Final Project Submission

By Group 4

Dara Venkata Sai Sandeep-5

Khandelwal Shuchita-10

Podilli Venkata Krishna-23

Sawant Anuja-25

Project Proposal

Project Team: 4

1. Dara Venkata Sai Sandeep - 5
2. Khandelwal Shuchita - 10
3. Podili, Venkata Krishna – 23
4. Sawant, Anuja Ajay – 25

Project Goal and Objective:

- Overall goal: To program a robot which can be used as a medical assistant.
- Specific objectives (problem statement): The main objective of the robot is to diagnose the disease that the user has depending on the inputs such as age, gender, symptoms, images etc. provided by the user.

Significance:

The robot provides the user with immediate information about the disease, nearest doctor and also keeps him notified about the appointment timings and prescription as and when it arrives from the doctor. Thus, the robot guides the user properly during its difficult times.

Specific features:

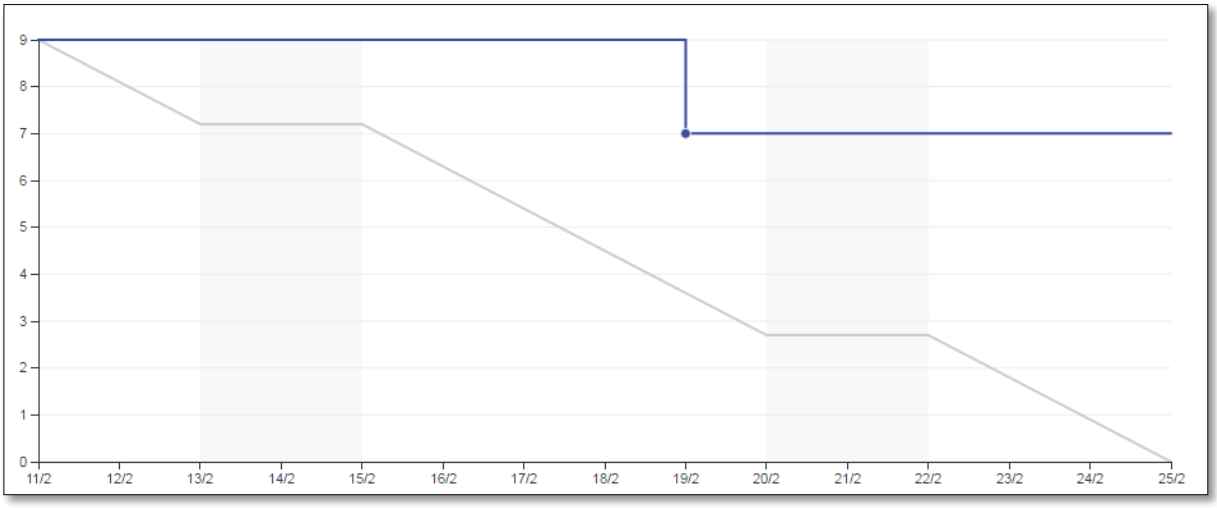
- Use facial recognition technique to authenticate the user.
- Collect the data from the user regarding the symptoms age and gender from his voice and would use Natural Language Processing and also images to identify the issue
- Diagnose the disease depending on the inputs provided by the user
- Suggest nearest doctor depending on the type of disease to the user
- Remind the user about his/her disease.

Bibliography:

- https://www.nlm.nih.gov/medlineplus/encyclopedia.html
- http://seer.cancer.gov/tools/seerrx/
- http://stackoverflow.com/

Project Plan

Increment -1



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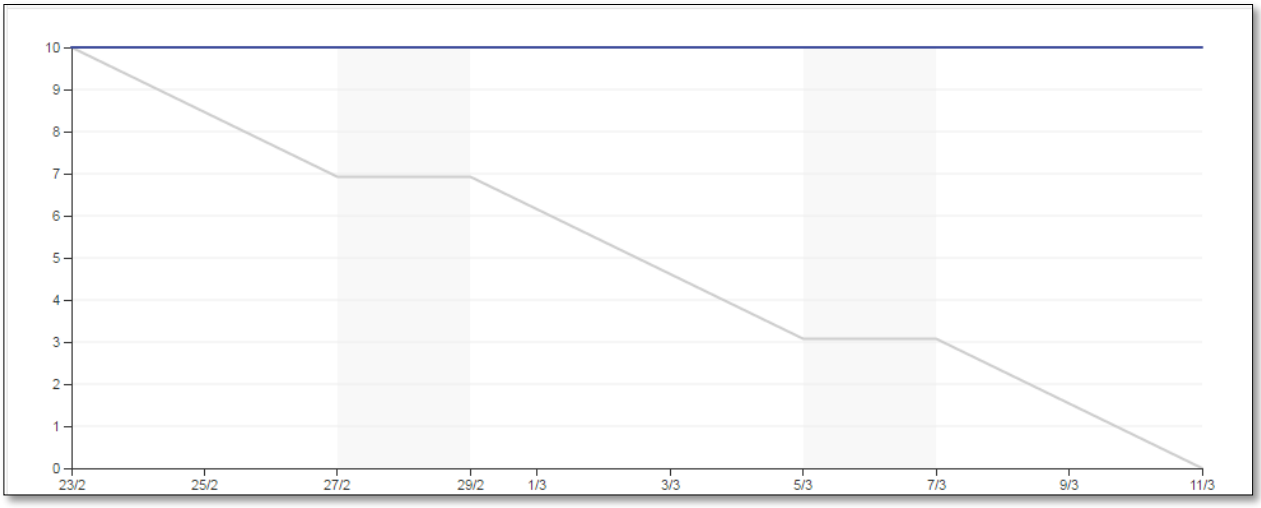

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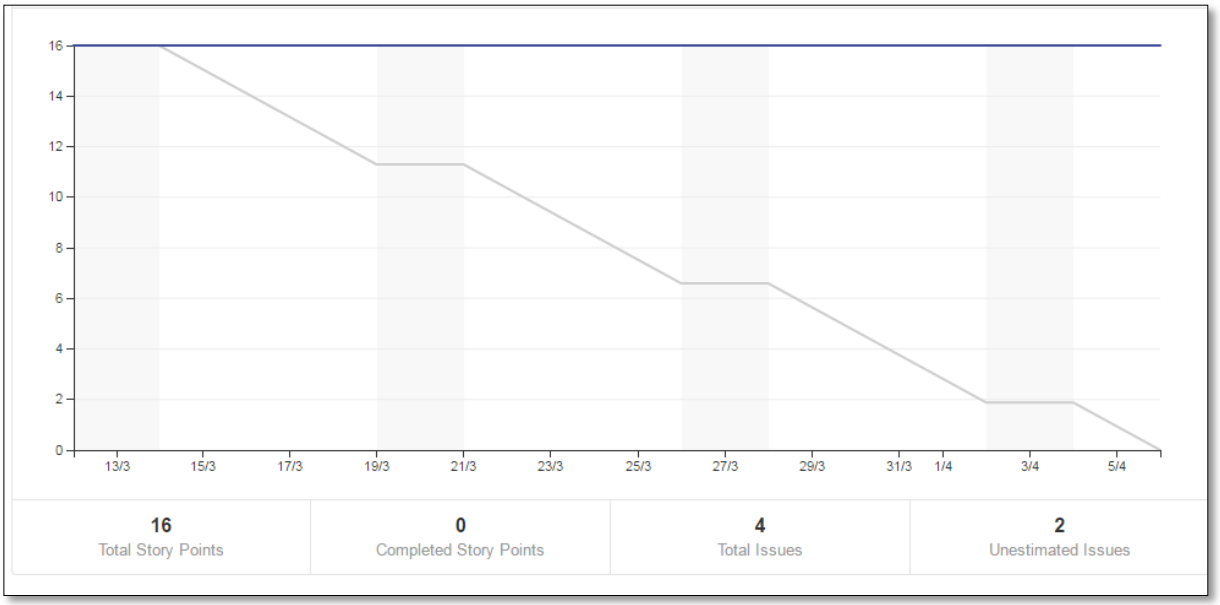
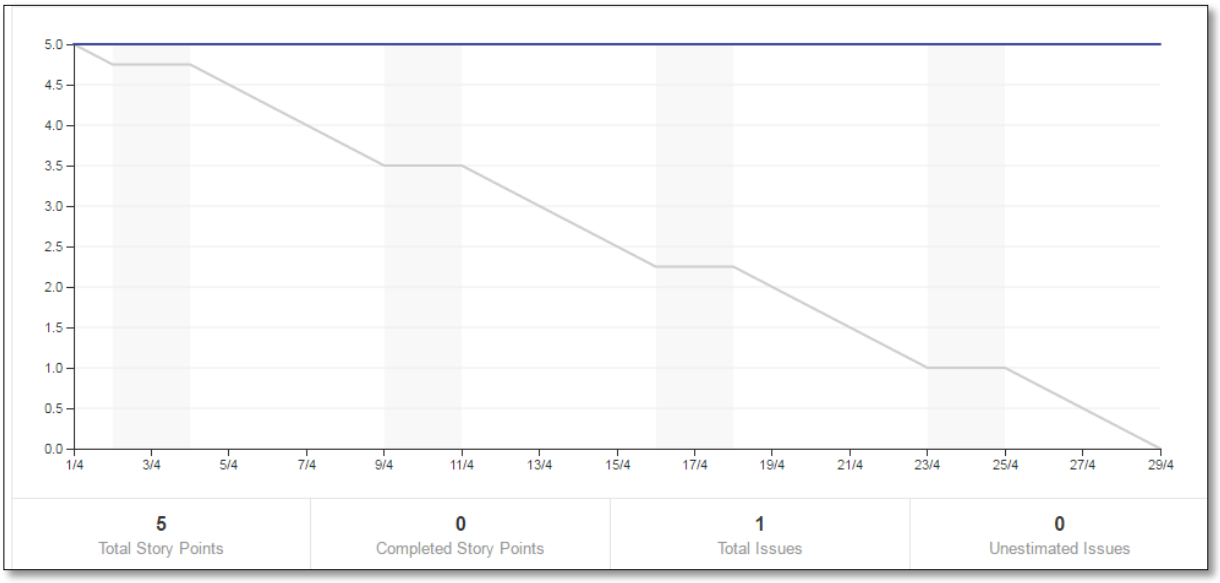


Increment -4



FIRST INCREMENT

Introduction:

RoboCare – A human friendly robot, one's own personal doctor. As its name suggests, this robot takes good care of his companion right from diagnosing the disease to notifying the user the nearest practitioner who can prescribe medicines. All that the robot needs are few inputs from the user and it does all the work on its own. RoboCare does take help of the Smart watch and the Smart Phone of the user to provide many other functionalities. Thus, RoboCare can be regarded as a guide to make a human's life illness free.

