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"Poster Recognition With Calender Integraion"

Project Report

Submitted in partial fulfillment of the requirements for the degree of

Bachelor of Engineering

by

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CERTIFICATE

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This is to certify that the project entitled *Poster Recognition With Calender Integration* is a bonafide work of **Khan Almustafa Jamaluddin Dildar**(12CO37), **Pirosh Toshif Abdul Rahim Naseem**(12CO54), **Sayed Mohd. Ayjaz Abdul Razak Badrunnisa**(12CO56), **Shaikh Mohammed Arif Md Hanif Noori Begam**(12CO58)submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering** in **Department of Computer Engineering**.

Prof.Mubashir Khan   **Prof.Apeksha Gopale**

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Project Approval for Bachelor of Engineering

This project entitled *Poster Recognition With Calender Integraion* by *Khan Almustafa Jamaluddin Dildar, Pirosh Toshif Abdul Rahim Naseem, Sayed Mohd. Ayjaz Abdul Razak Badrunnisa, Shaikh Mohammed Arif Md Hanif Noori Begam* is approved for the degree of *Bachelor of Engineering in Department of Computer Engineering.*

Examiners

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Supervisors
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Chairman

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Declaration

We declare that this written submission represents our ideas in our own words and where others ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

Tittle: Poster Reconition With Calender Integration

Text characters and strings in natural scene can provide valuable information for many applications. Extracting text directly from natural scene images or videos is a challenging task because of diverse text patterns and variant background interferences.This paper proposes a method of scene text recogntion from detected text regions. The proposed method combines previously scene text detection and scene text detection algorithms. Besides,previous work rarely presents the mobile implementation of scene text extraction,and we transplant our method into an Android based platform.Our proposed system will have an android application that will capture an image as an input and will process that image to extract text from it. Firtly we are extracting the event name,event date from the image of poster. Secondly by using the extracted date,reminder of the day before of event is set in the smartphone.

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Keywords And Glossary

Keywords :
Bounding Box, Edge Detector, Histogram, Text detection, Text recognition.

Glossary :
B
Bounding Box :
The smallest rectangle that encloses a shape so that each of the four sides touches an extremity of the shape.

E
Edge Detector :
An image-processing routine that flags the large changes in pixel brightness that indicate potential edges. Edge detectors often visualise their results in edge maps. Examples include the Sobel, Prewitt, Kirsch and Laplacian edge detectors. information.

H
Histogram :
The histogram of an image visualises the distribution of the brightness in the image by plotting the number of occurrences of each brightness.

T
Text detection :
Text detection is to localize image regions containing text characters and strings.

Text recognition :
Text recognition is to transform pixel-based text into readable code.

Chapter 1

Project Overview

1.1 Introduction

Text from camera of devices gives information which serves as effective tags or clues for many mobile applications associated with media analysis, content retrieval, scene understanding, and assistant navigation. Natural scene images and videos or strings that are appearing on various hand held objects provides significant knowledge about the environment and the objects. Now-a-days text-based tags are much more applicable than barcode, because the latter techniques contain limited information and require pre-installed marks for checking of information. In our proposed idea, basically the text is being extracted from the images of posters that serve the input to the application. The extracted text from the poster's image would contain title of the event, date and venue of the same. After the extraction of text, the date information is used to set the reminder of a day before the scheduled event. Therefore the main task of the application is to get an image of the poster as an input and process it for the extraction so as to get full information about the event.

1.1.1 Motivation

Our first motivation towards this project is our keen interest in image processing. So we started searching for different works under image processing and found that there is no such application developed using image processing technique. Reading text from photographs is challenging problem that has received a significant amount of attention. Secondly, as we know whole world is changing into digital.

People are much more getting addicted to technology. Humans normally find it difficult to remember each and every thing that is going around the world. For example, we as students have events almost every week and we cant remember the dates for every event. So we came up with an idea that how if our smartphone would take this pain of remembering and storing the date of every event and let us remind for particular event on a day before.

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1.1.2   Advantages Over Current System

There is no such application is available in market which will extract the text from the image and then set the reminder for the extracted date a day before. In current system they only extract the text from the different natural scene images using different image processing algorithms. They are only detecting and extracting the text from different images. But they do not deploy that in any application.

So we have come with an idea that we can create an android application which will extract the event name and event date from the particular image and set the reminder for that extracted date a day before. This will reduses the time and it becomes helpful for buisness people and students for different event occur in colleges.

1.2   Proposed System Architecture

Every software has a model. Before the implementation of software, architecture is drawn in the form of a flowchart or in the form of any diagram, so that it becomes easy for anyone to understand the how of the process thus helping for easier implementation of the software. The architecture not only helps the developer of that software but also helps the end user to understand the flow of the process. So this helps the developer for easier understanding of the project as well as easier implementation.

The client interacts with the developer team so that the client can make them understand what kind of software do they want and how it should work. So,on the basis of this, the team of developer come together and discuss about how the software would be implemented i.e. all the process from starting till the ending would be drawn in the form of diagrams which would help them further in the implementation and completion of the project. If they explain the client the flow of the software through these diagrams, then it would also help the client to understand how the software is going to work. If any changes are to be made, then the client could also ask the developer to make the required changes.

The explanation of the below architecture is as follows: In above architecture we have one android device by which the user can take a image or can select the image from gallery, then this image is displayed to the user on another activity screen, after that user has to click on load image button then that image is send to the server for further processing. At the server side the image is stored in a one perticular directory in wampserver. Also at server side we have run one php file, in this php file we have use exec command to run matlab remotely.

All processing of matlab is done in backgound.That image is process by using different image processing algorithms. After processing an image Matlab will create one text file in which extracted text is present. Then we run one java file to extract the event name and event date from that text file. And then we transfer that event name and event date to the android application using Json. And then the reminder application is run to set the reminder of the curresponding event name and date.

Figure 1.1: System Architecture

1.2.1 Formulation of Problem With using Technology

In our project we are using a trial version of matlab, in this version of matlab much features are not availbale. Due to this unavailability of features we are currently working on a particular image which has a particular dimensions. We have a selected one image which has particular font and background and other features such as solidity, eccentricity, etc. which is different for every image which we need to set manually for every image. The present algorithm is static, we will change it to dynamic and will set the solidity as per the image solidity.

1.3   Organization of the Project

The remaining part of the project is organized as follows.

Chapter 2 presents a review of related work.

Chapter 3 introduces the Software and Hardware Requirement of the project.

Chapter 4 proposes the Project Design of the Project . It represent the architectural design, front end design and database design of the project.

Chapter 5 introduces the system model and some basic assumptions and Dependencies of our work.

Chapter 6 presents the Results and Test cases related work.

Chapter 7 Described the time management and time utilization during the Project implementation.

Chapter 8 Described the Workload distribution.

Chapter 9 provides some concluding remarks and directions of our future work.

Chapter 2

Review Of Literature

2.1 A Survey on Scene Text Recognition in Mobile Applications by Character Descriptor and Structure Configuration

2.1.1 Discription

Text characters and strings in natural scene can provide valuable information for many applications. Extracting text directly from natural scene images or videos is a challenging task because of diverse text patterns and variant background interferences. This paper proposes a method of scene text recognition from detected text regions. In text detection, previously proposed algorithms are applied to obtain text regions from scene image.

First,in this paper design a discriminative character descriptor by combining several state-of-the-art feature detectors and descriptors. Second, model character structure at each character class by designing stroke configuration maps. Here algorithm design is compatible with the application of scene text extraction in smart mobile devices. An Android-based demo system is developed to show the effectiveness of a proposed method on scene text information extraction from nearby objects.The demo system also provides some insight into algorithm design and performance improvement of scene text extraction. The evaluation results on benchmark data sets demonstrate that proposed scheme of text recognition is comparable with the best existing methods.

2.1.2 Pros

- In this paper, the algorithms which are used can detect the text from complex background also.

- Also in this paper, they are Extracting the text with diverse text patterns.

2.1.3 Cons

- The main weakness is the algorithm which here used for text detection and extraction is only applicable for horizontally aligned text.

- It is not applicable for the text which is aligned in vertical manner.

2.2 Localizing Text in Scene Images by Boundary Clustering, Stroke Segmentation, and String Fragment Classification

2.2.1 Discription

In this paper, they propose a novel framework to extract text regions from scene images with complex backgroundsand multiple text appearances. This framework consists of three main steps: boundary clustering (BC), stroke segmentation, and string fragment classification. In boundry clustering,they propose a new bigram-color-uniformity-based method to model both text and attachment surface, and cluster edge pixels based on color pairs and spatial positions into boundary layers. Then, stroke segmentation is performed at each boundary layer by color assignment to extract character candidates.

They propose two algorithms to combine the structural analysis of text stroke with color assignment and filter out background interferences. Further, we design a robust string fragment classification based on Gabor-based text features. The features are obtained from feature maps of gradient, stroke distribution, and stroke width. The proposed framework of text localization is evaluated on scene images, born-digital images, broadcast video images, and images of handheld objects captured by blind persons. Experimental results on respective datasets demonstrate that the framework outperforms state-of-the-art localization algorithms.

2.2.2 Pros

- In this paper they are extracting the text from different scene images with complex background with multiple text appearance.

- They are using different image processing algorithms such as boundry clustering, stroke segmentation, and string fragment classification to increase the accuracy of detection of text.

2.2.3 Cons

- In this paper the algorithms which are used has less accuracy in curved text reagions.It means if the text which are present in any natural scene images has curved text regions then it may not be detected.

2.3 Real-Time Scene Text Localization and Recognition

2.3.1 Description

In this paper, an end-to-end real-time scene text localization and recognition method is presented. The real-time performance is achieved by posing the character detection problem as an efficient sequential selection from the set of Extremal Regions (ERs). The ER detector is robust to blur,illumination, color and texture variation and handles low contrast text. In the first classification stage, the probability of each ER being a character is estimated using novel features calculated with complexity per region tested. Only ERs with locally maximal probability are selected for the second stage, where the classification is improved using more computationally expensive features.

