

**A PROJECT REPORT ON**

**AUTOMATED B2C  
MARKETING**

**BY**

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**AT**



**DEPARTMENT OF COMPUTER ENGINEERING**

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# **CERTIFICATE**

This is to certify that the project report entitles  
**“AUTOMATED B2C MARKETING”**  
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is a bonafide work carried out by Students under the supervision of Prof.Vikas Kolekar and it is submitted towards the partial fulfillment of the requirement of Bachelor of Engineering (Computer Engineering).

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# **PROJECT APPROVAL SHEET**

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## **ABSTRACT**

Now days Social Media like Facebook, Twitter and many more playing key role in advertising. Business-to-consumer marketing (B2C Marketing) focuses on companies sales operations ,i.e.: creating, advertising, and selling products for customers to use in their everyday lives. Consumers are usually looking for content, entertainment, and connections. So the biggest problem while designing this advertising is content creation. Automated B2C Marketing system provides solution to this problem by generating content based on object detected in image that user wants to post. Other feature like Creating new Marketing Campaign, Analyzing ongoing campaign, Monitoring it are also provided. It provides the customer, a single platform through which executing campaigns on different social media is possible and also analyzing them based on likes and comments. The main objective behind this platform is to help the marketer to frame proper, appealing context by embedding popular hashtags to the post and creating, analyzing multiple marketing campaigns at once and reporting the results to the marketers.

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At last I must express my sincere heartfelt gratitude to all the staff members of Computer Department who helped me directly or indirectly during this course of work.

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# **Chapter 1**

## **Synopsis**

## 1.1 PROJECT TITLE

Automated B2C marketing

## 1.2 PROJECT OPTION

This project is a part of Digital marketing and Sponsored by Global Super Elite.

## 1.3 INTERNAL GUIDE

Prof. Vikas Kolekar

## 1.4 SPONSORSHIP AND EXTERNAL GUIDE

Mr. Rohit Shah and Ms. Shivika Agarwal

## 1.5 TECHNICAL KEYWORDS (AS PER ACM KEYWORDS)

1. B2C Marketing
2. Object Detection
3. Darknet
4. Imagenet
5. Graph API
6. Sentimental Analysis
7. Social media Content Creation
8. Monitoring campaigns

## 1.6 PROBLEM STATEMENT

To create a B2C Marketing Platform for executing multiple marketing campaigns on various social media effectively and also analyse their reach within the customers. Also to help the marketer to frame proper content for his social media posts.

## 1.7 ABSTRACT

Now days Social Media like Facebook, Twitter and many more playing key role in advertising. Business-to-consumer marketing (B2C Marketing) focuses on companys sales operations ,i.e.: creating, advertising, and selling products for customers to use in their everyday lives. Consumers are usually looking for content, entertainment, and connections. So the biggest problem while designing this advertising is content creation. Automated B2C Marketing system provides solution to this problem by generating content based on object detected in image that user wants to post. Other feature like Creating new Marketing Campaign, Analyzing ongoing campaign, Monitoring it are also provided. It provides the customer, a single platform through which executing campaigns on different

social media is possible and also analyzing them based on likes and comments. The main objective behind this platform is to help the marketer to frame proper, appealing context by embedding popular hashtags to the post and creating, analyzing multiple marketing campaigns at once and reporting the results to the marketers.

## 1.8 GOALS AND OBJECTIVES

1. The main aim of our platform is to help the marketer to create and analyze marketing campaigns on various social media. For that, a choice has to be made of multiple social media websites such as Twitter and Facebook, to execute campaigns on.
2. It is a platform that enables companies and brands to manage and coordinate the advertising campaigns by cross-channel execution.
3. This platform thereby helps to increase the company's revenue and analyzing and optimizing this entire marketing campaign To help the marketer in decision making by providing an interactive dashboard which gives analytic information for decision making.
4. Normally, techniques require a lot of data to find any decision. But these tools provide knowledge by using lightweight statistical tools for most parts and also Reinforcement learning for social media marketing.
5. To provide one more facility of Data Visualization through Graphs. Analytical data from all the social media can be fetched to provide visualization of data. These visualization is of very high spectrum.
6. There are low level analysis spectrum like number of Likes, Comments and Shares (On Social media). And also medium level like analyzing the comments using simple sentiment analysis and high level tools which include fetching the exact demographics and displaying it on a easy to understand Dashboard.

## 1.9 RELEVANT MATHEMATICS ASSOCIATED WITH THE PROJECT

Let S be the solution for the Smart B2C Communicator

$S = \{s, e, i, o, f, DD, NDD, \text{success}, \text{failure}\}$

$s = \{\text{Initial state i.e. Welcome Page}\}$

$e = \{\text{End state i.e. Executing Marketing Campaign}\}$

$i = \{\text{Input of the system ie. Budget, Audience Targeting Details, etc.}\}$

$o = \{\text{Output of the system ie. Analyzed chart.}\}$

$DD = \{\text{Deterministic data: It helps in filtering out the results.}\}$

$NDD = \{\text{Non deterministic data: Data of the system S to be given as output}\}$

$f = \{\text{audience\_targeter}(), \text{post\_scheduler}()\}$

$\text{audience\_targeter}() = \{\text{Targets Appropriate client automatically}\}$

$\text{post\_scheduler}() = \{\text{Schedules the posts.}\}$

Success - Required Output is generated

Failure - Incorrect Output is generated.

