

Food and Fitness Using Machine Learning

J. Sivapriya, Soumen Mukherjee

Abstract: The importance of informational databases is extremely thought of as major health issues for overwhelming majority of individuals widespread. this text illustrates totally different databases and their significance for food shoppers. Evaluation of food and nutrient accessibility and intakes in populations need food composition knowledge for public health functions. it's necessary to produce thorough knowledge on the market for users worldwide as this improves perceptibly the public's health. The main focus are going to be to assist the user reach his hot goal supported his BMI worth. It provides fitness tips and conjointly the hot values of each instruction. This fashion the users will management their diet and keep healthy and match. We have a tendency to are exploitation mil in USDA info contains data concerning Food Guide Pyramid, U.S. Dietary pointers, Food and Dietary Intake Statistics, Food help Programs, Food Safety and Recall data, Food Composition info to allow higher response.

Index Terms: BMI,ML,USDA database, dietary supplement

I. INTRODUCTION

. One of the key considerations for soul is the way to live healthy relating to to food and nutrition problems. Progressively, issues because of health appear to become sophisticated and worrying for all folks. To develop this application that gives a platform for users to understand concerning numerous match ness and health connected recipes which can facilitate them to stay fit. Whole description of the planning face is enclosed during this document. The project is aimed to supply a platform for accessing fitness recipes for users. It thus may be a internet application that ought to be compatible with majority of browsers to supply a user friendly interface. Therefore, this aphoristic paper is an effort to review all resources from round the world within which contain helpful info on food and nutrition resources like online databases. Evaluation of food and nutrient accessibility and intakes in populations need food composition information for public health functions. It's necessary to supply thorough information on the market for users worldwide as this improves perceptibly the public's health. Place confidence in food composition information bases is prime for each government and trust to the standard of these data is important.

To facilitate the user either gain or slim down supported his/her condition. It will provide the proper diet chart based mostly on the conditions provided from the user.

It can provide sure directions regarding what all is critical within the diet.

It will give tips and advice to the user and will specialize in all the age teams.

Name	Type
Fname	Varchar(20)
Lname	Varchar(20)
Email	Varchar(50)
DOB	Date
UserID	Varchar(10)
Password	Varchar(20)
Gender	Varchar(7)

Fig 1. User Table

II. SYSTEM ARCHITECTUTE

Before making any web site its common follow to visualise the layout, the look and every one the options you plan to include. Additionally, consider however users can move with every page and the way the location ought to perform. In code engineering, establishing a listing of necessities for a program is observed as developing the useful and non-functional necessities.

It is a key step in development method and one that's not solely applied to code development, however web site development similarly.

The popular databases contain searchable info on food and nutrition. There are some governmental and non-governmental sites regarding food and nutrition. These databases have some similarities and variations. it's seen similarities like food additives knowledge for databases of Food additives and International bibliographical info on Dietary Supplements .

Feedback Table

Avoid using bit-mapped fonts. True Type 1 or Open Type fonts.

Fig 2. Feedback Table

Name	Type
Name	Varchar(25)
email	Varchar(50)
Feed	Varchar(300)

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III. FUNCTIONAL REQUIREMENT

In a nutshell, useful needs describe what the software system / web site ought to do (the functions). rely on the core operations.

- The internet application shall settle for the domain of the user.
- The user ought to be able to read the recipes within the internet application.
- The internet application shall be able to permit users to transfer files containing the recipes they require to transfer. Notice that every demand is directly associated with what we have a tendency to expect the online application to try and do. They represent a number of the core functions.

IV. NON FUNCTIONAL REQUIREMENT

Non-functional needs don't seem to be involved with the functions of the system. Instead, they appear at the factors to that the package or web site is predicted to evolve to. Non-functional needs will embrace things like reaction time and dependability. It can even be closely tied to user satisfaction. Some non-functional needs for the motorcar look application might include:

- The internet application shall be straightforward to use by all users.
- The internet application shall be reliable for everybody.
- The internet application shall enable many file uploads.

