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Predicting Malnutrition Using Machine Learning

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ABSTRACT: Children are the future of any nation. A malnourished child is not only a problem of present-day society, but also an issue for the future. However, approximately one-third of the world's children are malnourished. Malnourishment can be measured in terms of nutrition and weight. In general, people believe that a lack of money—that is, financial poverty is the main reason for childhood malnutrition. Nevertheless, most studies addressing this topic report that socio-economic factors are the major cause of childhood malnutrition worldwide. A review of the literature shows that a mother's knowledge of her children's health, her education level, and her place of residence are some of the major factors impacting children's nutrition level.

KEYWORDS: Malnutrition, Children, Food.

I. INTRODUCTION

child malnutrition condition can be considered as a major health issue for a country since the children are the future workforce which directly affects the economic growth of the country. This impact is significant mainly in developing countries. This research is carried out with the purpose of reducing the prevalence of child malnutrition based on the analysis of the children under five years of age. Some hidden factors were extracted with the use of data mining tools and techniques. The design of the project is based on a conceptual framework which was constructed using the literature gathered. By testing and validating the knowledge, preventive actions can be taken with the help of medical experts to reduce the malnutrition condition among children for applicable countries.

II. RELATED WORK

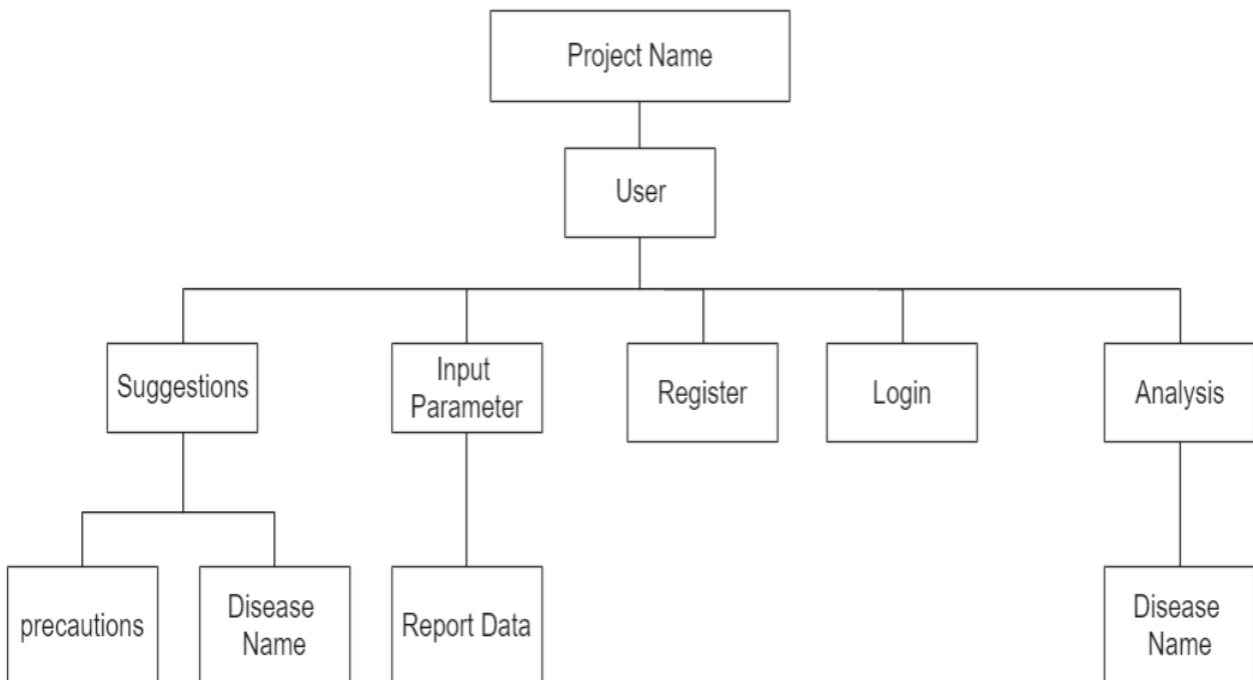
1. The User Logins to the system using Username and password. System verifies the username and password. Once verification is correct, user gets the message, "Verification is successful".
2. Later, user will provide health parameter to the system. And System will classify the parameter and disease will be predicted.
3. Using add report option user can input the symptoms, User can view all his report.
4. Based on the input parameter classification will be done.
5. The Later System will classify the parameter and disease will be predicted.
6. Based on symptoms disease name will be predicted and corresponding food will be suggested.