## **1.10 NAMES OF CONFERENCES / JOURNALS WHERE PAPERS ARE PUBLISHED**

VISHWACON : INTERNATIONAL CONFERENCE

## **1.11 REVIEW OF CONFERENCE/JOURNAL PAPERS SUPPORTING PROJECT IDEA**

REFERRED PAPERS:

1. The impact of social media on consumer behavior Case study Kosovo, Journal of Knowledge
2. Management, Economics and Information Technology, February 2017. Control of exploitationexploration meta-parameter in reinforcement learning, Nara Institute of Science and Technology, 8916-5 Takayama-cho, Ikoma, Nara 630-0101, Japan, 16 April 2002.
3. Multi-armed bandit problems, Mahajan A., Teneketzis D. (2008) in: Hero A.O., Castan D.A., Cochran D., Kastella K. (eds) Foundations and Applications of Sensor Management. Springer, Boston, MA.
4. Media Selection for Marketing Communication - An exploratory study among marketing managers, Claudia A. Rademaker Stockholm School of Economics, Center for Media and Economic Psychology, Nov. 2011.
5. PAC Bounds for Multi-armed Bandit and Markov Decision Processes, Eyal Even-Dar<sup>1</sup>, Shie Mannor<sup>2</sup>, and Yishay Mansour<sup>1</sup> 1 School of Computer Science, Tel Aviv University Tel-Aviv 69978, Israel, October 2002.

## **1.12 PLAN OF PROJECT EXECUTION**

Sr No.	Title	Week
1	Team Building	Week 1.
2	Identification of Problem Statement	Week 2.
3	Synopsis Submission	Week 3.
4	Landing Page Design	Week 4.
5	Static Page Design	Week 5.
6	Database Creation	Week 6.
7	Dynamic Coding	Week 7.
8	Dynamic Linking	Week 8.
9	Validation	Week 9.
10	Deployment	Week 10.
11	Documentation	Week 11.

# Chapter 2

## TECHNICAL KEYWORDS

## 2.1 AREA OF PROJECT

### Digital Marketing

Digital marketing is the marketing of products or services using digital technologies, mainly on the Internet, but also including mobile phones, display advertising, and any other digital medium. Digital marketing methods such as content marketing, content automation, campaign marketing, data-driven marketing, e-commerce marketing, social media marketing, social media optimization, e-mail direct marketing, display advertising are becoming more common in our advancing technology. In fact, digital marketing now extends to non-Internet channels that provide digital media, such as mobile phones (SMS and MMS), callback, and on-hold mobile ring tones. In essence, this extension to non-Internet channels helps to differentiate digital marketing from online marketing, another catch-all term for the marketing methods mentioned above, which strictly occur online.

## 2.2 TECHNICAL KEYWORDS

1. B2C Marketing
2. Object Detection
3. Darknet
4. Imagenet
5. Graph API
6. Sentimental Analysis
7. Social media Content Creation
8. Monitoring campaigns

# **Chapter 3**

## **Introduction**

### 3.1 PROJECT IDEA

- A tool which can handle marketing economically.
- Promoting products and small scale companies without a marketing team.
- Cross Platform application which is able to handle advertisement on different social media.
- Content Creation for effective impact on audience.
- Sentiment Analysis for getting the feedback.

### 3.2 MOTIVATION OF THE PROJECT

- There are no tools to create and help the marketer to create and analyze campaigns on various social media effectively.
- There is no single tool in existence which enables companies and brands to coordinate campaigns across multiple social media platforms.
- Normally, the existing techniques require a lot of data to find any significant pattern to improve marketing campaigns.
- There are no good tools to visualize entire data campaigns and analytical data of social media campaigns.
- For doing even small amount of data analysis about social media significant investment and team of marketers is required which is something small businesses/ companies/ shops cannot afford. Now this makes businesses to focus more on their products/services.
- Finding the proper hashtags related to your content plays a very important role as these social media (specially Instagram, Twitter) target people according to a specific hashtag. So, embedding popular hashtags to the post can help the post reach a larger range of audience much easily.
- For bigger social media handles, where there is a lot of traffic, there can even be thousands of comments per hour. There is a requirement of automated tool.
- There is a need for a proper Data Visualization and Reporting tool for Decision making that would be the most optimized one.

### 3.3 LITERATURE SURVEY

#### 3.3.1 Survey of existing algorithms:

This is currently an era where we are all surrounded by social media and it has drastically influenced everything, including the way commerce is done. So now to get an edge in this social media dominated world there is a necessity of a platform which will help businesses to reach out customers. But the problem with social media marketing is that it's very expensive as well as there is no surety that the marketing campaigns are reaching the right customers.

There are few systems which are able to do some what similar task like the one below.

Hootsuite is a social media platform for organizations and businesses to collaboratively carry out campaigns across various social networks such as Google+, LinkedIn, Facebook and Twitter. It lets users launch campaigns from a single, cloud-based dashboard. Hootsuite offers advanced functionalities for complete measurement and reporting purposes, such as tools for team collaboration, audience engagement, comprehensive analytics and account security. This solution is suitable for businesses of all sizes. Hootsuite allows users to manage several contributors and share data and access rights without the sharing of passwords. Users can work proficiently with social streams, columns and tabs along with an option of selecting from various design themes.

### 3.3.2 Pros of Existing System:

- Multi-Platform functions, Free to Use for some basic functionalities.
- Tells the few handy requirements for each social media platform. PC and Phone friendly.
- This has saved some businesses much time in the past and allowed them to remain connected to social media and their customers.
- A one stop program that takes care of posting across all of them.
- The great thing about Hootsuite is that it can post to multiple social media websites with one click. In addition, being able to schedule posts in advance allows to have a greater presence on sites.
- Easy to use, very convenient, existing users love it. The main page is user friendly too.
- It can post on 30 different accounts at once which saves time.