A highly efficient exhaustive search with feedback loops is then applied to group ERs into words and to select the most probable character segmentation. Finally, text is recognized in an OCR stage trained using synthetic fonts.The method was evaluated on two public datasets. On the ICDAR 2011 dataset, the method achieves state-of-the-art text localization results amongst published methods and it is the first one to report results for end-to-end text recognition. On the more challenging Street View Text dataset,the method achieves state-of-the-art recall. The robustness of the proposed method against noise and low contrast of characters is demonstrated by false positives caused by detected watermark text in the dataset.

2.3.2 Pros

- In this paper, they present an end-to-end real-time text localization and recognition method which achieves state-of-the-art results on standard datasets.

- The ER(External Region) detector which is use here is robust against blur, low contrast and illumination, color and texture variation.

2.3.3   Cons

- The proposed method may not work for the text which is present in complex backgroud.

- Also it does not work for the text which is present in curved text regions.

2.3.4   How we overcome Those problem in Project

- In our project we are working on the image which has complex background and and the text with different font styles.

2.4 Efficient Text Extraction Algorithm Using Color Clustering for Language Translation in Mobile Phone

2.4.1 Description

In this paper, they propose a Text Extraction algorithm for the context of language translation of scene text images with mobile phones, which is fast and accurate at the same time. The algorithm uses very efficient computations to calculate the Principal Color Components of a previously quantized image, and decides which ones are the main foreground-background colors, after which it extracts the text in the image. They compared there algorithm with other algorithms using commercial OCR, achieving accuracy rates more than 12 percent higher, and performing two times faster. Also, our methodology is more robust against common degradations, such as uneven illumination, or blurring. Thus, threy developed a very attractive system to accurately separate foreground and background from scene text images, working over low computational resources devices.

2.4.2 Pros

- They use a technique in which there methodology is more robust against common degradations, such as uneven illumination, or blurring.

- They are achieving accuracy rates more than 12 percent higher and this technique is times faster.

2.4.3 Cons

- In this method they are working on previously quantized image therefore this algorithm will achieve less accuracy for new images which has been taken.

2.4.4 How we overcome Those problem in Project

- In our project we are working on image which is not previously quantinized, we are taking new image and extracting the text from that image.

2.5   Technological Review

2.5.1   Android Studio

Android Studio is the official integrated development environment (IDE) for Android platform development.In our project the android application which we are developing will be work from minimum Android 4.1(Jelly Bean) to Android 5.1.1(Lollipop).

2.5.2   WampServer

WampServer refers to a software stack for the Microsoft Windows operating system, created by Romain Bourdon and consisting of the Apache web server, OpenSSL for SSL support, MySQL database and PHP programming language.Since here we are sending our image from android application to the server, we areusing a wampserver where the image is stored in directory.Then we run a php file from there to run matlab which will process the image and give us a output in the form of text file.

2.5.3   PHP

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language.PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management system and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. In our project we are using php at the server side to call a matlab remotely which will work in background.

2.5.4   MATLAB

MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and fourth-generation programming language. A proprietary programming language developed by Math-Works, MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms,creation of user interfaces, andinterfacing with programs written in other languages, including C, C++, Java, Fortran and Python.In our project our all image processing algorithms are run on matlab for detecting and extracting the text from image.

2.5.5 JAVA

In implementing the project, we are making use of java language as the main language.And since java is platform indendent it will work on any platform. Thus we are developing an android application, java is become an important part to develop any android application. Also we are using a java for extracting the event name and event date from the text file which is generated by matlab.

Chapter 3

Requirement Analysis

3.1 Platform Requirement :

3.1.1 Supportive Operating Systems :

The supported Operating Systems for client include:

- Android(Mobile Operating System)

Android is a mobile operating system (OS) currently developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets. Android operating system is based on code from the Android Open Source Project, or AOSP since it is a open source. In our project we are developing an android application so it could be available to any android user, freely and easily.

3.2 Software Requirement :

The Software Requirements in this project include:

- Android Studio

- Wampserver

- PHP

- Matlab

- Java

In this project, Android Studio is used to develop an android application , in this we create one splash screen which will displayed at the starting of the application.Also we create different activity screen, to take image from either galley or camera.Then that image is transfered to server .Also we are using to develop an reminder application. All this coding is done in Android Studio. We are using Wampserver to store the image on server in a directory. PHP file is also stored in thatdirectory. We are using PHP to run a matlab directly from the serever in background remotely.

In all process , Matlab is very important part of our project. Matlab is use to process the image which is given by the user, it execute the different image processing algorithms to detect and extract the text from the image.And it will generate text file which contain extracted text. Finally we are using java to extract the event name and event date from that extracted text to set the reminder of the event.

3.3 Hardware Requirement :

3.3.1 Hardware Required For Project Development:

- For Android Studio:

  Windows:

  Microsoft Windows 10/8(64-bit)

  8GB RAM (Minimum 4GB recommended)

  400MB Hard Disk space

  Atleast 1GB for Andrid SDK,Emulator System Images and catches Java Development Kit(JDK)7

- For Matlab

  Operating Systems: Wnidows 10/8/7

  Processors: Any Intel or AMD x86 processor

  Disk Space: 1 GB for MATLAB only

  RAM: 2GB

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Chapter 4

Project Design

4.1   Design Approach

Design is the first step in the development phase for any techniques and principles for the purpose of designing a device, a process or system in suficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities design,coding, implementation and testing that are required to build and verify the software. The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made.

These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer requirements into finished software or a system. Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data.
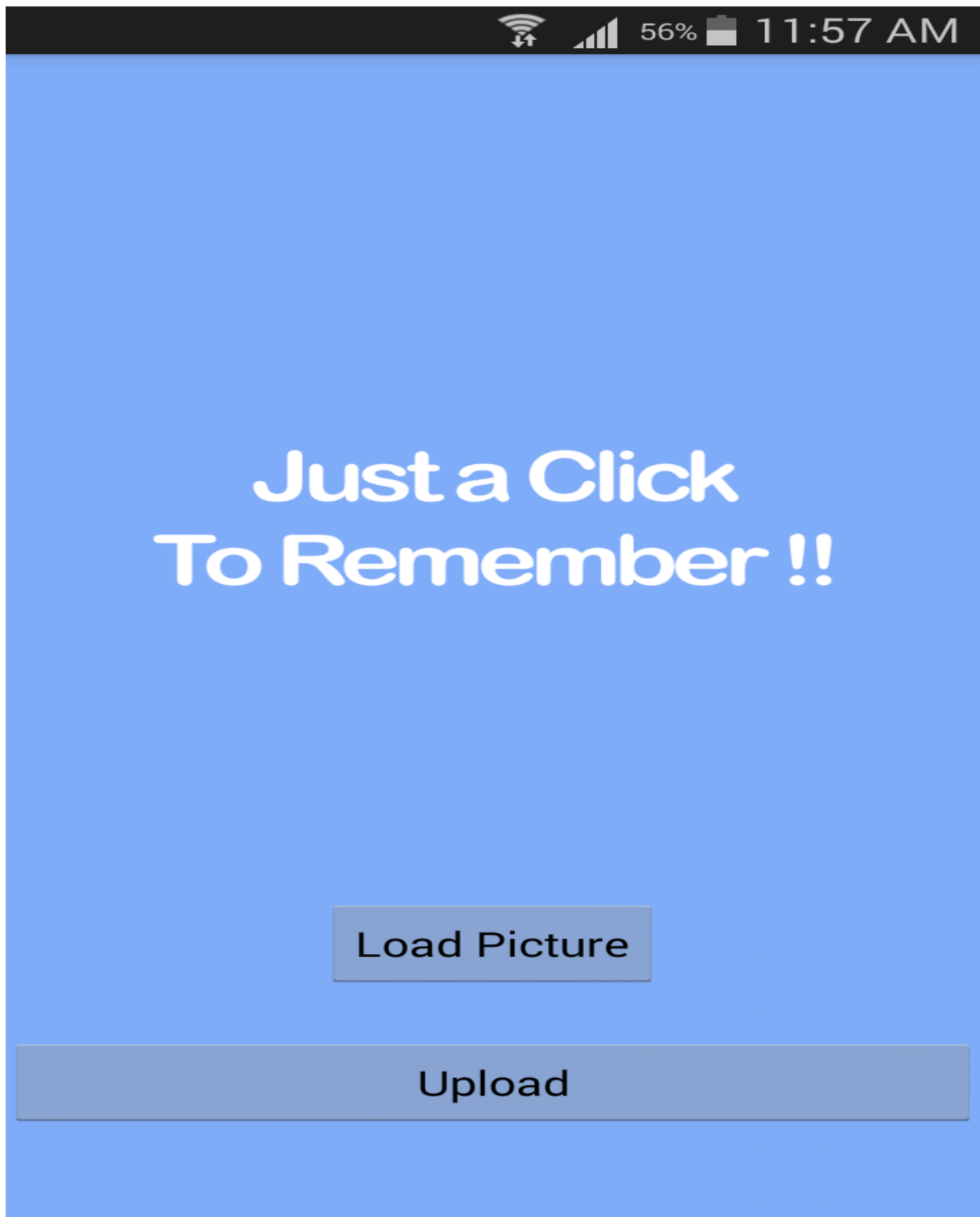
4.1.1   Front End Designs

