Project Report Format

CHAPTER 1
INTRODUCTON

Chapter 1: INTRODUCTON

1.1 Project Summary

Better health can be achieved by maintaining a simple lifestyle such as a good night sleep, enough exercises and good nutrition. People spend one third of their lives sleeping however most people do not understand the importance of sleep. Moreover, the lack of sleep can affect a person's memory and emotion. The exercise habit and nutrition can also lead to good health. Daily working life can be affected by lack of sleep such as drowsiness and long-term health problems. Many Researches have shown that not enough sleep or exercise can lead to many health problems such as GERD [3], Alzheimer's disease [4], hearth disease [5], sleep apnea [6] and insomnia [7]. In the competitive work environment, nowadays, it is not easy for many people to manage good sleeping and exercise habits. With busy work and personal life schedules, many people indulge themselves in a bad sleeping habit such as sleeping very late or waking up very late especially in young adults and teenagers. A good night sleep can also be affected by the person's exercise habits and nutrition consumption. The sleep, nutrition and exercise have more complicated relationship than many people have realized [8]. Enough exercise helps people sleep better and good nutrition also lead to better mood and better health. Thus, that can automatically record personal information, produce a warning, and give personal advices to its owner in order to maintain good sleeping, exercise and nutrition habits is needed. Today smart phone technology is a good candidate for this project because of its low cost, portability and capability which is similar or close to a personal computer. Moreover, a phone has become a typical device in daily activity. In addition, a current smart phone includes a lot of sensors such as an accelerometer, a microphone and a light sensor. These features make a smart phone suitable for collecting personal data in this work. Android is a Linux-based operating designed for touch screen mobile devices. Lately, Android becomes the world's most widely used smart phone platform [9]. Especially, its customizable features allow Androids to be the software of choice for many developers. Thus, this project aims to develop an application for Android smart phones that has a capability (1) to record the information related to the duration and quality of sleeping, the types and duration. Of exercise activities and the amount of nutrition consumed, (2) to analyse the collected data and provide a notification or an alarm in order to suggest or remind the user in taking care of his/her health; and (3) to present the analysed results in a format that is easy to understand without the need of a deep medical knowledge. The rest of this document is organized as follows. Next, the design is given. Then, the results and discussions are given. The conclusion is given at the end.

1.2 Purpose

By using machine learning techniques, the problem can be solved with minimal error rate. The voice dataset of Parkinson's disease from the UCI Machine learning library is

used as input. Also our proposed system provides accurate results by integrating spiral drawing inputs of normal and Parkinson's affected patients. We propose a hybrid and accurate results analyzing patient both voice and spiral drawing data's. Thus combining both the results, the doctor can conclude normality or abnormality and prescribe the medicine based on the affected stage.

CHAPTER 2
LITERATURE SURVEY

2.1 Existing problem

Jie Mei et al used all basic algorithms of deep learning techniques for the detection of PD. Like SVM, RF, Decision Tree, ANN, KNN, Radial Basis Function Networks (RBF) and Deep Belief Networks (DBN) etc. The early identification of Parkinson's disease is critical. The identification can be performed with the use of a data mining technique. The techniques for detecting PD, such as Naive Bayes, support vector machine, multilayer perceptron neural network, and decision tree, are theoretically explained in this study. This study uses speech input from acoustic devices to predict Parkinson's disease. People from various areas and speech factors are investigated in this article in order to predict Parkinson's disease among patients. The speech dataset was used to recognize Parkinson's illness using Multi - layer Perceptron and Logistic Regression (LR) frameworks.

Gabriel Solana-Lavalle et al. uses the algorithms such as Multilayer Perceptron (MLP), Random Forest (RF), K-Nearest Neighbour (KNN). For the prediction of Parkinson disease, three set of experiences were conducted to obtain the features with highest contribution to PD. This three sets are 1.a population with male and female subjects (balanced), 2.male subjects (balanced and unbalanced), and 3. Female subjects (balanced and unbalanced). In this study, the researchers used acoustic devices to collect speech parameters from 50 persons with Parkinson's disease and fifty healthy people. They employed the kfold cross validation method for testing and claim that it can deliver 85 percent accuracy.

Yi Xia et al. they have considered approaches, they include four DL-based models (DCNN, DALSTM, DCLSTM, and CNN-LSTM) and also used two traditional classifications for extraction. In the DL-based model DCNN gives less accuracy than other DL models. Parkinson's disease affects people all around the world. People and people with Parkinson's disease could be classified using machine learning approach. This paper provides a comprehensive overview of machine learning-based approaches for Parkinson disease prediction. A comprehensive overview of various computational system-based techniques for Parkinson disease prediction is presented. This report also includes an overview of the results obtained by several scientists from publicly available data in order to forecast Parkinson's disease.

Kazi Amit Hasan et al. used different classification methods RF, KNN, Decision Tree, Logistic Regression (LR), SVM, and Naïve Bayes for detection of PD. The best result achieved by Decision Tree and Random Forest (RF) classification methods. The data mining techniques may be a more popular in many field of medical, business, railway, education etc. They are most commonly used for medical diagnosis and disease

prediction at the early stage. The data mining is employed for healthcare sector in industrial societies.

Mosarrat Rumman et al. based on Image Processing and Artificial Neural Network (ANN) classification algorithm According to ANN prediction, if value closer to 1 then suggests PD and value closer to 0 then suggest normal. Parkinson disease is a global public health issue. Machine learning technique would be a best solution to classify individuals and individuals with Parkinson's sickness (PD). This paper gives an entire review for the forecast of Parkinson disease by utilizing the machine learning based methodologies. A concise presentation of varied computational system based methodologies utilized for the forecast of Parkinson disease is introduced. This paper likewise displays the outline of results acquired by different scientists from accessible information to predict the Parkinson disease.

Shail Raval et al. For the detection of PD they include all the aspects such as biological data, chemical data and genetic data. In this paper they mainly focused on the symptoms like rigidity, Tremor at rest, changing voice etc. The secure data transmission is proposed through authentication check, duplication check and faulty node detection. The proposed method is applicable to long ranges of transmission. It is also supporting a retransmission concept.

Zehra Karapinar Senturk et al. proposed the algorithms to detect PD like support vector machine (SVM), Classification and Regression Tree (CART). It provided about 13% performance improvement for SVM, about 11% for ANN, and about 5% improvement for CART. The result shows that Naive Bayes and decision tree (j48) yield better accuracy when performed upon the discretized PD dataset with cross-validation test mode without applying any attributes selection algorithm.

Satyabrata Aich et al. According to this Random Forest (RF) gives more accuracy. This analysis will help the clinicians to differentiate the PD group from healthy group based on the voice data. CNN’s, also referred to as ConvNets, contains multiple layers and are mainly used for image processing and object detection. Yann LeCun developed the primary CNN in 1988 when it had been called LeNet. It was used for recognizing characters like ZIP codes and digits.