Project Goal and Objective:

- Overall goal: To program a robot which can be used as a medical assistant.
- Specific objectives (problem statement): The main objective of the robot is to diagnose the disease that the user has depending on the inputs such as age, gender, symptoms, images etc. provided by the user.

Specific features:

The Robot will perform following tasks:

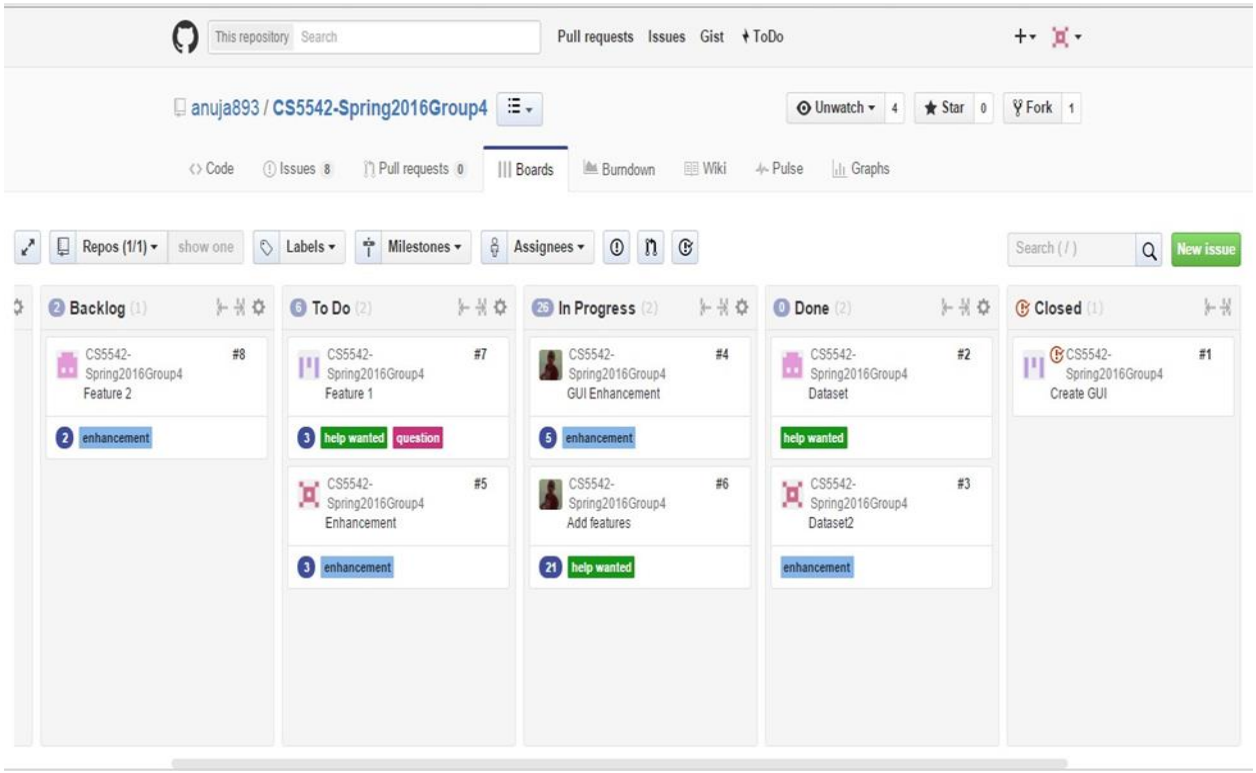
- Use facial recognition technique to authenticate the user.
- Collect the data from the user regarding the symptoms age and gender from his voice and would use Natural Language Processing and also images to identify the issue
- Diagnose the disease depending on the inputs provided by the user
- Suggest nearest doctor depending on the type of disease to the user
- Remind the user about his/her appointment by sending notification

Significance:

The robot provides the user with immediate information about the disease, nearest doctor and also keeps him notified about the appointment timings and prescription as and when it arrives from the doctor. Thus, the robot guides the user properly during its difficult times.

Project Plan

Issues:



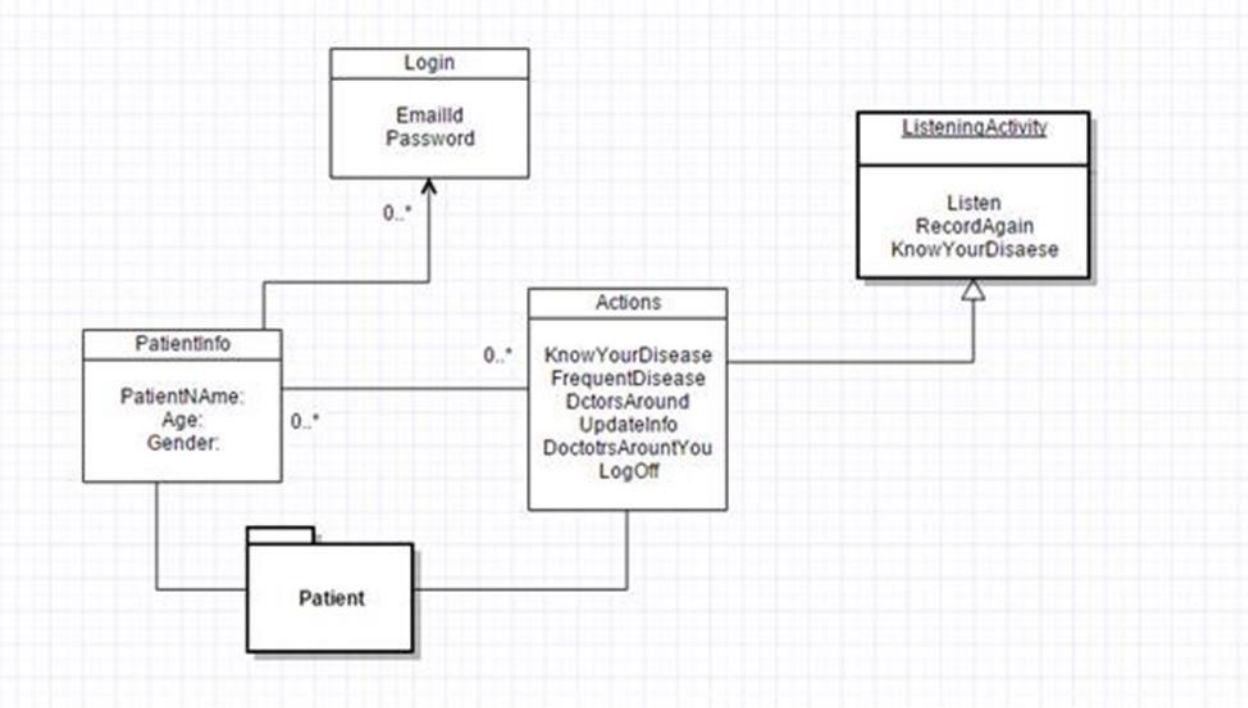
Burndown Chart:

First Increment Report

Existing API:

Used Android Studio 1.5.1 to develop the graphical user interface of the application and the inbuilt APIs for Speech to text conversion.

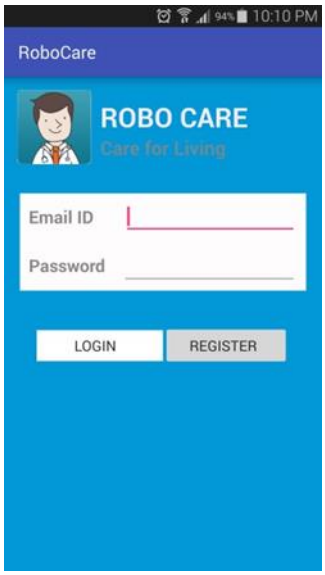
Design of Features:

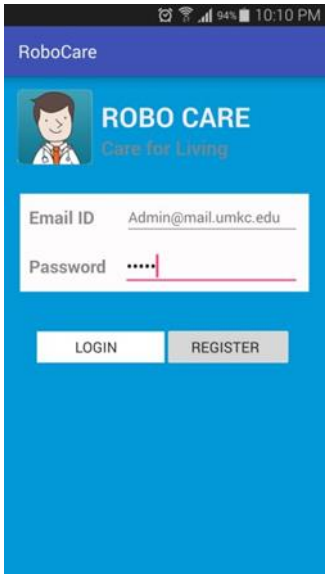


Dataset:

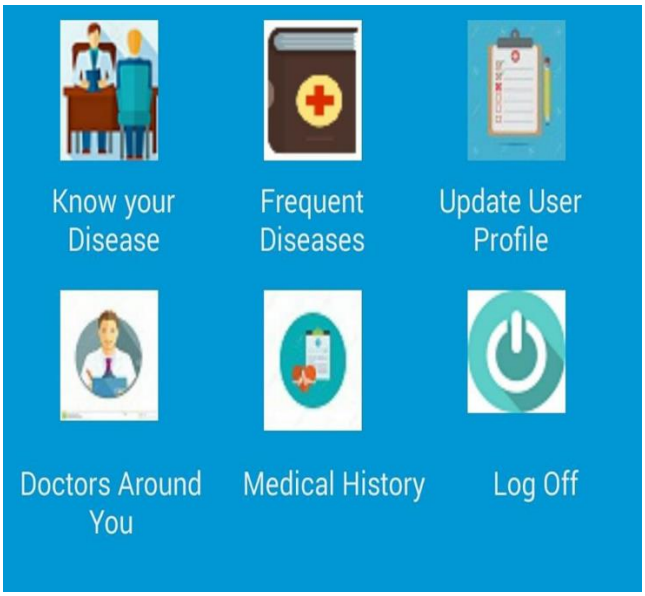
Developed a Comma Separated value (.csv) data sheet file consisting of information of various diseases and their symptoms.