Figure 4.1: Front End Design

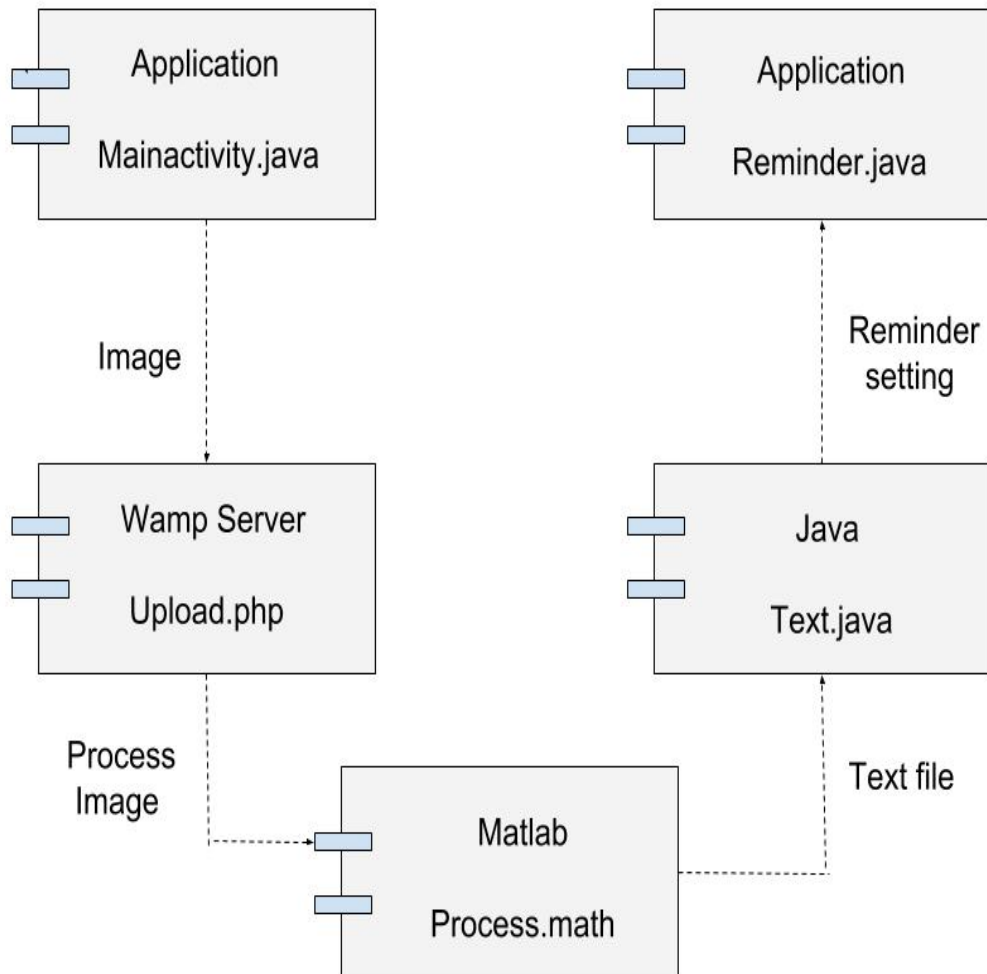## 4.1.2   Component Diagram

Figure 4.2: Component Diagram of Poster Recognition With Calender Integration

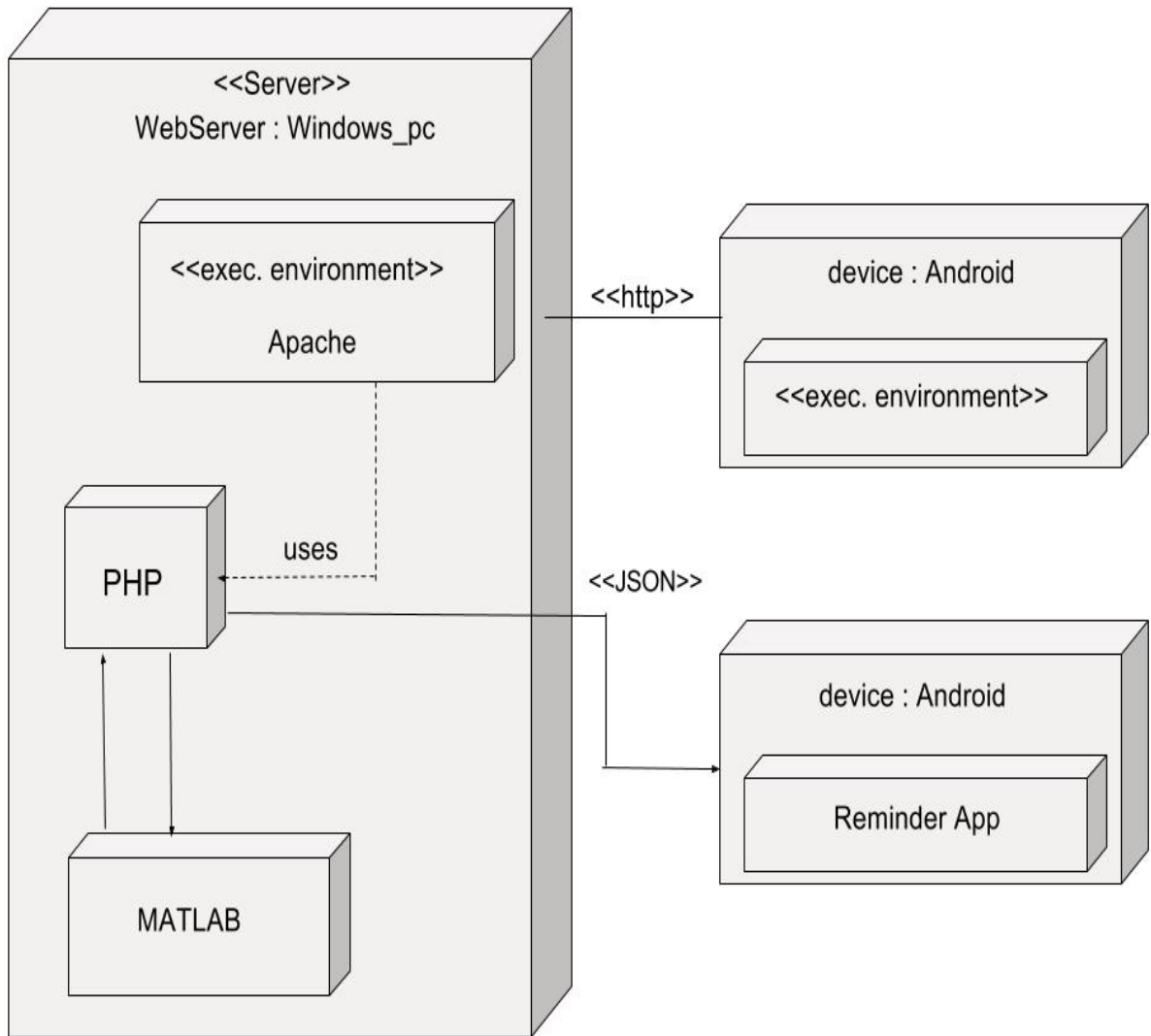### 4.1.3 Deployment Diagram

Figure 4.3: Deployment Diagram of Poster Recognition With Calender Integration

4.2   Work-flow Design
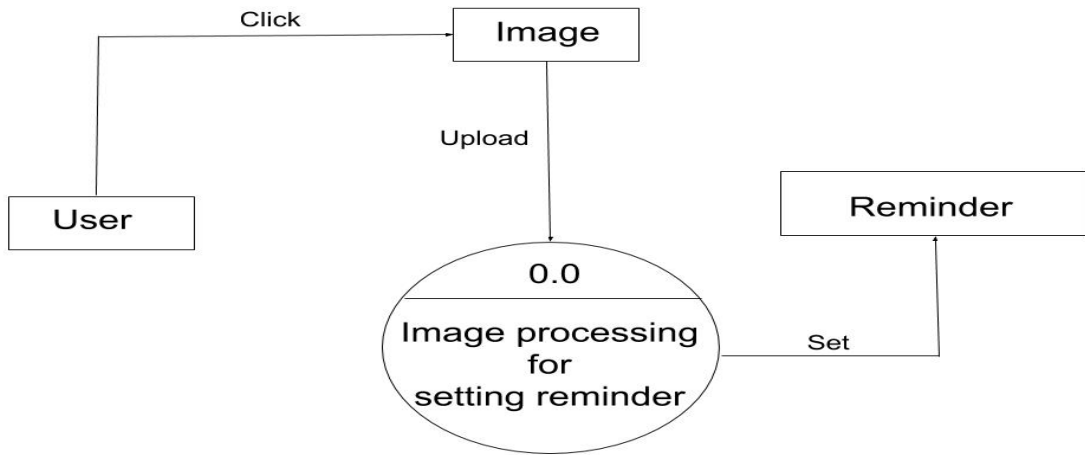
4.2.1   Flow Diagram

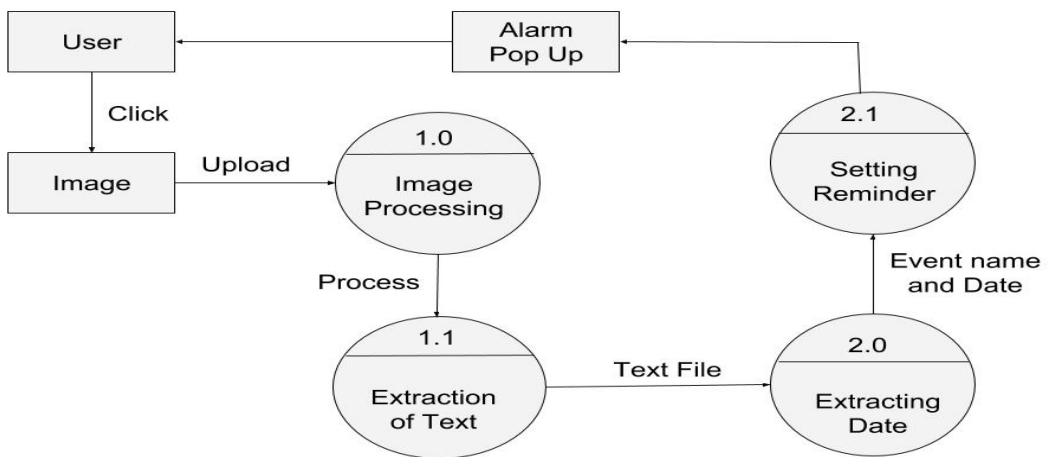Figure 4.4: Level 0 DFD of Poster Recognition With calender Integration

Figure 4.5: Level 1 DFD of Poster Recognition With calender Integration

Chapter 5

Implementation Details

5.1   Assumptions And Dependencies

5.1.1   Assumptions

The following Assumption was taken into consideration:

- In our project, we have assumed that our algorithm will detect the images with complex background and text with different font style and with diverse text patterns. The image is sent to the server and the algorithm will run on the server and it will extract all the text from the image and it will return a text file. Once the text file is generated the java program is run which will give only the title name and the event date from the extracted text file. We assumed that the accuracy of our algoritm will be achieve upto 65 percent.