### 3.3.3 Cons of Existing System:

- It can be a bit confusing to set up. We have also had to re-sign in a couple of times which is a bit annoying
- The Hootsuite dashboard in general is confusing and not very user friendly.
- It takes people quite awhile to figure out how to create a post.
- Additionally, users can't preview a post before sending it out. this creates many problems. For example, after posting to Facebook, when checked the post directly on FB and there can be errors.
- For editing of older posts users need to go to the social media again and edit the same, defeating the entire purpose of having a single portal for all social medias at once.
- For small functionalities like posting on too there has to payment made. Which are extremely unnecessary.
- There still has to be a team of humans to optimize this procedure,which could easily have been automated using some simple pattern recognition.

# Chapter 4

## PROJECT DEFINITION AND SCOPE

## 4.1 PROBLEM STATEMENT

To create a B2C Marketing Platform for executing multiple marketing campaigns on various social media effectively and also analyze their reach within the customers. Also to help the marketer to frame proper content for his social media posts.

### 4.1.1 GOALS AND OBJECTIVE

The main aim of our platform is to help the marketer to create and analyze marketing campaigns on various social media. For that, a choice has to be made of multiple social media websites such as Twitter and Facebook, to execute campaigns on. It is a platform that enables companies and brands to manage and coordinate the advertising campaigns by cross-channel execution. This platform thereby helps to increase the company's revenue and analyzing and optimizing this entire marketing campaign. To help the marketer in decision making by providing an interactive dashboard which gives analytic information for decision making. Normally, techniques require a lot of data to find any decision. But these tools provide knowledge by using lightweight statistical tools for most parts and also Reinforcement learning for social media marketing. To provide one more facility of Data Visualization through Graphs. Analytic data from all the social media can be fetched to provide visualization of data. These visualization is of very high spectrum. There are low level analysis spectrum like number of Likes, Comments and Shares (On Social media). And also medium level like analyzing the comments using simple sentiment analysis and high level tools which include fetching the exact demographics and displaying it on a easy to understand Dashboard.

### 4.1.2 STATEMENT OF SCOPE

On using this software, clients (advertising companies) don't need to hire a team that carries out a marketing campaign, instead, this software will do the Marketing effectively. This saves a lot of money. And it saves time to analyze the huge marketing data and make decisions effectively. This helps businesses to accelerate their revenue by increasing the customer engagements. Multiple social media platforms can be taken care of at once and even users who are not familiar with technology can work without putting in efforts for learning new social media platforms. This provide a common interface for users to post campaigns.

## 4.2 Major Constraints

Most data science, relevance, and machine learning activities in technology companies have been focused around Big Data and scenarios with huge data sets. Sets where the rows represent documents, users, files, queries, songs, images, etc. Things that are in the thousands, hundreds of thousands, millions or even billions. The infrastructure, tools, and algorithms to deal with these kinds of data sets have been evolving very quickly and improving continuously during the last decade or so. For the same reason there is a requirement of proper data in the classical big data format.

And most of the scientists and machine learning practitioners have gained experience in such situations, have grown accustomed to the appropriate algorithms, and gained good intuitions about the usual trade-offs (bias-variance, flexibility-stability, hand-crafted features vs. feature learning, etc.). But small data sets still arise in the wild every now and then, and often, they are trickier to handle, require a different set of algorithms and a different set of skills. Small data sets arise in several situations:

Time Series: Time is in short supply! Esp. in comparison with users, queries, sessions, documents, etc. This obviously depends on the time unit or sampling rate, but it's not always easy to increase the sampling rate effectively. Aggregate modeling of states, countries, sports teams, or any situation where the population itself is limited (or sampling is really expensive). Modeling of rare phenomena of any kind. Less data can lead to maybe an incorrect learning model so always a significant minimum investment could be required for the proper formation of association rule.

## 4.3 Outcome

- Successfully developed a platform that can handle multiple marketing campaigns effectively.
- This platform helps the marketer in creating effective and appealing context for promoting products of brands.
- Graphical visualization of customer feedback.
- At the end it reveals that whether our product is popular based on the sentiment analysis.

This platform thereby helps to increase the company's revenue by helping the marketer in framing a proper content for his posts and make the posts go on Trending on social media.

Our aim is to develop a platform to make digital marketing process simple for marketer, where he will submit the product details for the campaign. The system will promote the posts of these products (Ads) on social media and analyze those with respect to Likes/Favourites and Comments. We are creating a platform which will help effective promotions.

## 4.4 Application

- Clients (advertising companies) dont need to hire a team that carries out a marketing campaign
- This helps businesses to accelerate their revenue by helping the marketer in framing a proper content for his posts and make the posts go on Trending on social media.
- Small scale companies can use this site promote their company and product.

## 4.5 Software Resource Required

### Platform

1. Operating System:Ubuntu
2. IDE: pycharm
3. Programming Language:php,python
4. Stable Domain Name
5. Permissions(API , Data Extraction , etc.) from all Social Medias

