UNIVERSITY OF MISSOURI-KANSAS CITY

Hidden Hurdles

(CS5542-Big Data Analytics and Apps)

Project Report-2

By

Team 3

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Hidden Hurdles

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1. Introduction:

In the current years, there is a fast development in the arena of Artificial Intelligence. There is a huge amount of research done in the field of Machine Learning and lot more new strategies have been proposed in the recent times with which we can accomplish more than before.

2. Project Objectives:

2.1 Significance:

The main goal of our application is to challenge the user to find out the hidden objects lying uncovered in a place. This also helps player to get out of the tensions and to provide relaxation for a certain time. On further implementation, the same technique can be used in wider range of applications which helps the user to search for the objects that were left unnoticed.

2.2 Features: Use Case/Scenario:

Here we considered a simple room structure as our use case and have collected a data set of images that usually appear in every living room of an individual. Here we will display a set of objects to the player, once the player clicks on image that image will be predicted by using Image Classification program.

3. Approach:

3.1 Data Sources:

Here we considered a set of images that usually exist in a living room of any individual.

We have captured images from different data sources like:

- Caltech 256 Data set
- Canstockphoto.com
- Personally Captured images

3.2 Analytic Tools:

We have used MongoDB, Google conversation API, Clarifai API, Spark tools for our application.

3.3 Analytical Tasks:

We should analyze a particular image given as an input by the user using Image Analysis algorithm in Spark and produce an output which is then compared to the desired output.

3.4 Expected Input/Output:

The input to our application will be an image selected by the user which gets processed and gives us the prediction of the image. These predictions are then checked with the predefined list and if it matches we will generate success message.

3.5 Algorithms:

For image classification technique, we have used Random Forest decision tree algorithm.

4. Related Work:

In this module, we implemented image classification on the collected data to predict the object and we will find the accuracy of the selected object. In the game application we added timer and hint option.
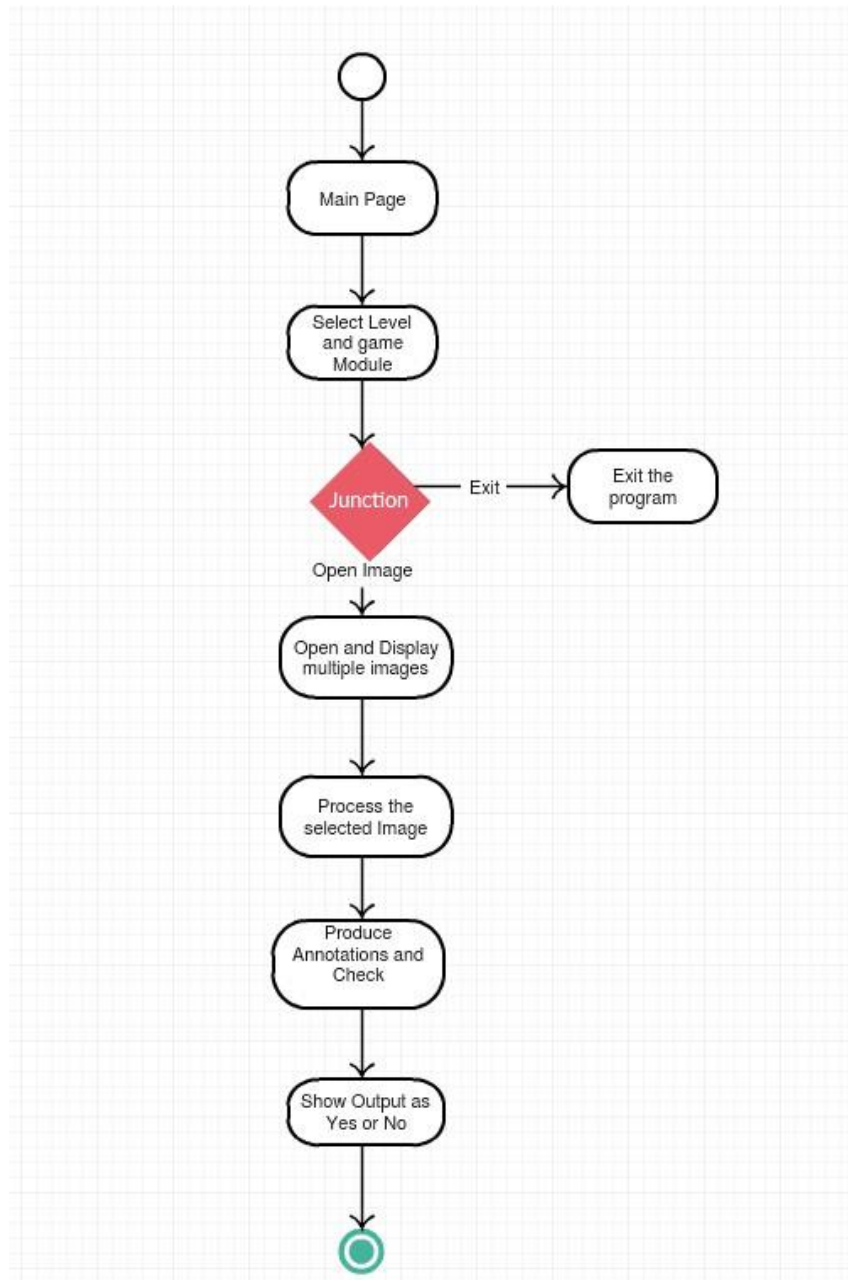
5. Application Specification:

5.1 System Specifications:

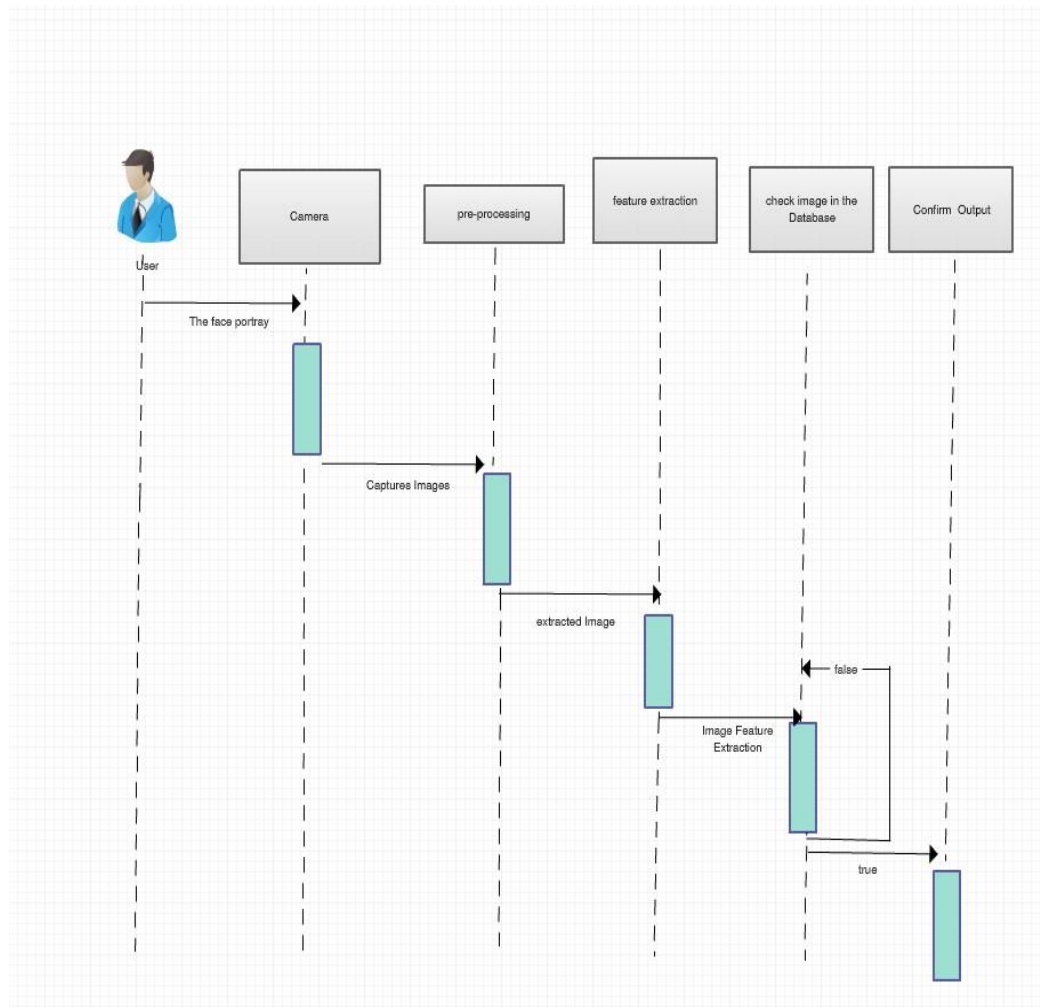#### 5.1.1 Software Architecture:
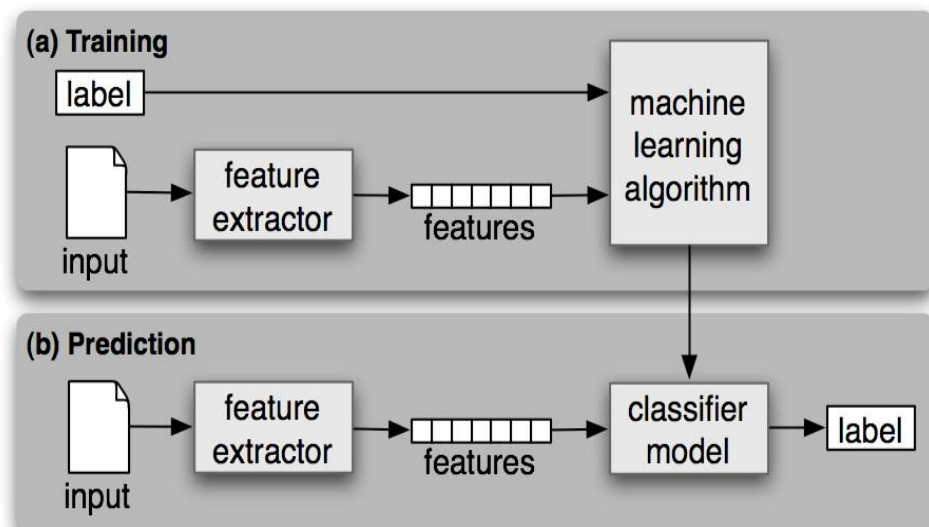
5.1.2 Features, workflow, technologies