Deployment


10:10 PM
RoboCare
ROBO CARE
Care for Living
Email ID
Password
LOGIN
REGISTER

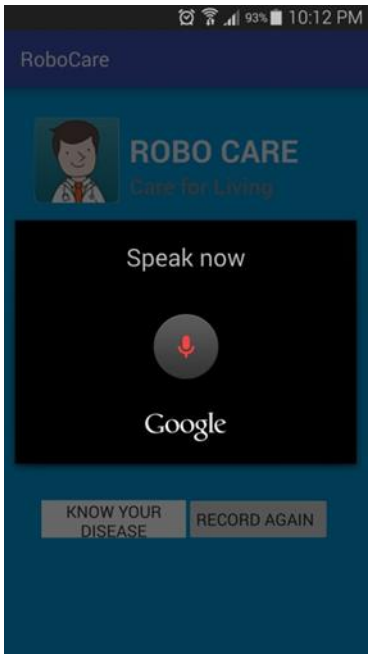

10:10 PM
RoboCare
ROBO CARE
Care for Living
Email ID
Admin@mail.umkc.edu
Password
LOGIN
REGISTER


Saving screenshot...
RoboCare
ROBO CARE
Care for Living
Patient Details
Name : Robert Bob
Age : 24
Gender : Male Female
Know your Disease
Frequent Diseases
Update User Profile
ROBO CARE Welcomes You


Know your Disease
Frequent Diseases
Update User Profile
Doctors Around You
Medical History
Log Off


10:11 PM
RoboCare
ROBO CARE
Care for Living
Patient Details
Name : Robert Bob
Age : 24
Gender : Male Female
Know your Disease
Frequent Diseases
Update User Profile
Doctors Around You
Medical History
Log Off


10:11 PM
RoboCare
ROBO CARE
Care for Living
Robo is here to listen you
KNOW YOUR DISEASE
RECORD AGAIN

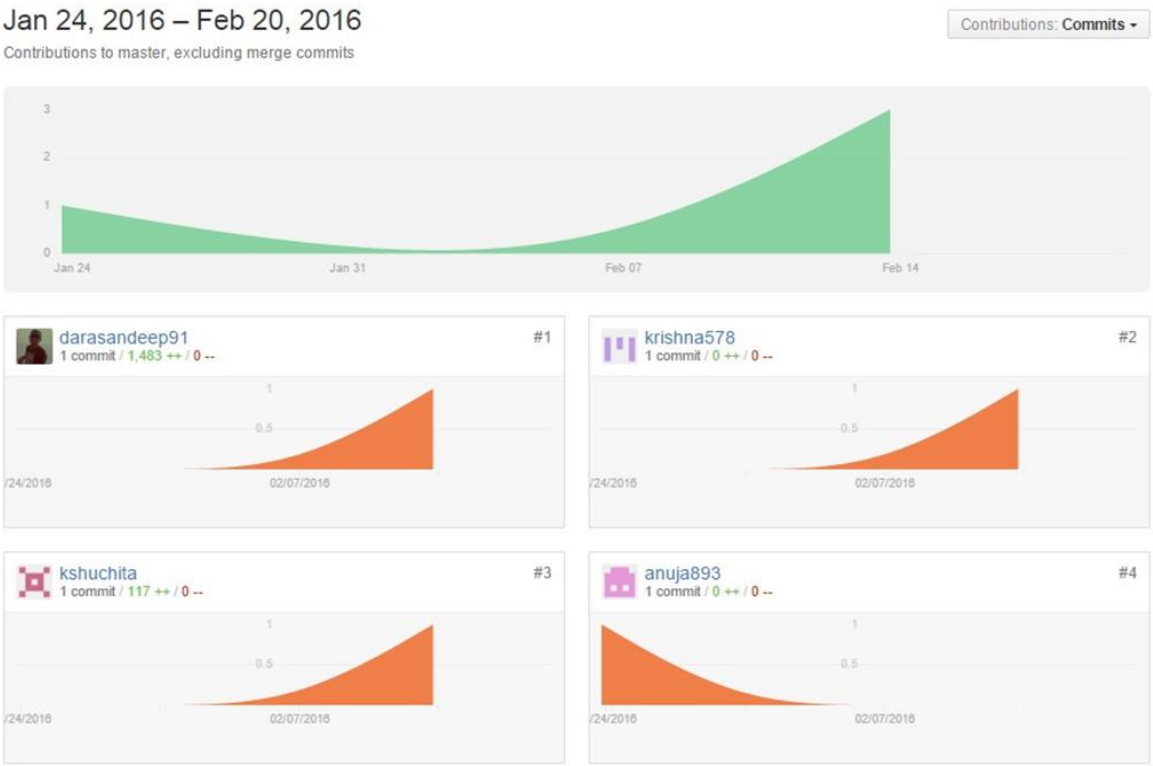


GitHub URL:

https://github.com/anuja893/CS5542-Spring2016Group4

Project Management

Contribution Graph:



Project Management:

Member Name: Dara, Venkata Sai Sandeep

Work Completed:

1. Worked on the GUI Part.
2. Modified the User interface facing bugs.

Time taken: 4 days

Contribution: 25%

Member Name: Podili, Venkata Krishna

Work Completed:

1. Created the GUI Part
2. Created the action part of the User interface.

Time taken: 4 days

Contribution: 25%

Member Name: **Anuja Sawant**
Work Completed:
1. Prepared dataset
2. Adding features for the action page in the GUI
Time Taken: 3 days
Contributions: 25%

Member name**: Shuchita Khandelwal**
Work completed:
1. Prepared the final updated dataset
2. Added the voice recognition feature
Time taken: 2 days
Contribution: 25%

Bibliography:

https://www.nlm.nih.gov/medlineplus/encyclopedia.html

http://seer.cancer.gov/tools/seerrx/

http://stackoverflow.com/

http://www.mayoclinic.org/

SECOND INCREMENT

Introduction:

RoboCare – A human friendly robot, one's own personal doctor. As its name suggests, this robot takes good care of his companion right from diagnosing the disease to notifying the user the nearest practitioner who can prescribe medicines. All that the robot needs are few inputs from the user and it does all the work on its own. RoboCare does take help of the Smart watch and the Smart Phone of the user to provide many other functionalities. Thus, RoboCare can be regarded as a guide to make a human's life illness free.

Project Goal and Objective:

- Overall goal: To program a robot which can be used as a medical assistant.
- Specific objectives (problem statement): The main objective of the robot is to diagnose the disease that the user has depending on the inputs such as age, gender, symptoms, images etc. provided by the user.

Specific features:

The Robot will perform following tasks:

- Use facial recognition technique to authenticate the user.
- Collect the data from the user regarding the symptoms age and gender from his voice and would use Natural Language Processing and also images to identify the issue
- Diagnose the disease depending on the inputs provided by the user
- Suggest nearest doctor depending on the type of disease to the user
- Remind the user about his/her appointment by sending notification

Significance:

The robot provides the user with immediate information about the disease, nearest doctor and also keeps him notified about the appointment timings and prescription as and when it arrives from the doctor. Thus, the robot guides the user properly during its difficult times.

Second Increment Report

Existing API:

Used Android Studio 1.5.1 to develop the graphical user interface of the application and the inbuilt APIs for Speech to text conversion.

Design of Features:

- Developed a user friendly GUI wherein after the user speaks, a dialog box appears which allows the user to select symptoms.
- After selecting a particular symptom, it will be added to the list of symptoms.
- The user can also modify it later as required by long pressing the symptom to be changed.
- After selecting the list of symptoms, after the user presses the 'Know Disease' button, the application predicts the disease depending on the symptoms provided.

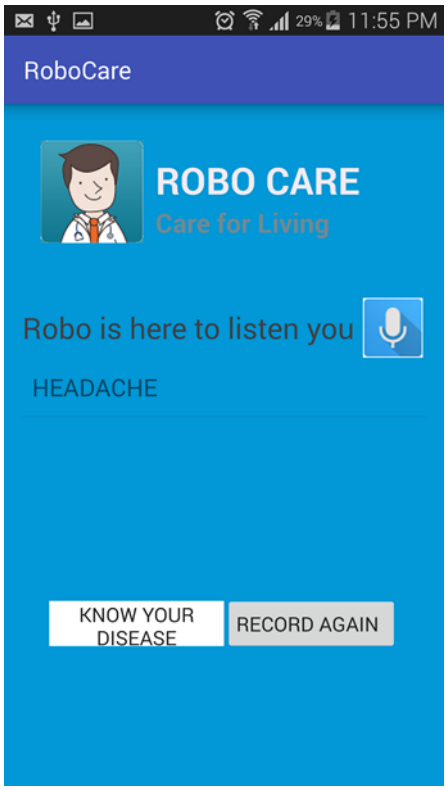
Dataset:

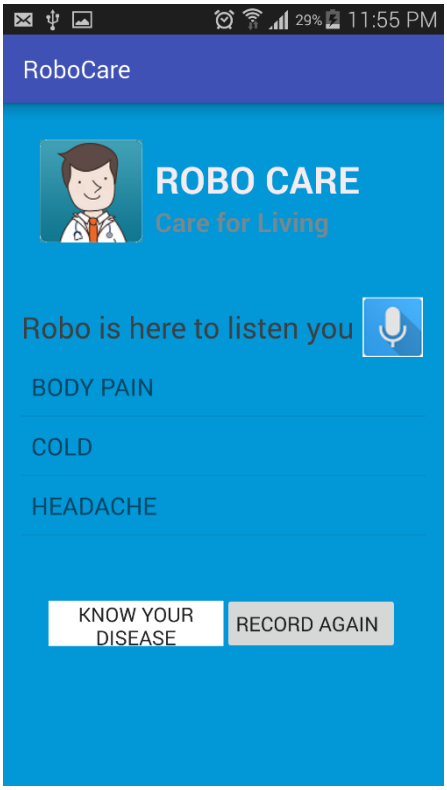
Developed a Comma Separated value (.csv) data sheet file consisting of information of various diseases and their symptoms.