## 4.6 Hardware Resource Required

1. Reliable Server
2. GPU Ge Force GT 530 or equivalent

# **Chapter 5**

## **Year wise Plan**

## 5.1 Project Timeline diagram

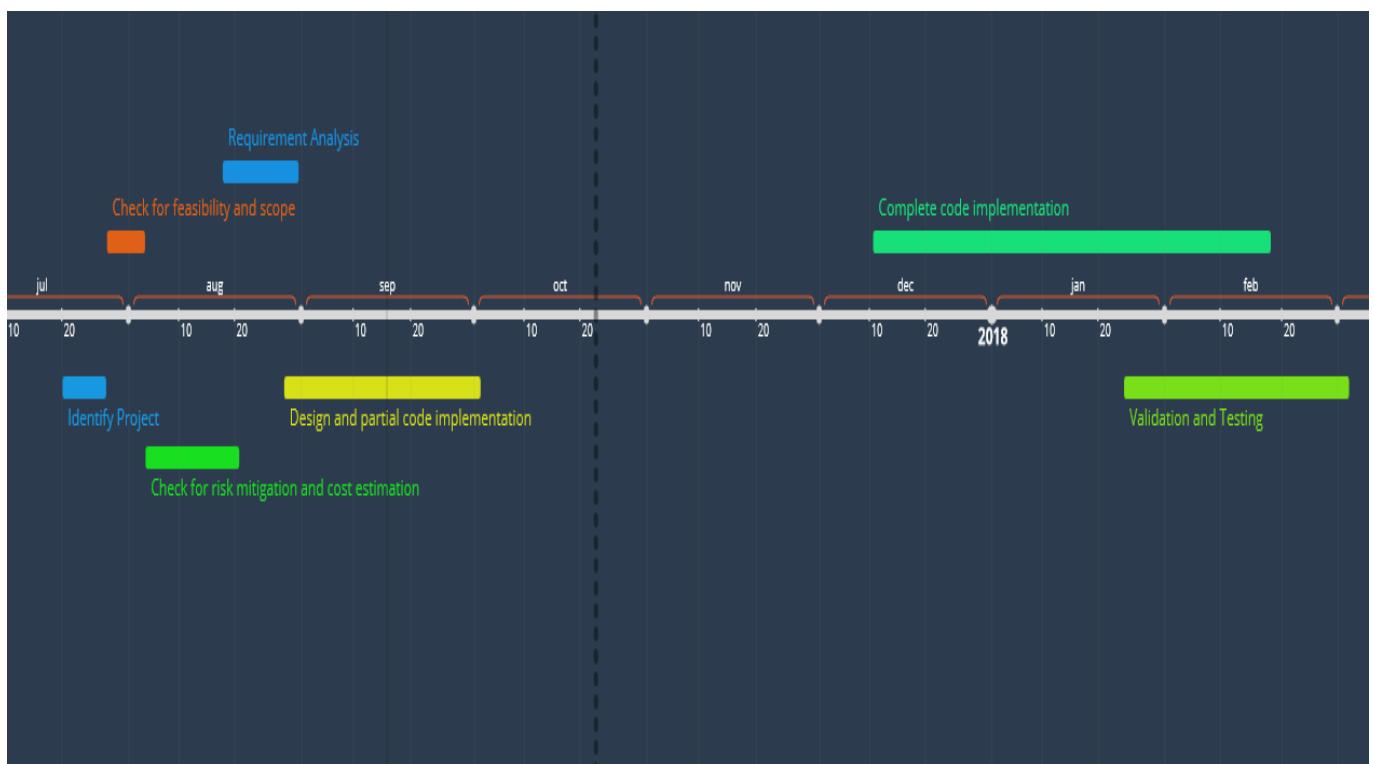


Figure 5.1: Project Timeline

## 5.2 Risk management wrt NP hard

As the algorithms of the data mining and association rule has a lot to do with many constraints which could become pretty difficult to get satisfied always so there has to always be alternatives which would somehow be able to manage it. If not all the constraints are satisfied then some alternative solution need to be made to if not eliminate but at least minimize risk.

### 5.2.1 Risk Identification

It would not be farely difficult to understand that with very less budget or with very less time or a very specific demographic targeting there is any room for improvement in audience targeting in the following iterations so some alternatives should be already available by that time as in without wasting time to analyze the same. And alternative algorithms can be implemented in first place to reduce the loss which could sometime be significant for small merchants.

### 5.2.2 Risk analysis

Once we have identified that some constraints from the optimal requirements are not up to the mark then we can easily apply alternative algorithm because in real life scenario not all the data would be available properly always.

### 5.2.3 Risk Migration, Monitoring, Management

When there is a identification that there is not much scope for learning so one thing can be done that:

# **Chapter 6**

## **SOFTWARE REQUIREMENT SPECIFICATION**

## 6.1 INTRODUCTION

### 6.1.1 Purpose and scope of document

To create a B2C Marketing Platform for executing multiple marketing campaigns on various social media effectively and also analyze their reach within the customers. Also to help the marketer to frame proper content for his social media posts. The platform should be able to do cross channel execution i.e. posting and managing of Ads on any social media. It should thereby help to increase the company's revenue by helping the marketer in framing a proper content for his posts and make the posts go on Trending on social media. In the end, the platform should display statistics of all campaigns posted on all social media. Graphs will be displayed for different social media for all the marketing campaigns. Time line of posted posts is to be displayed. In the end, it should manage every campaign of the registered company and display all results to those companies.

### 6.1.2 Overview of Responsibilities of Developer

- Maintaining database structure. If the database architecture needs to be changed, the developer handles it.
- If the APIs of Social medias are changed how to reflect the changes in the code of the project. If APIs are not available then finding some alternative solutions.
- For newer social media, support should be provided.
- Giving support for new file formats.
- Providing sentimental analysis support for newer languages.
- Crawlers need to change if the interfaces of the website change.
- To develop an effective reporting tool that helps the end users to gain insights of the marketing campaigns.
- If a social media comes up with new like/reaction buttons, suitable analysis for the same should be provided.
- If new Ad interfaces like carousels are there, giving support to them too.

## 6.2 Datamodel and Description

### 6.2.1 Database Description

- Register/Login table:

Attributes: Username, Company name, Email, password.

Use:

When the user registers himself for the website, data is entered into this table of the above attributes.

- Campaigns table:

Attributes: Username, Campaign name, Campaign category.

Use:

When the user creates a campaign, information related to the campaign is entered into this table.

