

Assist Robot

Phase III

Project Report

Project Team – 8

Team Members

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1. Introduction:

The main goal of the project is to help people in finding their misplaced objects. Basically humans have a tendency to forget their belongings somewhere in their house and search for it for hours together. For example, if I have an important business meeting to attend, but I don't remember where I placed my car keys, then I will be in huge loss. So to prevail in these circumstances here comes our Friendly Robot- My Friend which could assist me in keeping track of my personal things. So what this robot will do is that it will have entire map (laser scan) of the building and objects in the building in its memory. So we will feed the robot with the objects that are highly important to us, like car keys, some files, phone and laptop. This robot will keep its eye on these objects and notify their location to its master upon request. Additionally our Robot who will be an eFriend who will help us to choose the furniture to our home. Also our robot will suggest us the top rated books.

2. Project Goal and Objectives:

The primary goals of our project is described below:

- To implement a module which has an interaction with robot. Eg: You can ask few questions to the robot and the Robot will be responding to you back. You can ask the robot about your misplaced phone. So that it will answer you after it had found the phone.
- To make the robot learn about the personal items like chargers, phones, watch, keys etc.
- To design a robot which can find the learned objects that are misplaced in a building.
- To build a recommendation system which will be able to recommend the list of books which are rated high and are related to our interests.
- To build a recommendation system which will suggest us about the latest furniture details, their quality and from which brand/ shop we could purchase from. This feature enables us to decorate our houses with rich interior designing.
- To send a notification to your smart watch when it finds the lost object.
- To remind the user about his day to day events that were previously taught.
- To make the robot act as an assistant in getting things specified by the user. (Mr Robot – Get me my phone).

- To make a single robot act as assistant to all the people living in same house. It recognizes the user first and then assists that particular user in finding the belongings.

3. Project Plan:

3.1 Schedule:

Stories: Four user stories had been created as part of Iteration 1. Here are the snapshots for the stories which are in closed and opened state.

The screenshot shows the GitHub Issues page for the repository 'npdarsini / Assist-Robot'. The 'Issues' tab is selected. There are two open issues listed:

- ① Test - Different Objects enhancement
- ② Capture and feed the Images enhancement

Both issues were opened 35 minutes ago by npdarsini. The interface includes filters, labels, milestones, and a 'New issue' button.



The screenshot shows the GitHub Issues page for the repository 'npdarsini / Assist-Robot'. The 'Issues' tab is selected. There are two closed issues listed:

- ① Smart Watch connection with Smart Phone enhancement
- ② Smart Phone connection with Android Studio enhancement

Both issues were opened 49 minutes ago by npdarsini. The interface includes filters, labels, milestones, and a 'New issue' button.



Stories: Eight user issues had been created as part of Iteration 2. Here are the snapshots for the stories which are in closed and opened state.

Issues | Pull requests | Issues | Gist | ToDo

npdarsini / Assist-Robot

Issues

Filters: Is issue milestone: "Project - Increment 2" is closed

1 Open ✓ 7 Closed

- Creating a perfect training Dataset and collecting Test data (enhancement)
- Usage of Speech and image services (enhancement)
- Data Collection and analysis (enhancement)
- Establishing connection between smart watch and Robome (enhancement)
- Installation of Spark (enhancement)
- Features of Robome (question)
- Introduction to Spark (enhancement)

ProTip! Adding no label will show everything without a label.

Issues | Pull requests | Issues | Gist | ToDo

npdarsini / Assist-Robot

Issues

Filters: Is issue milestone: "Project - Increment 2" is open

1 Open ✓ 7 Closed

- Developing a Recommendation System (enhancement)

ProTip! Mix and match filters to narrow down what you're looking for.

Stories: Six user issues had been created as part of Iteration 3. Here are the snapshots for the stories which are in closed and opened state.

The screenshot shows the GitHub Issues page for the repository npdarsini/Assist-Robot. There are 17 issues listed:

- Notification to Android Device - Recognized Object (enhancement) #18 (closed)
- Training data sets - Creation with different objects (enhancement) #17 (closed)
- Exploring different Classification algorithms - Random Forest, Decision Tree (enhancement) #16 (closed)
- Image classification (enhancement) #15 (closed)
- Developing a Recommendation System (enhancement) #14 (closed)
- Introduction to ML Algorithm (enhancement) #13 (closed)
- Creating a perfect training Dataset and collecting Test data (enhancement) #11 (closed)
- Usage of Speech and image services (enhancement) #10 (closed)
- Data Collection and analysis (enhancement) #9 (closed)
- Establishing connection between smart watch and Robome (enhancement) #8 (closed)
- Linking Modules (enhancement) #20 (open)
- Classification based on the Streaming Data (enhancement) #19 (open)
- Streaming Data Collection (enhancement) #12 (open)

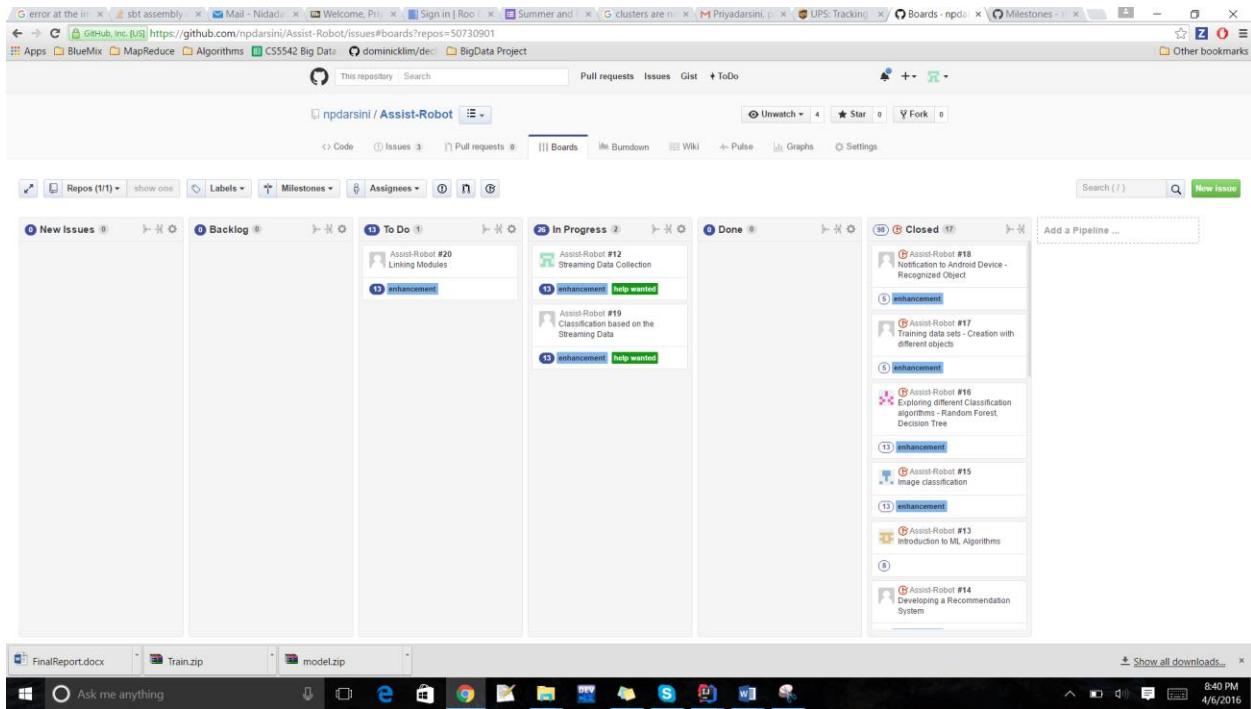
The screenshot shows the GitHub Issues page for the repository npdarsini/Assist-Robot. There are 3 open issues:

- Linking Modules (enhancement) #20
- Classification based on the Streaming Data (enhancement) #19
- Streaming Data Collection (enhancement) #12

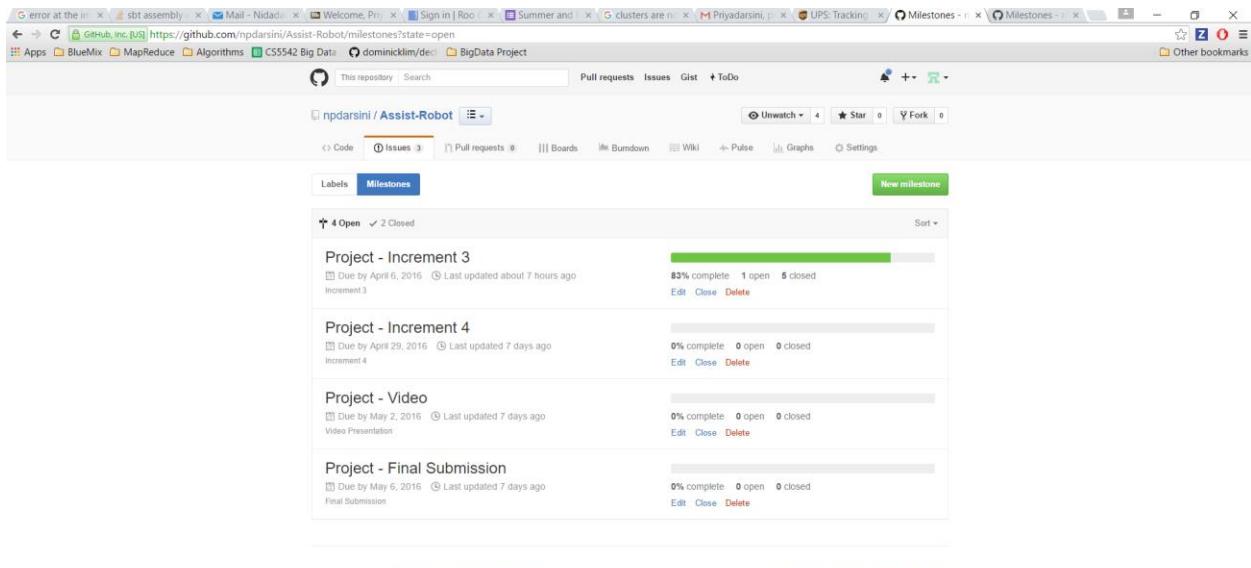
The screenshot shows a Windows taskbar with three open files:

- FinalReport.docx
- Train.zip
- modelZip

Board:

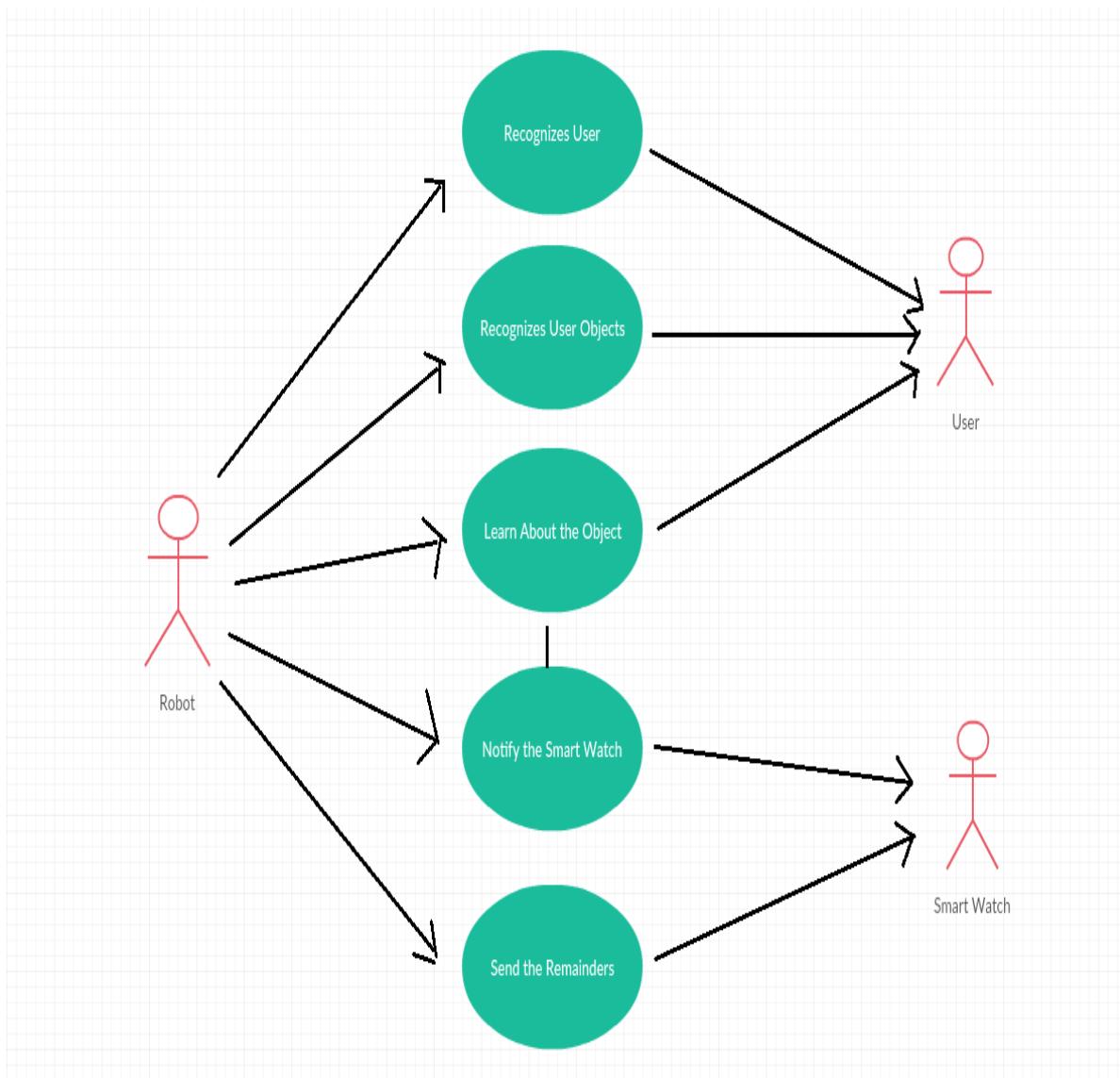


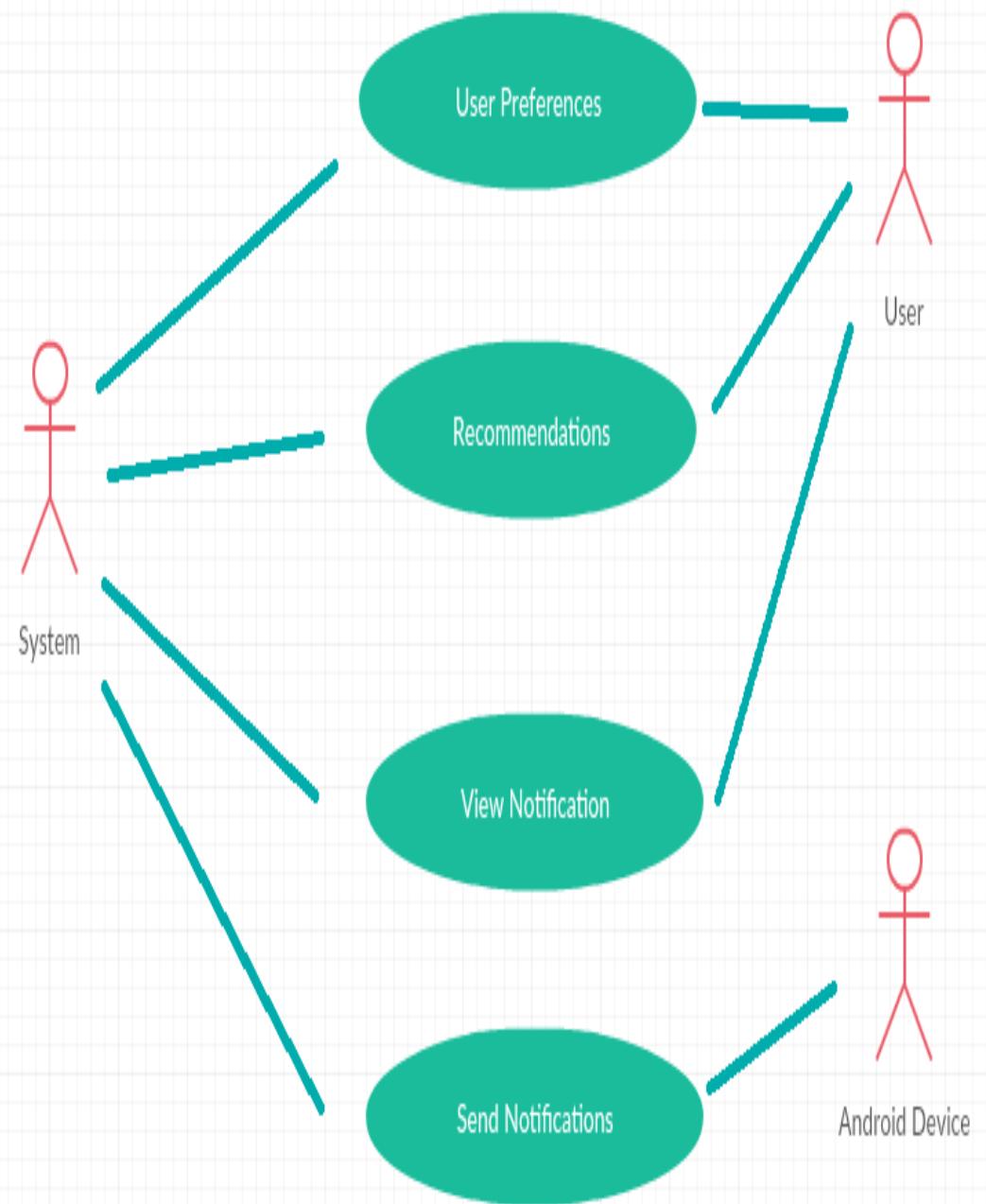
Milestones:



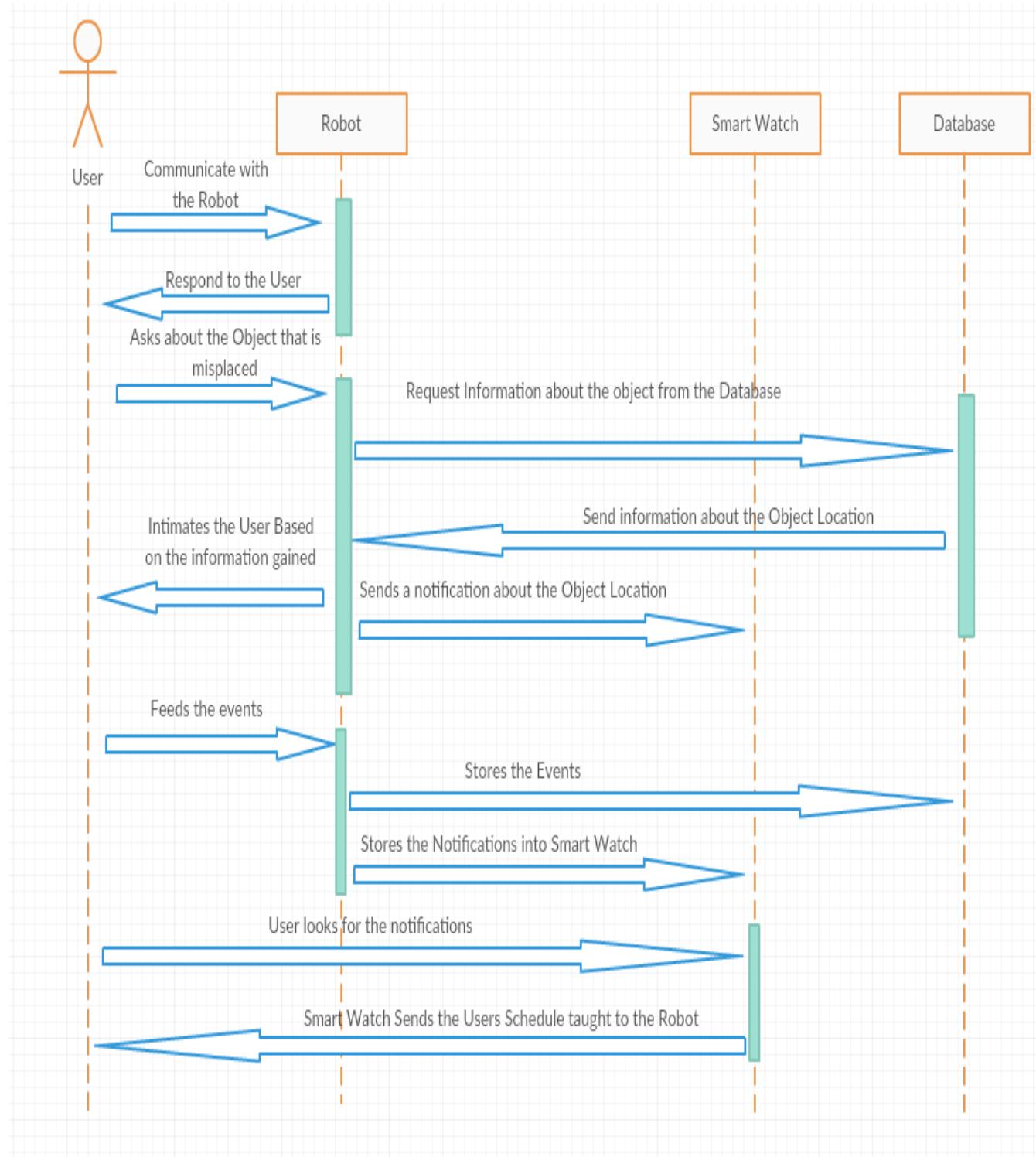
3.1.1 UML Diagrams:

Use Case Diagram

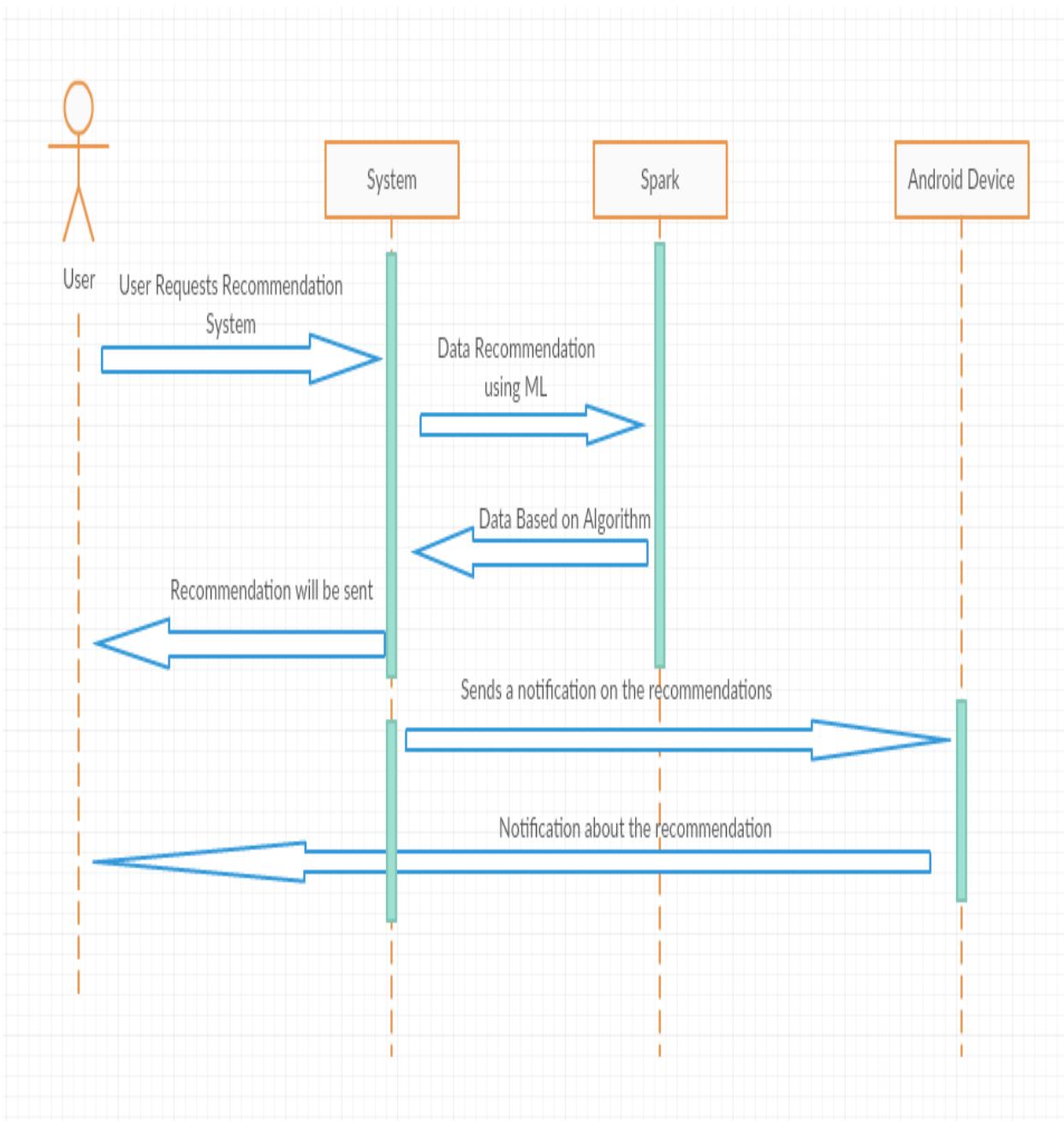




Sequence Diagram:



Sequence Diagram for Recommendation System



3.2 Project Timelines:

Increment	Deadline
Increment 1	19 February 2015
Increment 2	11 March 2016
Increment 3	6 April 2016
Increment 4	29 April 2016
Final Submission	6 May 2016

3.2.1 Team Members:

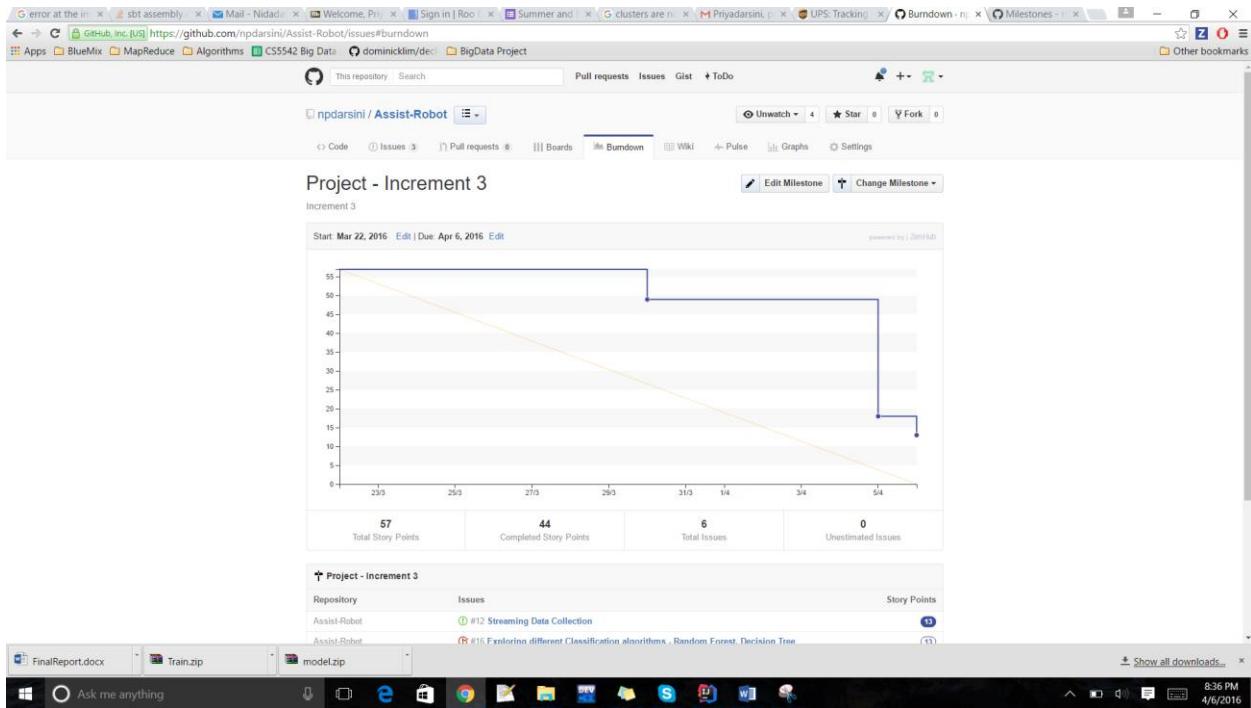
1. Priyadarsini Nidadavolu – 17
2. Deepthi Priyadarshini Penmetsa – 22
3. Dheeraja Vallabhaneni – 28
4. Tej Kumar Yentrapragada – 33

3.2.2 Tasks and Responsibilities:

- **Machine Learning and R Programming** – Deepthi Priyadarshini Penmetsa
- **Spark and Hadoop Technologies** – Priyadarsini Nidadavolu
- **Objective C and IOS Programming** – Tej Kumar Yentrapragada
- **Android Programming** - Dheeraja Vallabhaneni

3.3 Burndown Chart:

Burndown:



4. Increment Report

4.1 Incremental Explanations

4.1.1 Phase 1 -Existing API:

IBM Alchemy API

This API basically performs machine learning and natural language processing techniques. Some of its features include semantic text analysis, sentimental analysis, deep learning, face detection and reorganization, speech to text and vice versa conversions etc. In this we had used this API in order to recognize the objects that we want to teach the Robot.