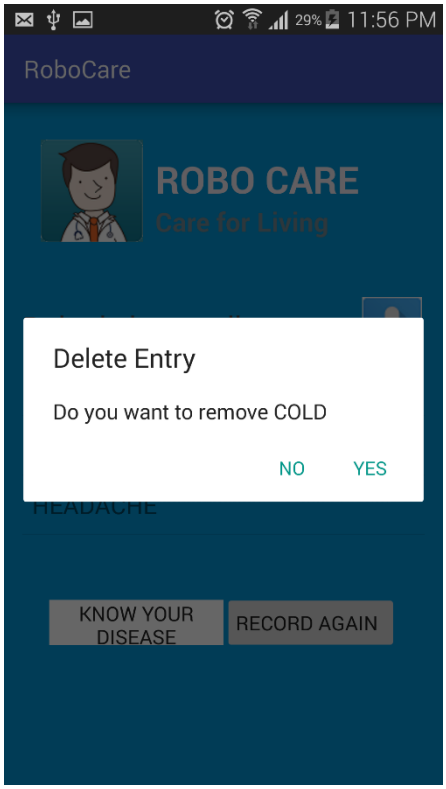
Implementation:

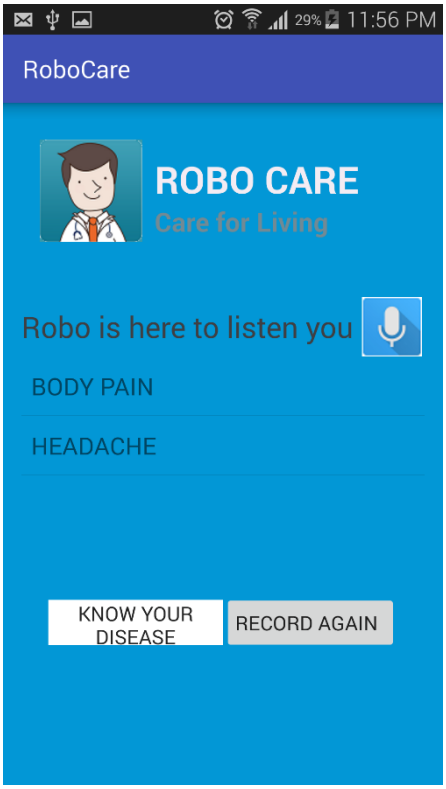
Application for a Smart phone

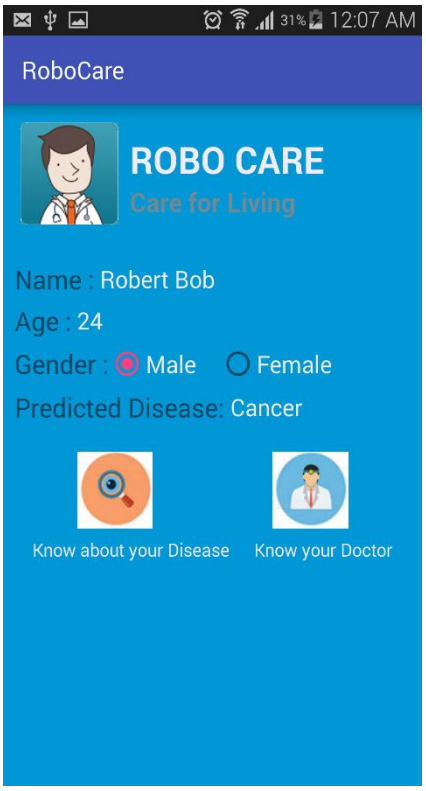
Deployment:


11:55 PM
RoboCare
ROBO CARE
Care for Living
Robo is here to listen you
HEADACHE
KNOW YOUR DISEASE
RECORD AGAIN


11:55 PM
RoboCare
ROBO CARE
Care for Living
Robo is here to listen you
BODY PAIN
COLD
HEADACHE
KNOW YOUR DISEASE
RECORD AGAIN


11:56 PM
RoboCare
ROBO CARE
Care for Living
Delete Entry
Do you want to remove COLD
NO
YES
KNOW YOUR DISEASE
RECORD AGAIN


11:56 PM
RoboCare
ROBO CARE
Care for Living
Robo is here to listen you
BODY PAIN
HEADACHE
KNOW YOUR DISEASE
RECORD AGAIN



GitHub URL:

https://github.com/anuja893/CS5542-Spring2016Group4

Project Management:

Member Name: **Dara, Venkata Sai Sandeep**
Work Completed:
1. Worked on the GUI Part
2. Classification of disease using Naïve Bayes Model.
3. Socket Programming

Time taken: 15 days
Contribution: 25%

Member Name: **Podili, Venkata Krishna**
Work Completed:
1. Created the GUI Part
2. Classification of symptoms by the application

Time taken: 12 days
Contribution: 25%

Member Name: **Anuja Sawant**
Work Completed:
1. Prepared dataset and report generation
2. Worked on speech to text part of the application.
Time Taken: 10 days
Contributions: 25%

Member name: **Shuchita Khandelwal**
Work completed:
1. Prepared the final updated dataset
2. Worked on speech to text part of the application.
Time taken: 10 days
Contribution: 25%

Bibliography:

https://www.nlm.nih.gov/medlineplus/encyclopedia.html
http://seer.cancer.gov/tools/seerrx/
http://stackoverflow.com/ \http://www.mayoclinic.org/

THIRD INCREMENT

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- Remind the user about his/her appointment by sending notification

Significance:

The robot provides the user with immediate information about the disease, nearest doctor and also keeps him notified about the appointment timings and prescription as and when it arrives from the doctor. Thus, the robot guides the user properly during its difficult times.

Third Increment Report

Existing API:

Used Android Studio 1.5.1 to develop the graphical user interface of the application and the inbuilt APIs for Speech to text conversion.

Design of Features:

- Based upon the disease doctor recommendations are done and showing Recommendations in smart phone.
- Implemented emergency button for the users which that redirects directly to the phone calling.
- Used M Lab to store application related data i.e. is login details symptoms of user and suggested disease.
- Used Foursquare API to provide search feature of doctors around the user.

Dataset:

Developed a Comma Separated value (.csv) data sheet file consisting of information of various diseases and their doctors.

Implementation:

Application for a Smart phone.

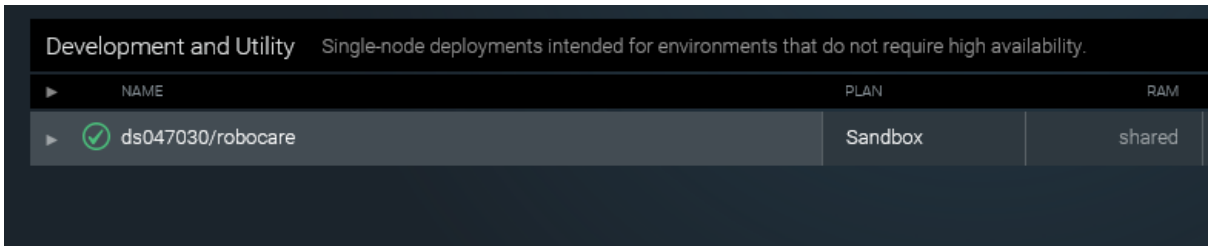
Deployment:

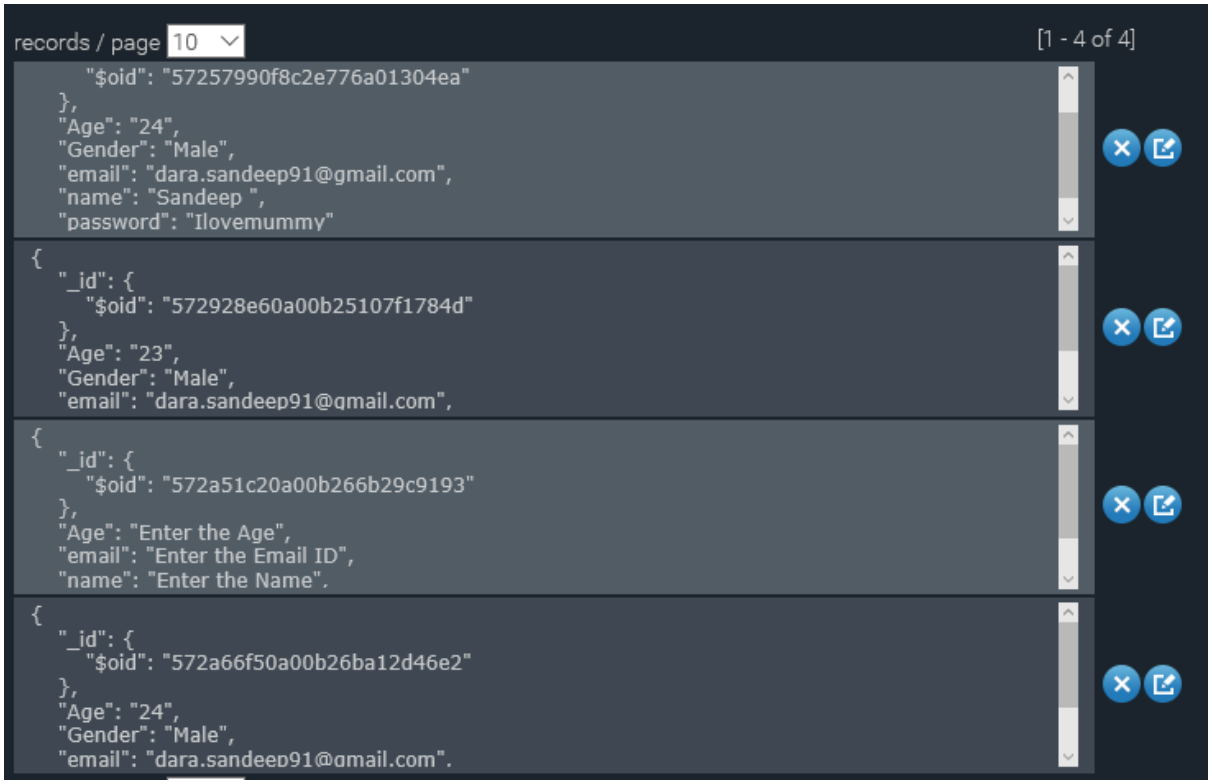

7:47 AM
RoboCare
ROBO CARE
Care for Living
Name : Robert Bob
Age : 24
Gender : Male Female
Predicted Disease: Cancer
Doctor Details
Name : Dennis Citrin
Specilisation : Oncologist
Hospital : Shawnee Cancer Center