III. METHODOLOGY

This application consists of four modules, they are:

1. Login: This is responsible for successful login by registered users.
2. Register: This is useful for users to register themselves to our system.
3. Input Parameter: This module used to input the Symptoms.
4. Analysis: This is the part which mainly is used to analyze the disease based on the symptoms.
5. Suggestions: This module suggest the food.



3.2 Pre-Requisites

HTML

Hypertext Markup Language (HTML) is the standard markup language for creating web pages and web applications. With Cascading Style Sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the World Wide Web. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as `` and `<input />` directly introduce content into the page. Other tags such as `<p>` surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

HTML can embed programs written in a scripting language such as JavaScript, which affects the behavior and content of web pages. Inclusion of CSS defines the look and layout of content. The World Wide Web Consortium (W3C), maintainer of both the HTML and the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997.



JavaScript

JavaScript often abbreviated as JS, is a high-level, interpreted programming language that conforms to the ECMAScript specification. It is a programming language that is characterized as dynamic, weakly typed, prototype-based and multi-paradigm. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it, and major web browsers have a dedicated JavaScript engine to execute it.

As a multi-paradigm language, JavaScript supports event-driven, functional, and imperative (including object-oriented and prototype-based) programming styles. It has APIs for working with text, arrays, dates, regular expressions, and the DOM, but the language itself does not include any I/O, such as networking, storage, or graphics facilities. It relies upon the host environment in which it is embedded to provide these features.

Back End: MY-SQL

MySQL officially, but also called("My Sequel")is (as of July 2013) the world's second most widely used relational database management system (RDBMS) and most widely used open-source RDBMS. It is named after co-founder Michael Widenius's daughter, My. The SQL acronym stands for Structured Query Language.

The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. MySQL is a popular choice of data base for use in web applications, and is a central component of the widely used LAMP open source web application software stack (and other 'AMP' stacks).

Python

Python is an interpreted high-level general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python is dynamically-typed and garbagecollected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library. Python is a multi-paradigm programming language. Object-oriented programming and structured programming are fully supported, and many of its features support functional programming and aspect-oriented programming. Python uses dynamic typing and a combination of reference counting and a cycle-detecting garbage collector for memory management. It also features dynamic name resolution (late binding), which binds method and variable names during program execution.