Notice however every demand isn't associated with associate degree operation or what the appliance ought to do. Instead, the most focus during this case is that the simple use and performance. That's the concept of non-functional needs. Without realizing it, developers continuously establish needs before any secret writing begins. whether or not it had been an internet site for a consumer, or one for your own personal wants, distinguishing needs was vital. By establishing the useful and non-functional needs,

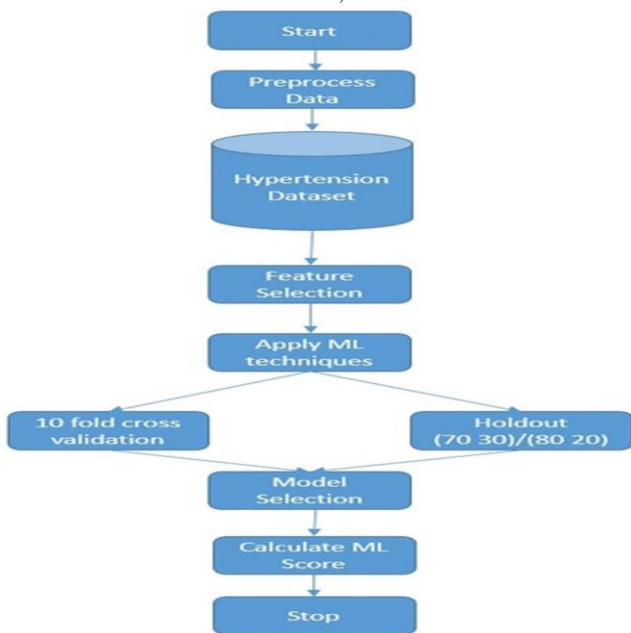


Fig 3. System Architecture

have got a guide to follow in guaranteeing that an internet site meets its specifications.

Food 'n' Fitness may be a web site ready by United States, that provides recipes to users. It provides the user associate choice to register then login. The user conjointly has associate choice to provide feedbacks and transfer the recipes of their own. Sometimes people have there own option to carry out characteristics to recover the proper diet so that it would help them to recover them fast and get the high and good amount of calorie. If any people have any type of kind of fitness goal that it help them in a better way. In fitness it is said that if you achieve any kind of certain goal you should have to take a good amount of diet a proper and good amount of sleep and high intensity training is must so that your muscle get breakdown and repair in big.

V. MACHINE LEARNING

A. K-NN Algorithm. k- NN may be a special case of a variable-bandwidth, kernel density "balloon" expert with a standardized kernel. The naive version of the algorithmic program is straightforward to implement by computing the distances from the take a look at example to all or any keep examples, however it's computationally intensive for big coaching sets victimization. AN approximate nearest neighbour search algorithmic program makes k-NN computationally tractable even for big information sets. several nearest neighbour search algorithms are projected over the years; these typically obtain to cut back the amount of distance evaluations really performed. K-NN has some sturdy consistency results. because the quantity of information approaches eternity, the two-class k-NN algorithmic program is bound to yield a mistake rate no worse than doubly the Thomas Bayes error rate. numerous enhancements to the k-NN speed square measure attainable by victimization proximity graphs. R^{\wedge} is the Thomas Bayes error rate (which is that the nominal error rate possible), } } is that the k-NN error rate, and M is that the range of categories within the drawback. For $M=2$ and because the theorem error rate } R^{\wedge} approaches zero, this limit reduces to "not o

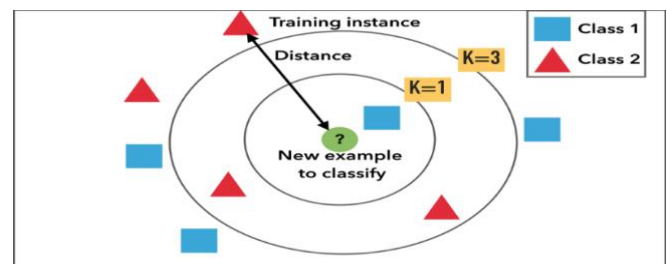


Fig 4. K-NN Design

Example of k-NN classification. The check sample (green circle) ought to be category field either to the primary category of blue squares or to the second class of red triangles. If $k = three$ (solid line circle) it's allotted to the second category as a result of there square measure a pair of triangles and only one sq. within the lot. If $k = five$ (dashed line circle) it's allotted to the primary category (3 squares vs. a pair of triangles within the outer circle).



The coaching examples square measure vectors during a three-d feature house, every with a category label. The coaching section of the algorithmic program consists solely of storing the feature.