Timothy J. Wroge et al. used Extra Tree and gradient boosted Decision tree classification algorithms are used to detect variations in voice. LSTMs are a kind of Recurrent Neural Network (RNN) which will learn and memorize longterm dependencies. Recalling past information for long periods is that the default behavior.

Rajalakshmi Shenbaga Moorthy et al. used to novel analytic system for Parkinson's disease Prediction mechanism using Improved Radial Basis Function Neural Network (IRBFNN). RNNs is during a one among the deep learning models that are used for modeling the arbitrary length sequences by applying a transition function to all or any it's hidden states during a recursive manner.

Rahul R. Chakre et al. According to the hybrid approach, which is a combination of supervised and unsupervised techniques, is also beneficial for classification and feature extraction. Support vector machine is employed as the supervised technique for classification, and ICA is used as unsupervised technique for the feature extraction in multiclass data set.

Rahul Ramesh Chakre et al.According to the field of medical diagnosis, bioinspired computing is also a novel technique. Swarm intelligence and immune computing algorithms, two major subsets of bio-inspired computation, are presented for a wide range of issues.

2.2 References

[1] Machine learning models for mathematical symbol recognition: A stem to stern literature analysis - Vinay Kukreja & Sakshi

[2] A Novel Method for the Recognition of Isolated Handwritten Arabic Characters - Ahmed Sahlol, Cheng Suen

[3] A novel method for offline handwriting-based writer identification - Zhenyu He; Bin Fang; Jianwei Du; Yuan Yan Tang; Xinge You

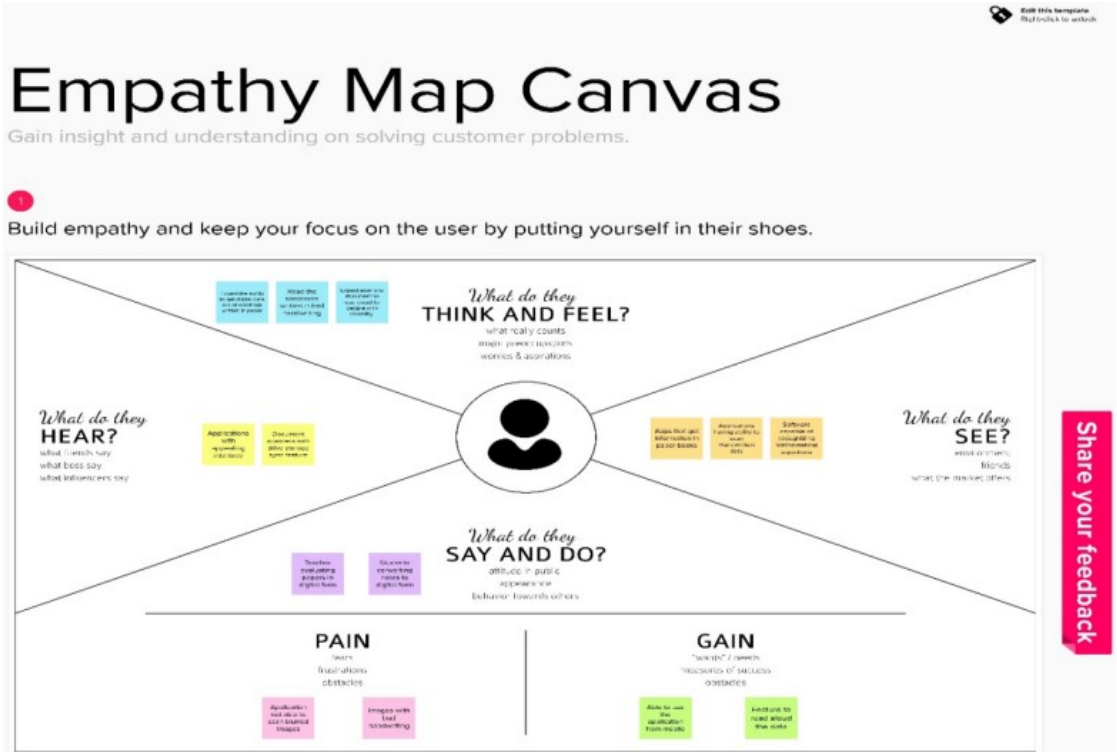
[4] A Novel Method for Recognition of Persian Alphabet by Using Fuzzy Neural Network - Mohammad Mehdi Motahari Kia; Jafar A. Alzubi; Mehdi Gheisari; Xiaobo Zhang; Mohamadtaghi Rahimi; Yongrui Qin

2.3 Problem Statement Definition

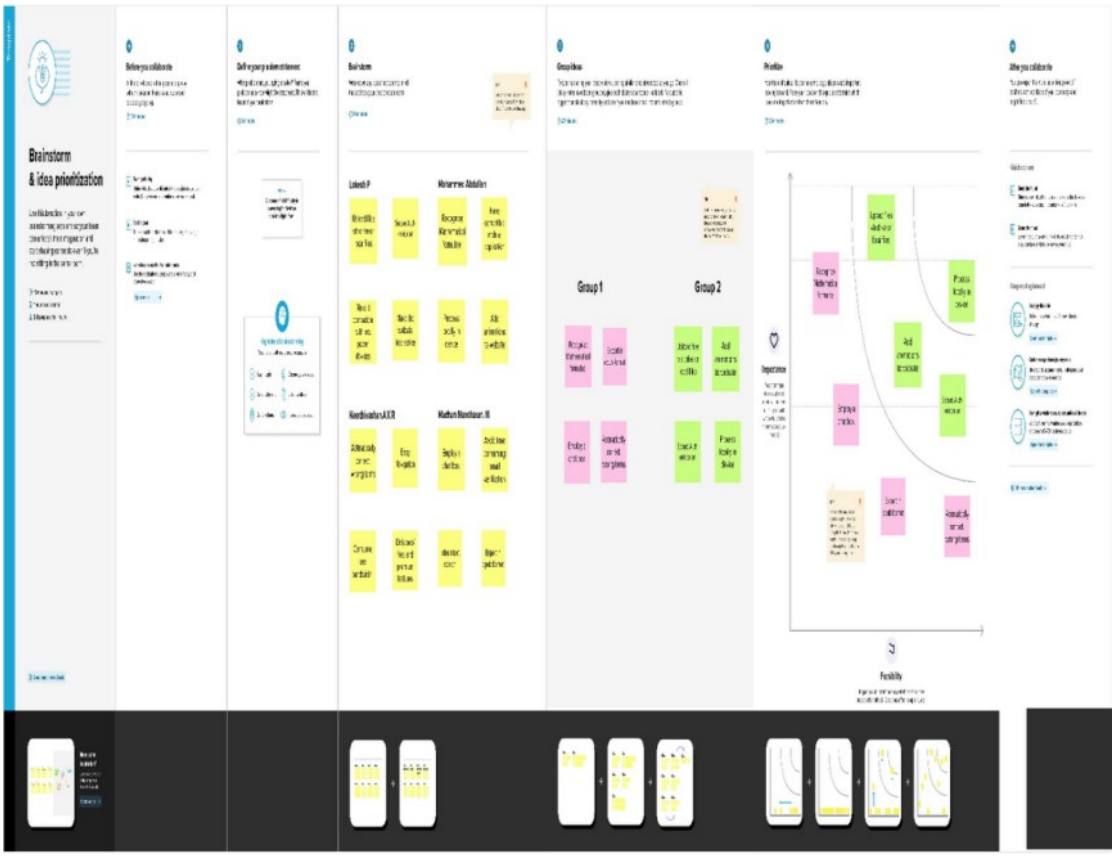
obesity is one of the biggest health problems associated with junk foodand Peoplewants to control their daily calorie intake by eating healthier foods, which is themost basic method to avoid obesity. However, although food packaging comeswith nutrition (and calorie) labels, it's still not very convenient for people