7:46 AM
RoboCare
ROBO CARE
Care for Living
Patient Details
Name : Robert Bob
Age : 24
Gender : Male Female
Know your Disease
Emergency Button
Update User Profile
ROBO CARE Welcomes You


7:47 AM
RoboCare
ROBO CARE
Complete action using
Phone
Skype
Always
Just once
Doctors Around You
Medical History
Log Off


7:47 AM
Keypad
Logs
Favorites
Contacts
Add to Contacts
(875) 453-1545


Development and Utility
Single-node deployments intended for environments that do not require high availability.
NAME
PLAN
RAM
ds047030/robocare
Sandbox
shared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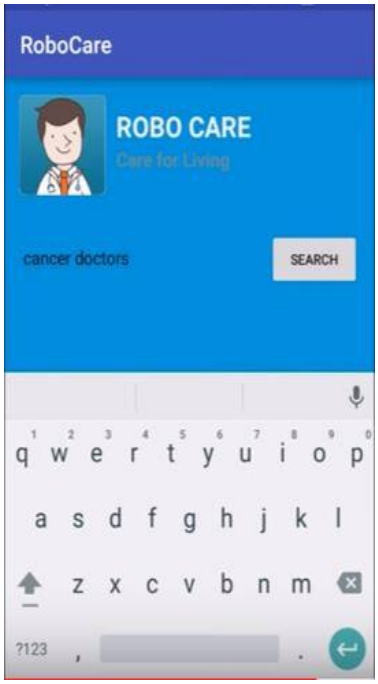
RoboCare
ROBO CARE
Care for Living
cancer doctors
SEARCH


RoboCare
ROBO CARE
Care for Living
cancer doctors
SEARCH
Family Foot Doctors
Saint Lukes Cancer Institute
Cancer Action
The Universsity of Kansas Cancer Center
KU Cancer Center Lab

Project Management:

Member Name: **Dara, Venkata Sai Sandeep**

Work Completed:

1. Worked on the GUI Part
2. Prediction of diseases depending on the symptoms.
3. Socket Programming.

Time taken: 15 days

Contribution: 25%

Member Name: **Podili, Venkata Krishna**

Work Completed:

1. Created the GUI Part
2. Recommendation of doctors by the application

Time taken: 12 days

Contribution: 25%

Member Name: **Anuja Sawant**

Work Completed:

1. Prepared dataset and report generation
2. Worked on GUI part and getting info on diseases
3. Implementing call feature

Time Taken: 10 days

Contributions: 25%

Member name: **Shuchita Khandelwal**

Work completed:

1. Prepared the final updated dataset
2. Worked on GUI part and getting info on diseases

Time taken: 10 days

Contribution: 25%

FOURTH INCREMENT

Introduction:

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Significance:

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Fourth Increment Report

Existing API:

Used Android Studio 1.5.1 to develop the graphical user interface of the application and camera icon for capturing the testing image.

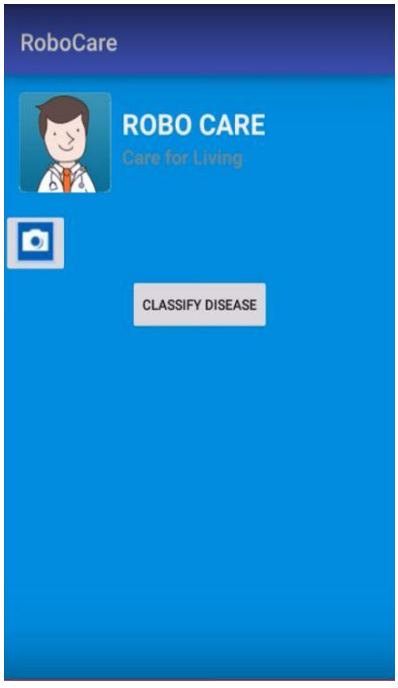
Design of Features:

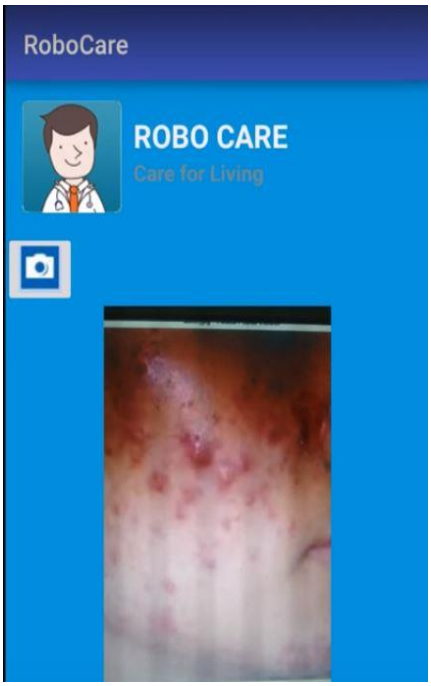
- The training data set consists of the images of various skin diseases like Psoriasis, skin cancer, acne etc.
- The testing data comes from user directly through the app.
- After giving the testing image it directly invokes Spark for image classification through socket connection.
- For image classification we have used random forest algorithm and the classified disease directly sent to smart watch as a notification.

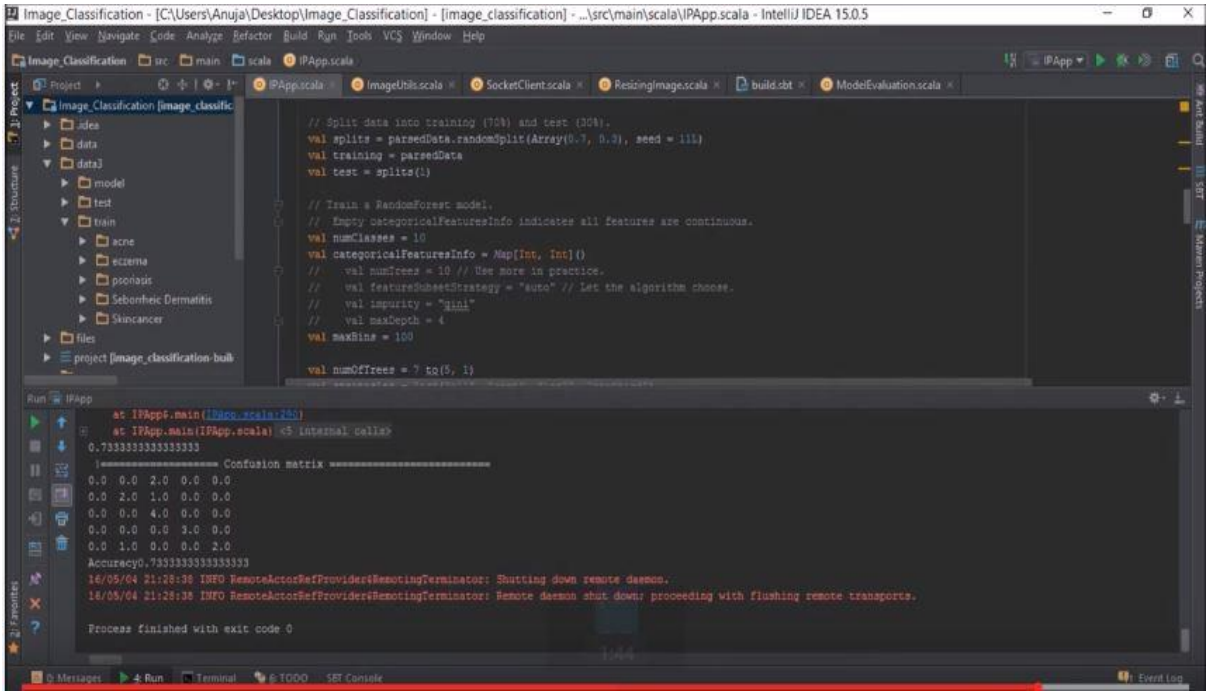
Dataset:

Developed a testing data of images consisting of information of various set of skin diseases.

Deployment:




RoboCare
ROBO CARE
Care for Living


Image_Classification - [C:\Users\Anuja\Desktop\Image_Classification] - [image_classification] - ...\src\main\scala\IPApp.scala - IntelliJ IDEA 15.0.5
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
Image_Classification src main scala IPApp.scala
IPApp.scala ImageUtils.scala SocketClient.scala ResizingImage.scala build.sbt ModelEvaluation.scala
Image_Classification [image_classific
.idea
data
data3
model
test
train
acne
eczema
psoriasis
Seborrheic Dermatitis
Skincancer
files
project [image_classification-build
// Split data into training (70%) and test (30%).
val splits = parsedData.randomSplit(Array(0.7, 0.3), seed = 11L)
val training = parsedData
val test = splits(1)
// Train a RandomForest model.
// Empty categoricalFeaturesInfo indicates all features are continuous.
val numClasses = 10
val categoricalFeaturesInfo = Map[Int, Int]()
// val numTrees = 10 // Use more in practice.
// val featureSubsetStrategy = "auto" // Let the algorithm choose.
// val impurity = "gini"
// val maxDepth = 4
val maxBins = 100
val numOfTrees = 7 to(5, 1)
Run IPApp
at IPApp$.main(IPApp.scala:250)
at IPApp.main(IPApp.scala) <5 internal calls>
0.7333333333333333
|================== Confusion matrix ======================
0.0 0.0 2.0 0.0 0.0
0.0 2.0 1.0 0.0 0.0
0.0 0.0 4.0 0.0 0.0
0.0 0.0 0.0 3.0 0.0
0.0 1.0 0.0 0.0 2.0
Accuracy0.7333333333333333
16/05/04 21:28:38 INFO RemoteActorRefProvider$RemotingTerminator: Shutting down remote daemon.
16/05/04 21:28:38 INFO RemoteActorRefProvider$RemotingTerminator: Remote daemon shut down; proceeding with flushing remote transports.
Process finished with exit code 0
0: Messages 4: Run Terminal 6: TODO SBT Console Event Log

GitHub URL:

https://github.com/anuja893/CS5542-Spring2016Group4

Project Management:

Member Name: **Dara, Venkata Sai Sandeep**
Work Completed:
1. Worked on the GUI Part
2. Sending Notification to smart watch.
3. Connecting to M Lab Cloud.