5.1.2   Dependencies

The dependencies are as follows:

- For backend processing, Matlab, Java and Wampserver is used. The backbone structure of the system is developed in matlab. In matlab we are extracting the text from the image.The extracted text is sent to java for extraction of further data. In Wamp Server we are running the matlab by using PHP by exec command. And Json is use to transfer the that data to our android application

5.2 Implementation Methodologies

Different Modules created are image acquisition, image processing, extracted data(event name and event date), and setting reminder. In image acquisition module, the user is taking the image using camera or from the gallery and send it to the sever. In image processing module, the text is detect and extract from the image using matlab and it will generate the text file. In the next module from the extracted text file the event name,event date is extract by using Java. And the that data is sent to the application using Json.

5.2.1 Modular Description of Project

5.3 Detailed Analysis and Description of Project

Image acquisition Module: In this module, the user will click the image using in buid camera in device or can select the image from the gallery. The image first displayed in one activity screen where user can see that image and then he will click on load image button to upload that image to the server for further processing.

Image Processing Module: When the image is sent at the sever, we transfered that image to matlab using PHP using exec command. Matlab will work in background. In image processing there are two main jobs are done, first is text detection and another is text recognition. Text detection and recognition is done using different algorithms in matlab. After that matlab will generate the text file which contain extracted text contains from the image.

Extracting specific data: The text file come to the server which contain all extracted text from the image. Then in third module, we use one java program to extract the event name, event date from that text file. And this extracted information is sent to the reminder application using Json.

Setting reminder: In this module, by using that date we are setting the reminder in our device. And the notification will be pop up automatically reminding the user about the particular event.
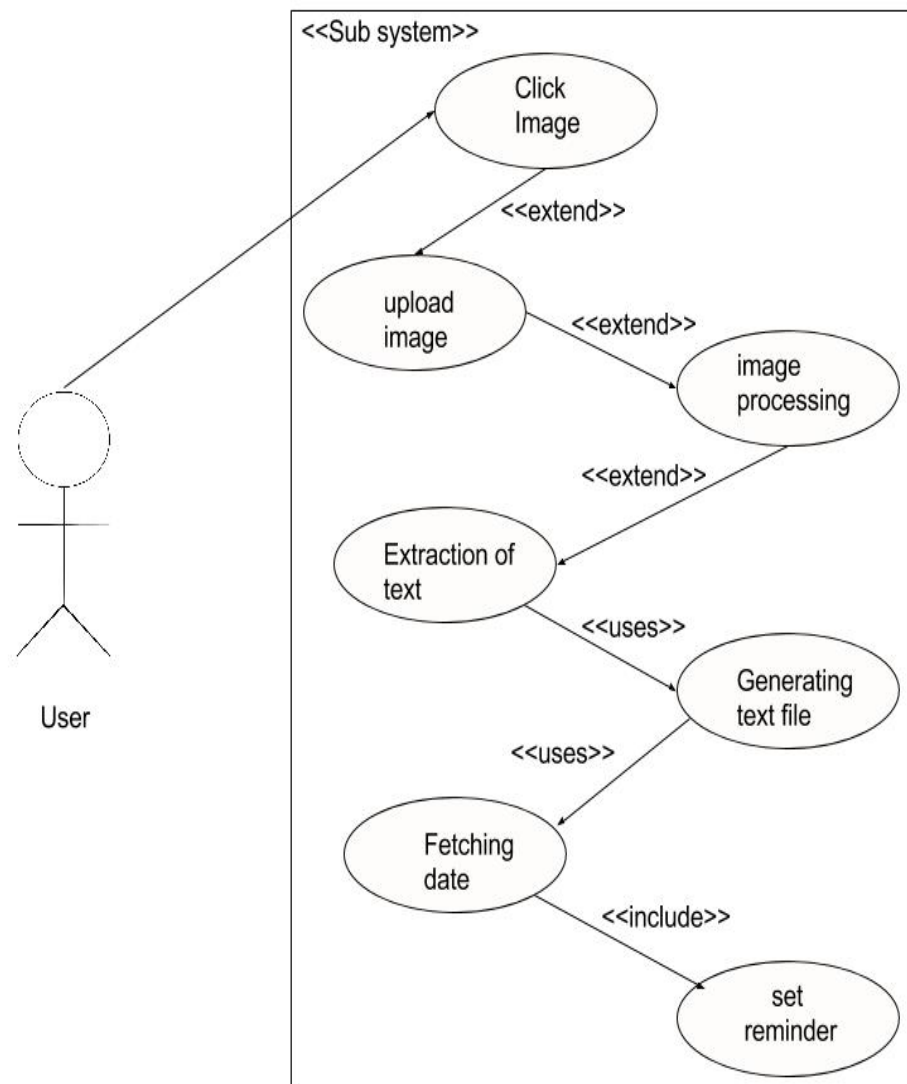
Figure 5.1: Usecase Diagram

5.3.1 Usecase Report

Title:	Poster Recognition With Calender Integration
Description:	Poster Recognition With Calender Integration, we have one android device by which the user can take a image. Then this image is send to the sever for further processing. At the server side the image is stored in a one perticular directory in wampserver. Also at server side we have run one php file, in this php file we have use exec command to run matlab remotely. All processing of matlab is done in backgound.That image is process by using different image processing algorithms. After processing an image Matlab will create one text file in which extracted text is present. Then we run one java file to extract the event name and event date from that text file. And then we transfer that event name and event date to the android application using Json. And then the reminder application is run to set the reminder of the curresponding event name and date
Primary Actor:	User
Preconditions:	User has to open the application
Post conditions:	User has to select or click the image
Main Success Scenario:	1. User can select any image from device. 2. Algorithm will extract the text from simple as well as from complex background 3. It will achieve the accuracy upto 60 percent
Frequency of Use:	User can use any number of time
System Requirement:	User should be connected to the internet

Table 5.1: Usecase Report

Chapter 6

Results and Discussion

6.1 Test cases and Result

We have tested our android application by considering following test cases:

6.1.1 Unit Testing

In computer programming, unit testing is a software testing method by which invidual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine weather they are fit for use.

Ideally, each test case is independent from the others. The goal of unit testing is to isolate each part of the program and show that the invidual parts are correct.

6.1.2 Functional Testing

Functional testing is a quality assurance process and a type of black-box testing that bases its test cases on the specifications of the software component under test. Functions are tested by feeding them input and examining the output, and internal program structure is rarely considered. Functional testing usually describes what the system does.

Fumctions testing does not imply that you we are testing a function of module or class. Functional testing tests a slice of functionality of the whole system.