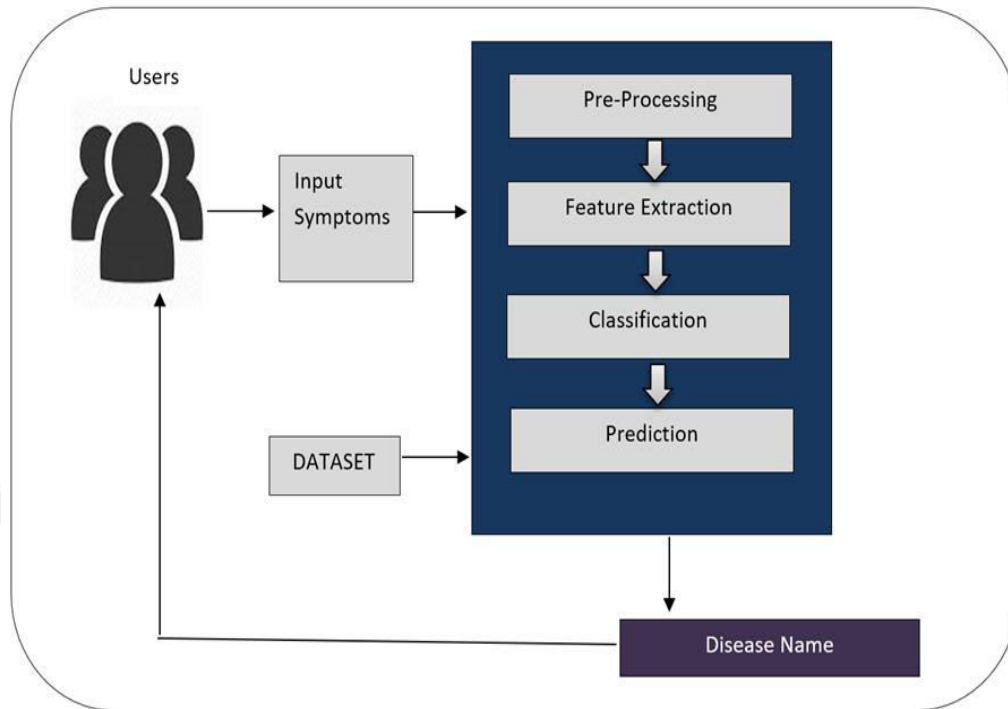
Django Web Framework

Django is a Python-based free and open-source web framework that follows the model-templateviews (MTV) architectural pattern. Django's primary goal is to ease the creation of complex, database-driven websites. The framework emphasizes reusability and "pluggability" of PREDICTING MALNUTRITION USING ML Dept. of CS&E, CEC Page 17 components, less code, low coupling, rapid development, and the principle of don't repeat yourself. Python is used throughout, even for settings, files, and data models. Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models. Despite having its own nomenclature, such as naming the callable objects generating the HTTP responses "views", the core Django framework can be seen as an MVC architecture. It consists of an object-relational mapper (ORM) that mediates between data models (defined as Python classes) and a relational database ("Model"), a system for processing HTTP requests with a web templating system ("View") and a regular-expression-based URL dispatcher ("Controller").

3.3 Proposed System

The User Logs in to the system using Username and password System verifies the username and password. Once verification is correct, user gets the message, “Verification is successful”. Later, user will provide health parameter to the system. And System will classify the parameter and disease will be predicted. Using add report option user can input the symptoms, User can view all his report. Based on the input parameter classification will be done. The Later System will classify the parameter and disease will be predicted. Based on symptoms disease name will be predicted and corresponding food will be suggested.