## Entity Relationship Diagram

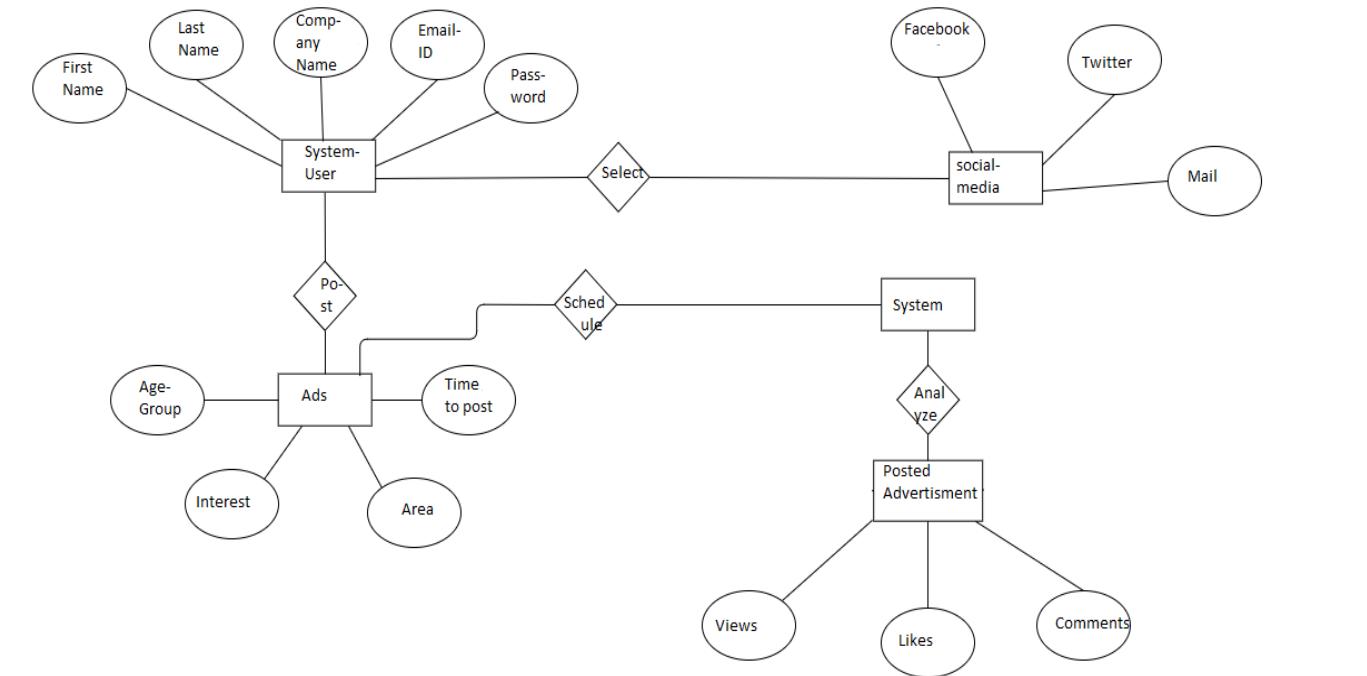


Figure 6.1: ER Diagram

- Promotions table:

Attributes:

Username, campaign name, Caption, image name, Hashtags, Social media, Facebook post id, Twitter post id, Facebook likes, Twitter likes, Sentimental analysis result. Use:

When a user posts a photo to a campaign, above information related to the promotion of campaign is stored in the database. And while displaying the timeline, all the attributes are fetched according to username and campaign name.

### 6.2.2 Non functional Requirements

#### Interface Requirements

- User Interface:  
Front-end software: Web Application (HTML/CSS, PHP).
- Hardware Interface:  
Server for processing data. Software interface:
- Social Media APIs.  
Back-end software: SQL.  
Operating System with GUI.  
Web browser(Google Chrome, Firefox,etc).

### 6.2.3 Performance Requirements

- Disaster recovery

The system should be able to recover from any disaster such as database failure, server crash, web service failure,etc. And also if a scheduled post is missed, it should immediately send the post fetching from database.

- Reusability

The reusability will ensure that even after any new social media comes like facebook, twitter,etc. It should be able to reuse the same algorithm to target audiences and fetch demographics from social media APIs.

- Testability

This platform not only tests hundreds of different campaign variants, but keeps them running long enough to determine which ones should be scaled up and which should be abandoned. It will also tell you about the testing it has done and what it has found along its journey, as well as automatically apply those learnings when faced with similar situations in future digital , and offline, campaigns. It leaves no stone unturned, testing and optimizing thousands of campaign variables in a fraction of the time it would take a human marketer.

- Backup

Time to time backups are carried out to avoid disasters due to data loss and corruption. Data replication must be done on different systems to avoid database failures, etc.

- Stability

Even if there are errors while posting the platform should be able to handle the errors.

- Security

Login credentials should not be misused. This can be ensured by data encryption while transmission. For larger organizations, their scheduled posts should not be leaked because it can cause major loss of those companies.

- Compatibility

It should be compatible with all the browsers and all the operating systems. And should be usable on any devices like desktop, mobile, palmtop ,tablets, etc.

- Documentation

Proper documentation of all the modules should be done for modifying any module or making a new module dependent on previous ones. Dependency on other parties

- Fault tolerance

System should be fully fault tolerant and capable of to deliver uninterrupted service, despite one or more of its components failing without compromising security and data loss. Fault tolerance also resolves potential service interruptions related to software or logic errors. The purpose is to prevent catastrophic failure that could result from a single point of failure.

- Response time

Response time should be as minimum as possible. Algorithms for posting multiple photos should be optimized. As well as database access should be fast.

- Portability

It should be portable on all OS and browsers and on all social media platforms.