Figure 6.1: Splash Screen

Figure 6.2: Front Screen
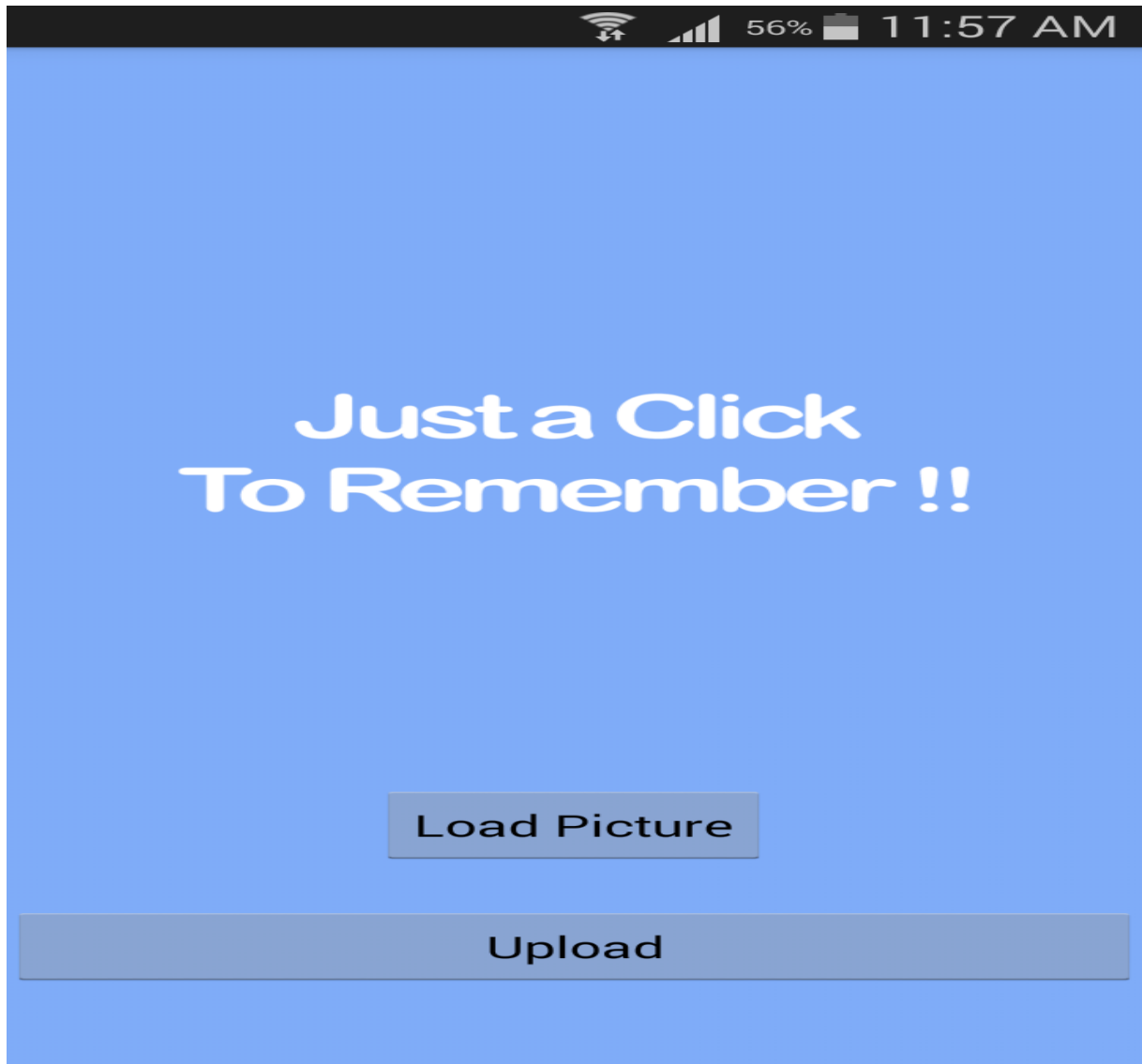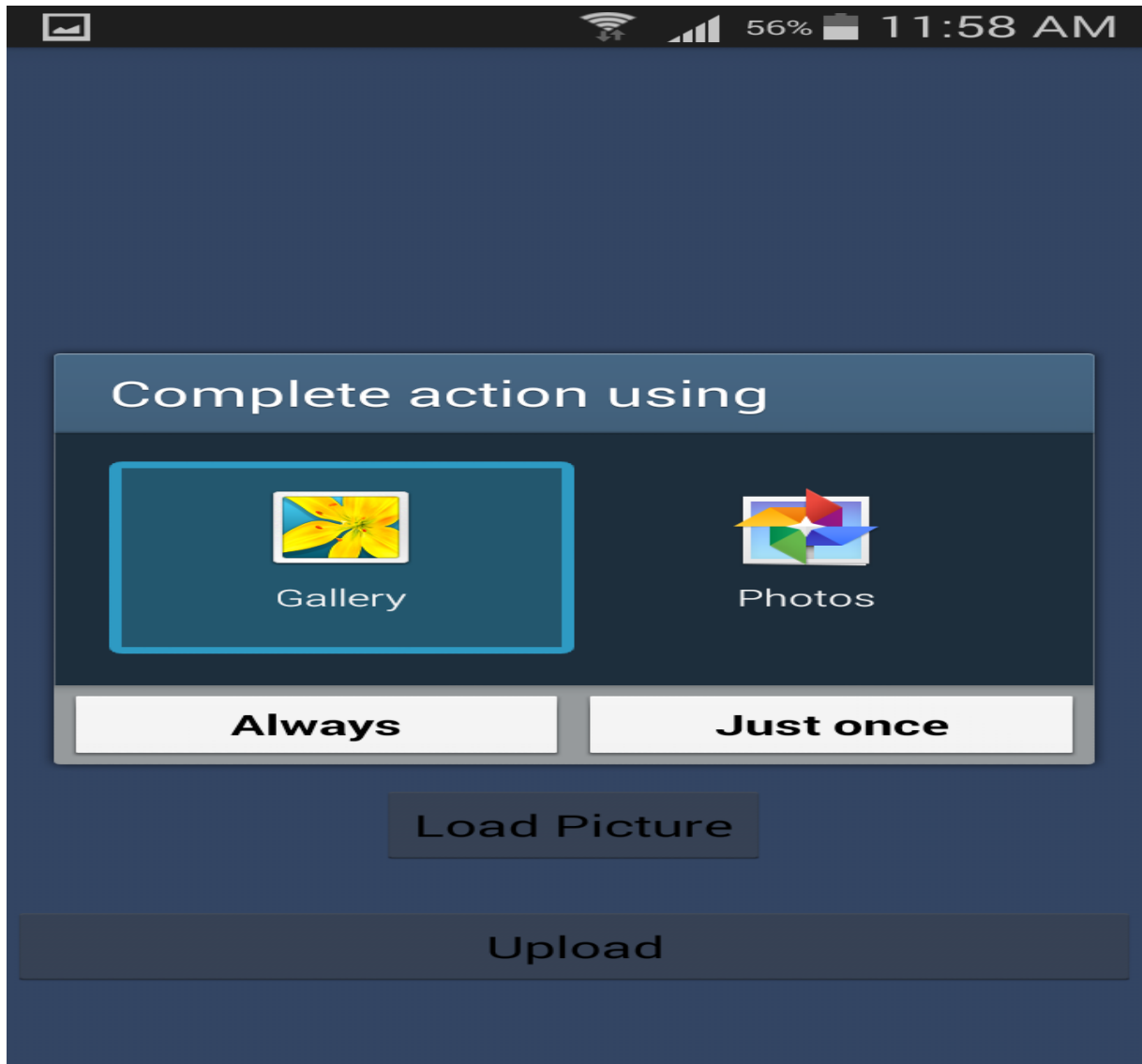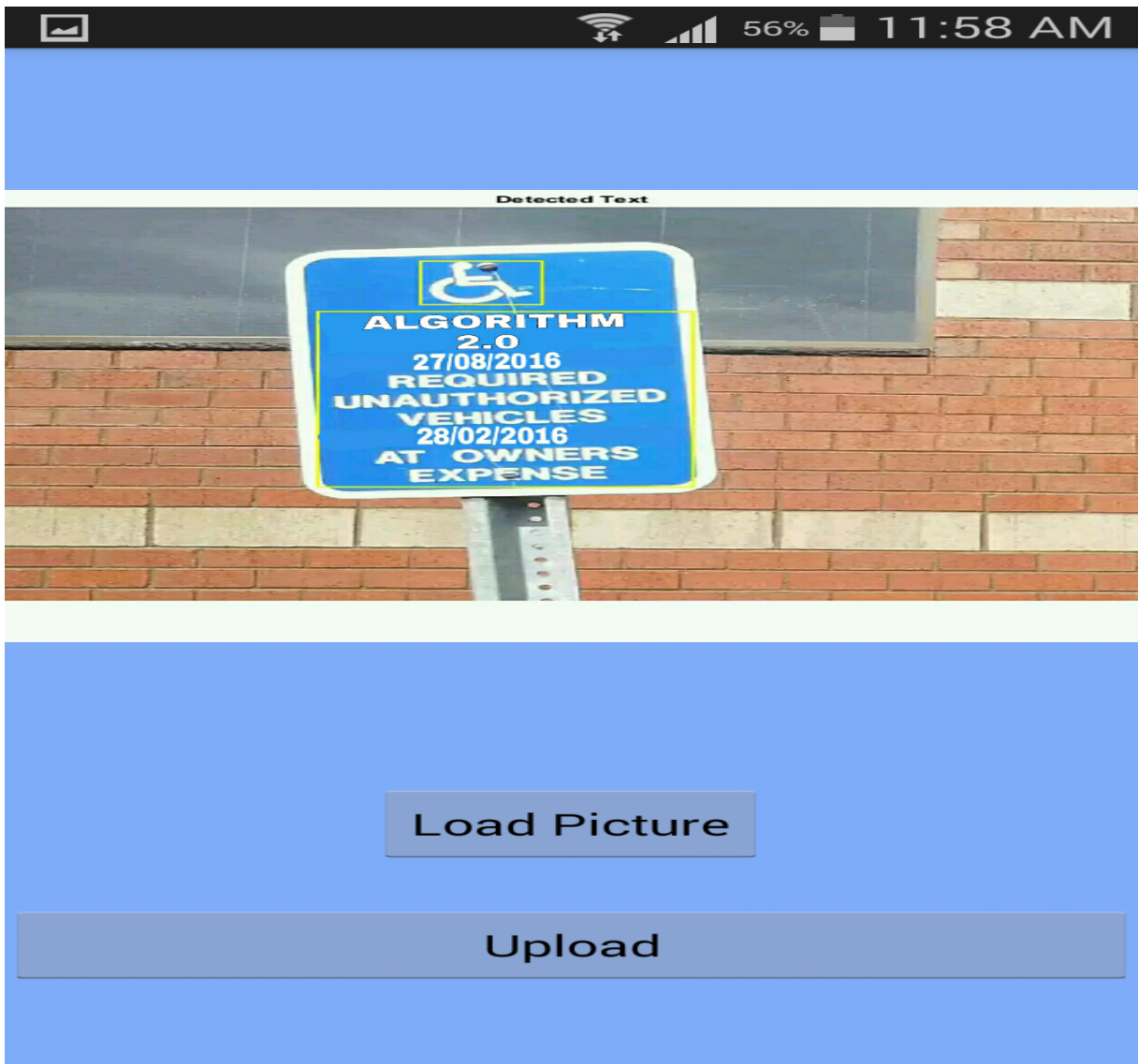
Figure 6.3: Selecting Image
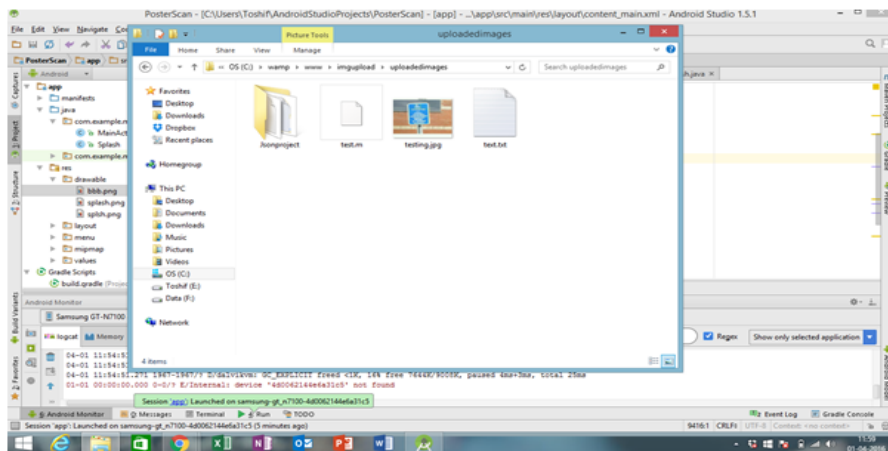
Figure 6.4: Image On Activity Screen
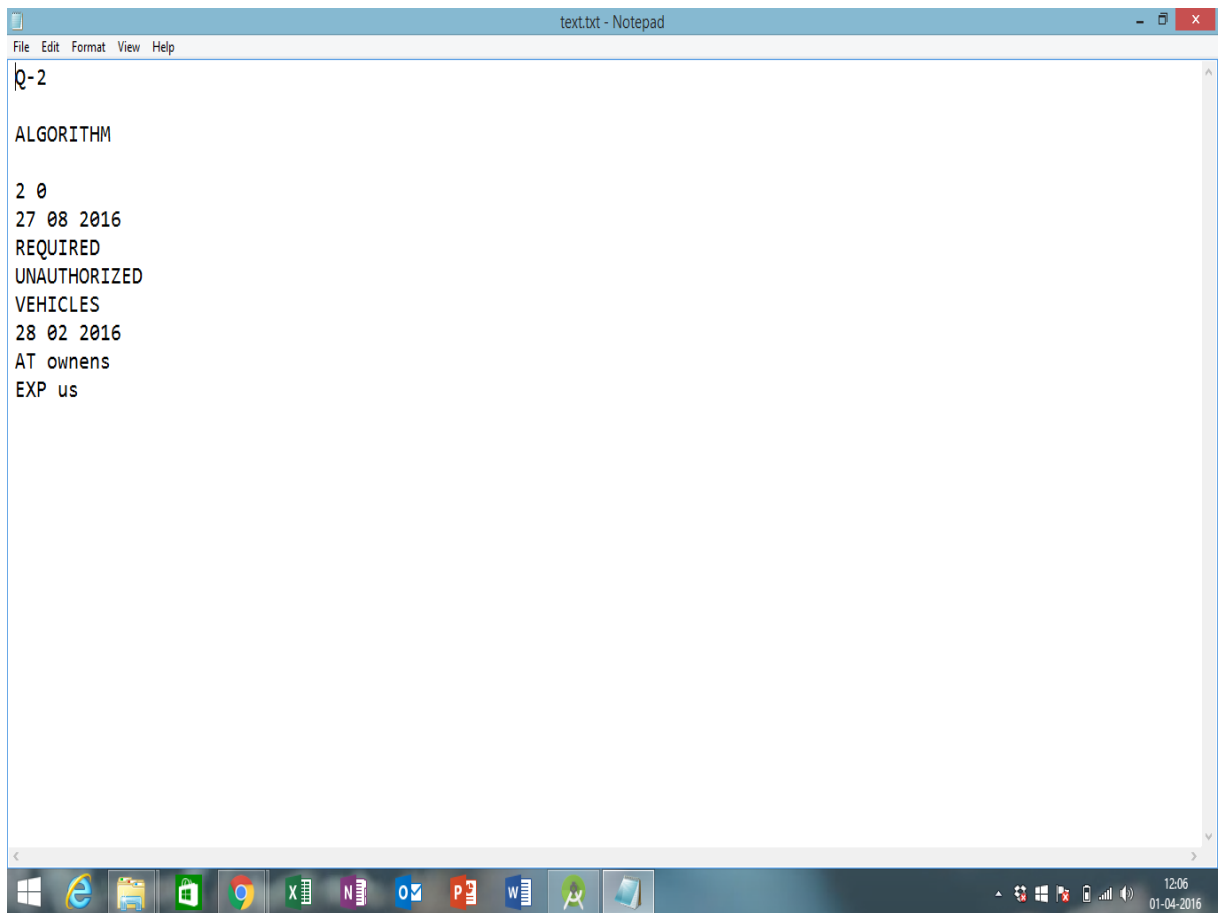