CHAPTER 3
IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



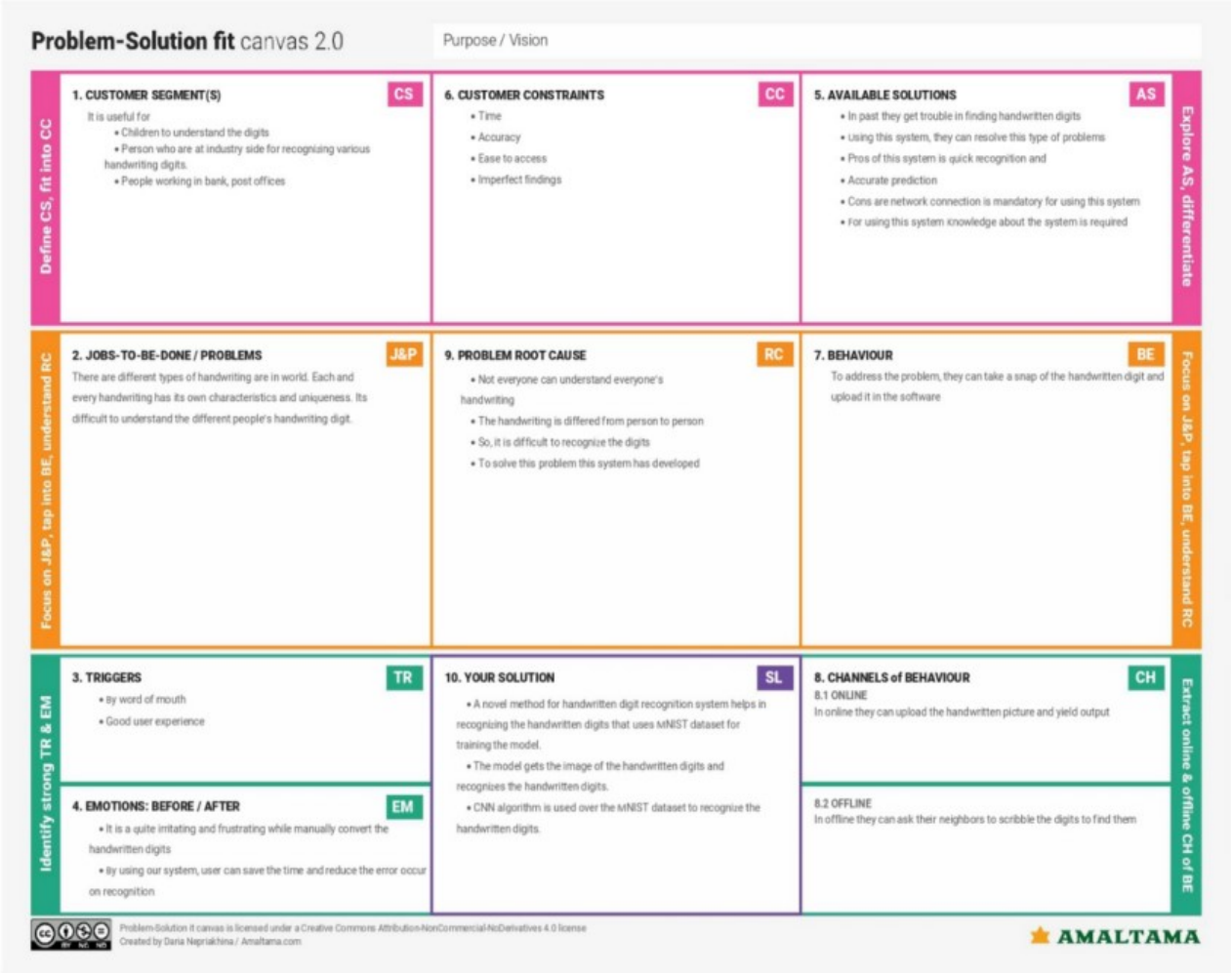
3.2 Ideation & Brainstorming



3.3 Proposed Solution

S. No.	Parameter	Description
1.	Problem Statement	The handwritten digit recognition is the capability of computer applications to recognize the human handwritten digits. It is a hard task for the machine because handwritten digits are not perfect and can be made with many different shapes and sizes. The handwritten digit recognition system is a way to tackle this problem which uses the image of a digit and recognizes the digit present in the image.
2.	Idea /Solution description	We came up with a solution that recognizes the handwritten digits by means of a deep learning model.
3.	Novelty / Uniqueness	The system recognizes input given by user in a precise and efficient manner.
4.	Social Impact / Customer Satisfaction	The aim of a handwriting digit recognition system is to convert handwritten digits into machine readable formats. The main objective of this work is to ensure effective and reliable approaches for recognition of handwritten digits.
5.	Business Model (Revenue Model)	Pay per use – each time a person needs the service he can avail it by paying for the use.
6.	Scalability of the Solution	It can be implemented using any we framework and can be made available to everyone in need.

3.4 Problem Solution fit



CHAPTER 4
REQUIREMENT ANALYSIS

4.1 Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	It is necessary to register
FR-2	Uploading the image	Please upload a handwritten digit image in the format provided
FR-3	Using a web browser	Digit recognition requires a desktop or mobile browse

4.2 Non - Functional requirement

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Handwritten recognition digits are easy to get and simple to understand.
NFR-2	Security	Our application does not take any security measures.

