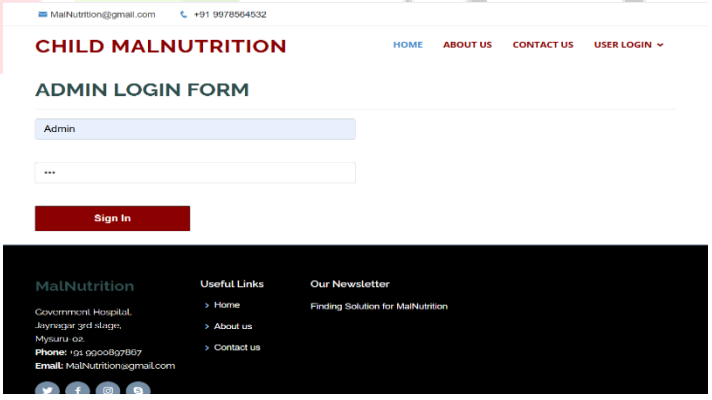


Fig: Admin login form

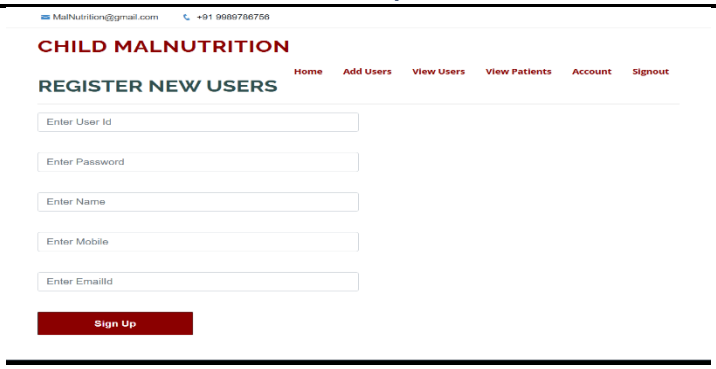


Fig: Doctor's registration page

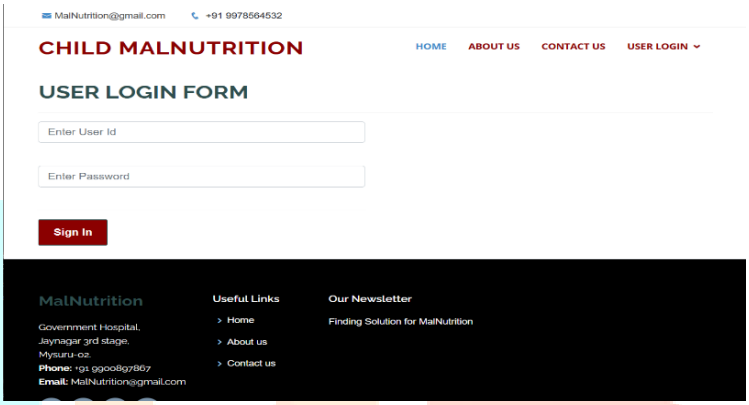
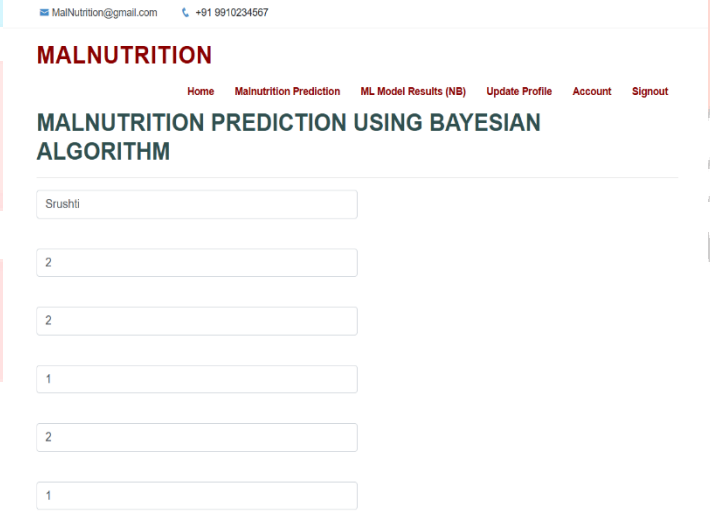