Figure 6.5: Image on server

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Figure 6.6: Extracted Information(Text file)
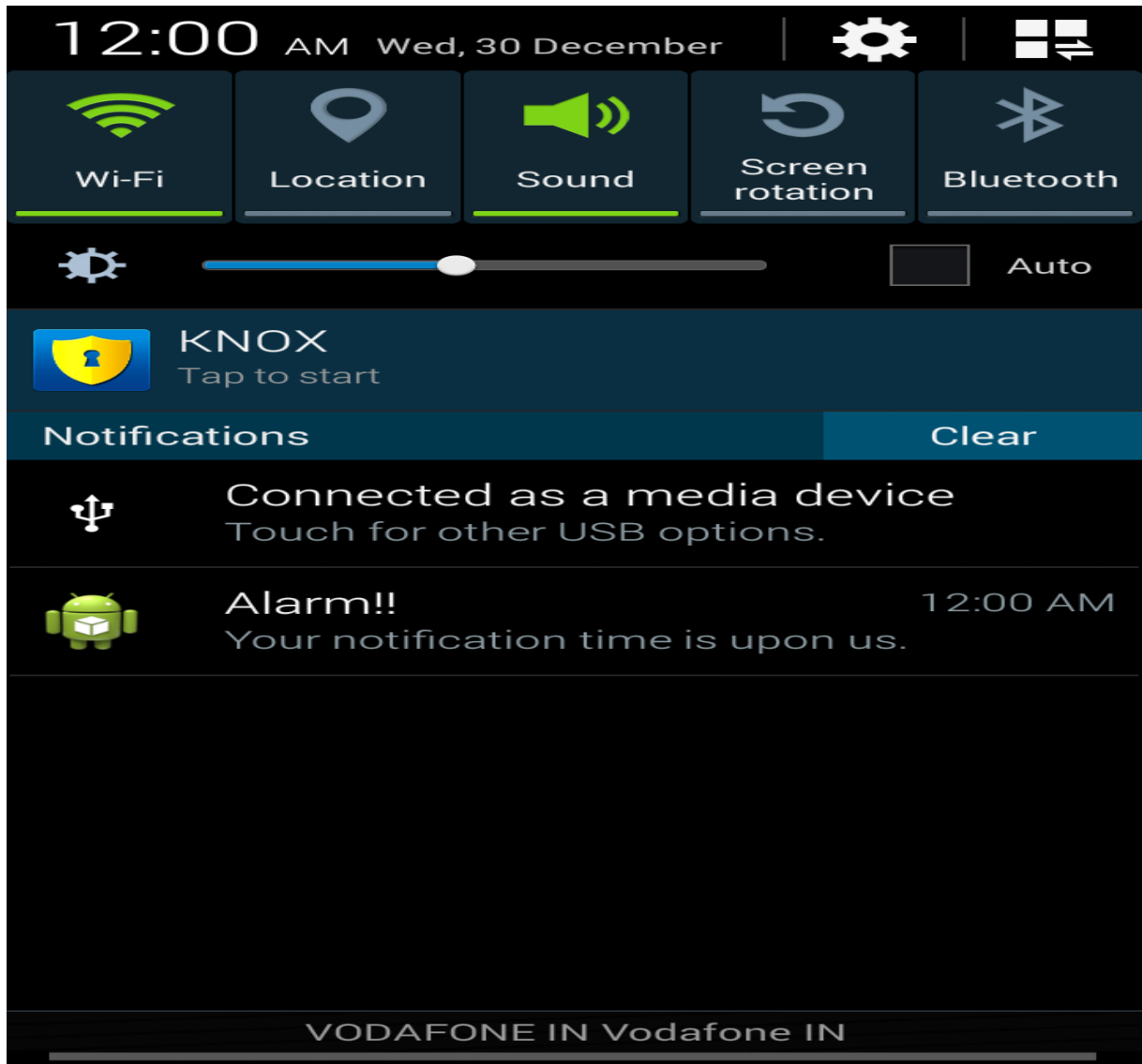
Figure 6.7: Reminder