Activity Diagram:

Sequence Diagram:

Feature Specification:

- Providing the game with different levels.
- Displaying the hidden objects based on the game level complexity.
- On finding the hidden objects then predict the accuracy of the images.
- If it matches with the list which will provide on the screen, then the score will be increased.
- Once the given time is done, automatically the game will quit.

Operation Specification:

- Image is given as input.
- Annotation of the image is given as an intermediate output.
- This annotation then checked with our desired result and gives a Yes or No as final output.

5.2 Existing Applications/ Services Used: Name, Description, URL:

- **Clarifai API:**

  It provides a RESTful API to process the images and video and generate annotations from the processed data. It provides the output in the form of JSON.

- **Google Conversation API:**

  It is a web simulator which allows communicating and getting responses. In this we create the input in MLAB and generate the Heroku URL by deploying the application in Heroku. This is deployed in web simulator through API.AI and generate the output.

6. Implementation:

- ➢ As a part of the application we have implemented a web application which contains start page and level page.
- ➢ In this we have implemented the Image classification for the dataset in order to get the objects accuracy.
- ➢ In this web application, there would be some hidden images and player should identify the images based on the image names which are displayed on the game screen.
- ➢ This game has three different levels:
  - Level 1
  - Level 2
  - Level 3
- ➢ This application has hint option on the game screen, by using this option player can get the clue about the image, which the player feels difficult to find the image in the screen.
- ➢ There is a timer running on the screen which can shows the application running time and if the timer reaches 5 minutes then automatically the game will be ended and the score will be displayed.
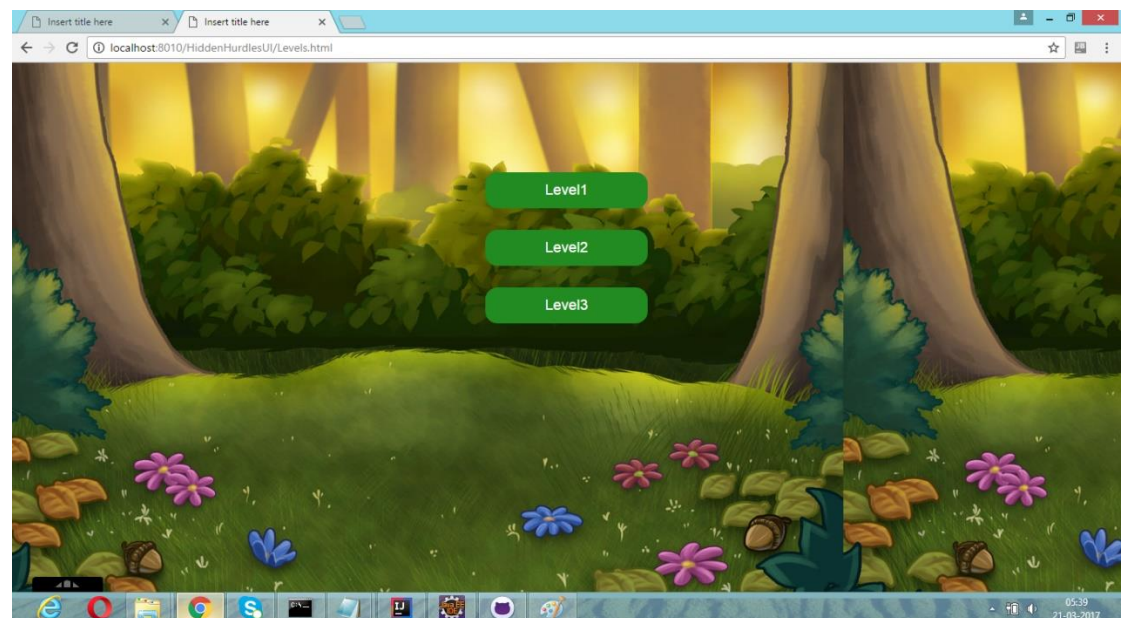
7.   Documentation:

Screenshots:

Start Page:
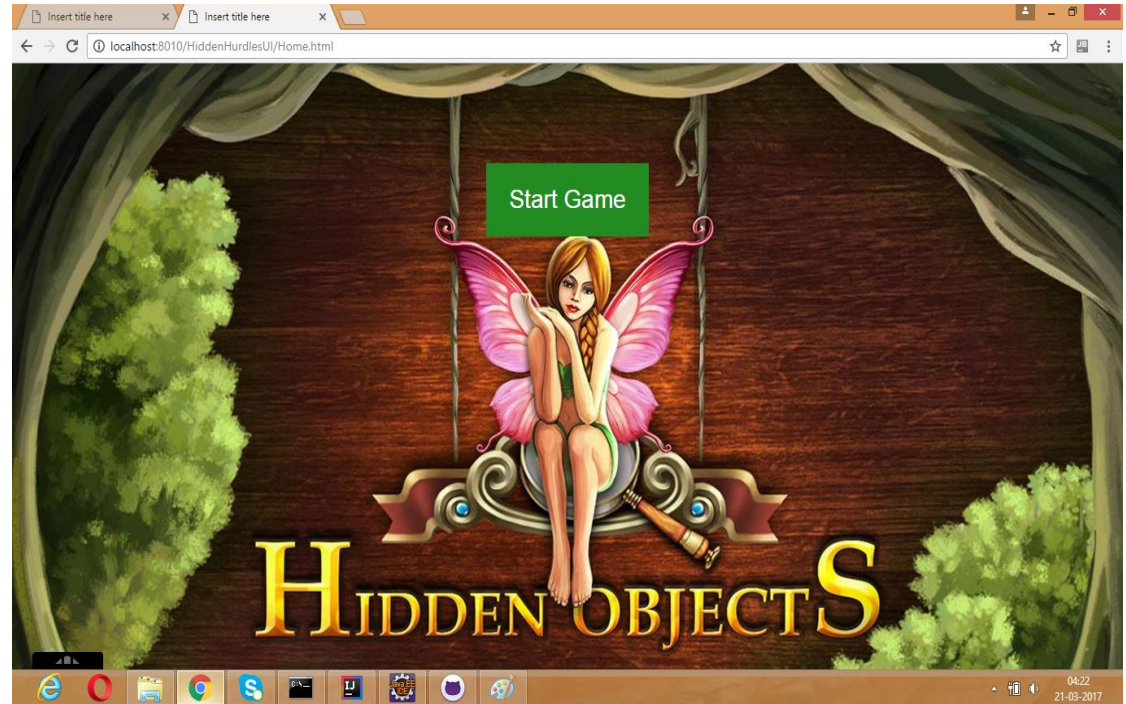
Level Page:
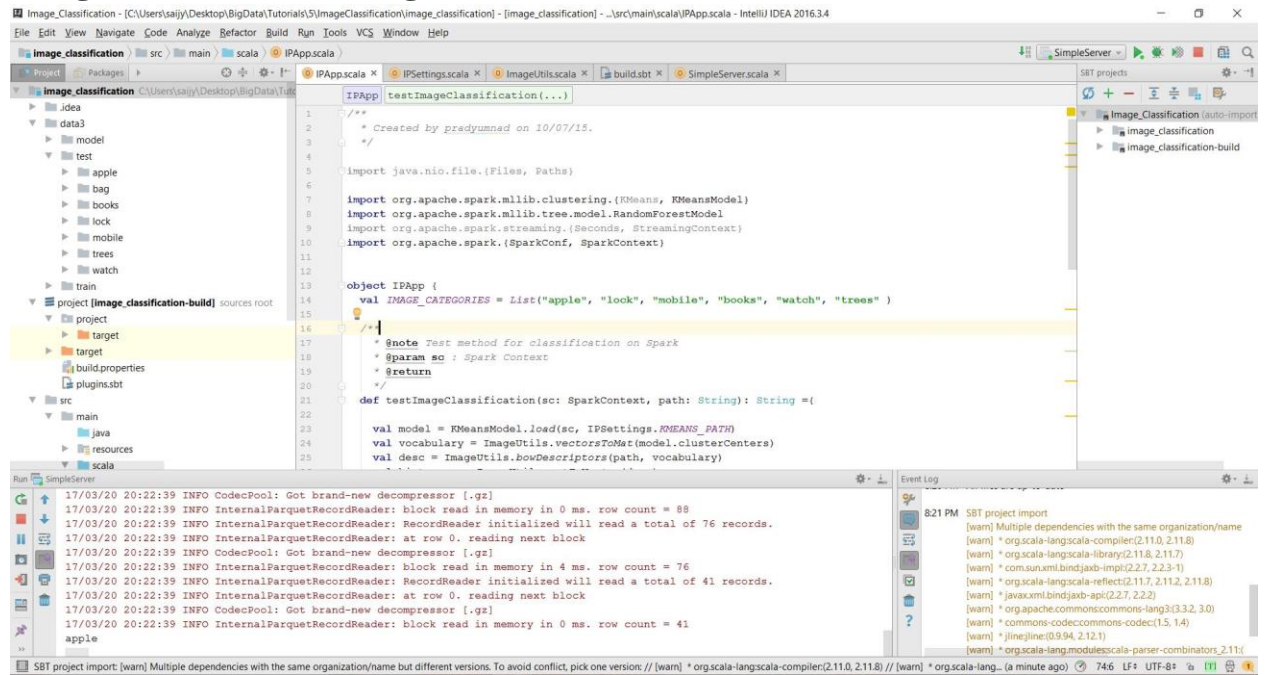
Level 1:

Level 1-Hint Page:

Level 2:

Level 2-HintPage:

Level 3:

Image Classification Program Train And Test Data:

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8. Project Management:

Github URL: -

https://github.com/ManasaReddyThipparthi/BigDataProject-Spring2017

Zenhub Report:

The following screenshots represent the project management Zenhub report

Issues:

Completed Issues and Pull Requests	Story points
🕐 DataSet Collection duplicate BigDataProject-Spring2017 **#9**	②
🕐 Train The Model invalid BigDataProject-Spring2017 **#10**	①
🕐 Test the model enhancement BigDataProject-Spring2017 **#11**	①
🕐 Image Classification duplicate BigDataProject-Spring2017 **#12**	③
🕐 UI Creation help wanted BigDataProject-Spring2017 **#13**	③
🕐 Levels Creation enhancement BigDataProject-Spring2017 **#14**	②
🕐 Hint, Timer and Sore enhancement BigDataProject-Spring2017 **#15**	⑤

Milestones:

Labels | **Milestones**   New milestone

🕇 **2 Open**   ✓ 0 Closed   Sort ▾

Increment2

📅 Due by March 20, 2017   🕐 Last updated 5 minutes ago

100% complete   **0** open   **7** closed
Edit   Close   Delete

Increment-1

⚠ Past due by 23 days   🕐 Last updated 21 days ago

All the Increment one tasks and issues are to be completed within this milestone
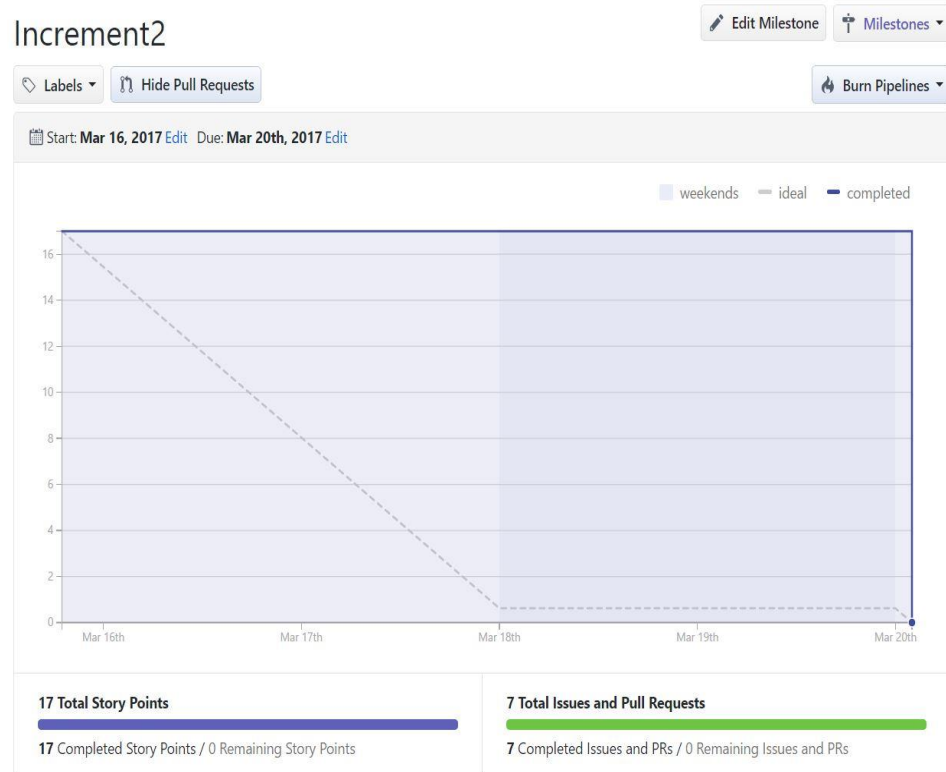
100% complete   **0** open   **8** closed
Edit   Close   Delete

Burndown Chart:

Team Members Contribution:
40 - Thipparthi, Manasa T – 25%
12 - Gudibandi, Saijyothi – 25%
33 - Puthana, Sujitha – 25%
10 - Golla, Sri Harsha Kumar Raja – 25%

Future Work:
- Implementation of Tensor flow
- Implementation of Google conversation API