3.4 Architecture

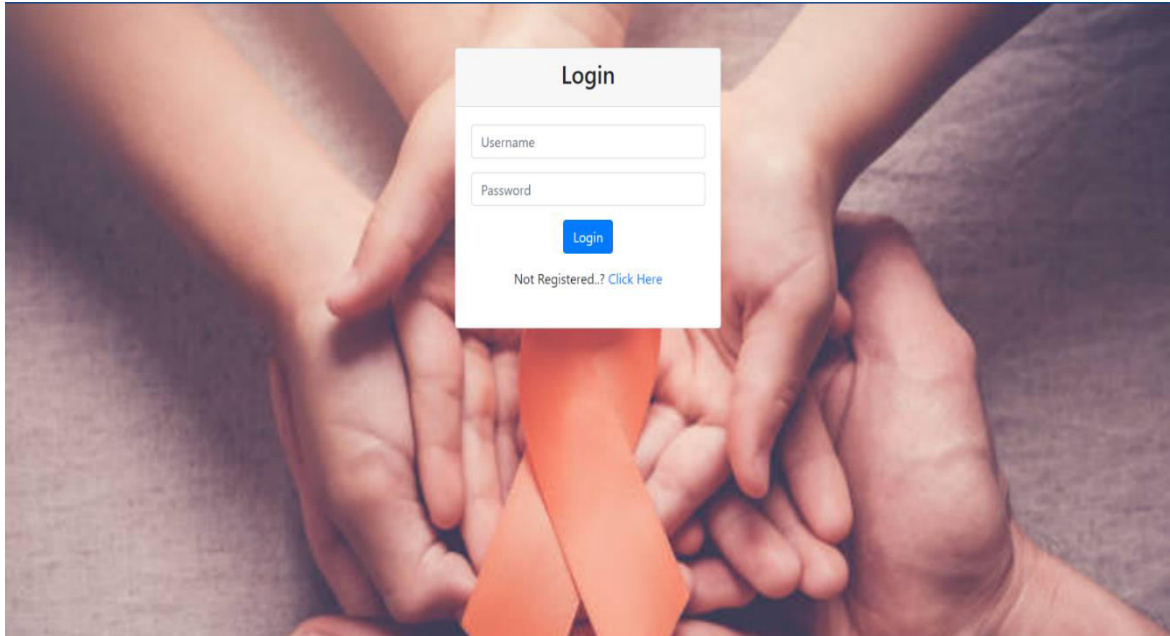


Architectural Diagram

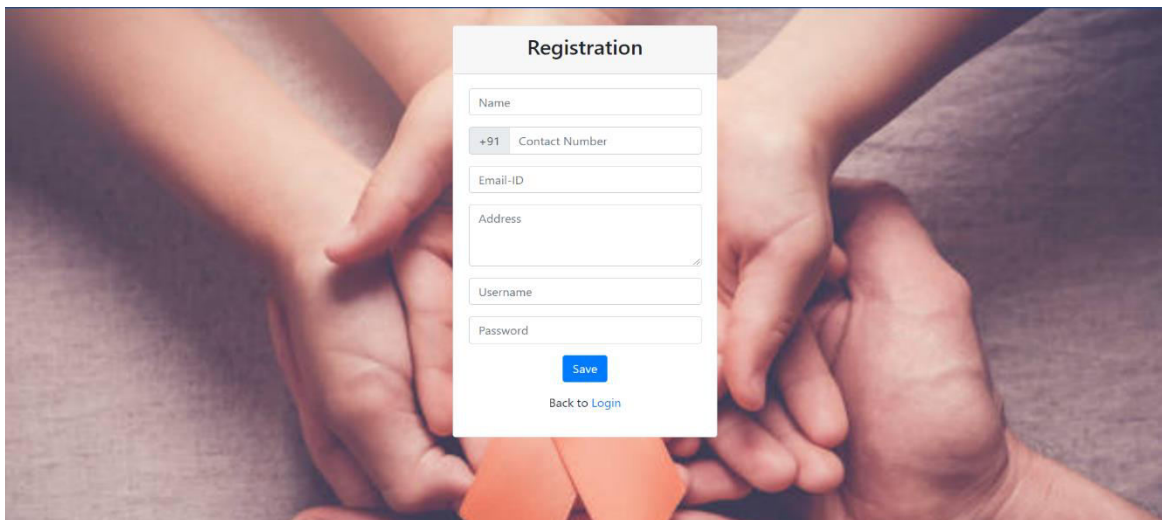
Architectural design is a graphical representation of a set of concepts that are part of architecture including the principles, elements and components. This System contains five sections -Register, Login, Input Parameter, Analysis, and suggestion. The data flow is shown in the above figure



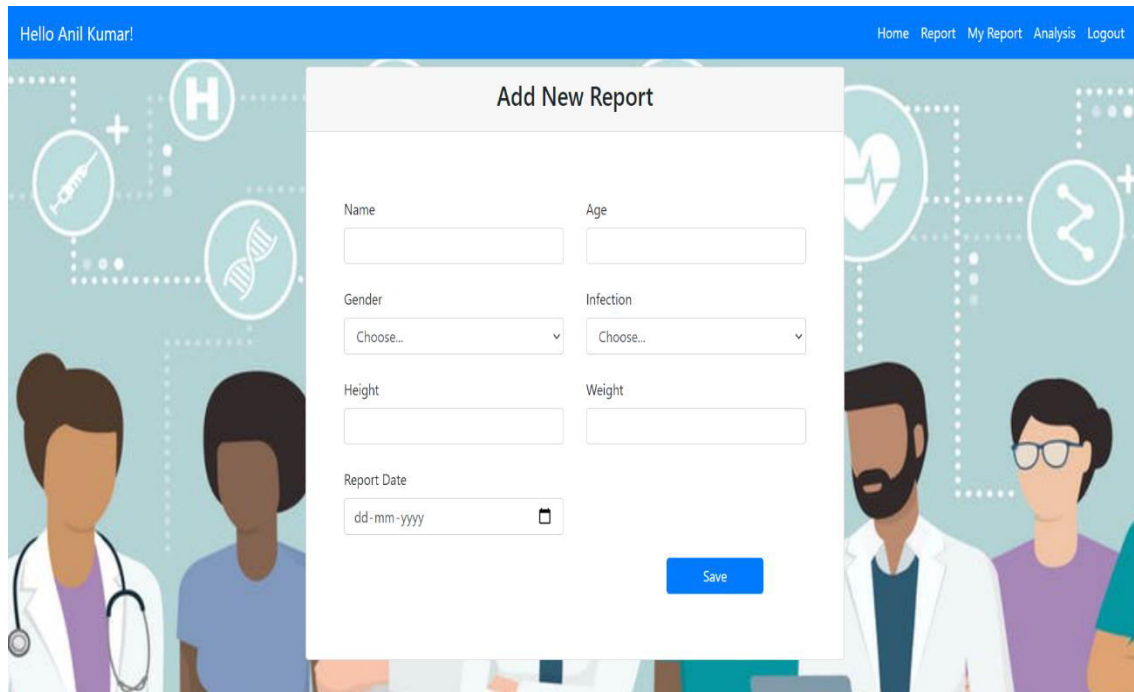
IV. EXPERIMENTAL RESULTS



User Login Page



Register page



Add Report Page

V. CONCLUSION

The main purpose of this System is to Predict the malnutrition related Diseases and suggest the food to overcome the malnutrition related diseases, The proposed system will be very beneficial for mothers to take care of her child's health. In future work, all the details of disease, plan to cure that disease along with the diet for all age groups will be considered.

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