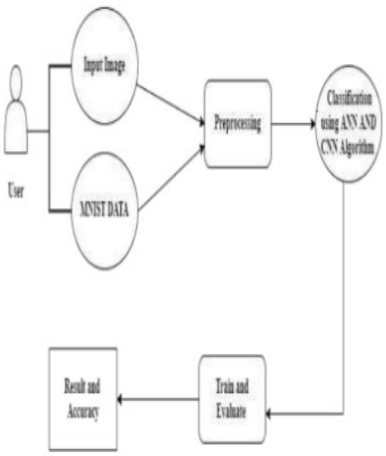
NFR-3	**Reliability**	**Be able to endure the long periods of time without errors.**
NFR-4	**Performance**	**The performance of a lightweight application.**

CHAPTER 5
PROJECT DESIGN

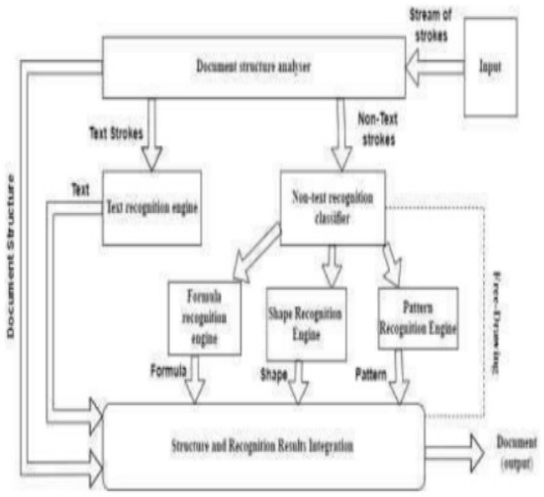
5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Simplified:



Example: DFD Level 0 (Industry Standard)



5.2 Solution & Technical Architecture

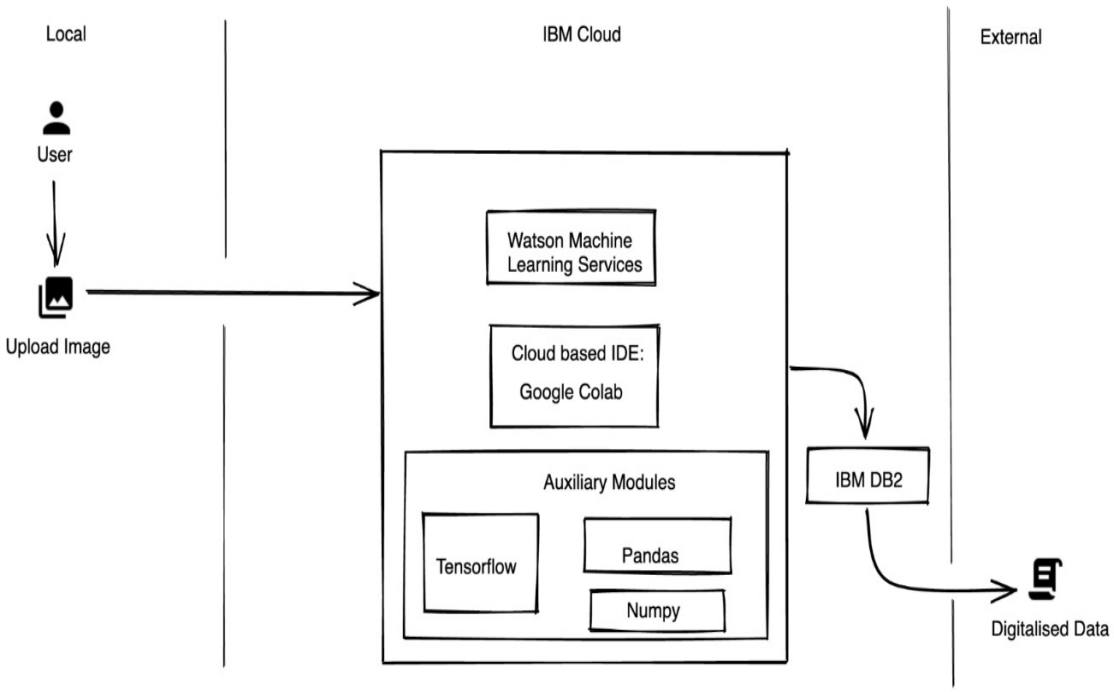
Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- When we used models pretrained on unrelated Image Net dataset for the construction of the ensemble architectures

- It significantly enhanced the performance on detecting PD compared to untrained models.

- Our finding suggests a promising direction, where unrelated training data can be considered when insufficient or no training data is available for a particular application.

Example - Solution Architecture Diagram :


Local
IBM Cloud
External
User
Upload Image
Watson Machine Learning Services
Cloud based IDE:
Google Colab
Auxiliary Modules
Tensorflow
Pandas
Numpy
IBM DB2
Digitalised Data

5.3 User Stories

To list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
User (subject that submits the photograph)	Uploads image	USN-1	Users can upload the pictures to the website to achieve a desired result	We can upload an image	High	Sprint-1
Examination	Image processing	USN-1	Users may examine the projections and outcomes with accuracy.	We can get results instantly.	High	Sprint-1

CHAPTER 6
PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	As a user, the dataset can be collected from a variety of sources with different handwritings.	10	Low	Lokesh.P, Madhan Manoharan
Sprint-1	Data Preprocessing	USN-2	As a user, I can load the dataset, handling the missing data, scaling and split data into train and test.	10	Medium	Keerthivashan, Madhan Manoharan
Sprint-2	Model Building	USN-3	As a user, I will get an application with ML model which provides high accuracy of recognized handwritten digit.	5	High	Mohammed Abdullah, Lokesh.P
Sprint-2	Add CNN layers	USN-4	Creating the model and adding the input, hidden, and output layers to it.	5	High	Mohammed Abdullah, Keerthivashan

Sprint-2	**Compiling the model**	**USN-5**	**With both the training data defined and model defined, it's time to configure the Learning process.**	**2**	**Medium**	**Madhan Manoharan, Keerthivashan**
Sprint-2	**Train & test the model**	**USN-6**	**As a user, let us train our model with our image dataset.**	**6**	**Medium**	**Mohammed Abdullah, Lokesh.P**
Sprint-2	**Save the model**	**USN-7**	**As a user, the model is saved & integrated with an android application or web application in order to predict something.**	**2**	**Low**	**Madhan Manoharan, Keerthivashan**
Sprint-3						