Achievements upon using this API – The Robot could identify basic objects like laptop, phone, bottle etc.

4.1.2 Phase 2 - Recommendation System:

In this phase we had developed two recommendation systems which can recommend the user about the popular furniture showrooms and the famous books. In this we provided the training set with user information (uid, name, ratings etc.,), furniture information (list of showrooms, location) and the book information (name, author etc.,).

The recommended notification has been sent to the android device (smart watch/phone) using Spark-Android Socket programming techniques.

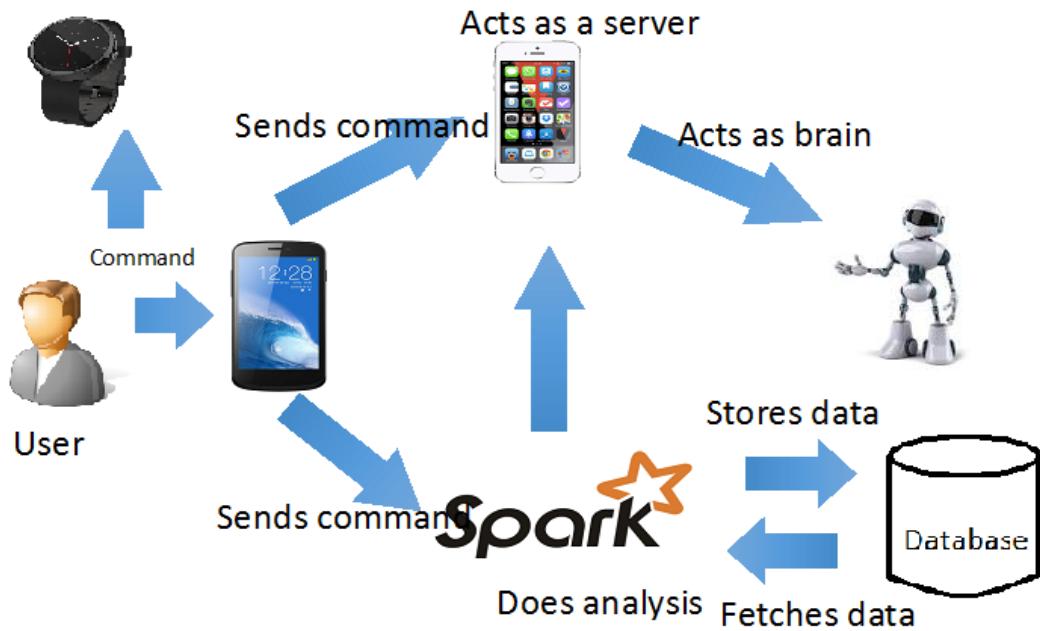
4.1.3 Phase 3 – Image Classification:

In this phase we had implemented Image Classification system using Random Forest Machine Learning Classifier Algorithm. In this we had provided the training data set which has the different kinds of objects like keys, charger, watch, spectacles, phone. Basically, we generated the key descriptors and created the clusters and histograms out of it. Based on this features, the classifier predicts the image from the testing data set that has been provided.

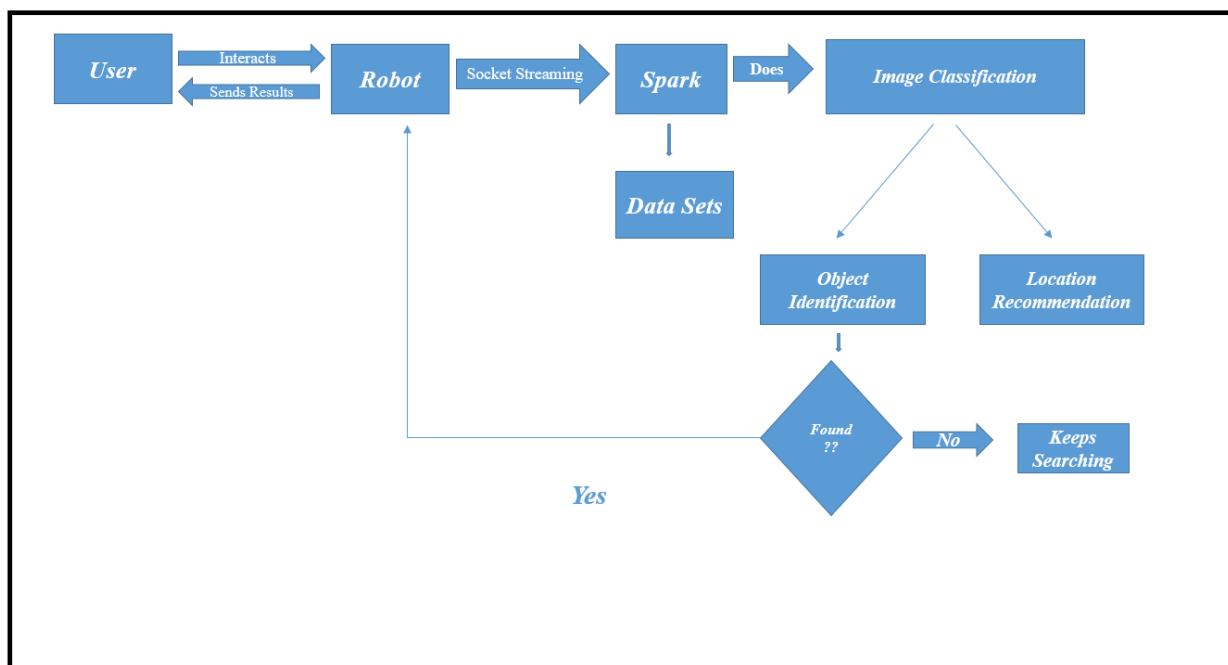
The notification about the classified image will be sent to the android device (smart watch/phone) using Spark-Android Socket programming techniques.

4.2 Design of Features:

The architecture of our system could be like the user can give commands to the client device which is android phone. Further the Iphone which acts as a server could take commands from the android phone and passes it to the Robot. The Robot performs the necessary actions of the received command and return back to the Android Phone. It also sends the notifications to the Android Smart Watch. The Android device can also pass the command to the Spark and fetch the data from the database (MongoDB, Hadoop DB). Our system will be able to recommend the user based on the trained data sets and the notifications will be sent to the android device.



Work Flow:



System Features

The following are the features that were developed as part of Phase I:

We had used IBM's Alchemy API and able to make our Robot to detect the object and return the object name as a result.

The following are the features that are developed as part of Phase II:

We had used machine learning algorithms to develop a recommendation system. In this phase we had developed two recommendation systems with which the system will be able to suggest top rated books to the user based on his interests and the furniture showrooms which could be available for cheaper prices with the location. Basically, we had provided the training data sets and the user preferences which serves as a key inputs for the system. We were also able to connect our system to the android device to which the recommendations has been sent.

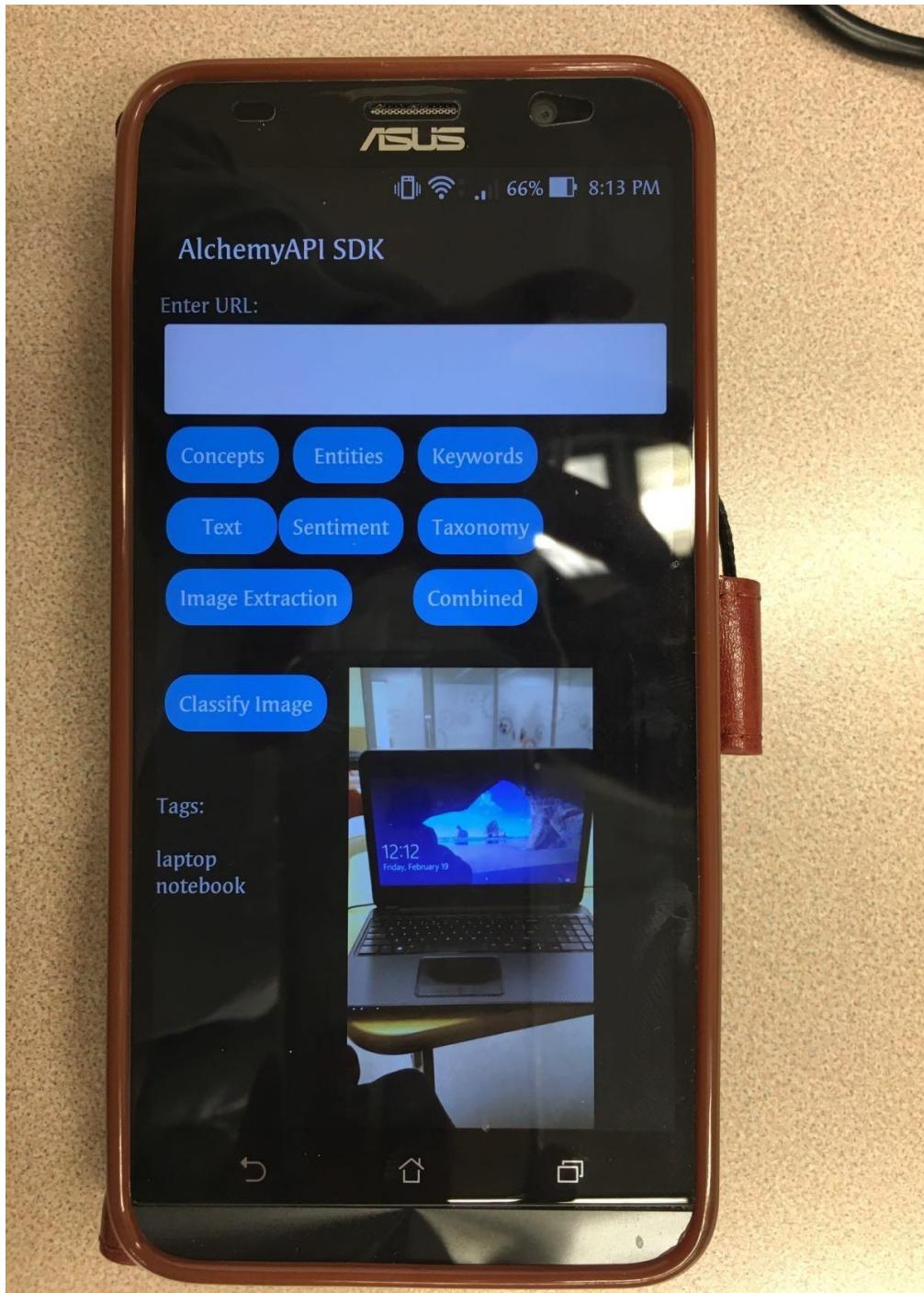
The following are the features that are developed as part of Phase III:

We had used Random Forest Classifier Algorithm to develop an Image classification system. In this phase we had provided the system with the training data set which consists the sample images of the different types of objects like keys, watch, spectacles, phone etc. We are able to create the clusters and histograms out of the provided data and was able to send a notification to the smart device about the object that has been predicted.