Time taken: 20 days
Contribution: 25%

Member Name: Podili**, Venkata Krishna**
Work Completed:
1. worked on Image Classification part.
2. worked on GUI part

Time taken: 25 days
Contribution: 25%

Member Name: **Anuja Sawant**

Work Completed:

1. worked on image classification.
2. prepared image dataset.

Time Taken: 25days

Contributions: 25%

Member name: **Shuchita Khandelwal**

Work completed:

1. Prepared the final updated image dataset
2. Worked on camera feature.

Time taken: 20 days

Contribution: 25%

Bibliography:

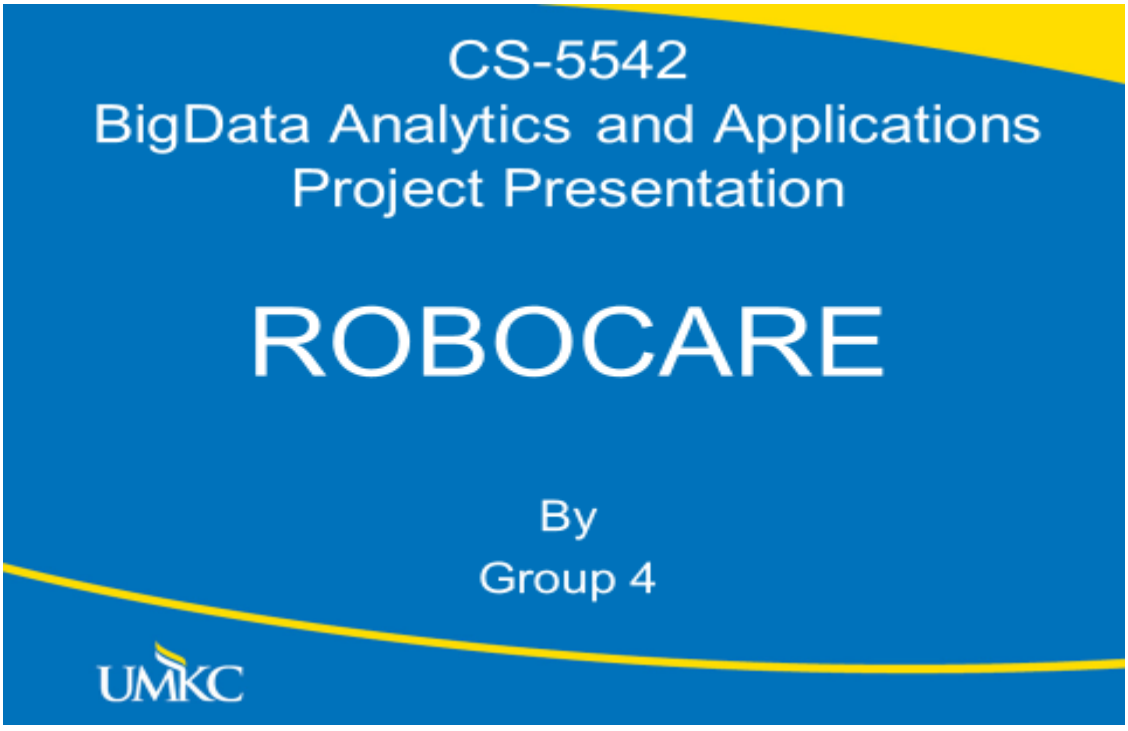
https://www.google.com/search?q=Acne

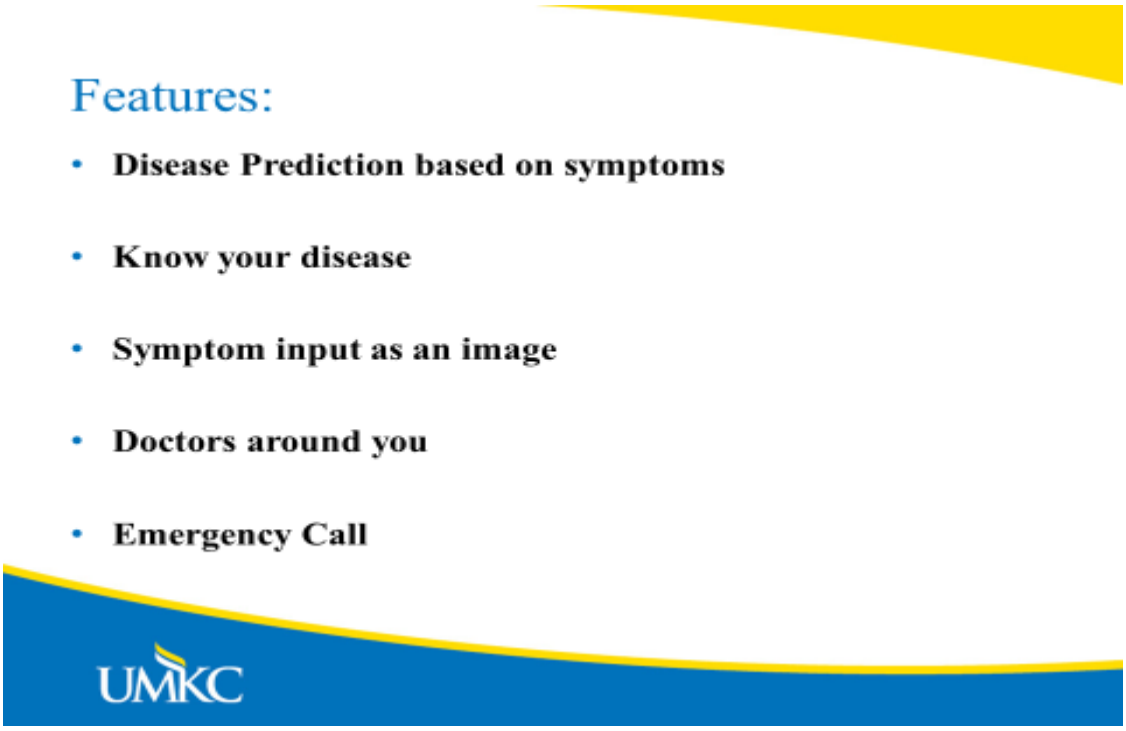
https://www.nlm.nih.gov/medlineplus/encyclopedia.html

http://seer.cancer.gov/tools/seerrx/

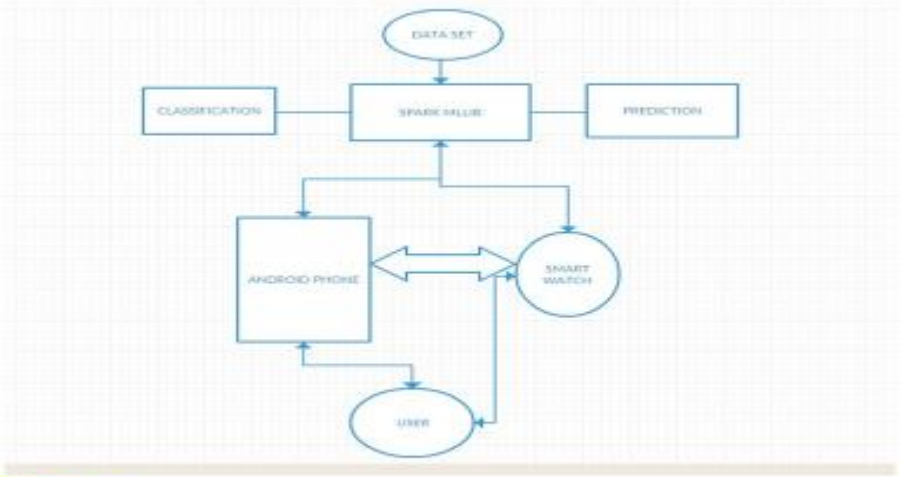
http://stackoverflow.com/ \http://www.mayoclinic.org/

Presentation Slides





Work flow:



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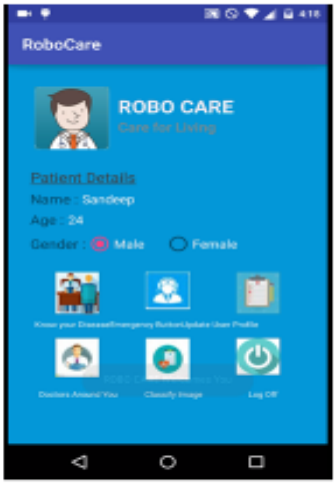
Screenshots:



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Dataset:

58	Nasal Polyps	Nasal obstruction	Sneezing	Nasal congestion	Facial pain	Loss of taste	Itching around eyes	Runny nose	
59	Hay fever	Runny nose and na	Watery, itchy, red	Sneezinng	Coughing	Itchy nose,mouth and th	Fatigue		
60	Malaria	Moderate to severe	High fever	Sweating	Headache	Vomiting	Diarrhea		
61	Mastitis	Breast tenderness	Generally feeling i	Pain while breast feedir	Skin rednes often in we	Fever of 101 F or greater			
62	Measles	Fever	Dry cough	Runny nose	Sore throat	Inflammed eyes	tiny white spots inside the mouth		
63	Meningitis	Sudden high fever	Stiff neck	Severe headache with n	Seizures	Sleepiness, Skin rash	Sesnitivity to light	No appetite	
64	Migraine	Constipation	PulsatingPain on si	Blurred vision	Hyperactivity	Irritability	Neck stiffness	Uncontrollable yawning	
65	Moles	Brown Spots on ski	Painless						
66	Mumps	Swollen, painful sa	Fever	Headache	Muscle aches	Loss of apetite	Pain while swallowing or chewing		
67	Myocarditis	Chest pain	Rapid heart rythms	Shortness of breath	Fluid retention with swe	Fatigue	Headache	Body aches and joint pains	
68	Myoclonus	Sudden Jerks	Spasms						
69	Pneumonic Pla	Cough, with blood	Difficulty in breath	High fever	Nausea	Vomiting	Weakness		
70	Septicimic Plag	Fever and chills	Abdominal pain	Diarrhea	Vomiting	Bleeding from mouth	Shock	Blackening and death of tissue	
71	Pneumonia	Fever, sweating an	Coughing with phl	Chest pain when breath	Shortness of breath	Fatigue	Nausea	Vomiting	