Chapter 7

Project Time Line

7.1 Project Time Line Matrix
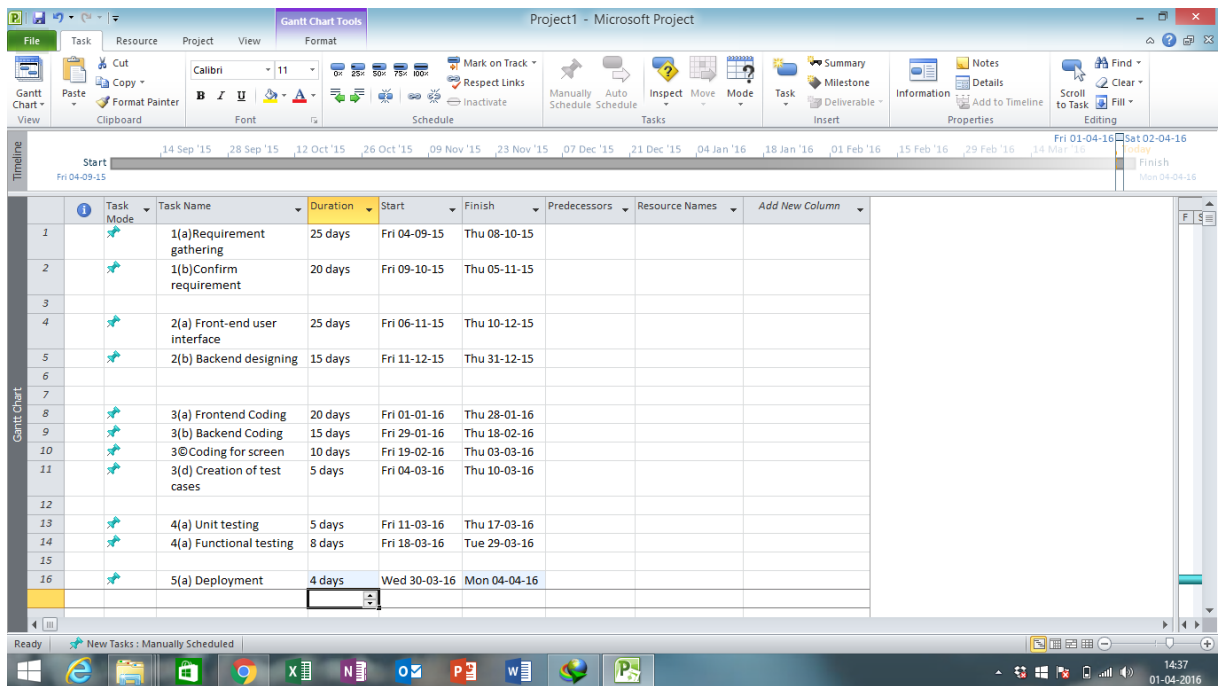
Figure 7.1: Time Line Matrix

7.2 Project Time Line Chart
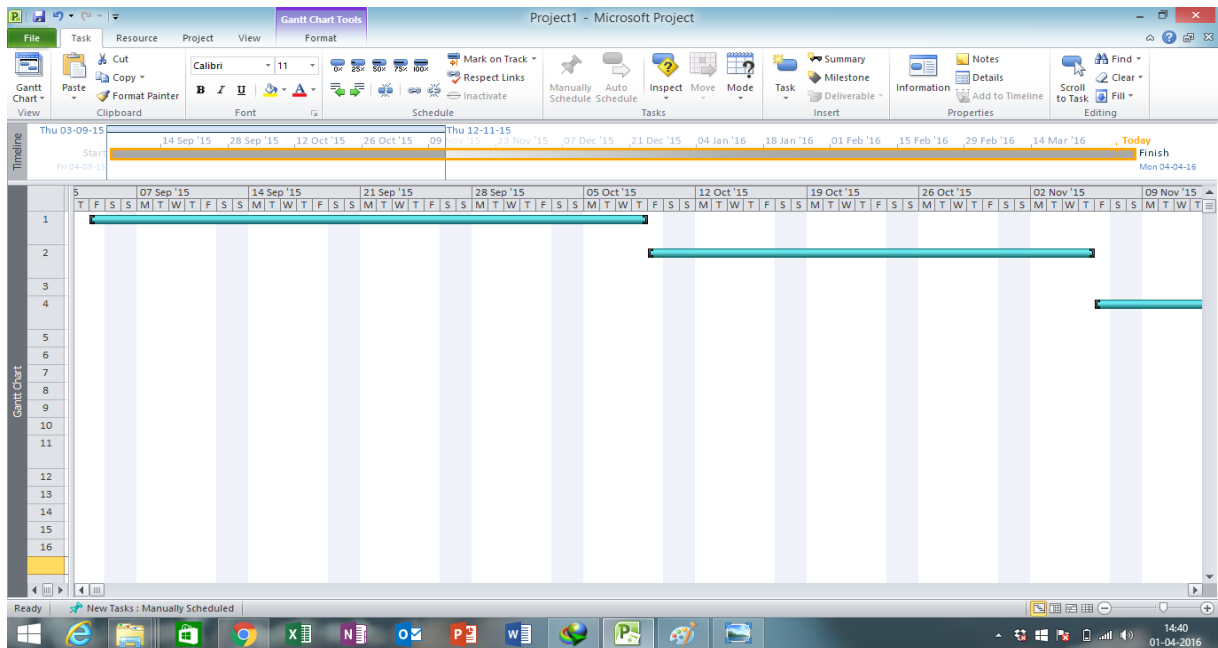
Figure 7.2: Time Line Chart
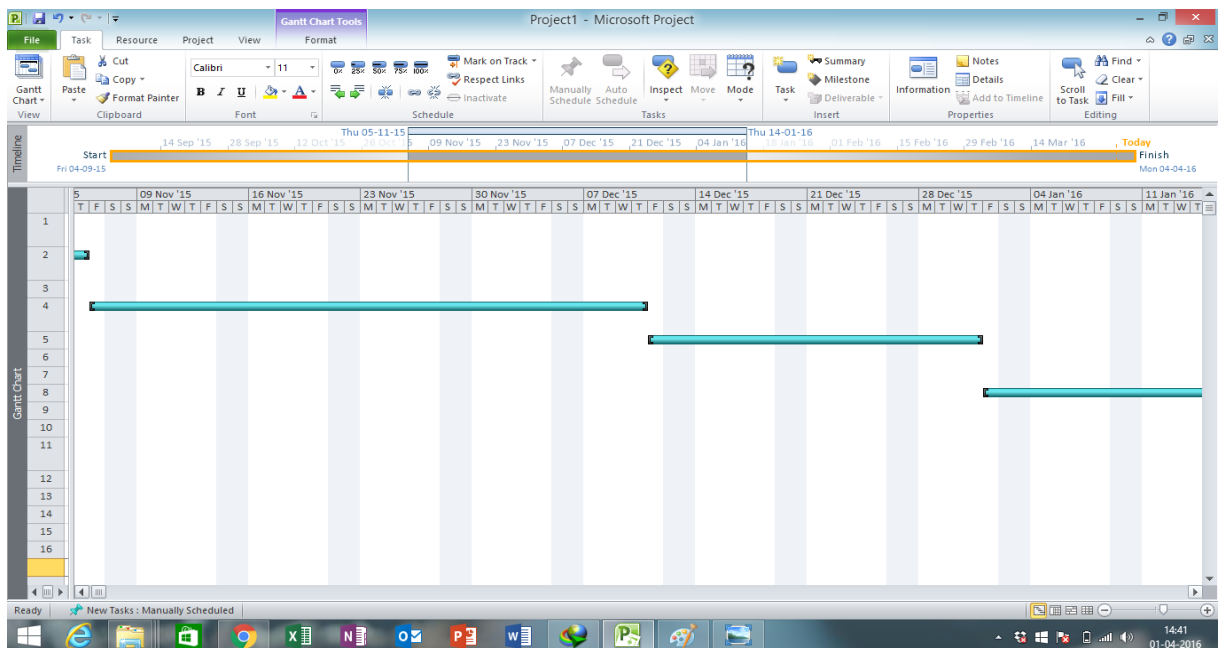
Figure 7.3: Time Line Chart
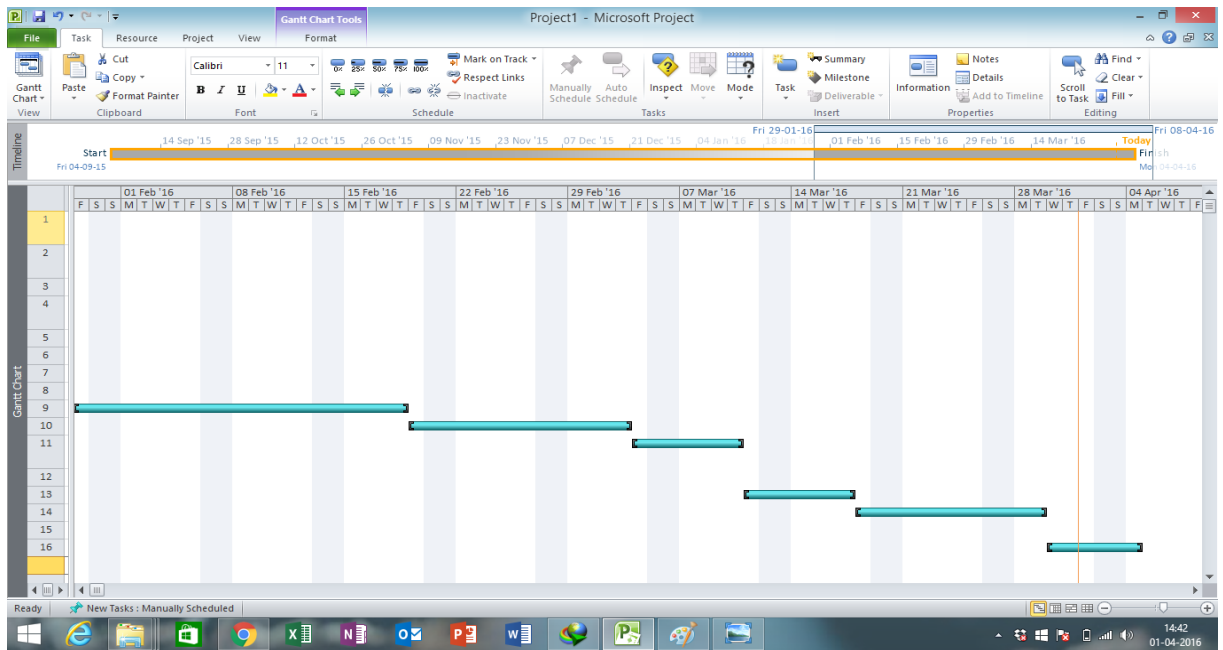
Figure 7.4: Time Line Chart

Chapter 8

Task Distribution

8.1 Distribution of Workload

8.1.1 Scheduled Working Activities

Activity	Time Period	Comment
Requirement Gathering	45 Days	Requirement gathering has took placed through searching on internet and taking the ideas, sharing the views among group members.
Planning	25 Days	Planing has done by Reviewing of literature of IEEE papers and by taking the walkthrough.
Design	15 Days	Designing has done by creating UML diagram, By creating Charts.
Implementation	50 Days	Implementation has done First creating the backend and then front end module by module.
Testing	13 Days	Testing has done by perfoming unit testing, functional testing.
Deployment	04 Days	Deployment has done by integrating all the modules.

Table 8.1: Scheduled Working Activities

8.1.2 Members actvities or task

Member	Activity	Time Period	Start Date	End Date	Comment
M1, M2, M3, M4	Requirement Gathering	20 Days	04/09/15	01/10/15	M1 and M2 has perfomed the seaching for project requirement on the internet by reviewing the related literature and by anlysing the related prject which is already available in the market. Regularly inform to the other member of team.
M1, M2, M3, M4	Analysing of the requirement	15 Days	02/10/15	22/10/15	M1, M2, M3, M4 done the requirement analysing of project by sharing the ideas, and by discussing on related information which is gather by the M1, And M2. M3 and M4 has created the list of requirement after every meeting
M1, M2, M3, M4	Finalysing the requirement	10 Day	23/10/15	05/11/15	Whole team finalize the requirement. M1 and M4 has created a list of finalise requirement.
M1, M2, M3, M4	Planning	15 Days	06/11/15	26/11/15	Planning has done by walkthrough and by analysing the available product. M2 and M3 creats a list of funtion which will be implement in the project. Each and every module were discuss in every group meeting and M1 and M2 creates a blue print for project .

M1, M2	Front End design	10 Days	27/11/15	10/12/15	M1 and M2 creates the UML diagram for front end of the system and data flow diagrams and informed to the whole team regularly.
M3, M4	Back End design	15 Days	11/12/15	31/12/15	M3 and M4 creates the UML diagram for back end of the system and data flow diagrams and informed to the whole team regularly.
M3, M4	Installation of tools and tech- nology for front end	5 Days	01/01/16	07/01/16	M3 and M4 installed the all the require tools which is use for front end design.
M1, M2	Installation of tools and technol- ogy for back end	5 Days	08/01/16	14/01/16	M3 and M4 installed all the require tools which is use for back end de- sign.
M3, M4	Implementation of GUI	5 Days	15/01/16	21/01/16	M3 and M4 creates the GUI of the project and informed to other mem- ber.
M1	Image acquisi- tion	02 Days	22/01/16	25/01/16	M1 and M2 done the image aquisition part.
M2	Sending image to server	03 Days	26/01/16	28/01/16	M2 implemented the part realated to sending image to server.
M1,M2	Image Process- ing	10 Days	29/01/16	11/02/16	M1,M2,M3,M4 all done the imple- mentation of image processing algorithm.

M3, M4	Program implementation to run matlab from sever	3 Days	12/02/16	16/02/16	M3 and M4 done the implementation to run matlab from server.
M1, M2	Extracting date from text file	2 Days	17/02/16	18/02/16	M1 and M2 created a java program to extract the date from text file.
M3, M4	Sending data through Json	2 Days	19/02/16	22/02/16	M3 and M4 done the work realated to sending image back to server.
M1, M2	Implementation of Reminder	03 Days	23/02/16	25/02/16	M1, M2, M3, M4 all done the implementation of reminder.
M3, M4	Integration of all modules	10 Days	26/02/16	10/03/16	M3 and M4 integrate all the modules together.