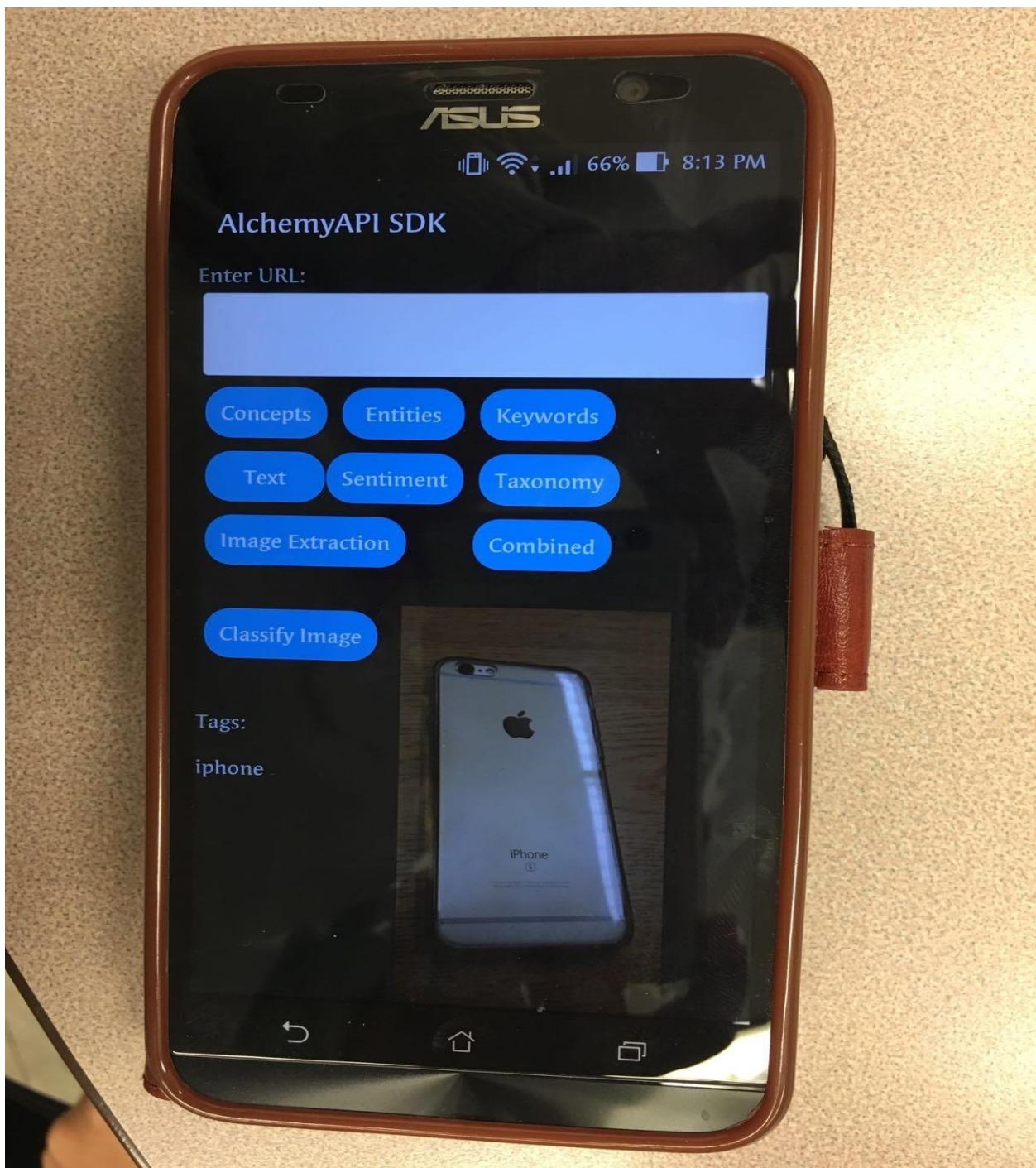
4.3 Implementation:

Mobile Client Implementation – Snapshots

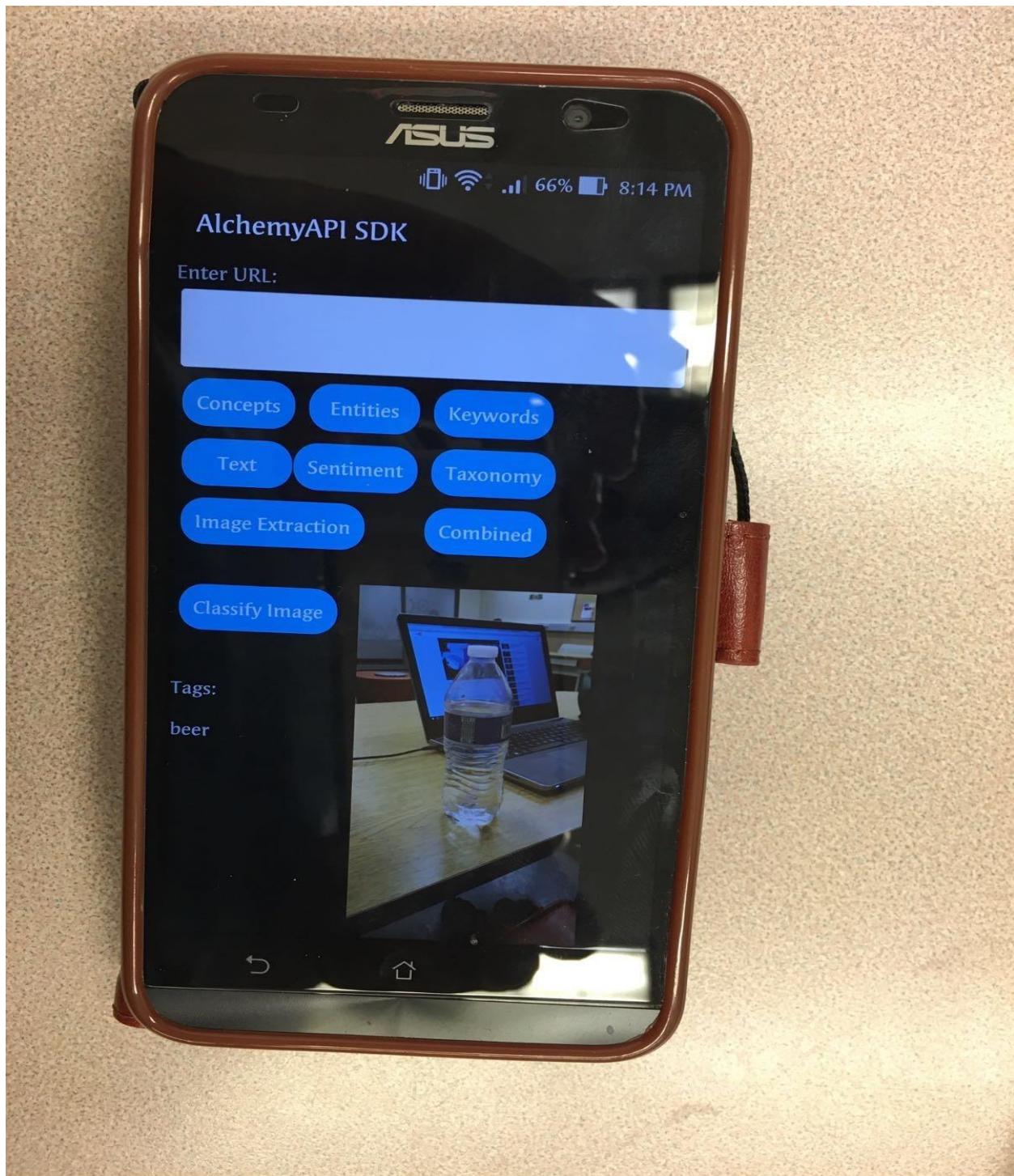
This snapshot shows us that the application is able to identify the object and names its Laptop.



This snapshot shows us that the application is able to identify the object and names it as an Iphone.



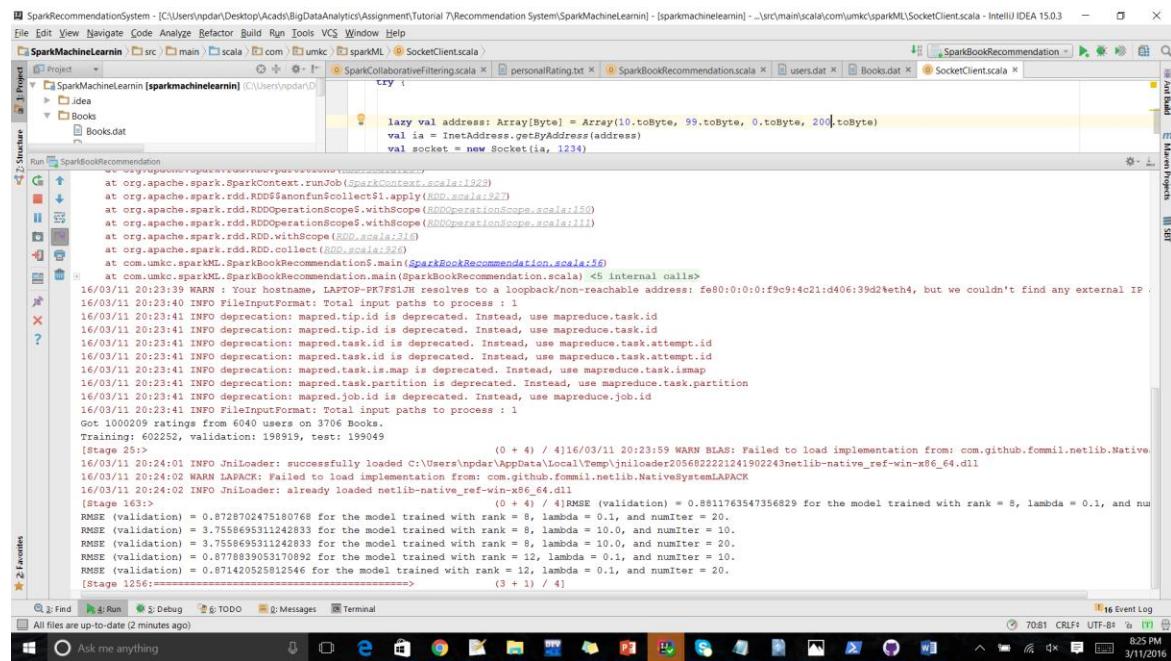
This snapshot shows us that the application is able to identify the bottle.



Recommendation System Snapshots:

Books Recommendation System:

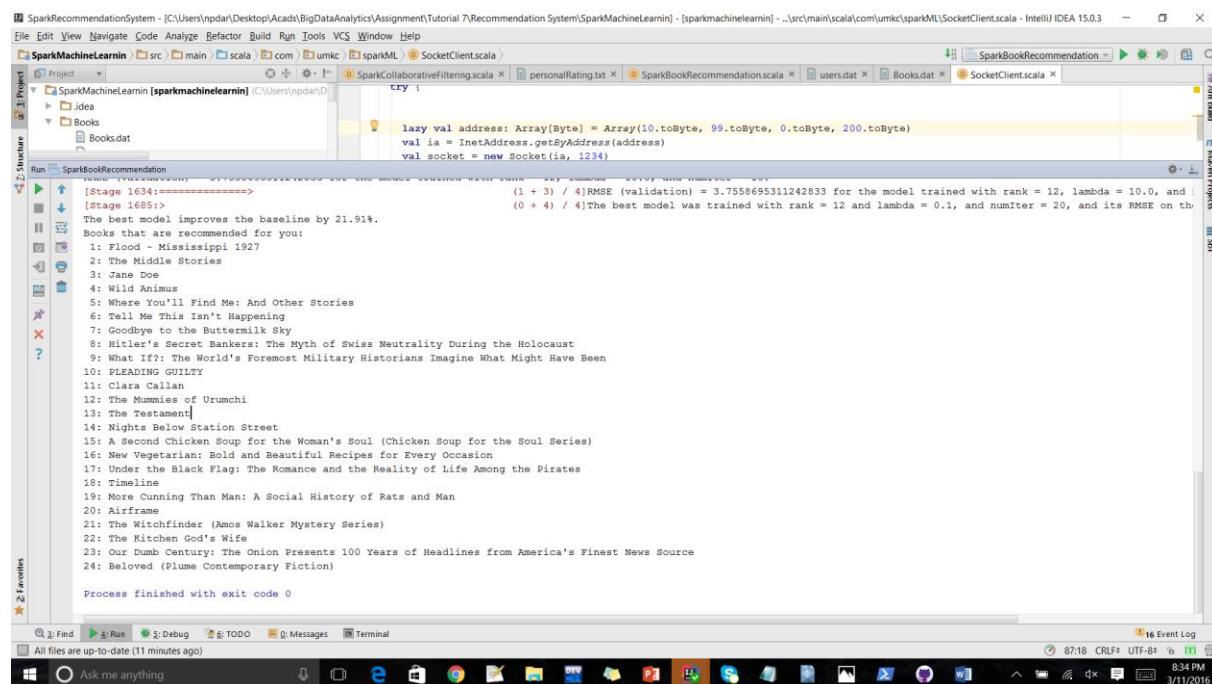
Phase at which the analyzation of training data set is taking place.



```
try {
    lazy val address: Array[Byte] = Array(10.toByte, 99.toByte, 0.toByte, 200.toByte)
    val ia = InetAddress.getByAddress(address)
    val socket = new Socket(ia, 1234)
} catch {
    case e: UnknownHostException =>
        System.out.println("WARN : Your hostname, " + e.getMessage() + " is not reachable")
        e.printStackTrace()
}

@Stage 25:> [Stage 25:=====>]
[Stage 163:> [Stage 163:=====>]
[Stage 164:> [Stage 164:=====>]
[Stage 165:> [Stage 165:=====>]
The best model improves the baseline by 21.9%.
Books that are recommended for you:
1: Flood - Mississippi 1927
2: The Middle Stories
3: Jane Doe
4: Wild Animals
5: Where You'll Find Me: And Other Stories
6: Tell Me This Isn't Happening
7: Goodbye to the Buttermilk Sky
8: Hitler's Secret Bankers: The Myth of Swiss Neutrality During the Holocaust
9: What If?: The World's Foremost Military Historians Imagine What Might Have Been
10: FEADING GUILTY
11: Clara Callan
12: The Mummies of Urumchi
13: The Testament
14: Nights Below Station Street
15: A Second Chicken Soup for the Woman's Soul (Chicken Soup for the Soul Series)
16: New Vegetarian: Bold and Beautiful Recipes for Every Occasion
17: Under the Black Flag: The Romance and the Reality of Life Among the Pirates
18: Timeline
19: More Cunning Than Man: A Social History of Rats and Man
20: Airframe
21: The Witchfinder (Amos Walker Mystery Series)
22: The Kitchen God's Wife
23: Our Dumb Century: The Onion Presents 100 Years of Headlines from America's Finest News Source
24: Beloved (Plume Contemporary Fiction)
```