Fig. Instance of the diseases.csv

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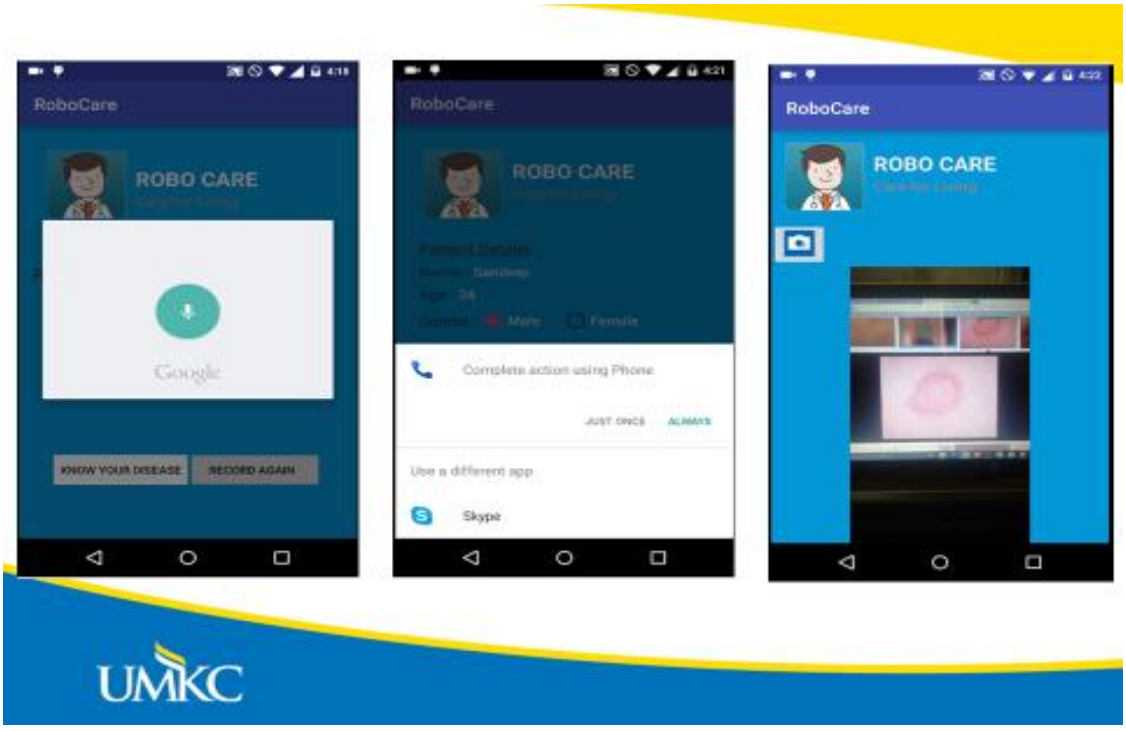

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YouTube URL

https://www.youtube.com/watch?v=f28AO6-PsTA

GitHub URL

https://github.com/anuja893/CS5542-Spring2016Group4

Project Summary

Introduction:

RoboCare – A human friendly application, one's own personal doctor. As its name suggests, this app takes good care of its user right from diagnosing the disease to suggesting the user the nearest practitioner who can prescribe medicines for his or her illness. All that it needs is few inputs from the user and it does all the work on its own. RoboCare with the help of the Smart watch and the user's Smart Phone provides its user excellent functionalities. Thus, RoboCare can be regarded as a guide to make a human's life illness free.

Architecture & Application:

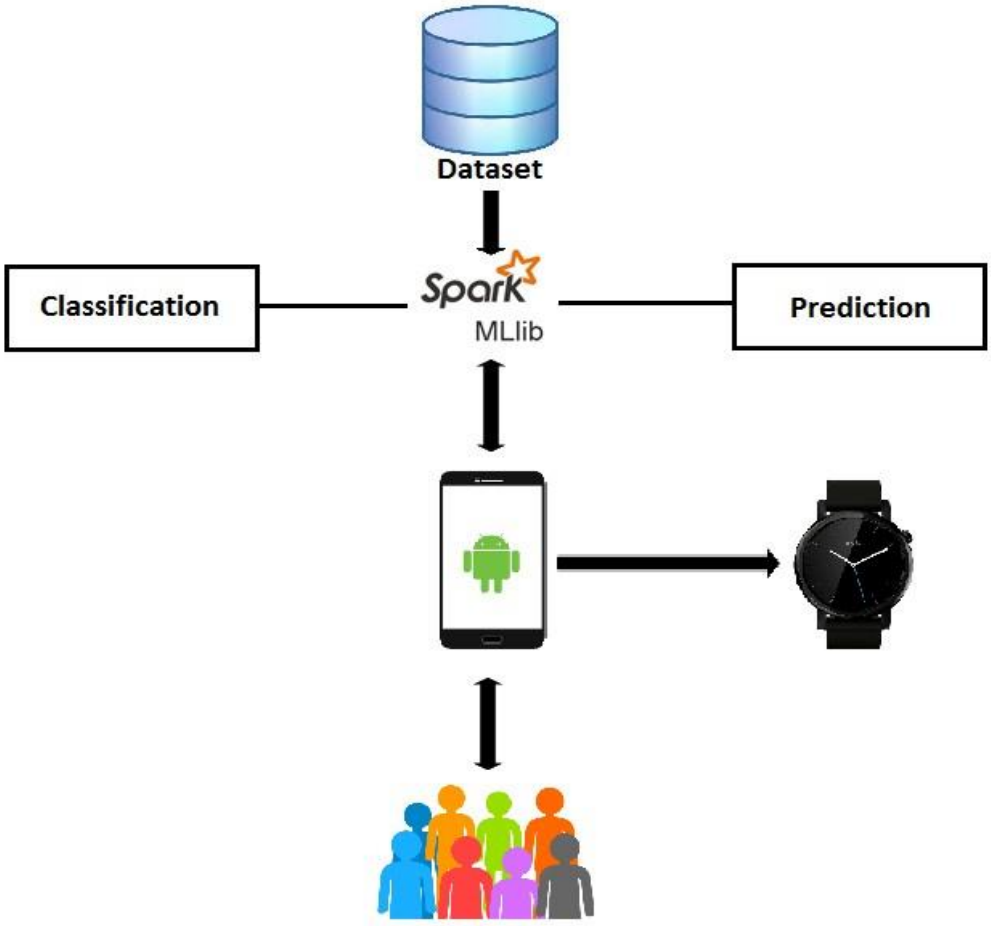


Figure 1. Architecture of RoboCare

The above diagram portrays the architecture of the overall application. The main components of the application are:

- Users: Provide symptoms of disease as input to the system in various formats and views the results given by the application.
- Android Phone: Acts as the front end of the application. Takes input from the user, passes it to the Spark System and provides results back to the user. Also sends notifications to the user's smart watch.
- Smart Watch: Displays notifications sent by the phone to the User.
- Spark Machine learning library: Takes input from the user via the Smart Phone and performs Naïve Bayes Prediction on the speech and text inputs and Random Forest Classification on the image inputs with the help of the training data provided to the system.
- Dataset: It consists of information about large number of diseases along with a list of symptoms of the diseases. Also consists of images of a few skin related diseases.

The workflow of the application goes as follows: The user registers himself by providing his or her necessary details. Then with the help of the credentials, the user logs into his or her account and then can make use of the multiple features provided by the system.

The user can provide symptoms to the 'Know your disease' function of the application via speech or text or also by taking images of the skin diseases and then the application predicts the nearest possibility of the disease. Then the user can also know about the medicines that can help to cure that.

The application also provides an Emergency button which helps the user to immediately call a person in urgency whose contact details he mentions during registration.

The application also provides the user with information about the doctors in the nearby areas who can help them cure that disease.

By making the most of all these functions the user logs out of the application.