Fig: Doctor login form



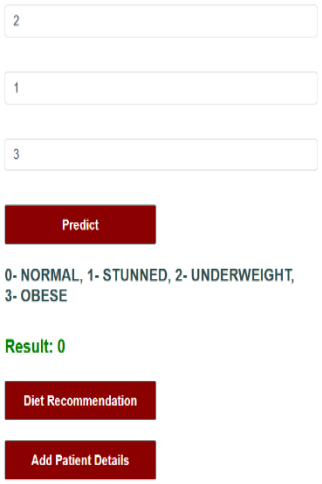


Fig: Malnutrition prediction Normal case

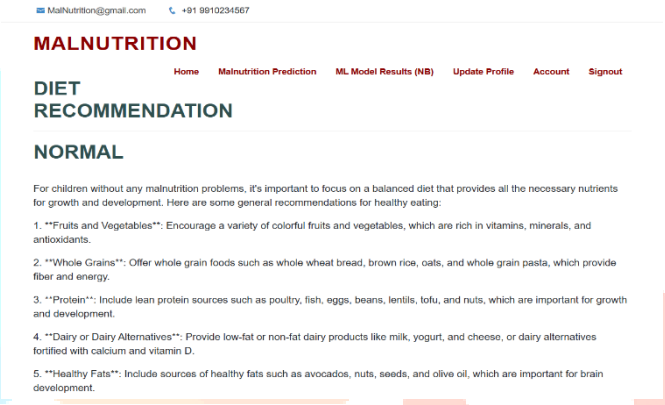


Fig: Normal case diet recommendation page

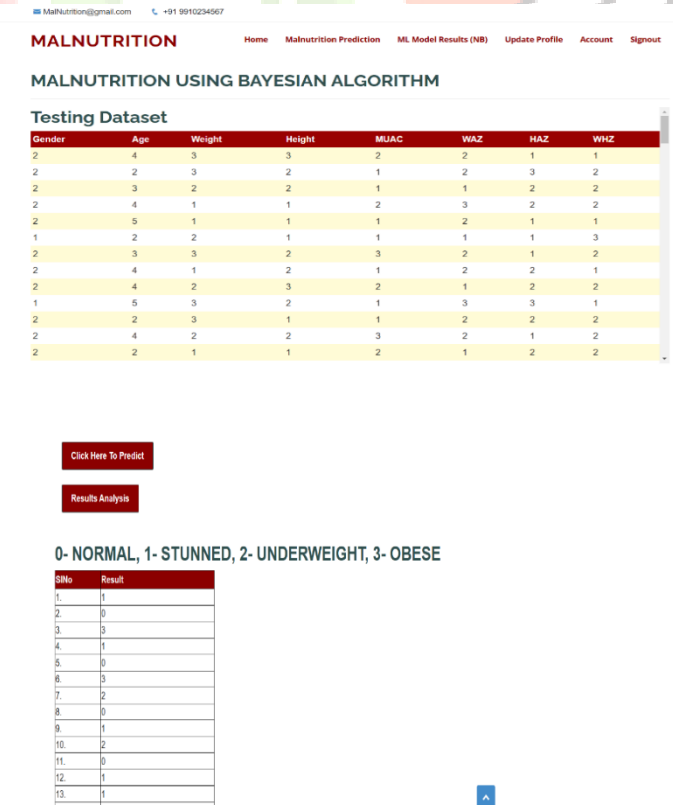


Fig: Testing dataset page

CONCLUSION

Proper nutrition is an essential element for survival, growth and development of children. Malnutrition is a global problem in moment's life. Proposed system major ideal is to prognosticate the malnutrition status of children under five times of age. System classifies children into suppressed, light, wasted, and nutritive oedema statuses. We use parameters similar as age, gender, height, weight, WAZ, HAZ, WHZ etc. Classifiers used for malnutrition vaticination of children. System also prognosticate anemia and suggests suitable diet recommendations for the druggies. System is a real time operation useful for the medical sector.

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