Recommended Books



```
try {
    lazy val address: Array[Byte] = Array(10.toByte, 99.toByte, 0.toByte, 200.toByte)
    val ia = InetAddress.getByAddress(address)
    val socket = new Socket(ia, 1234)
} catch {
    case e: UnknownHostException =>
        System.out.println("WARN : Your hostname, " + e.getMessage() + " is not reachable")
        e.printStackTrace()
}

@Stage 164:> [Stage 164:=====>]
[Stage 165:> [Stage 165:=====>]
The best model improves the baseline by 21.9%.
Books that are recommended for you:
1: Flood - Mississippi 1927
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3: Jane Doe
4: Wild Animals
5: Where You'll Find Me: And Other Stories
6: Tell Me This Isn't Happening
7: Goodbye to the Buttermilk Sky
8: Hitler's Secret Bankers: The Myth of Swiss Neutrality During the Holocaust
9: What If?: The World's Foremost Military Historians Imagine What Might Have Been
10: FEADING GUILTY
11: Clara Callan
12: The Mummies of Urumchi
13: The Testament
14: Nights Below Station Street
15: A Second Chicken Soup for the Woman's Soul (Chicken Soup for the Soul Series)
16: New Vegetarian: Bold and Beautiful Recipes for Every Occasion
17: Under the Black Flag: The Romance and the Reality of Life Among the Pirates
18: Timeline
19: More Cunning Than Man: A Social History of Rats and Man
20: Airframe
21: The Witchfinder (Amos Walker Mystery Series)
22: The Kitchen God's Wife
23: Our Dumb Century: The Onion Presents 100 Years of Headlines from America's Finest News Source
24: Beloved (Plume Contemporary Fiction)

Process finished with exit code 0
```

We had also sent the recommended books to the smart phone as a notification:



Furniture Malls Recommendation System

```
16/03/10 07:16:28 INFO FileInputFormat: Total input paths to process : 1
Got 1000209 ratings from 6040 users on 3706 FurnitureMalls.
Training: 602252, validation: 198919, test: 199049
[Stage 25:>          (0 + 4) / 4]16/03/10 07:16:25 WARN BLAS: Failed to load implementation from: com.github.fommil.netlib.NativeDenseMatrix64F
16/03/10 07:16:28 INFO JniLoader: successfully loaded C:\Users\DEEPU\AppData\Local\Temp\jniloader1966739238328846810\jniLibs\NativeRef\win-x86_64.dll
[Stage 27:>          (0 + 4) / 4]16/03/10 07:16:33 WARN LAPACK: Failed to load implementation from: com.github.fommil.netlib.NativeDenseVector64F
16/03/10 07:16:33 INFO JniLoader: already loaded netlib-native_ref-win-x86_64.dll
RMSE (validation) = 0.8815801121709103 for the model trained with rank = 8, lambda = 0.1, and numIter = 10.
RMSE (validation) = 0.8726203182715503 for the model trained with rank = 8, lambda = 0.1, and numIter = 20.
RMSE (validation) = 3.7558695311242833 for the model trained with rank = 8, lambda = 10.0, and numIter = 10.
[Stage 950:>          (0 + 4) / 4]RMSE (validation) = 3.7558695311242833 for the model trained with rank = 8, lambda = 10.0, and numIter = 20.
[Stage 1125:=====          (3 + 1) / 4]RMSE (validation) = 0.8772284010651425 for the model trained with rank = 12, lambda = 0.1, and numIter = 20.
RMSE (validation) = 0.8710227453579589 for the model trained with rank = 12, lambda = 0.1, and numIter = 20.
[Stage 1595:>          (0 + 4) / 4]RMSE (validation) = 3.7558695311242833 for the model trained with rank = 12, lambda = 10.0, and numIter = 20.
RMSE (validation) = 3.7558695311242833 for the model trained with rank = 12, lambda = 10.0, and numIter = 20.
The best model was trained with rank = 12 and lambda = 0.1, and numIter = 20, and its RMSE on the test set is 0.8690494992690084.
The best model improves the baseline by 21.95%.
```

This Screenshot shows the Furniture Malls recommended to you:

The screenshot shows the IntelliJ IDEA 15.0.1 interface with the following details:

- Project Structure:** Shows the project structure with files like `SparkCollaborativeFiltering.scala`, `SparkMovieRecommendation.scala`, and `FurnitureShopRating.txt`.
- Run Output:** Displays the Scala code and its execution output. The output shows the training process, including the number of users (6040), items (3706), and ratings (1000209). It details the stages of training (e.g., Stage 25, Stage 27, Stage 950, Stage 1125, Stage 1595) and the resulting RMSE values for validation and test sets. The best model found has a RMSE of 0.8690494992690084, which is a 21.95% improvement over the baseline.
- Bottom Status Bar:** Shows "Compilation completed successfully in 31s 964ms (7 minutes ago)" and other system information like terminal count (12), event log count (1), and file encoding (UTF-8).

The notification has been sent to the android mobile which shows the recommended furniture list.

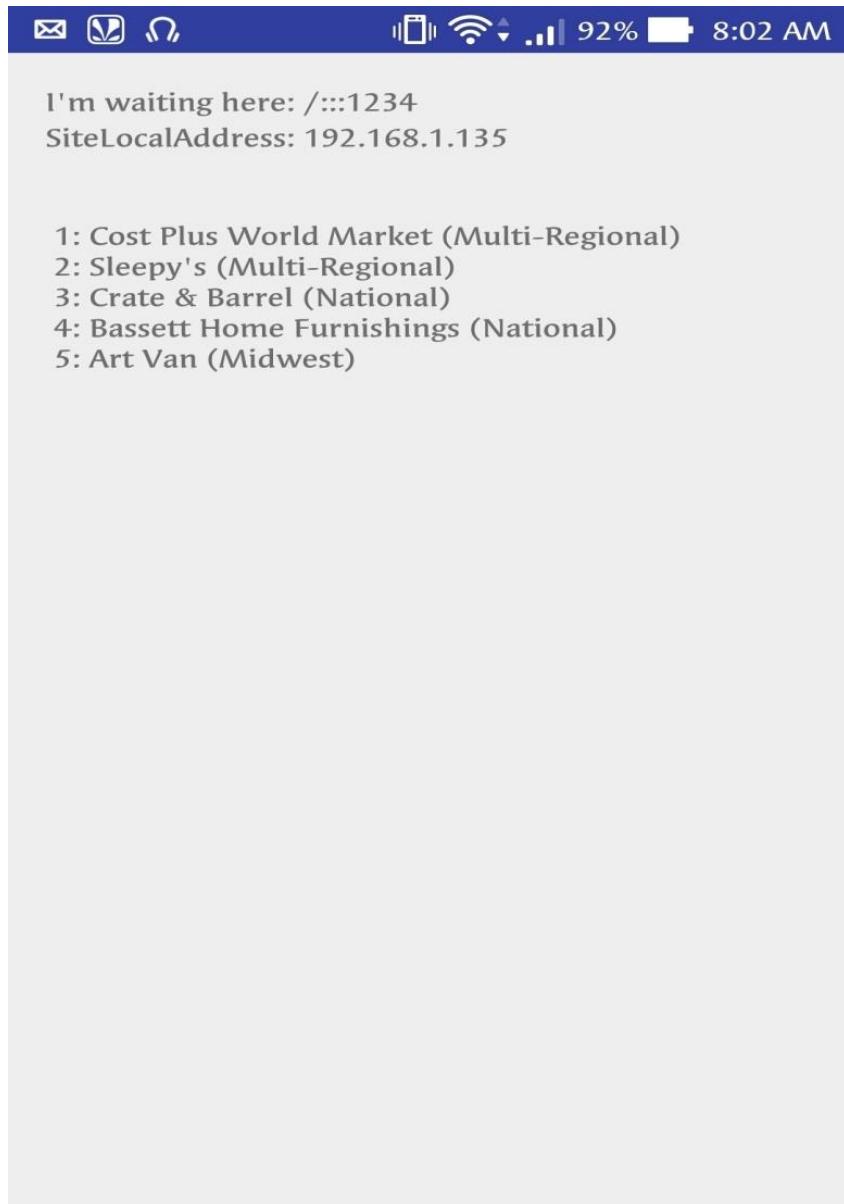
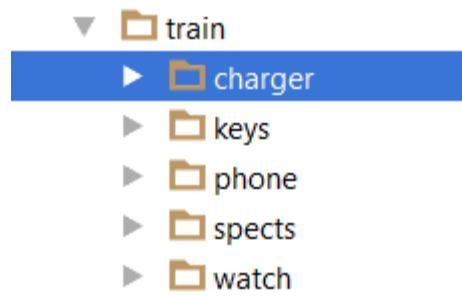


Image Classification

The Training dataset is full with images of objects the user want to identify which were got misplaced. And the test dataset is the streaming images which are captured by the robot while trying to identify the misplaced object. So when the robot finds the image, it classifies the image and notifies about the object to the users device.

Screenshots of the image classification:

Train data:



Identifying Key descriptors from Training dataset

```
// Empty categoricalFeaturesInfo indicates all features are continuous.
val numClasses = 10
val categoricalFeaturesInfo = Map[Int, Int]()
// val numTress = 10 // Use more in practice.
// val featureSubsetStrategy = "auto" // Let the algorithm choose.
// val impurity = "gini"
// val maxDepth = 4
val maxBins = 100
```

Key Descriptors 1556 x 128
Key Descriptors 1334 x 128
Key Descriptors 1000 x 128
Key Descriptors 692 x 128
Key Descriptors 515 x 128
Key Descriptors 781 x 128
Key Descriptors 20587 x 128
Key Descriptors 24357 x 128
Key Descriptors 2381 x 128
Key Descriptors 24357
Key Descriptors 17111 x 128
Key Descriptors 27961 x 128
Key Descriptors 3518 x 128
Key Descriptors 27961

Cluster formation:

Image_Classification - C:\Users\ndpar\Desktop\Acads\BigDataAnalytics\Assignment\Tutorial 9\CS5542 - Tutorial 9 Code\Image_Classification - [image_classification] - \src\main\scala\IApp.scala - IntelliJ IDEA 15.0.3

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

Project Packages Project Files Problems + - * IApp.scala * IPSettings.scala * build.sbt *

Platform and Plugin Updates Intelij IDEA is ready to update.

IPApp

// 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

Run IApp

16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 64,986B for [point, values, list, element] DOUBLE: 12,800 values, 102,912B raw, 64,939B comp, 1 pages, encodings: [RLE, PLAIN]
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 53B for [point, indices, list, element] INT32: 100 values, 14B raw, 30B comp, 1 pages, encodings: [RLE, PLAIN]
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 64,817B for [point, values, list, element] DOUBLE: 12,800 values, 102,912B raw, 64,770B comp, 1 pages, encodings: [RLE, PLAIN]
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 66,094B for [point, values, list, element] DOUBLE: 12,800 values, 102,912B raw, 66,047B comp, 1 pages, encodings: [RLE, PLAIN]
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 62B for [point, type] INT32: 100 values, 10B raw, 28B comp, 1 pages, encodings: [BIT_PACKED, PLAIN_DICTIONARY, RLE], data: 100
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 50B for [point, values, list, element] INT32: 100 values, 7B raw, 27B comp, 1 pages, encodings: [BIT_PACKED, RLE, PLAIN]
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 53B for [point, indices, list, element] INT32: 100 values, 14B raw, 30B comp, 1 pages, encodings: [RLE, PLAIN]
16/04/06 17:57:26 INFO ColumnChunkPageWriteStore: written 65,899B for [point, values, list, element] DOUBLE: 12,800 values, 102,912B raw, 65,852B comp, 1 pages, encodings: [RLE, PLAIN]
16/04/06 17:57:26 INFO FileOutputCommitter: Saved output of task 'attempt_201604061757_0058_m_000002_0' to file:/C:/Users/ndpar/Desktop/Acads/BigDataAnalytics/Assignment/Tutorial 9/CS5542 - Tutorial 9 Code/Image_Classification/_temp/_SUCCESS
16/04/06 17:57:26 INFO FileOutputCommitter: Saved output of task 'attempt_201604061757_0058_m_000000_0' to file:/C:/Users/ndpar/Desktop/Acads/BigDataAnalytics/Assignment/Tutorial 9/CS5542 - Tutorial 9 Code/Image_Classification/_temp/_SUCCESS
16/04/06 17:57:26 INFO FileOutputCommitter: Saved output of task 'attempt_201604061757_0058_m_000001_0' to file:/C:/Users/ndpar/Desktop/Acads/BigDataAnalytics/Assignment/Tutorial 9/CS5542 - Tutorial 9 Code/Image_Classification/_temp/_SUCCESS
16/04/06 17:57:26 INFO FileOutputCommitter: Saved output of task 'attempt_201604061757_0058_m_000003_0' to file:/C:/Users/ndpar/Desktop/Acads/BigDataAnalytics/Assignment/Tutorial 9/CS5542 - Tutorial 9 Code/Image_Classification/_temp/_SUCCESS
16/04/06 17:57:26 INFO ParquetFileReader: Initiating action with parallelism: 5
Save Clusters to data3/model/clusters
16/04/06 17:57:26 INFO FileInputFormat: Total input paths to process : 1
16/04/06 17:57:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:57:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:57:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:57:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:57:27 INFO deprecation: mapred.min.split.size is deprecated. Instead, use mapreduce.input.fileinputformat.split.minsize
16/04/06 17:57:27 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskK
16/04/06 17:57:27 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskK
16/04/06 17:57:27 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskK
16/04/06 17:57:27 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskK
16/04/06 17:57:28 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 100 records.
16/04/06 17:57:28 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 100 records.
16/04/06 17:57:28 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 100 records.
16/04/06 17:57:28 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 100 records.