CHAPTER 7
CODING & SOLUTIONING

7.1 INFORMATION CENTER

Provides an overview of parkinson disease in two tabs -

1.home

2.Info

Home-

Template -

```
 <!--    Content    Header
(Page header) -->
                                    <div class="content-header">
                                      <div class="container">
                                        <div class="row mb-2">
                                          <div class="col-sm-6">
                                            <h1   class="m-0">Detecting   Parkinson
Disease Using ML</h1>
                                          </div>
                                          <!-- /.col -->


                                          <!-- /.col -->
                                        </div>
                                        <!-- /.row -->
                                      </div>
                                      <!-- /.container-fluid -->
                                    </div>
                                    <!-- /.content-header -->


                                    <!-- Main content -->
                                    <div class="content">
                                      <div class="container">
                                        <div class="row">
                                          <div class="col-lg-6">
                                            <div  class="card  card-primary  card-
outline">
```

```
                <div class="card-header">
                  <h5      class="card-title      m-
0">Healthy</h5>
                </div>
                <div class="card-body">
                  <div class="col-sm-12">
                    <div class="position-relative">
                      <img

src="../static/dist/img/healthy.jpg"
                        alt="Photo 1"
                        class="img-fluid"
                        width="650"
                        height="400"
                      />
                      <div     class="ribbon-wrapper
ribbon-lg">
                        <div    class="ribbon    bg-
success text-lg">Healthy</div>
                      </div>
                    </div>
                  </div>
                </div>
                <!-- /.card -->
              </div>
              <!-- /.col-md-6 -->
              <div class="col-lg-6">
                <div  class="card  card-primary  card-
outline">
                  <div class="card-header">
                    <h5      class="card-title      m-
0">Parkinson's Disease</h5>
                  </div>
                  <div class="card-body">
                    <div class="col-sm-12">
                      <div class="position-relative">
                        <img

src="../static/dist/img/parkinson_affected.jpg"
                          alt="Photo 1"
```

```
                        class="img-fluid"
                        width="650"
                        height="300"
                      />
                      <div     class="ribbon-wrapper
ribbon-lg">
                        <div class="ribbon bg-danger
text-lg">Parkinson</div>
                      </div>
                    </div>
                  </div>
                </div>
              </div>
              <!-- /.col-md-6 -->
            </div>
            <div class="row">
              <div class="col-lg-12">
                <div  class="card  card-primary  card-
outline">
                  <div class="card-header">
                    <h5      class="card-title      m-
0">About</h5>
                  </div>
                  <div class="card-body">
                    <p class="card-text">
                      More than 10 million people are
living with Parkinson’s
                      Disease worldwide, according to
the Parkinson’s
                      Foundation.  While  Parkinson’s
cannot be cured, early
                      detection  along  with  proper
medication can significantly
                      improve symptoms and quality of
life. The researchers
                      found that the drawing speed was
slower and the pen
                      pressure    is    lower    among
Parkinson’s patients. One of the
                      indications  of  Parkinson’s  is
tremors and rigidity in the
                      muscles, making it difficult to
draw smooth spirals and
```

```
                        waves. It is possible to detect
Parkinson's disease using
                        the drawings alone instead of
measuring the speed and
                        pressure of the pen on paper.
Our goal is to quantify the
                        visual appearance(using HOG
method) of these drawings and
                        then train a machine learning
model to classify them. In
                        this project, We are using,
Histogram of Oriented
                        Gradients (HOG) image descriptor
along with a Random
                        Forest classifier to
automatically detect Parkinson's
                        disease in hand-drawn images of
spirals and waves.
                    </p>
                  </div>
                </div>
              </div>
            </div>
            <!-- /.row -->
          </div>
          <!-- /.container-fluid -->
        </div>
```

API DEclaration -

```
@app.route("
/")
                def about():
                   return
                render_template("home.html")
```

Info -

Template -

```
<div class="content">

                    <div class="container">
                      <div class="row">
                        <div class="col-lg-6">
                          <div    class="card    card-primary    card-
outline">
                            <div class="card-header">
                              <h5  class="card-title  m-0">Parkinson's
Symptoms</h5>
                            </div>
                            <div class="card-body">
                              <div class="col-sm-12">
                                <div class="position-relative">
                                  <img

src="../static/dist/img/parkinson_symptoms.png"
                                    alt="Symptoms"
                                    class="img-fluid"
                                  />
                                </div>
                              </div>
                            </div>
                          </div>
                          <!-- /.card -->
                        </div>
                        <!-- /.col-md-6 -->
                        <div class="col-lg-6">
                          <div    class="card    card-primary    card-
outline">
                            <div class="card-header">
                              <h5   class="card-title   m-0">More   on
Parkinson</h5>
                            </div>
                            <div class="card-body">
                              <p class="card-text">

         &nbs
p;         &n
bsp;        
         &nbs
```

```
p;    Parkinson’s
                    disease is a condition where a part
of your brain
                    deteriorates, causing more severe
symptoms over time.
                    While this condition is best known
for how it affects
                    muscle control, balance and movement,
it can also cause a
                    wide range of other effects on your
senses, thinking
                    ability, mental health and more.
                    <br />The risk of developing
Parkinson’s disease naturally
                    increases with age, and the average
age at which it starts
                    is 60 years old. It’s slightly more
common in men or
                    people designated male at birth
(DMAB) than in women or
                    people designated female at birth
(DFAB). While
                    Parkinson’s disease is usually age-
related, it can happen
                    in adults as young as 20 (though this
is extremely rare,
                    and often people have a parent, full
sibling or child with
                    the same condition).
                    <br />
                    Parkinson’s disease is very common
overall, ranking second
                    among age-related degenerative brain
diseases. It’s also
                    the most common motor (movement-
related) brain disease.
                    Experts estimate that it affects at
least 1% of people
                    over age 60 worldwide.
                  </p>
                  <a

href="https://en.wikipedia.org/wiki/Parkinson%27s_disease"
                    class="btn btn-primary"
                    >Learn more</a
                  >
                </div>
```

```
                    </div>
                  </div>
                  <!-- /.col-md-6 -->
                </div>


                <!-- /.row -->
              </div>
              <!-- /.container-fluid -->
            </div>
            <!-- /.content -->
          </div>
```

API Declaration-

```
@app.route("/in
fo")
                    def information():
                       return
                    render_template("info.html")
```

7.2 PREDICTOR

This is the part which enables file upload, process the image and determine whether parkinson is positive or negative.