B. MATPLOTT : Matplotlib may be a plotting library for the Python programming language and its numerical arithmetic extension NumPy. It provides associate degree object-oriented API for embedding plots into applications exploitation general GUI toolkits like Tkinter, wxPython, Qt, or GTK+. There's together a procedural "pylab" interface supported a state machine (like OpenGL), designed to closely match that of MATLAB, although its use is discouraged. SciPy makes use of Matplotlib. One of the best advantages of image is that it permits North American country visual access to very large amounts of information in simply light visuals. Matplotlib consists of many plots like line, bar, scatter, bar chart etc.

A Standard Machine Learning Pipeline

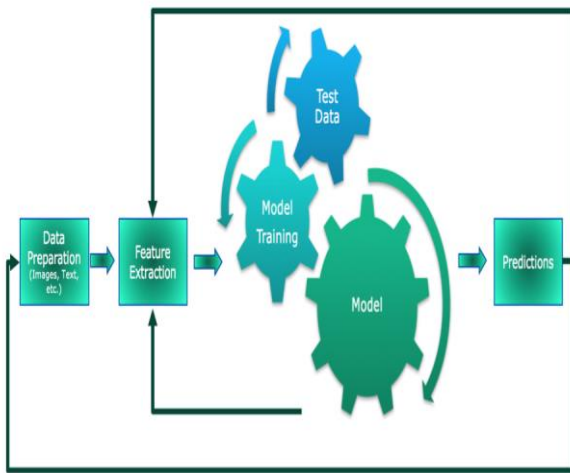


Fig 5. Data Pipelling

1. Basemap: map plotting with varied map projections, coastlines, and political boundaries
2. Cartopy: a mapping library that includes object-oriented projection definitions, and arbitrary purpose, line, polygonal shape and image transformation capabilities.
3. Excel tools: utilities for exchanging knowledge with Microsoft stand out
4. GTK tools: interface to the GTK+ library Qt interface
5. Mplot3d: 3D plots
6. Natgrid: interface to the natgrid library for gridding on an irregular basis spaced knowledge.

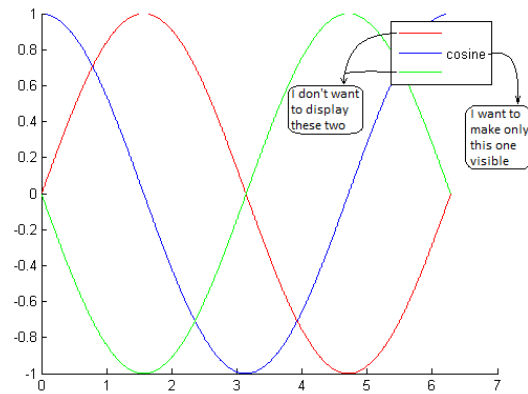


Fig 6. Matplot of Design

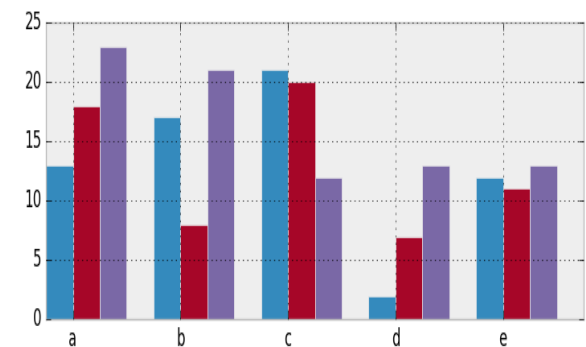
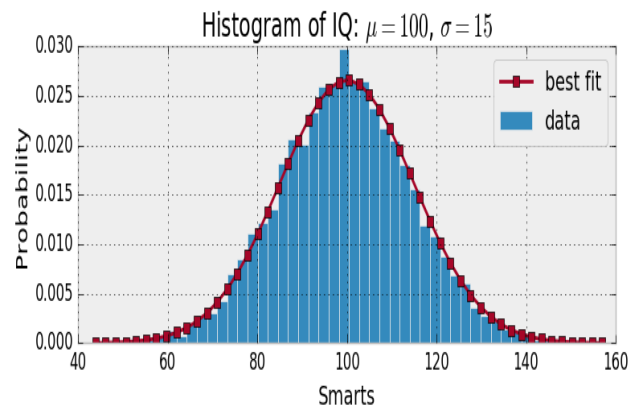
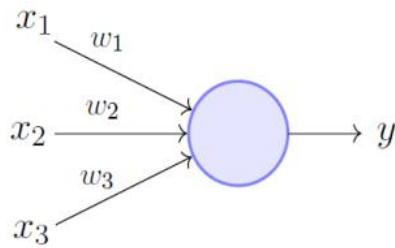