Find Run Terminal Event Log

Compilation completed successfully in 75ms (20 minutes ago)

20326 LF UTF-8 6:11 PM 4/6/2015

Histogram generation based on size specified:

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project Structure:** The `IApp.scala` file is open in the editor.
- Code Editor:** The code defines a `CategoricalFeaturesInfo` object with various parameters like `numClasses`, `numTrees`, and `maxBins`.
- Run Configuration:** A configuration named `IApp` is selected, showing the main class as `IApp` and the main method as `main`.
- Terminal Output:** The output of the application execution is displayed, showing the creation of histograms for different features and their sizes.
- Status Bar:** Shows the message "Compilation completed successfully in 7s 29ms (20 minutes ago)".
- Bottom Right:** Shows the current time as 6:10 PM and the date as 4/6/2016.

Model has been created based on the Random Forest Classifier Algorithm

The screenshot shows the IntelliJ IDEA interface. The top navigation bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help. The title bar indicates the project is 'Image_Classification' and the current file is 'IPApp.scala'. A message in the top right says 'Platform and Plugin Updates' and 'IntelliJ IDEA is ready to update'. The left sidebar shows the project structure with 'Project' selected, displaying 'data3' and its subfolders: 'model', 'test', 'keys', 'phone', 'specs', 'watch', and 'train'. The main code editor window contains Scala code for a Random Forest classifier. The bottom run log window shows the command-line output of the application running, including logs from 'ColumnChunkPageWriteStore', 'FileOutputCommitter', and 'ParquetFileReader'. The bottom status bar shows the date and time as '4/6/2016 6:09 PM'.

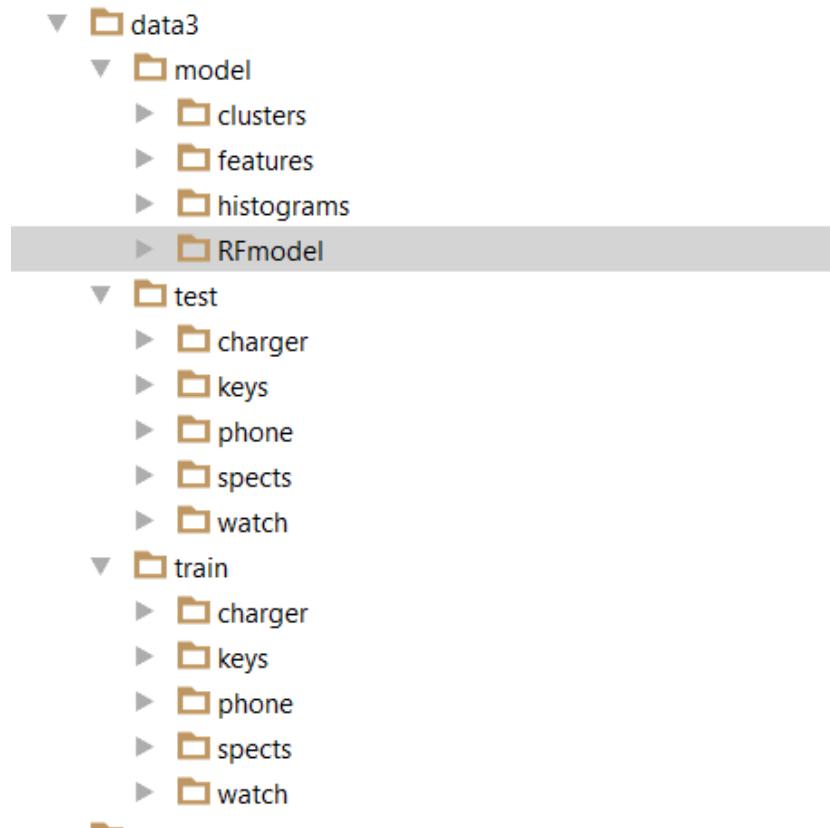
```

// 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 numTrees = 4 to(5, 1)
val strategies = List("all", "sqrt", "log2", "onethird")
val maxDepths = 3 to(6, 1)
val impurities = List("gini", "entropy")

var bestModel: Option[RandomForestModel] = None
var bestErr = 1.0
val bestParams = new mutable.HashMap[Any, Any]()
var bestNumTrees = 0
var bestNumTreesSubSet = ""

```



Confusion Matrix:

```
Image_Classification - [C:\Users\inpda\Desktop\Acads\BigDataAnalytics\Assignment\Tutorial 9\CS5542 - Tutorial 9 Code\Image_Classification] - [image_classification] - ...src\main\scala\IPApp.scala - IntelliJ IDEA 15.0.3
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
Image_Classification > data3 > model
Run IPApp
Project Z-Structure Favorites
I: Project
IPApp
(0,0,4)
(3,0,3)
(3,0,3)
(2,0,3)
(2,0,2)
(3,0,2)
(0,0,2)
(3,0,2)
(2,0,2)
(3,0,2)
(0,0,2)
(2,0,1)
(1,0,1)
(0,0,1)
(3,0,1)
(0,0,1)
(1,0,1)
(1,0,1)
(1,0,1)
(1,0,0)
(3,0,0)
(0,0,0)
(0,0,0)
(0,0,0)
(1,0,0)
(2,0,0)
0.3333333333333333
=====
Confusion matrix
=====
3.0 2.0 1.0 1.0 0.0
2.0 3.0 1.0 1.0 0.0
2.0 0.0 2.0 0.0 0.0
0.0 0.0 1.0 2.0 0.0
4.0 1.0 1.0 0.0 0.0
0.3333333333333333
16/04/06 18:00:51 INFO RemoteActorRefProvider$RemotingTerminator: Shutting down remote daemon.
16/04/06 18:00:51 INFO RemoteActorRefProvider$RemotingTerminator: Remote daemon shut down; proceeding with flushing remote transports.

Process finished with exit code 0

2577:1 LF# UTF-8# 6:12 PM
4/6/2016
Event Log
```

Predicted Results Snapshots from the testing dataset

Screenshot of IntelliJ IDEA 15.0.3 showing the code editor and run log for the `Image_Classification` project.

Code Editor:

```
// testImageClassification(sc)

val testImages = sc.wholeTextFiles(s"${IPSettings.INPUT_DIR}/*/*.jpg")
val testImagesArray = testImages.collect()
var predictionLabels = List[String]()
testImagesArray.foreach(f => {
    val splitStr = f._1.split("/")
    val predictedClass: Double = classifyImage(sc, splitStr(1))
    val segments = f._1.split("/")
    val cat = segments(segments.length - 2)
    val GivenClass = IMAGE_CATEGORIES.indexOf(cat)
    println(s"Predicting test image : " + cat + " as " + IMAGE_CATEGORIES(predictedClass.toInt))
    predictionLabels = predictionLabels + ":" + GivenClass :: predictionLabels
})
```

Run Log:

```
16/04/06 17:46:37 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 17:46:37 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 128
16/04/06 17:46:37 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 59 records.
16/04/06 17:46:37 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 17:46:37 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 59
16/04/06 17:46:37 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 138 records.
16/04/06 17:46:37 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 17:46:37 INFO InternalParquetRecordReader: Got brand-new decompressor [.gz]
16/04/06 17:46:37 INFO InternalParquetRecordReader: block read in memory in 2 ms. row count = 138
Predicting test image : charger as charger
file:///C:/Users/npdar/Desktop/Acds/BigDataAnalytics/Assignment/Tutorial 9/CS5542 - Tutorial 9 Code/Image_Classification/data3/test/charger/charger4.jpg
16/04/06 17:46:37 INFO FileInputFormat: Total input paths to process : 1
16/04/06 17:46:37 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:46:37 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:46:37 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:46:37 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:46:38 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskAttempt
16/04/06 17:46:38 INFO ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskAttempt
16/04/06 17:46:38 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 100 records.
```

System Tray:

- Ask me anything
- Event Log: 2661 LF: UTF-8
- 5:47 PM 4/6/2016

Screenshot of IntelliJ IDEA 15.0.3 showing the code editor and run log for the `Image_Classification` project.

Code Editor:

```
// Empty categoricalFeatureInfo indicates all features are continuous.
val numClasses = 10
val categoricalFeatureInfo = 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 = 4 to(5, 1)
val strategies = List("all", "sqrt", "log2", "onethird")
val maxDepths = 3 to(6, 1)
val impurities = List("gini", "entropy")

var bestModel: Option[RandomForestModel] = None
var bestErr = 1.0
var bestParams = new mutable.HashMap[Any, Any]()
var bestNumTrees = 0
var bestFeatureSubSet = ""
```

Run Log:

```
16/04/06 18:00:26 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 18:00:26 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 7 records.
16/04/06 18:00:26 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 18:00:26 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 18:00:26 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 7
16/04/06 18:00:26 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 7
16/04/06 18:00:26 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 7 records.
16/04/06 18:00:26 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 18:00:26 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 18:00:26 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 7
Predicting test image : spects as spects
16/04/06 18:00:27 INFO FileInputFormat: Total input paths to process : 1
16/04/06 18:00:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:27 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:27 INFO ParquetFileReader: Initiating action with parallelism: 5
```

System Tray:

- Ask me anything
- Event Log: 25468 LF: UTF-8
- 6:05 PM 4/6/2016

Image_Classification - [C:\Users\npdar\Desktop\Acads\BigDataAnalytics\Assignment\Assignment\Tutorial 9\CS5542 - Tutorial 9 Code]\Image_Classification] - [image_classification] - ..\src\main\scala\IPApp.scala - IntelliJ IDEA 15.0.3

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

Image_Classification > data3 > model >

Project Packages Project Files Problems

IPApp.scala IPSettings.scala build.sbt

```
// 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 = 4 to(5, 1)
val strategies = List("all", "sqrt", "log2", "onethird")
val maxDepths = 3 to(6, 1)
val impurities = List("gini", "entropy")

var bestModel: Option[RandomForestModel] = None
var bestErr = 1.0
val bestParams = new mutable.HashMap[Any, Any]()
var bestnumTrees = 0
var bestFeatureSubSet = ""
```

Run IPApp

```
16/04/06 18:00:18 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 7 records.
16/04/06 18:00:18 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 18:00:18 INFO InternalParquetRecordReader: block read in memory in 0 ms. row count = 7
16/04/06 18:00:18 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 18:00:18 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 7
Predicting test image : phone as phone
16/04/06 18:00:18 INFO FileInputFormat: Total input paths to process : 1
16/04/06 18:00:18 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:18 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:18 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:18 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 18:00:18 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
16/04/06 18:00:18 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
16/04/06 18:00:18 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 100 records.
16/04/06 18:00:18 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 18:00:18 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
16/04/06 18:00:18 INFO CodecPool: Got brand-new decompressor [.gz]
```

Find Run Terminal TODO Event Log

Compilation completed successfully in 7s 29ms (16 minutes ago)

2153:72 LF+ UTF-8 6:05 PM 4/6/2016

Image_Classification - [C:\Users\npdar\Desktop\Acads\BigDataAnalytics\Assignment\Assignment\Tutorial 9\CS5542 - Tutorial 9 Code]\Image_Classification] - [image_classification] - ..\src\main\scala\IPApp.scala - IntelliJ IDEA 15.0.3

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

Image_Classification > data3 > model >

Project Packages Project Files Problems

IPApp.scala IPSettings.scala build.sbt

```
// 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 = 4 to(5, 1)
val strategies = List("all", "sqrt", "log2", "onethird")
val maxDepths = 3 to(6, 1)
val impurities = List("gini", "entropy")

var bestModel: Option[RandomForestModel] = None
var bestErr = 1.0
val bestParams = new mutable.HashMap[Any, Any]()
var bestnumTrees = 0
var bestFeatureSubSet = ""
```

Run IPApp

```
16/04/06 17:59:53 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 17:59:53 INFO InternalParquetRecordReader: block read in memory in 0 ms. row count = 7
16/04/06 17:59:53 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 17:59:53 INFO InternalParquetRecordReader: block read in memory in 18 ms. row count = 7
16/04/06 17:59:53 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
16/04/06 17:59:53 INFO InternalParquetRecordReader: RecordReader initialized will read a total of 7 records.
16/04/06 17:59:53 INFO InternalParquetRecordReader: at row 0. reading next block
16/04/06 17:59:53 INFO CodecPool: Got brand-new decompressor [.gz]
16/04/06 17:59:53 INFO InternalParquetRecordReader: block read in memory in 1 ms. row count = 7
Predicting test image : keys as keys
16/04/06 17:59:53 INFO FileInputFormat: Total input paths to process : 1
16/04/06 17:59:53 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:59:53 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:59:53 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:59:53 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:59:53 INFO ParquetFileReader: Initiating action with parallelism: 5
16/04/06 17:59:53 INFO ParquetRecordReader: Initiating counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
16/04/06 17:59:53 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
16/04/06 17:59:53 WARN ParquetRecordReader: Can not initialize counter due to context is not a instance of TaskInputOutputContext, but is org.apache.hadoop.mapreduce.task.TaskA
```

Find Run Terminal TODO Event Log

Compilation completed successfully in 7s 29ms (17 minutes ago)

1765:55 LF+ UTF-8 6:07 PM 4/6/2016



47% 9:39 PM

Hello World!