Template-

```
            <h5   class="card-title
m-0">Parkinson Classifier</h5>
                                                    </div>
                                                    <div class="card-body">
                                                      <div class="row">
                                                        <div class="col-md-12">
                                                          <div      class="card
card-default">
                                                            <div   class="card-
header">
                                                              <h3  class="card-
title">Dropzone</h3>
                                                            </div>
                                                            <div   class="card-
body">
                                                              <div id="actions"
class="row">
                                                                <div
class="col-lg-6">
                                                                  <div
class="btn-group w-100">
                                                                    <span

class="btn btn-success col fileinput-button"
                                                                    >

                                                                      <i
class="fas fa-plus"></i>
                                                                      <span>Add
files</span>
                                                                    </span>
                                                                    <button

type="submit"

class="btn btn-primary col start"
```

```
                                    >
                                      <i
class="fas fa-upload"></i>

<span>Start upload</span>
                                    </button>
                                    <button

type="reset"

class="btn btn-warning col cancel"
                                    >
                                      <i
class="fas fa-times-circle"></i>

<span>Cancel upload</span>
                                    </button>
                                  </div>
                                </div>
                                <div
class="col-lg-6 d-flex align-items-center">
                                  <div
class="fileupload-process w-100">
                                    <div

id="total-progress"

class="progress progress-striped active"

role="progressbar"
                                      aria-
valuemin="0"
                                      aria-
valuemax="100"
                                      aria-
valuenow="0"
                                    >
                                      <div

class="progress-bar progress-bar-success"

style="width: 0%"
                                        data-
dz-uploadprogress
                                      ></div>
                                    </div>
```

```
                                </div>
                              </div>
                            </div>
                            <div
                              class="table
table-striped files"
                              id="previews"
                            >
                              <div
id="template" class="row mt-2">
                                <div
class="col-auto">
                                  <span
class="preview"
                                    ><img
src="data:," alt="" data-dz-thumbnail
                                  /></span>
                                </div>
                                <div
class="col d-flex align-items-center">
                                  <p
class="mb-0">
                                    <span
class="lead" data-dz-name></span>
                                    (<span
data-dz-size></span>)
                                  </p>
                                  <strong

class="error text-danger"
                                    data-dz-
errormessage
                                  ></strong>
                                </div>
                                <div
class="col-4 d-flex align-items-center">
                                  <div

class="progress progress-striped active w-
100"

role="progressbar"
                                    aria-
valuemin="0"
                                    aria-
valuemax="100"
```

```
                                    aria-
valuenow="0"
                                  >
                                    <div
class="progress-bar progress-bar-success"
style="width: 0%"
                                      data-
dz-uploadprogress
                                    ></div>
                                  </div>
                                </div>
                                <div
class="col-auto d-flex align-items-center">
                                  <div
class="btn-group">
                                    <button
class="btn btn-primary start">
                                      <i
class="fas fa-upload"></i>
<span>Start</span>
                                    </button>
                                    <button
                                      data-
dz-remove
class="btn btn-warning cancel"
                                    >
                                      <i
class="fas fa-times-circle"></i>
<span>Cancel</span>
                                    </button>
                                    <button
                                      data-
dz-remove
class="btn btn-danger delete"
                                    >
                                      <i
class="fas fa-trash"></i>
<span>Delete</span>
                                    </button>
```

```
                                    </div>
                                  </div>
                                </div>
                              </div>
                              <!-- /.card-body -->
                              <div   class="card-footer">Drop your Image here</div>
                            </div>
                            <!-- /.card -->
                          </div>
                        </div>
                      </div>
                    </div>
                  </div>
                  <!-- /.row -->
                  <button
                    type="button"
                    class="btn btn-danger"
                    data-toggle="modal"
                    data-target="#modal-danger"
                    id="dangerModel"
                    hidden
                  >
                    Launch danger Modal
                  </button>
                  <div      class="modal      fade"
id="modal-danger">
                    <div class="modal-dialog">
                      <div class="modal-content bg-
danger">
                        <div class="modal-header">
                          <h4 class="modal-title">
                            <b>Parkinson
Positive</b>
                          </h4>
                          <button
```

```
                    type="button"
                    class="close"
                    data-dismiss="modal"
                    aria-label="Close"
                  >
                    <span aria-
hidden="true">&times;</span>
                  </button>
                </div>
                <div class="modal-body">
                  <ion-icon
                    name="alert-circle-
outline"
                    size="large"
                  ></ion-icon>
                  <p>
                    <b><i>    Consult    a
doctor</i></b>
                    <br />
                    You’re  going  to  beat
this thing!
                  </p>
                </div>
                <div    class="modal-footer
justify-content-between">
                  <button
                    type="button"
                    class="btn btn-outline-
light"
                    data-dismiss="modal"
                  >
                    Close
                  </button>
                </div>
              </div>
              <!-- /.modal-content -->
            </div>
            <!-- /.modal-dialog -->
          </div>
          <button
```

```
                type="button"
                class="btn btn-success"
                data-toggle="modal"
                data-target="#modal-success"
                id="successModel"
                hidden
              >
                Launch Success Modal
              </button>
              <div      class="modal      fade"
id="modal-success">
                <div class="modal-dialog">
                  <div class="modal-content bg-
success">
                    <div class="modal-header">
                      <h4 class="modal-title">
                        <b>Healthy</b>        -
Parkinson Negative
                      </h4>
                      <button
                        type="button"
                        class="close"
                        data-dismiss="modal"
                        aria-label="Close"
                      >
                        <span             aria-
hidden="true">&times;</span>
                      </button>
                    </div>
                    <div class="modal-body">
                      <ion-icon    name="happy-
outline" size="large"></ion-icon>
                      <p>
                        The image is drawn by a
<b><i>HEALTHY PERSON</i></b>
                      </p>
                    </div>
                    <div    class="modal-footer
justify-content-between">
                      <button
                        type="button"
```

```
                        class="btn btn-outline-
light"
                        data-dismiss="modal"
                      >
                        Close
                      </button>
                    </div>
                  </div>
                  <!-- /.modal-content -->
                </div>
                <!-- /.modal-dialog -->
              </div>
            </div>
            <!-- /.container-fluid -->
          </div>
          <!-- /.content -->
        </div>
```

Api Declaration -

```
@app.route('/predi
ct',
methods=['GET',
'POST'])
                    def upload():
                       if request.method == 'POST':
                           f=request.files['file'] #requesting the file
                           basepath=os.path.dirname(__file__)#storing the file
directory
                           filepath=os.path.join(basepath,          "uploads",
f.filename) #storing the file in uploads folder
                           f.save(filepath) #saving the file
                           #Loading the saved model
                           print("[INFO] loading model...")
                           model    =    pickle.loads    (open('parkinson.pkl',
"rb").read())
                           # pre-process the image in the same manner we did
earlier
                           image = cv2.imread(filepath)
                           output = image.copy()
                           # load the input image, convert it to grayscale, and
resize
                           output = cv2.resize(output, (128, 128))
                           image = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
                           image = cv2.resize(image, (200, 200))
                           image     =     cv2.threshold(image,     0,     255,
cv2.THRESH_BINARY_INV | cv2.THRESH_OTSU) [1]



                           # quantify the image and make predictions based on
the extracted
                           # features using the last trained Random Forest
                           features    =    feature.hog(image,    orientations=9,
pixels_per_cell=(10,     10),     cells_per_block=(2,     2),
transform_sqrt=True, block_norm="L1")
                           preds = model.predict([features])
                           ls=["healthy","parkinson"]
                           result = ls[preds[0]]
```

```
        return result

    return None
```

CHAPTER 8
TESTING

Chapter 8: TESTING

Testing is a process, which reveals errors in the program. It is the major quality measure employed during software development. During software development. During testing, the program is executed with a set of test cases and the output of the program for the test cases is evaluated to determine if the program is performing as it is expected to perform.