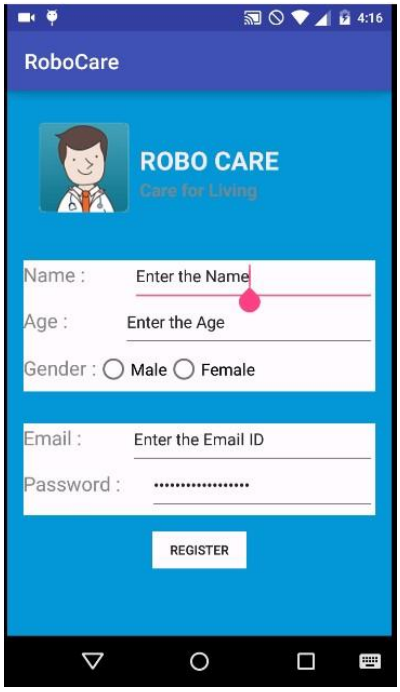


Figure 4.Registration Page

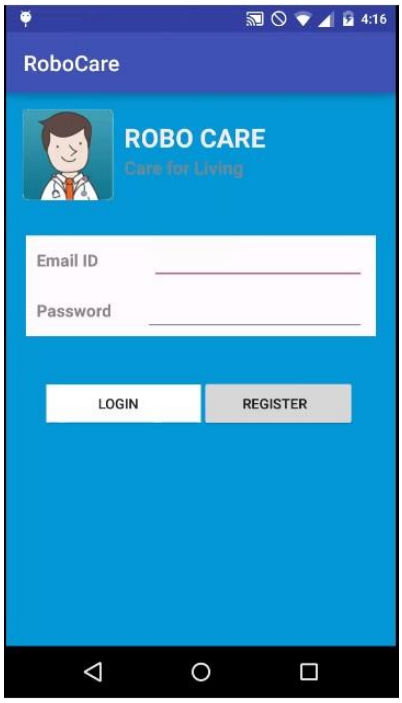


Figure 2.Login Page

Figure 3.Home Page

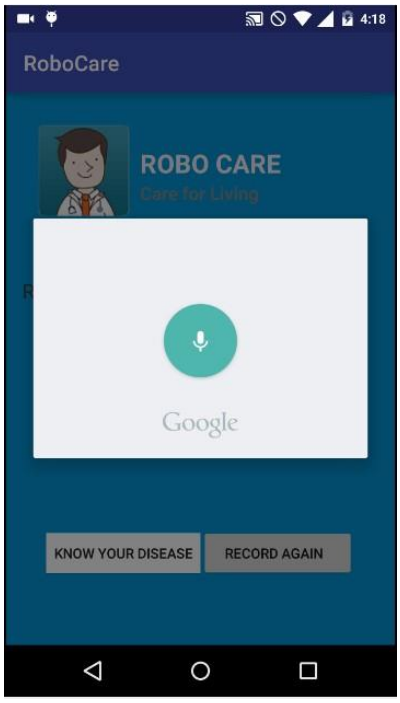


Figure 7.Speech Input

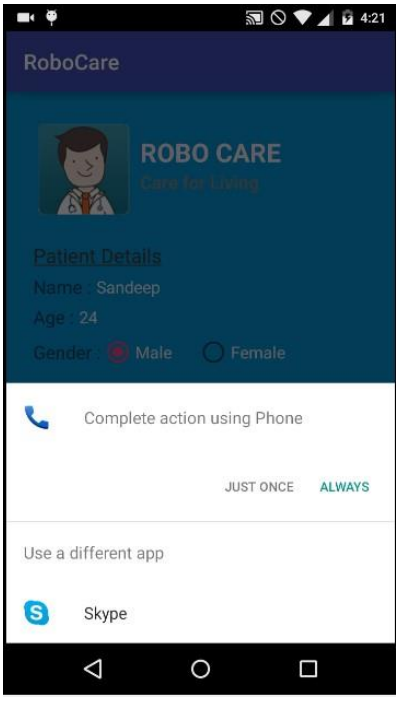


Figure 6.Emergency Call

Figure 5.Image input

Machine Learning:

Disease Prediction: Used Naïve Bayes Algorithm for the disease prediction in the application as it comes up with a rapid, highly scalable model development and recording. It makes use of parallelization as well. In spite of a small training set of data, Naïve Bayes algorithm provides efficient result. The accuracy attained is about 60%.

Image Classification: Random Forest is a collective classifier which contains many decision trees and generates the output class which is the general approach of the class's output by distinct trees. It provides a highly accurate classifier for the datasets. It is one of the effective method for estimating missing data and also maintains accuracy. The accuracy rate achieved is about 73%.

Data:

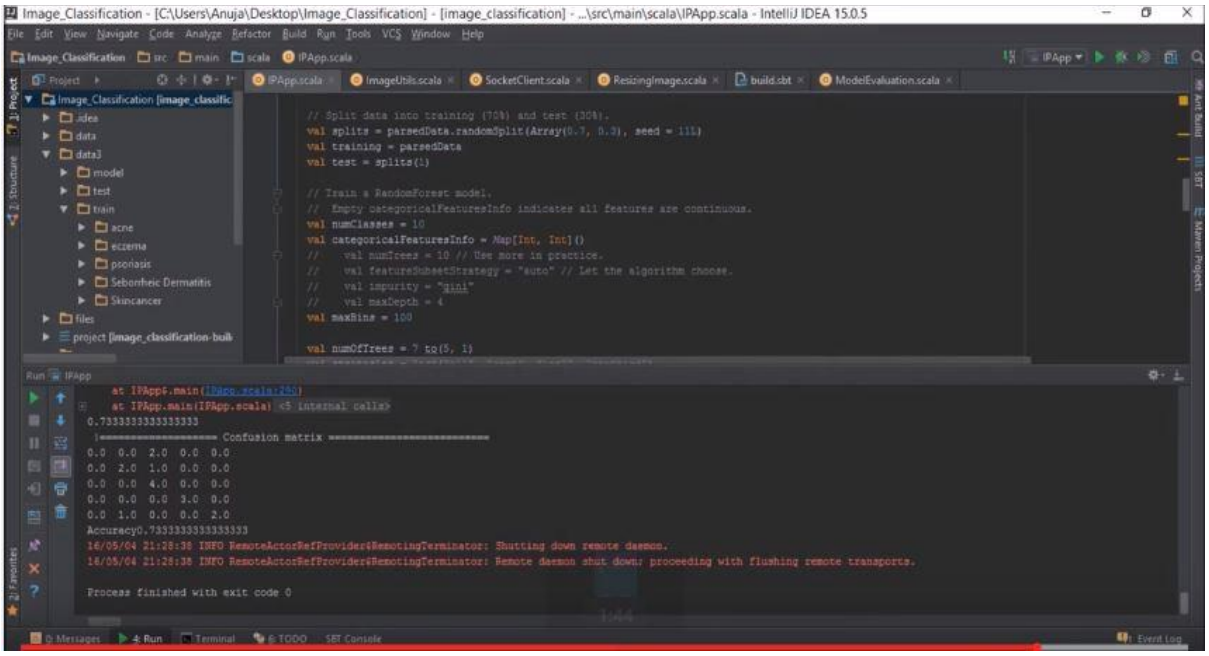
The dataset consists of comma separated value(.csv) files which entails information of various diseases and their symptoms. This information is gathered from a number of health related websites manually. Also, the image data used for image classification is of different skin diseases such as Eczema, Psoriasis etc. and has been collected from google images.

Evaluation:

The development of the entire application has been done by all the team members with equal dedication and co-operation amongst each other. The entire distribution of work is as follows:

Image Classification

We are trying to classify the skin disease of the users which they cannot give in form of speech input.
We have used Random Forest Algorithm to achieve this, we have collected different data sets of images. We have chosen 4 categories of skin diseases to classify.
Input will be taken using user camera and would be sent to spark to predict the skin disease we have achieved 73% accuracy using this algorithm.



From the above image we can find the confusion matrix and accuracy of 73%.

Once the processing is done input is given to user smart watch.

FOURSQUARE API

We have Used Foursquare API to provide the search feature for the user. User can search for the doctor around him using the search field and we would display the top 5 results to the user based on his search criteria.

```
private String clientId = "MV0IECXG5AA0QBVYNAE4LIVTSPYXT5ZAKCM4KFPBCB500VSY";
private String clientSecret = "XOMRCZL3ZJLNOQVFBKU5FWFQJRXRZR5U2XUX5BCDT3M5GDPU";
//private  String url = "https://api.foursquare.com/v2/venues/explore?";
private String url = "https://api.foursquare.com/v2/venues/search?";
Gson gson;
EditText SearchText;
```

```
public void SearchDoctor( ) {
    try {

        //GetDetails();
        //String userJSON = gson.toJson(User);

        String URI = url + "near=kansas&" + "query=" + SearchText.getText() + "&" + "limit=5&" + "client_id=" + clien
        HttpsURLConnection connection;

        connection = (HttpsURLConnection) (new URL(URI)).openConnection();

        connection.setDoOutput(true);
        connection.setRequestMethod("GET");
        connection.setRequestProperty("ACCEPT-LANGUAGE", "en-US,en;0.5");
        connection.connect();
        Integer responseCodee = connection.getResponseCode();
        if (connection.getResponseCode() == HttpURLConnection.HTTP_OK) {
        }
        if (responseCodee == 200) {
            BufferedReader br = new BufferedReader(new InputStreamReader(connection.getInputStream()));
            String line = "";
            StringBuilder responseOutput = new StringBuilder();
            System.out.println("output==============" + br);
            while((line = br.readLine()) != null ) {
                responseOutput.append(line);
            }
            br.close();
            JSONArray venues = null;
            json = new JSONObject(responseOutput.toString());
```

Name: **Dara Venkata Sai Sandeep**

Class ID: 5 Participation: 31% Tasks Accomplished:

- Project plot decision
- Worked on the front end of the application
- Developed a disease prediction system using Naïve Bayes Algorithm
- Foursquare API for searching doctors
- M Lab for data storage in cloud

Name: **Khandelwal Shuchita**

Class ID: 10 Participation: 23% Tasks Accomplished:

- Development of the disease dataset
- Disease information functionality
- User authentication
- X code for Romo

Name: **Podili Venkata Krishna**

Class ID: 23 Participation: 23% Tasks Accomplished:

- Worked on the front end of the application
- Emergency button functionality
- Speech to text functionality
- Recommendation of doctors.

Name: **Sawant Anuja Ajay**

Class ID: 25 Participation: 23% Tasks Accomplished:

- Development of the disease dataset
- Image input using mobile camera
- Image classification using Random Forest Algorithm

Precision:

The disease prediction provided using the Naïve Bayes Algorithm is about 60% accurate. The accuracy is achieved as a result of efficient functioning of the Naïve Bayes algorithm and the distinct dataset provided to it. An accuracy of 73% for image classification is attained by using the Random Forest Algorithm for the same. The amount of such accuracy is obtained by accurate decision tree generation by the algorithm and discrete training data of images.

Related Work (references):

- http://spark.apache.org/docs/latest/mllib-naive-bayes.html
- http://www.yelp.com/kansas-city-ks-us
- https://www.nih.gov/
- http://archive.ics.uci.edu/ml/
- https://www.google.com/imghp?hl=en&tab=wi&ei=ougvV4u3OYSEmQGMpp CICg&ved=0EKouCBYoAQ
- www.medicinenet.com/symptoms_and_signs/article.htm#introView
- http://www.mayoclinic.org/diseases-conditions/index?letter=A

Future Work:

The application which has been developed efficiently predicts the disease that the user might be suffering from with the help of the symptoms provided by the users. But the application works on the basis of different datasets for the symptoms provided in text and image formats. This application can be upgraded to a better version wherein both the inputs rely on same dataset for classification and then prediction of disease.