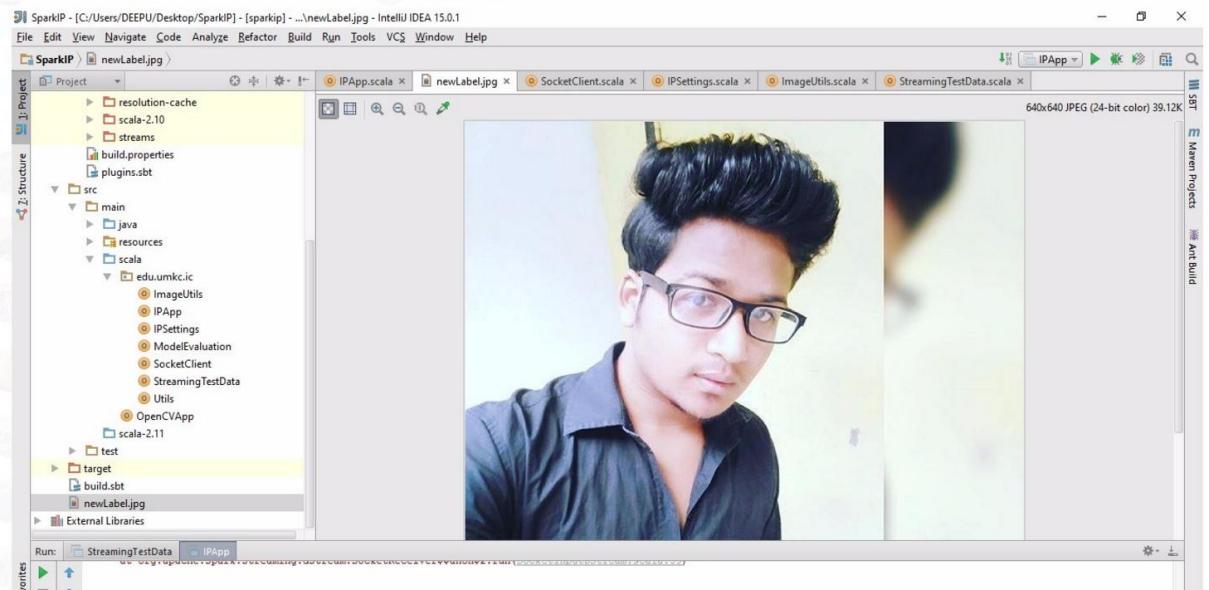
NOTIFY WEARABLE

I'm waiting here: 1234

SiteLocalAddress: 192.168.0.21

#1 from /192.168.0.23:53290

Predicted test image:spects/nreplayed: Hello from
Android, you are #1



4.4 Deployment:

Git Hub Link:

<https://github.com/npdarsini/Assist-Robot>

5. Project Management:

5.1 Implementation status report:

70% implementation has been implemented. This phase involves the development of Image classification report. Basically the system will classify the object based on the provided image and will notify the user about the object. The team members has an equal contribution towards the development and it took around 4 complete days to give an outlook for this phase. First we had tried developing a system with the static training and testing data sets and later we had made the testing part to be the streaming data which comes from the android device. Upon classifying the image the notification will be sent to the user device. Assuming the user will be carrying the smart android device every single time, we thought that this could be as an innovative thought as the user don't need to spend a lot of time for finding the lost objects.

Classification based on the Streaming Data #19

npdarsini opened this issue 33 minutes ago · 0 comments

npdarsini commented 33 minutes ago · No description provided

npdarsini added enhancement, help wanted labels 32 minutes ago

Write Preview AA- B i Leave a comment

Attach files by dragging & dropping, selecting them, or pasting from the clipboard

Styling with Markdown is supported

Close issue Comment

Pipeline In Progress

Labels enhancement Help wanted

Milestone No milestone

Estimate 13

Assignee No one—assign yourself

Epic Not inside an Epic

Notifications Unsubscribe You're receiving notifications because you authored the thread.

1 metric issue

Show all downloads...

FinalReport.docx Train.zip modelZip

Notification to Android Device - Recognized Object #18

DheerajaUmkc opened this issue a day ago · 0 comments

DheerajaUmkc commented a day ago · To check if our project becomes better using Audio mining techniques
Not utilized

DheerajaUmkc added the enhancement label a day ago

DheerajaUmkc added this to the Project - Increment 3 milestone a day ago

DheerajaUmkc set the estimate to 5 a day ago

DheerajaUmkc closed this 7 hours ago

npdarsini changed the title from To utilize audio mining to Notification to Android Device - Recognized Object 35 minutes ago

Write Preview AA- B i Leave a comment

Labels enhancement

Milestone Project - Increment 3

Estimate 5

Assignee No one—assign yourself

Epic Not inside an Epic

Notifications Unsubscribe You're receiving notifications because you're subscribed to this repository.

1 participant

Show all downloads...

FinalReport.docx Train.zip modelZip

[Training data sets - Creation with different objects #17](https://github.com/npdarsini/Assist-Robot/issues/17)

Closed DheerajaUmkc opened this issue a day ago · 0 comments

DheerajaUmkc commented a day ago
Making use of text mining techniques

DheerajaUmkc added the enhancement label a day ago

DheerajaUmkc added this to the Project - Increment 3 milestone a day ago

DheerajaUmkc set the estimate to 5 a day ago

DheerajaUmkc assigned Deepu123start and unassigned Deepu123start a day ago

DheerajaUmkc closed this a day ago

DheerajaUmkc reopened this a day ago

DheerajaUmkc closed this a day ago

npdarsini changed the title from Usage of Text mining to Training data sets - Creation with different objects 37 minutes ago

Labels
enhancement

Milestone
Project - Increment 3

Estimate
5

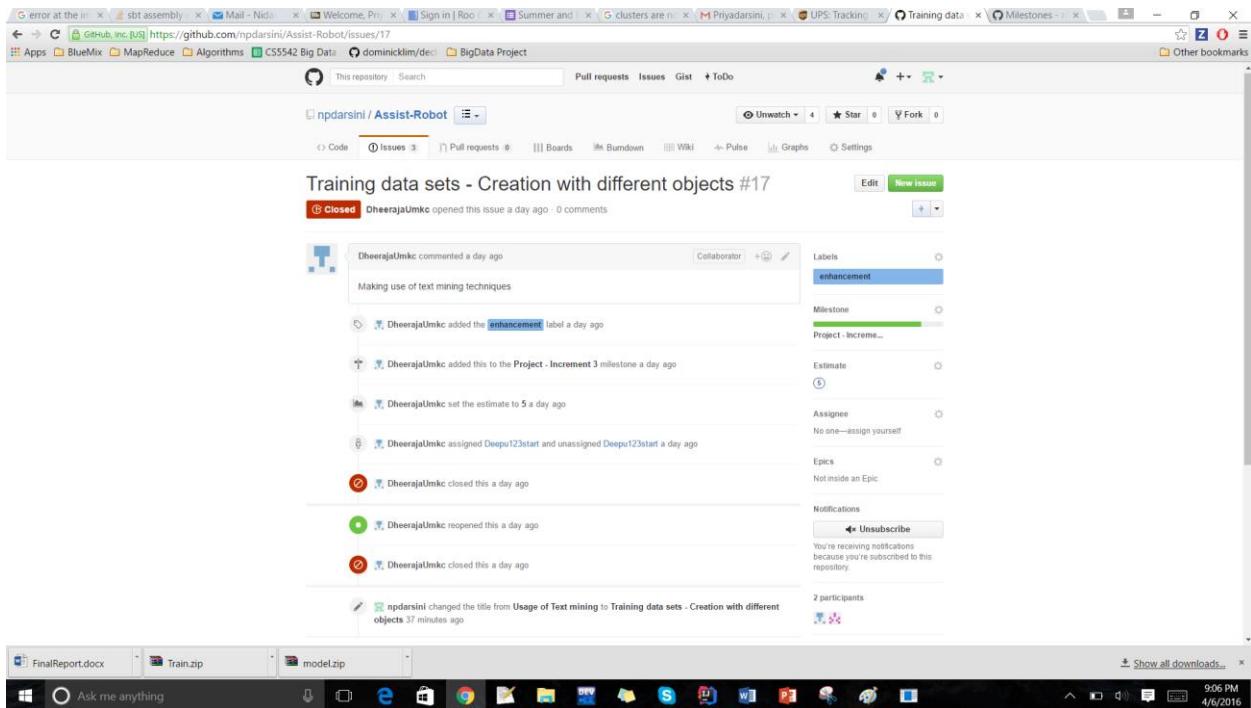
Assignee
No one—assign yourself

Epic
Not inside an Epic

Notifications
Unsubscribe

You're receiving notifications because you're subscribed to this repository.

2 participants



[Exploring different Classification algorithms - Random Forest, Decision Tree #16](https://github.com/npdarsini/Assist-Robot/issues/16)

Closed DheerajaUmkc opened this issue 7 days ago · 0 comments

DheerajaUmkc commented 7 days ago
Trying to make use of classification algorithms and figure out the best that suits our application

Deepu123start was assigned by DheerajaUmkc 7 days ago

DheerajaUmkc added the enhancement label 7 days ago

DheerajaUmkc added this to the Project - Increment 3 milestone 7 days ago

DheerajaUmkc set the estimate to 8 7 days ago

DheerajaUmkc changed the estimate from 8 to 13 7 days ago

DheerajaUmkc closed this a day ago

npdarsini changed the title from Exploring different supervised learning algorithms to Exploring different Classification algorithms - Random Forest, Decision Tree 38 minutes ago

Labels
enhancement

Milestone
Project - Increment 3

Estimate
13

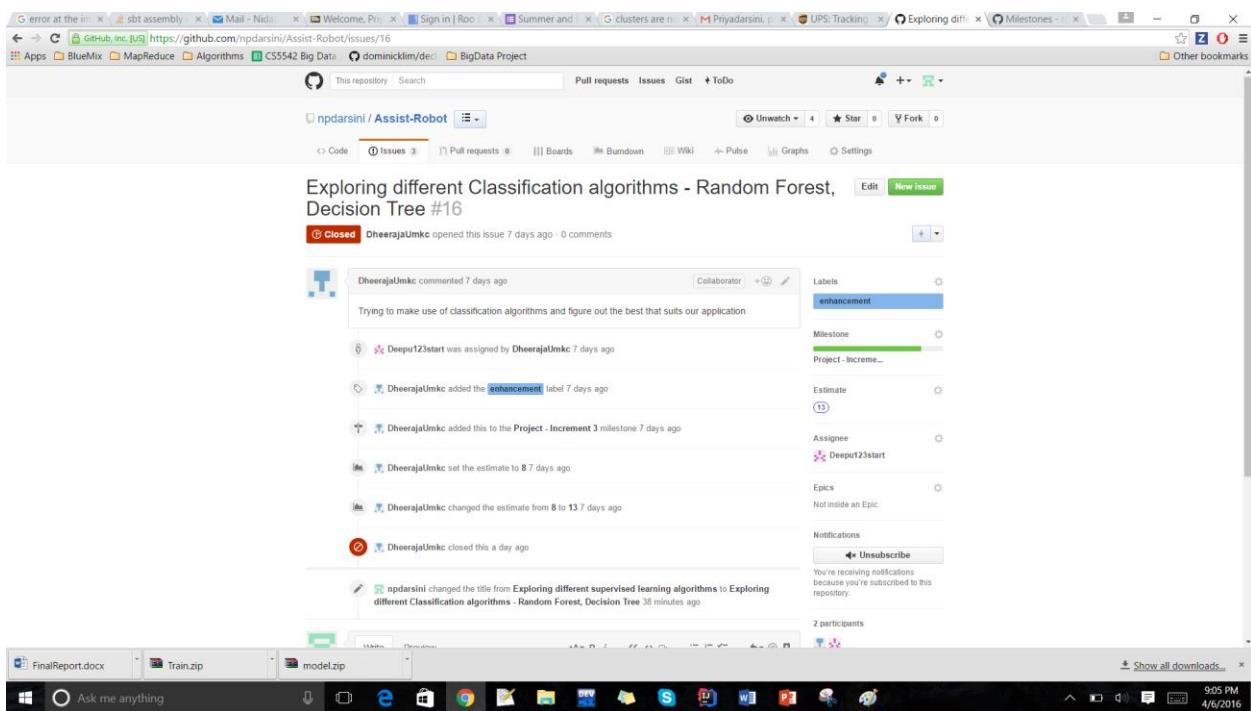
Assignee
Deepu123start

Epic
Not inside an Epic

Notifications
Unsubscribe

You're receiving notifications because you're subscribed to this repository.

2 participants



GitHub Issues - npdarsini / Assist-Robot

Image classification #15

Closed DheerajaUmkc opened this issue 7 days ago · 0 comments

DheerajaUmkc commented 7 days ago
Image classification plays a vital role in our project

DheerajaUmkc self-assigned this 7 days ago

DheerajaUmkc added the **enhancement** label 7 days ago

DheerajaUmkc added this to the **Project - Increment 3** milestone 7 days ago

DheerajaUmkc set the estimate to 13 7 days ago

DheerajaUmkc changed the pipeline from **In Progress** to **Done** a day ago

DheerajaUmkc closed this a day ago

Labels
enhancement

Milestone
Project - Increment 3

Estimate
(13)

Assignee
DheerajaUmkc

Epic
Not inside an Epic

Notifications
Unsubscribe

You're receiving notifications because you're subscribed to this repository.

1 participant

Leave a comment

FinalReport.docx Train.zip model.zip

Ask me anything

9:05 PM 4/6/2016

GitHub Issues - npdarsini / Assist-Robot

Creating a perfect training Dataset and collecting Test data #11

Closed DheerajaUmkc opened this issue 4 hours ago · 0 comments

DheerajaUmkc commented 4 hours ago
Test data helps in finding the results and to understand the need for enhancement of the training data

DheerajaUmkc added the **enhancement** label 4 hours ago

DheerajaUmkc added this to the **Project - Increment 2** milestone 4 hours ago

DheerajaUmkc set the estimate to 3 4 hours ago

DheerajaUmkc changed the pipeline from **In Progress** to **Done** 3 hours ago

DheerajaUmkc closed this 2 hours ago

Labels
enhancement

Milestone
Project - Increment 2

Estimate
(3)

Assignee
No one—assign yourself

Notifications
Unsubscribe

You're receiving notifications because you're subscribed to this repository.

1 participant

Leave a comment

Attach files by dragging & dropping, selecting them, or pasting from the clipboard.