Test Cases

Test Case No.	Action	Expected Output	Actual Output	Result
1	Entering details in sign up page	Sign up button is enable	Sign up button is enable	Pass
2	Entering details in sign up page	Profile pic button is enable	Profile pic button is enable	Pass
3	Entering details in sign up page	Already have an account Button is enable	Already have an account Button is enable	Pass
4	Entering details in login page	Login button enable	Login button enable	Pass
5	Entering details in login page	Do you have account button enable	Do you have account button enable	Pass
6	Watson chat bot	Entering queries enable	Entering queries enable	Pass
7	Watson chatbot	Automated replies enable	Automated replies enable	Pass
8	Entering wrong login details	Invalid reply	Invalid reply	Pass
9	Entering wrong password	Invalid reply	Invalid reply	Pass

10	Search your cuisine	Search button enable	Search button enable	Pass
11	Entering cuisine	It shows nutrition's	It shows nutrition's	Pass

8.1TESTING:

```
import unittest
try:
from app import app

except Exception as e:
print('Some modules missing {}'.format(e))


class FlaskTest(unittest.TestCase):

# check if response is 200
def test_index(self):
        tester = app.test_client(self)
        Response = tester.get("/")
        statuscode = response.status_code
        self.assertEqual(statuscode, 200)

# check content type
def test_index_content(self):
        tester = app.test_client(self)
         response = tester.get("/")
self.assertEqual(response.content_type, 'text/html; charset=utf-8')

def test_register(self):
   tester = app.test_client(self)
   response = tester.post('/register', data=dict(email='username', password='password'),
   follow_redirects=True)
  self.assertTrue(b'email' in response.data)
# check log in  def test_login(self):
   tester = app.test_client(self)
   response = tester.post('/', data=dict(email='username', password='password'), follow_redirects=True)

self.assertTrue(b'email' in response.data)

# checking forgot function
def test_forgot(self):
  tester = app.test_client(self)
```

```
    response = tester.post('/', data=dict(email='username'), follow_redirects=True)
    self.assertTrue(b'email' in response.data)

if  name == ' main ':
    unittest.main()
```

8.2 User Acceptance Testing

1.Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Nutrition Assistant Application project at the time of the release to User Acceptance Testing (UAT).

2.Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and howthey were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	5	4	6	5	20
Duplicate	0	1	3	0	4
External	1	1	0	4	6
Fixed	2	5	20	10	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	8	16	33	21	77

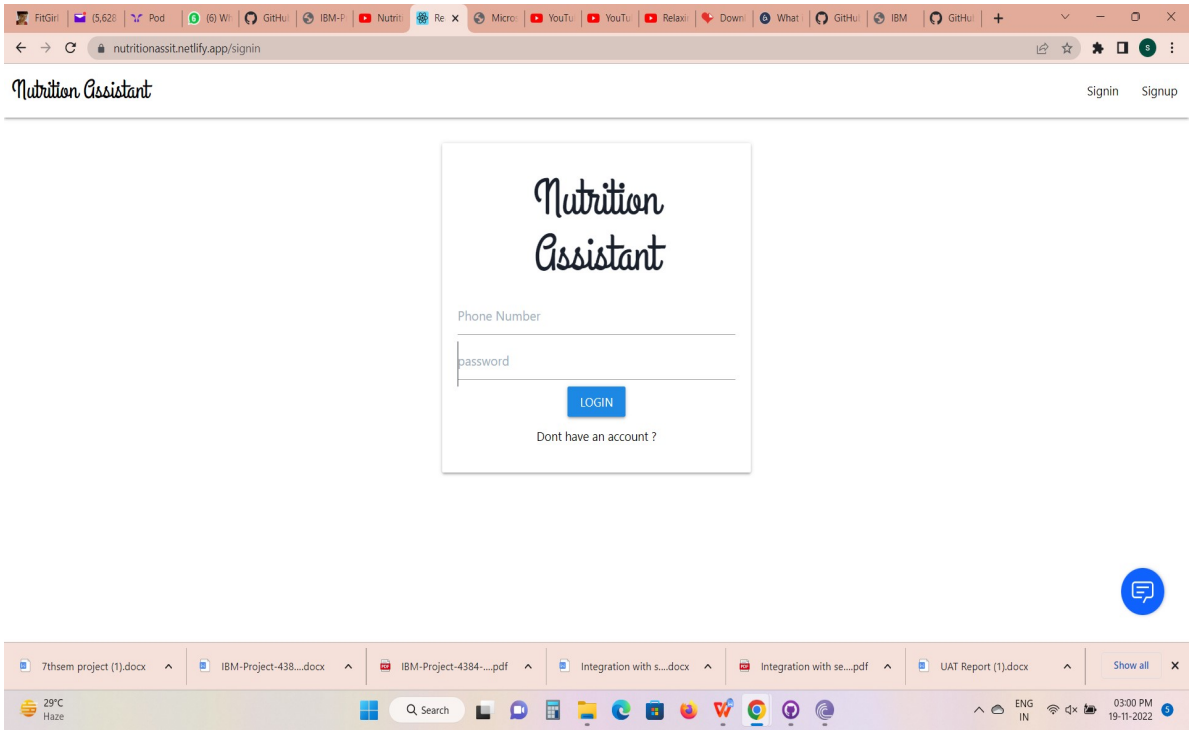
3.Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