M1,M2	Unit testing	5 Days	11/03/16	17/03/16	M1 and M2 performed the unit testing and noted down results and discuss with other member of team.
M3, M4	Functional testing	8 Days	18/03/16	29/03/16	M3 and M4 performed the functional testing and noted down results and discuss the result of testing with other member.
M1, M2, M3, M4	Deployment	4 Days	30/03/2016	04/04/2016	M1,M2,M3,M4 done the deployment of project.

Table 8.2: Member Activities and Task

Chapter 9

Conclusion and Future Scope

9.1 Conclusion

In our project, we have send the poster image to the server. This image will process in the matlab application and it will detect and extract the text from that image. In particular we are extracting the event name and event date from that text and send back to our android application. Then reminder will automatically get set in the android device. By using this application for any event of poster this application will automatically set the reminder for that particular date. And all the processing is done in the background. So this application is become useful for any type of user.

9.2 Future Scope

In the future, we will work on this project and try to increased the accuracy of text detection and recognition algorithm. We also try to develop a new algorithm so it can easily detect the text from different complex background also and having different fonts. Also we trying to add sharing feature in the system. In this, if one particular user take the snap of that poster than he can share that snap with another user which having the same application. In this proposed system we are working on horizontally aligned text only. And in future we will try to work for the text which is in verical manner. As our system will detect and extract the text which is english language, so we can extend this project which will work other languages such as Marathi, Hindi etc.

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Chapter 10

Own Publication

Khan Almustafa Jamaluddin, Pirosh Toshif Abdul Rahim, Sayed Mohd. Ayjaz Abdul Razak, Shaikh Mohammed Arif Md Hanif *A Survey on Poster Recognition with Calendar Integration* IJIRCCE International Journal of Innovative Research in Computer and Communication Engineering Vol. 3, Issue 11, November 2015

A Survey on Poster Recognition with Calendar Integration

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ABSTRACT: Textual information is very much important as far as concerned with todays era of developing technologies. Text that is residing in the pictures can convey important information. Extracting that text from natural images or images of posters is a challenging concept, because the background of the image can be complex or the image can contain the text which is in diverse pattern. Students in colleges have many events. So it is difficult for them to remember the dates and events. This paper proposes a method of extracting the text from the images and utilizing the extracted text information to set a reminder of a day before the scheduled event.

KEYWORDS: Text detection, Text Recognition, Character Descriptor, Stroke Configuration.

I. INTRODUCTON

Text from camera of devices gives information which serves as effective tags or clues for many mobile applications associated with media analysis, content retrieval, scene understanding, and assistant navigation. Natural scene images and videos or strings that are appearing on various hand held objects provides significant knowledge about the environment and the objects. Now-a-days text-based tags are much more applicable than barcode, because the latter techniques contain limited information and require pre-installed marks for checking of information.

In our proposed idea, basically the text is being extracted from the images of posters that serve the input to the application. The extracted text from the poster's image would contain title of the event, date and venue of the same. After the extraction of text, the date information is used to set the reminder of a day before the scheduled event. Therefore the main task of the application is to get an image of the poster as an input and process it for the extraction so as to get full information about the event.

The processing of image mainly includes text extraction. To extract text by mobile devices from the images of posters, efficient text detection and recognition algorithms are essential. However, extracting text from the images is quite challenging task due to two main factors:
1) Cluttered backgrounds with noise and non-text outliers.
2) Diverse text patterns such as character fonts, size, etc.
A limited number of characters are embedded in complex background. Also sometimes the text is not in proportion with respect to fonts and size. Text consists of different fonts, size, style which gives large varieties of text patterns. To overcome this problem, we divide the text extraction process into two parts, viz. Text detection and Text recognition.
Text detection basically means localizing the regions in the image where text character and strings are present. The main aim of text detection process is remove non-textual background from the image. Text recognition means to transform the pixel-based text in the image to readable code.
For text detection and recognition we are going to use the proposed algorithm by chucai yi and yingli tian. In text detection we have pixel based layout analysis which is used to extract the text region and separate out the characters in poster image. Now, the extraction is based on color uniformity and horizontal alignment of text characters. In text recognition process we will use two schemes of text recognition. The first one is to order the character recognizer to predict the category of a character in an image patch. The second one is training a binary character classifier that will

take each character class to predict the existence of the same category in an image patch. Basically these two things come under text understanding and text retrieving. Text understanding means to detect whether the image actually contains text information and text retrieval means to verify whether a piece of text information exists in natural scene.

In text recognition process, we have character descriptor and stroke configuration that are designed to model character structure and compute discriminative character features. A character descriptor is used to compare the structure of text characters to extract discriminative features from character patches. The proposed method combines text detection and text recognition algorithm for processing of the image for text extraction. The main aim of this proposed idea is the image processing work and then followed by integration with the calendar for setting up the reminder. As the method is being designed for android application, setting up for reminder part would be integrated with the system application of the device.

II. RELATED WORK

Text recognition is still an open topic for the developers and researchers. In the Robust Reading Competition of International Conference on Document Analysis and Recognition (ICDAR) 2011, the best word recognition rate for images was only about 41.2%.

In natural images the text composed of cross cuttings, stroke variation which are in same colors and multiple orientations, but they are effected by some color distortion, complex background, etc. The text characters from various categories are distinguished by the shape of boundary and the skeleton structure, which helps in designing the recognition algorithm. Currently Optical Character Recognition (OCR) system is more accurate for recognizing the text from the scan or printed document, but cannot recognize the text from the natural images with different text fonts and complex backgrounds.

III. QUANTITATIVE EXPERIMENTAL ANALYSIS

Poster text extraction consists of text detection and text recognition. However, the main technical contributions of this paper are the two scene character recognition schemes compatible with mobile applications. We perform experiments to evaluate the two schemes over benchmark datasets.

Datasets:
To evaluate the proposed character descriptor and the character stroke configuration, we employ three public datasets of scene text characters, in which we conduct scene character recognition. The first one is Chars 74K Image Dataset. It contains all the 62 character classes with the approximately balanced number of samples. It captures 96 camera-based signs with 1209 scene characters. Most of the characters appear in regular font and style consistent with documents. ICDAR-2003 Dataset is very challenging because large amounts of non-text background outliers interfere with the roped character samples, and many character samples have a small size that does not have enough resolution for recognition. In Sign Dataset and ICDAR-2003 Dataset, the number of character samples from different categories is unbalanced.

Poster character recognition for text understanding:
Text Recognition means recognizing the text from any natural images .Text in the images may be in different languages due to this recognizer may assign different labels to identical characters. Instead of comparing characters directly to a model, directly comparing characters to each other, helps ensure that similar instances receive the same label. The undertaking of character acknowledgment in normal scenes is identified with issues considered in camera-based report examination and acknowledgment. A large portion of the work in this field depends on finding and amending the content zone.

Scene character recognition for text retrieval:
The proposed character structure modelling is applied to extract structure features from stroke configuration of the characters to learn a binary classifier for each character class. We evaluate these binary classifiers by queried character classification in the above three datasets. After the understanding of text, characters of text are compared to the datasets available in the system. Text characters are then extracted with the help of datasets.

Reminder of extracted date:

After the extraction of text information, reminder of a day before is set in the smart phone. In our proposed system, we will integrate the reminder application of the smart phone with the application that is going to develop. With the help of extracted date, reminder of a day before is set in the system application.

IV. CONCLUSION AND FUTURE WORK

This paper presents fast and accurate algorithm that enables us to detect most characters from the images of posters with simple as well as complex backgrounds and set reminder of a day before the event date which is compatible with mobile application. It detects text regions from the images and extracts text from the detected regions by using efficient algorithms. This paper proposes algorithms that we are going to use to develop the application and the mechanism of setting the reminder with the extracted information. Demo system of text extraction has been developed. The demo system demonstrates the effectiveness of our proposed method in blind-assistant applications, and it also proves that the assumptions of color uniformity and aligned arrangement are suitable for the captured text information from natural scene. In future work, we can improve the accuracy of the system by developing much efficient algorithms.

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Chapter 11

Appendix I

11.1 What is Matlab?

MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and fourth-generation programming language. A proprietary programming language developed by Math-Works, MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++, Java, Fortran and Python.

11.2 What is Json?

JSON (JavaScript Object Notation) is an open-standard format that uses human-readable text to transmit data objects consisting of attributeâ"value pairs. It is the most common data format used for asynchronous browser/server communication (AJAJ), largely replacing XML which is used by AJAX.

JSON is a language-independent data format. It derives from JavaScript, but as of 2016 code to generate and parse JSON-format data is available in many programming languages. The official Internet media type for JSON is application/json. The JSON filename extension is .json. JSON grew out of a need for stateful, real-time server-to-browser communication without using browser plugins such as Flash or Java applets, which were the dominant methods in the early 2000s.Though JSON is commonly perceived as being a subset of JavaScript and ECMAScript, it allows some unescaped characters in strings that are illegal in JavaScript and ECMAScript strings.

ACKNOWLEDGMENT

We would like to take the opportunity to express our sincere thanks to our guide **Prof. Mubashir Khan**, Assistant Professor, Department of Computer Engineering, AIKTC, School of Engineering, Panvel for his invaluable support and guidance throughout our project research work. Without his kind guidance & support this was not possible.

We are grateful to him for his timely feedback which helped us track and schedule the process effectively. His time, ideas and encouragement that he gave his help us to complete our project efficiently.

We would also like to thank **Dr. Abdul Razak Honnutagi**, AIKTC, Panvel, for his encouragement and for providing an outstanding academic environment, also for providing the adequate facilities.

We are thankful to **Prof. Tabrez Khan**, HOD, Department of Computer Engineering, AIKTC, School of Engineering, Panvel and all my B.E. teachers for providing advice and valuable guidance. We also extend our sincere thanks to all the faculty members and the non-teaching staff and friends for their co-operation. Last but not the least, We are thankful to all our family members whose constant support and encouragement in every aspect helped us to complete our project.

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