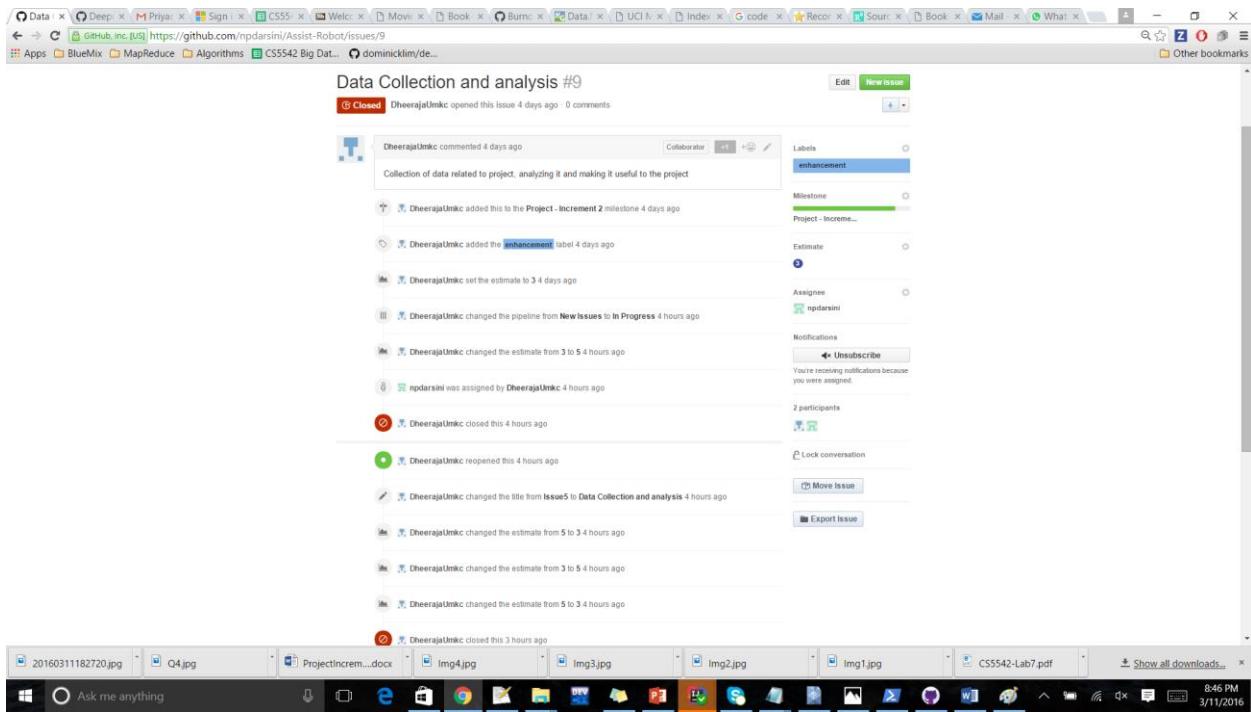
Comment Reopen issue Export issue

20160311182720.jpg Q4.jpg ProjectIncrem...docx Img4.jpg Img3.jpg Img2.jpg Img1.jpg CS5542-Lab7.pdf

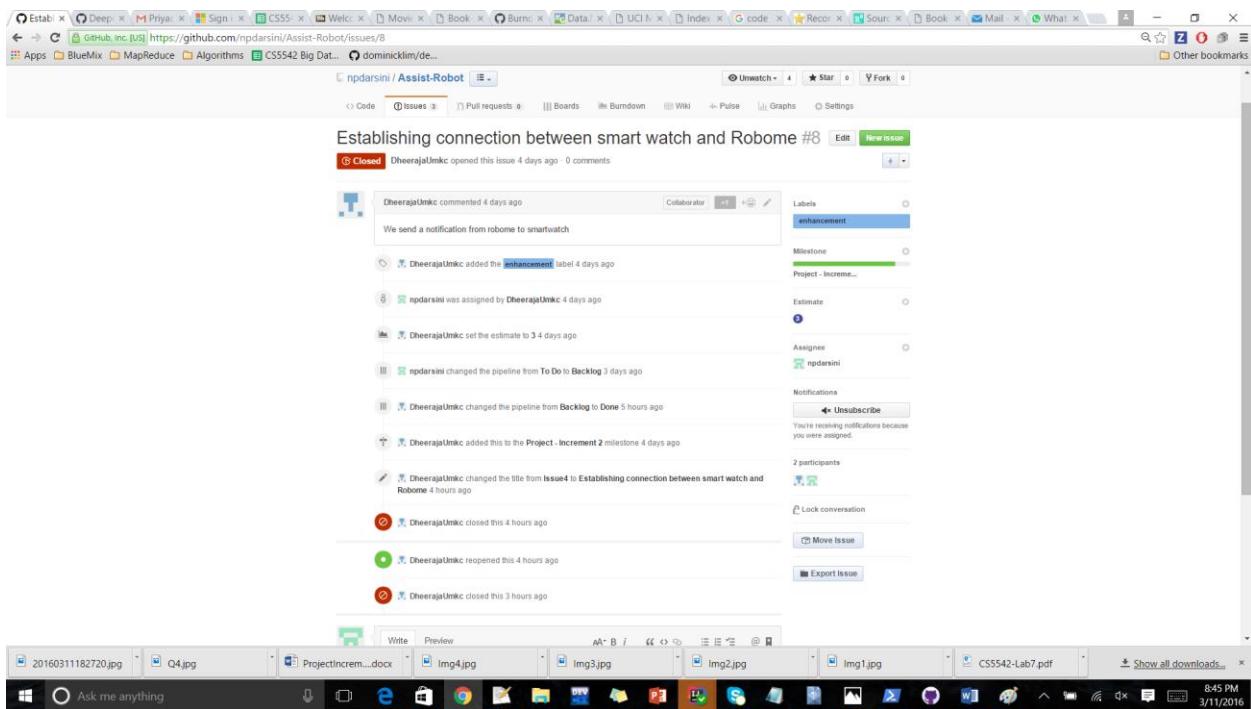
Ask me anything

8:47 PM 3/11/2016

Firefox browser window showing a GitHub issue titled "Data Collection and analysis #9". The issue is closed by DheerajUmkc. The description states: "Collection of data related to project, analyzing it and making it useful to the project". Labels: enhancement. Milestone: Project - Increment 2. Estimate: 3 hours. Assignee: npdarsini. Notifications: You're receiving notifications because you were assigned. Participants: 2. Conversation history shows multiple comments from DheerajUmkc and npdarsini.



Firefox browser window showing a GitHub issue titled "Establishing connection between smart watch and Robome #8". The issue is closed by DheerajUmkc. The description states: "We send a notification from robome to smartwatch". Labels: enhancement. Milestone: Project - Increment 2. Estimate: 3 hours. Assignee: npdarsini. Notifications: You're receiving notifications because you were assigned. Participants: 2. Conversation history shows multiple comments from DheerajUmkc and npdarsini.



Installation of Spark #7

Closed Dheeraj@Umkc opened this issue 4 days ago · 0 comments

Dheeraj@Umkc commented 4 days ago Since usage of spark makes the project more flexible because of availability of RDD's

Dheeraj@Umkc added the enhancement label 4 days ago

dunil210 was assigned by Dheeraj@Umkc 4 days ago

Dheeraj@Umkc added this to the Project - increment 2 milestone 4 days ago

Dheeraj@Umkc set the estimate to 3-4 days ago

npdarsini changed the pipeline from To Do to Backlog 3 days ago

Dheeraj@Umkc changed the title from Issue3 to Installation of Spark 4 hours ago

dunil210 was unassigned by Dheeraj@Umkc 4 hours ago

Dheeraj@Umkc changed the pipeline from Backlog to Done 4 hours ago

Deepur123start was assigned by Dheeraj@Umkc 4 hours ago

Dheeraj@Umkc closed this 4 hours ago

Dheeraj@Umkc reopened this 4 hours ago

Dheeraj@Umkc closed this 4 hours ago

The screenshot shows a GitHub issue page for a project named 'dominiclimk/de...'. The issue is titled 'Installation of Spark #7' and is marked as 'Closed'. It was opened by 'Dheeraj@Umkc' 4 days ago. The issue has 0 comments. A comment from 'Dheeraj@Umkc' discusses the flexibility of using spark due to RDD's. Another comment from 'Dheeraj@Umkc' adds the 'enhancement' label. 'dunil210' is assigned to the issue. It is part of the 'Project - increment 2' milestone and has an estimated value of 3-4 days. The pipeline has been moved from 'To Do' to 'Backlog' and then to 'Done'. The title of the issue was changed from 'Issue3' to 'Installation of Spark'. The issue was reopened and then closed again by 'Dheeraj@Umkc'. The GitHub interface includes a sidebar with labels like 'enhancement', 'Milestone', 'Estimate', 'Assignee', and 'Notifications'. The bottom of the screen shows a Windows taskbar with various icons and a system tray indicating the date and time.

Features of RoboMe #6

Closed Dheeraj@Umkc opened this issue 4 days ago · 0 comments

Dheeraj@Umkc commented 4 days ago Going through the features of Robome and what all can be derived using its basic features

Dheeraj@Umkc added enhancement, question labels 4 days ago

Deepur123start was assigned by Dheeraj@Umkc 4 days ago

Dheeraj@Umkc added this to the Project - increment 2 milestone 4 days ago

Dheeraj@Umkc set the estimate to 5-4 days ago

npdarsini changed the pipeline from In Progress to To Do 3 days ago

npdarsini changed the pipeline from To Do to In Progress 3 days ago

Dheeraj@Umkc changed the pipeline from In Progress to Done 5 hours ago

Dheeraj@Umkc removed the enhancement label 4 hours ago

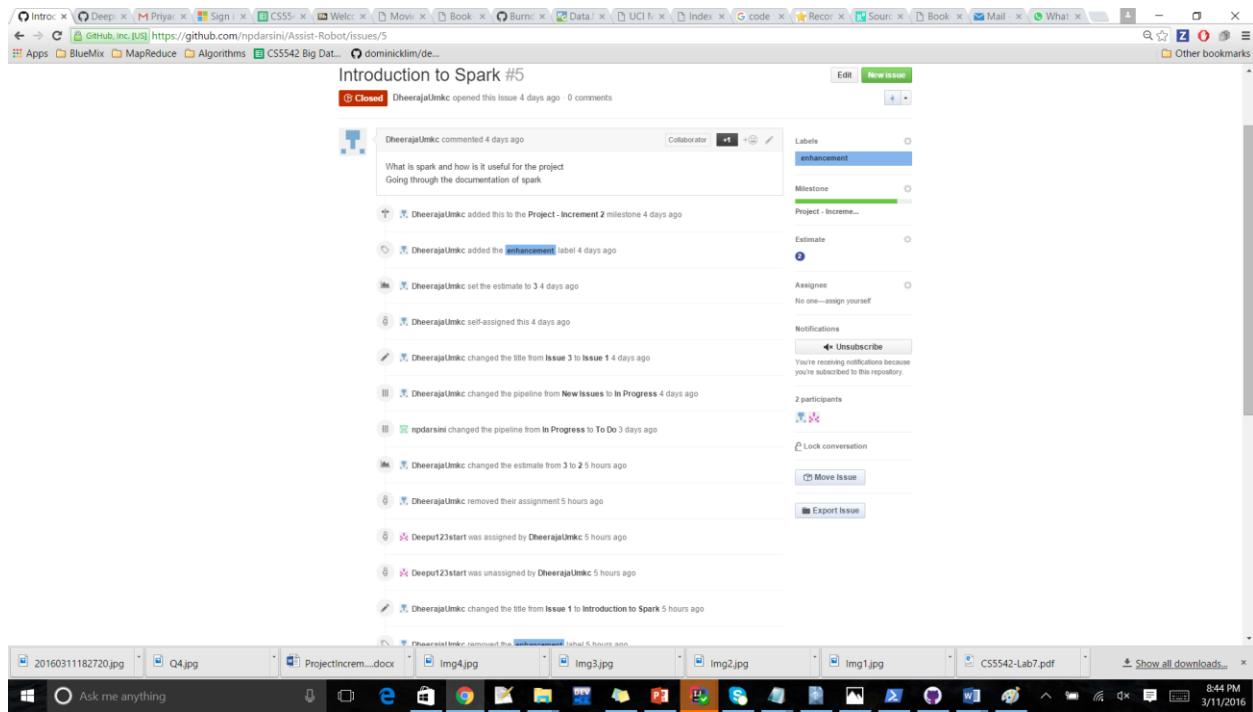
Deepur123start was unassigned by Dheeraj@Umkc 4 hours ago

Dheeraj@Umkc changed the estimate from 5 to 1 hours ago

npdarsini was assigned by Dheeraj@Umkc 4 hours ago

npdarsini was unassigned by Dheeraj@Umkc 4 hours ago

The screenshot shows a GitHub issue page for a project named 'dominiclimk/de...'. The issue is titled 'Features of RoboMe #6' and is marked as 'Closed'. It was opened by 'Dheeraj@Umkc' 4 days ago. The issue has 0 comments. A comment from 'Dheeraj@Umkc' discusses going through the features of Robome. Another comment from 'Dheeraj@Umkc' adds the 'enhancement' and 'question' labels. 'Deepur123start' is assigned to the issue. It is part of the 'Project - increment 2' milestone and has an estimated value of 5-4 days. The pipeline has been moved from 'In Progress' to 'To Do' and then to 'In Progress' again, finally being completed. The issue was closed by 'Dheeraj@Umkc'. The GitHub interface includes a sidebar with labels like 'question', 'Milestone', 'Estimate', 'Assignee', and 'Notifications'. The bottom of the screen shows a Windows taskbar with various icons and a system tray indicating the date and time.



Bibliography:

Lab Tutorials and the material provided by Dr. Lee.