# **Chapter 7**

## **PROJECT IMPLEMENTATION**

## 7.1 INTRODUCTION

## 7.2 METHODOLOGIES/ALGORITHM DETAILS

### 7.2.1 Project Functionality

#### 1. Smart Hashtags

From following hashtags to adding them to your Instagram Stories, hashtags are an important tool to help you grow your brand this year. Instagram's algorithm favors posts with high engagement, meaning that the more likes and comments your post receives, the more people will see your post. Instagram posts with at least one hashtag have 12.6 percent more engagement than those without.

And although each Instagram post allows up to 30 hashtags, research on the topic suggests that the optimum number of hashtags is fewer than 10 per post.

#### 2. Image recognition and content creation

There is a need for proper content creation for marketers to post on social media. But sometimes for automated posting and new digital influencers it becomes highly challenging learning curve to nail it every time perfectly. And there are a lot of tricks and tweaks to be done which are many times redundant and can be easily automated. Here we are using Google's Imagenet model for learning image labels, for object recognition YOLO (You Only Look Once). YOLO is a very fast for recognizing whether an object exists at a particular location. All prior detection systems repurpose classifiers or localizers to perform detection. They apply the model to an image at multiple locations and scales. High scoring regions of the image are considered detections.

We use a totally different approach. We apply a single neural network to the full image. This network divides the image into regions and predicts bounding boxes and probabilities for each region. These bounding boxes are weighted by the predicted probabilities. Finally, we can threshold the detections by some value to only see high scoring detections:

Our model has several advantages over classifier-based systems. It looks at the whole image at test time so its predictions are informed by global context in the image. It also makes predictions with a single network evaluation unlike systems like R-CNN which require thousands for a single image. This makes it extremely fast, more than 1000x faster than R-CNN and 100x faster than Fast R-CNN. See our paper for more details on the full system.

#### 3. Display sentimental analysis results

For understanding the reviews and what people/audiences are thinking about a post on social media this is a tool which will do so. This will also help in analysing how much of an impact the post has. If a post has a positive impact then it is more likely that the company should be moving more in the direction of what audience show positive response towards.

This will provide a more scope for the posts to go viral and increases higher amounts of audiences to get notice of the same. If the admin(of business) knows exactly what people are responding for something i.e it's more important for planning strategies of going forward. Also what type of advertising is influencing people for some products can be analysed.

The timeline of the admin dashboard will provide all the sentimental analysis of the posts in a campaign as well as throughout the entirety.

### 7.2.2 Algorithms

#### Algorithm for Smart Hashtags::

1. Get seeding data to begin with.
2. Seeding data if from image recognition model get the top 5 most probable terms.
3. If seeding data from user(manually) get the top 5 terms.
4. Using display purposes rest API get all the hashtags related to the term from Instagram.
5. From all the hashtags proportionally sort the most popular one and the uncommon.
6. Uncommon if taken many won't drive more traffic but good for long run.
7. Popular tags will take a lot of traffic in the beginning but not sustainable enough.

#### Algorithm for Image recognition and content creation::

1. Install and run YOLO over COCO model
2. Retrain it over imagenet labels
3. Find the top 5 probability
4. Parse the output to smart hashtag generation

#### Algorithm for Display sentimental analysis results

1. Fetch post id from the timeline
2. Query/refresh the comments of the post and store in database
3. Break down the sentences into words for each sentences and find out the positive or negative feedback for the same using textblob tool
4. Find out the cumulative score of the same also the relevance of the same
5. Display the same using graphical tool(pie chart)

# **Chapter 8**

## **Software Testing**

## 8.1 Introduction

Software testing is conducted briefing the stakeholders about the quality of the product or service under test. It can also provide an objective, independent perspective of the software to allow the business to appreciate and understand the risks of software implementation. It is the process of evaluating the system along with its components to ensure that it satisfies all the specified requirements and there is no defect in the system. Testing includes system execution with the intent to find any error, unfulfilled requirements, gaps and bugs in the system. During execution one or more test properties are evaluated.

Testing is very important in development of any software. A good testing program is a tool for the programmer or the end user; it typically identifies the end of the development phase of the project, establishes the criteria for project acceptance, and establishes the start of the warranty period. All software testing uses some strategy to select tests that are feasible for the available time and resources. As a result, software testing typically (but not exclusively) attempts to execute a program or application with the intent of finding software flaws. The job of testing is an iterative process as when one bug is fixed; it can illuminate other, deeper bugs, or can even create new ones, one has to periodically evaluate the application.

## 8.2 Types Of Testing Used

### - Unit Testing

It focuses on the verification effort on the smallest unit of software design the software component or module. Using the component- level design description as a guide, important control paths are tested to uncover flaws within the boundary of the module. The relative complexity of tests and the flaws those tests uncover is limited by the constrained scope established for this testing. This test focuses on the internal processing logic and data structures within the boundaries of a component. This type of testing can be conducted in parallel for multiple components the system. All the components used in our system where tested individually for their respective functionality.

### - Integration Testing

Integration testing is a technique for constructing the software architecture while conducting tests in parallel to uncover the flaws associated with interfacing. The main objective is to take unit-tested components and build a program structure that has been dictated by design. Incremental integration is complete opposite approach of the big bang approach. The application is constructed and tested in small increments, where flaws, bugs or defects are easier to isolate, correct and modify; interfaces are more likely to be tested completely; and a systematic test approach may be applied. Bottom-up integration testing, begins construction and testing with atomic modules. Since components are integrated from the bottom, the functionality provided by components subordinate to a given level is always obtainable and the requirement for stubs is eliminated. The following steps are taken into consideration for bottom-up integration:

1. Low-level components are combined into clusters (sometimes called builds) that perform a specific software sub-function
  2. A control program for testing is written to inter-relate test case input and output
  3. The cluster is then tested
  4. Control Programs are then removed and clusters are combined moving upward in the program structure
- We have applied bottom-up integration technique, where we tested each component individually by unit testing and then integrated the components one by one and checked their working together.