Fig 7. Histogram Representation

VI. M-NEURON AND PERCEPTRON ALGORITHM

The submitting author is responsible for obtaining The most elementary unit of a deep neural network is termed a synthetic nerve cell, that takes associate degree input, processes it, passed it through associate degree activation operate just like the Sigmoid, come the activated output. during this post, we have a tendency to square measure solely getting to point out the perceptron model planned before the 'activation' half came into the image. It overcomes a number of the restrictions of the M-P nerve cell by introducing the conception of numerical weights for inputs, and a mechanism for learning those weights. Inputs {are no |are not associate degree |aren't any} longer restricted to Boolean values like within the case of an M-P nerve cell, it supports real inputs likewise that makes it a lot of helpful and generalized.





Perceptron Model (Minsky-Papert in 1969)

Fig 8.Perceptron Model Design

SIGMOID NEURON

As I discussed earlier, the unreal neurons we have a tendency to use these days are unit slightly totally different from the perceptron we have a tendency to checked out, the distinction is that the activation operate. here. Some may say that the thresholding logic utilized by a perceptron is incredibly harsh. This harsh thresholding isn't attributed to simply one specific downside we have a tendency to selected here, it may happen with any or each downside we have a tendency to traumatize. it's a characteristic of the perceptron operate itself that behaves sort of a step operate.

Introducing sigmoid neurons wherever the output operate is far power tool than the step operate sounds like a logical and obvious issue to try to to. Mind you that a sigmoid operate could be a function with a characteristic "S"-shaped curve, additionally referred to as the sigmoid curve

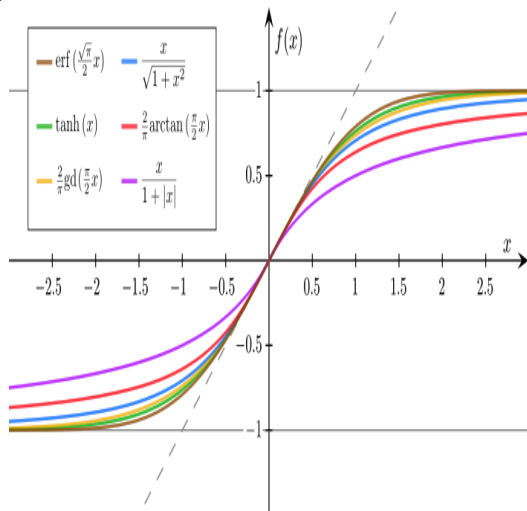


Fig 9. Final Algorithm Design

VII. PROPOSED SYSTEM

The contents of the journal are peer-reviewed and archival. Food 'n' Fitness may be a web site ready for US, that provides recipes to users. It provides the user Associate in Nursing choice to sign in so log in. The user conjointly has Associate in Nursing choice to provide feedbacks and transfer the recipes of their own. It will calculate the BMI price of the user and provides the precise calories ought to be taken by the user. It contain one among the foremost vital databases recorded was the executive department website concerning Food Guide Pyramid, U.S. Dietary tips, Food and Dietary Intake Statistics, Food help Programs, Food Safety

and Recall data, Food Composition info.). The info of data concerning atomic number 20 intakes for youngsters and adults is extremely sensible for youngsters and adults supported atomic number 20 intake victimisation machine learning it'll give the higher choice to the user and maintain the accuracy so user will trust unsighted and the data is checked.

VIII. CONCLUSION

The food 'n' fitness using machine learning is helpful for that type of user who are foodies and also like to eat healthy food .Obligation of public health exploitation web offer the simplest obtainable data concerning enhancements on health and diet. Building a public health education program supported correct data exist is of nice profit for all globally. Multi- factors in relevancy food and diet have an effect on public health like quality and amount of food merchandise. All government and health policy organizations and agencies ought to create plans to forestall malady additionally as management it. Food connected databases may facilitate food scientists, government et al to access instantly to online websites and collect required data which can take while to get . We tend to then checked out the Perceptron Learning formula then went on to examine why it works i.e., however the acceptable weights square measure learned.

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