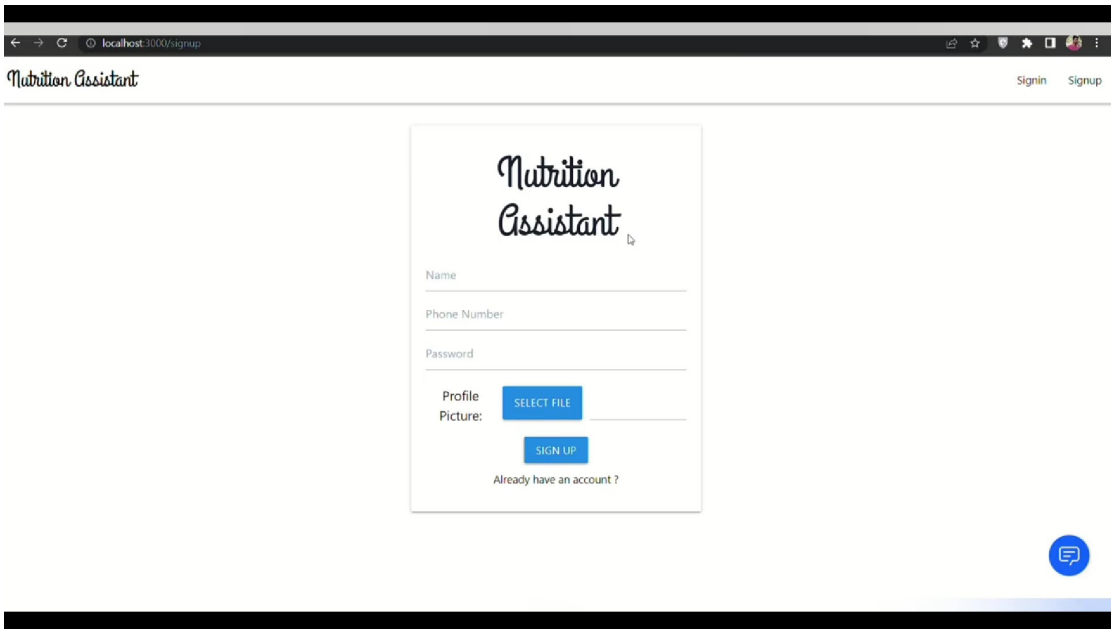
Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	51	5	0	46
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	4	0	0	4
Version Control	2	0	0	2

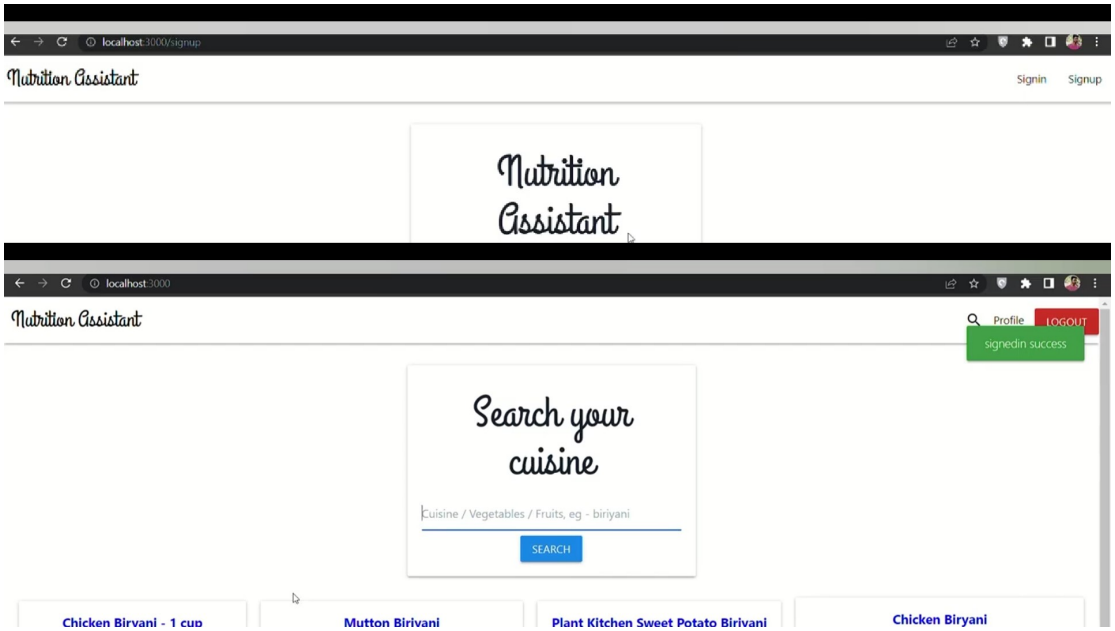
CHAPTER 9
RESULTS

RESULTS


nutritionassit.netlify.app/signin
Nutrition Assistant
Signin
Signup
Nutrition Assistant
Phone Number
password
LOGIN
Dont have an account ?

7thsem project (1).docx
IBM-Project-438....docx
IBM-Project-4384-....pdf
Integration with s....docx
Integration with se....pdf
UAT Report (1).docx
Show all
29°C
Haze
Search
ENG
IN
03:00 PM
19-11-2022


localhost:3000/signup
Nutrition Assistant
Signin
Signup
Nutrition Assistant
Name
Phone Number
Password
Profile Picture:
SELECT FILE
SIGN UP
Already have an account ?


localhost:3000/signup
Nutrition Assistant
Signin
Signup
Nutrition Assistant

localhost:3000
Nutrition Assistant
Profile
LOGOUT
signedin success
Search your cuisine
Cuisine / Vegetables / Fruits, eg - biriyani
SEARCH
Chicken Biryani - 1 cup
Mutton Biriyani
Plant Kitchen Sweet Potato Biriyani
Chicken Biryani

CHAPTER 10
ADVANTAGES
& DISADVANTAGES

ADVANTAGES :

- Works Under Low Data Connection.
- Low Energy Consumption.
- User Friendly Web Application.
- Data Privacy.
- Easy to Understand.

DISADVANTAGES:

- It Cannot be Used Without Internet Connection.
- Usage of 3rd party API may cause the time delay.

CHAPTER 11
CONCLUSION

Conclusion

Nutritional support is the provision of adequate nutrients to maintain a healthy body weight and avoid malnutrition.The continuous delivery of high-quality and cost-effective nutritional care to patients has been shown to be an increasingly difficult task.

We developed a cloud based nutrition application which detects the nutrition in food. It clarifies the calories in the food which affects our health.

It is observed that dietitians are requested to carry out the nutritional assessment, to manually calculate the nutritional needs and to design the everyday meal plan for each patient. In most cases, these time-consuming tasks are not completed due to lack of time or inadequate number of person.

CHAPTER 12
FUTURE SCOPE

Future Scope

Project scope is a way to set boundaries on your project and define exactly what goals, deadlines, and project deliverables you'll be working towards. By clarifying your project scope, you can ensure you hit your project goals and objectives without delay or overwork. Defining your project scope isn't a one-person job.

You can work as a Nutritionist/Dietitian there and take control of the food intake and also the food quality consumed by the people. With a degree in food and nutrition, you can act as a Public

Health Nutritionist in non governmental organizations and play your part in spreading some good in the world.

Future Scope is for the Undergraduates, Graduates and the Working Professionals. They may want to review or reconsider their future options and goals in terms of its suitability now; may be with a different perspective of their options in terms of time, resources, inclination etc.

CHAPTER 12
APPENDIX

APPENDIX

Source Code

https://github.com/IBM-EPBL/IBM-Project-4262-1658727002

Demo Link

https://www.youtube.com/watch?v=llvRMgcQMH4&ab_channel=CNBC