- System testing Different tests are conducted whose primary aim is to fully exercise the computer-based system. Even though each test has a different motive, each test has to verify that system elements have been appropriately integrated and perform allocated functions. It is very important form of testing once all the components are integrated.
- Performance Testing  
Software that provides required function but does not conform to performance requirements is unacceptable especially in real-time applications. It is designed to test the runtime performance of software within the context of an integrated system. Performance testing occurs throughout all steps in the testing process. Even at the unit level, the performance of an individual module may be assessed as tests are conducted. However, it is not until all system elements are fully integrated that the true performance of a system can be ascertained.
- Manual Testing  
In this testing we manually test the software for defects. It requires a tester to play the role of an end user whereby he/she utilizes most of the applications features to safeguard correct behaviour. To ensure the completeness of testing, the tester generally implements a written test plan that heads them through a set of important test cases. Static and dynamic testing approach may also be used. Dynamic testing involves running the program or application. Static testing comprise of verifying requirements, syntax of the code and any other activities which does not require running the application.
- White-Box Testing  
Static and dynamic testing approach may also be used. Dynamic testing involves running the program or application. Static testing comprise of verifying requirements, syntax of the code and any other activities which does not require running the application.
  - 1. Guarantees that all individualistic paths within a module have been exercised at least once
  - 2. Exercise all rational decisions on their true and false sides
  - 3. Execute all loops at their boundaries and within their operational bounds, and
  - 4. Exercise internal data structures to ensure their soundness.
- Black-Box Testing  
It is also called behavioural testing, which focuses on the functional requirements of the software. This technique enables one to derive sets of input conditions that fully exercises all functional requirements for a program. It is not a substitute to white-box techniques; rather it is a complementary approach i.e. likely to uncover a different class of errors than white box methods. Black-box testing attempts to find errors in the following categories:
  - 1. incorrect or missing functions
  - 2. interface errors
  - 3. errors in data structures or external database access
  - 4. behaviour or performance errors
  - 5. initialization and termination errorsUsing this testing we have tried to check all the input conditions and map it to the output required.

## 8.3 Test Cases

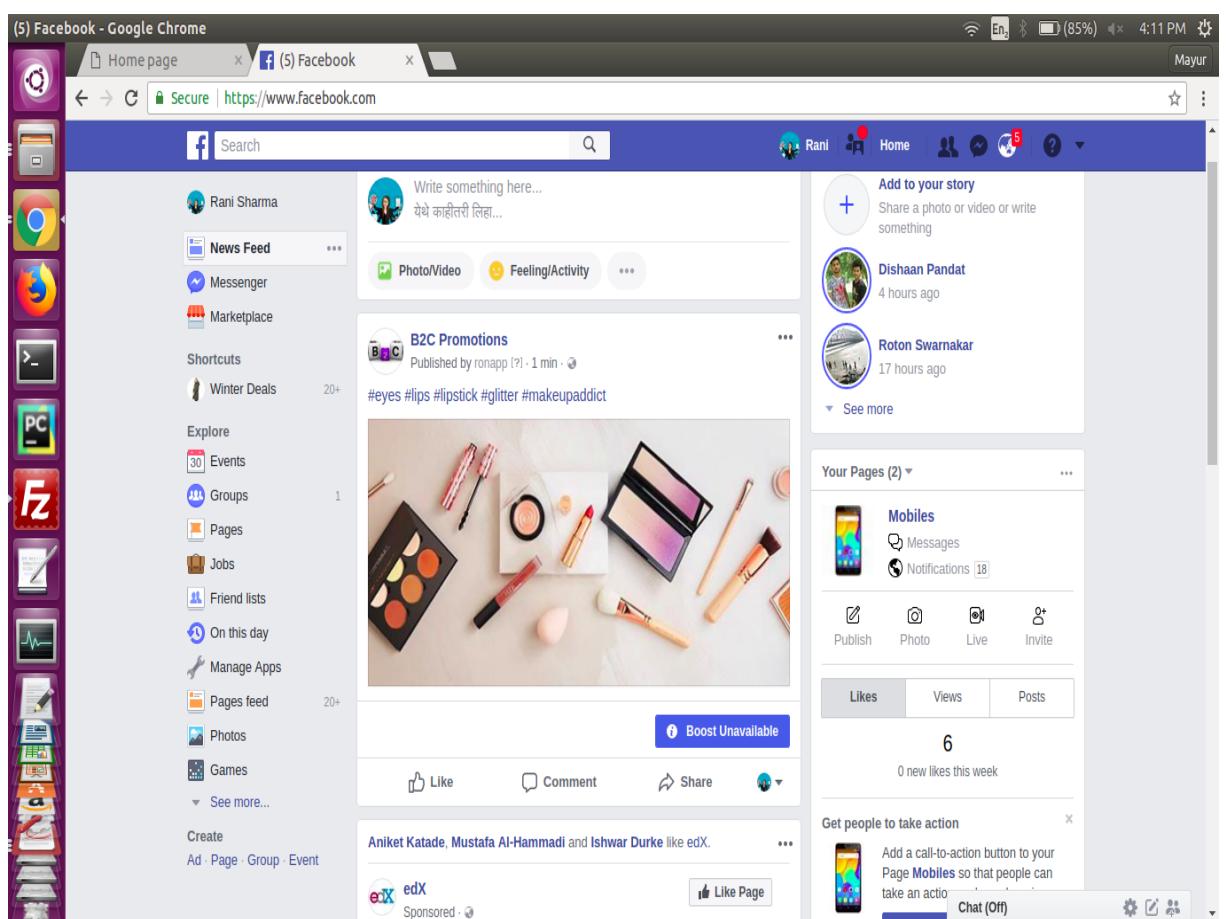
### 8.3.1 General Test Scenarios:

1. All mandatory fields should be validated and indicated by asterisk (\*) symbol

2. Input fields should be checked for max field value. Input values greater than specified max limit should not be accepted or stored in database
3. Check all input fields for special characters
4. Check functionality of buttons available on all pages
5. Font size, style and color for headline, description text, labels, infield data, and grid info should be standard as specified in SRS
6. Proper validation messages should be displayed for invalid values

### 8.3.2 Module wise Test Cases:

1. Advertisement posted on selected/appropriate social media. :: To check whether advertisement posted on social media which is selected by user. For e.g. Facebook, Twitter.



B2C Promotions (@B2Cpromotions) | Twitter - Google Chrome

Home page Facebook Twitter, Inc. [us] https://twitter.com/B2Cpromotions

Twitter has a new Terms of Service and Privacy Policy, effective May 25, 2018. [Learn more](#)

Got it

Home Moments

Tweets 32 Following 5 Followers 3 Likes 20

**B2C Promotions** @B2Cpromotions

Its an account to promote different campaigns of our clients

① Pune, India

🔗 cliq.globalsuperelite.com/primex/index.h...

Joined June 2017

30 Photos and videos

**B2C Promotions** @B2Cpromotions · 2m  
#eyes #lips #lipstick #glitter #makeupaddict

**B2C Promotions** @B2Cpromotions · May 26  
Come back after a long time! :)

Have an account? balukumar3214@gmail.com

Remember me · Forgot password?

Log in Sign up

New to Twitter?

Worldwide trends

#SanjuTrailer 27.3K Tweets

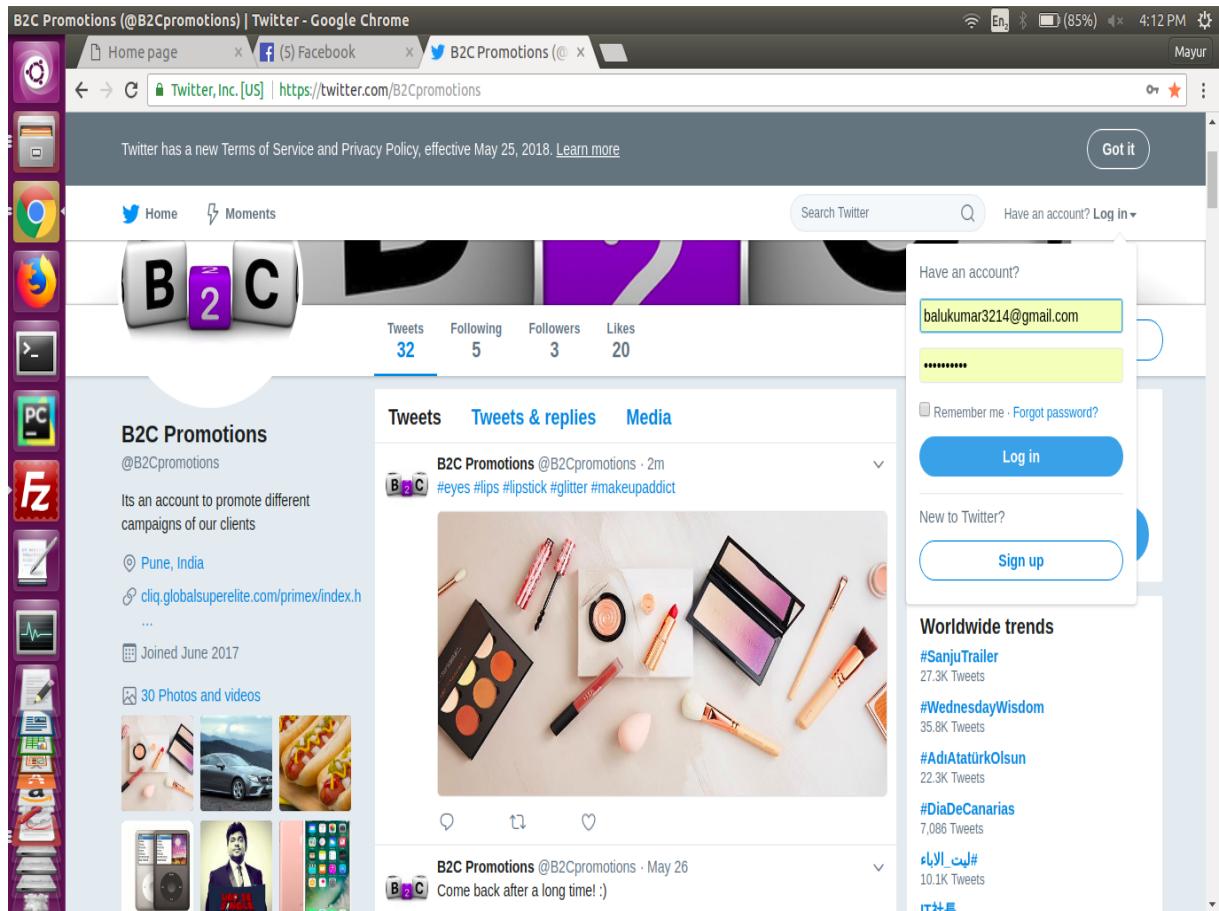
#WednesdayWisdom 35.8K Tweets

#AdriAtatürkOlsun 22.3K Tweets

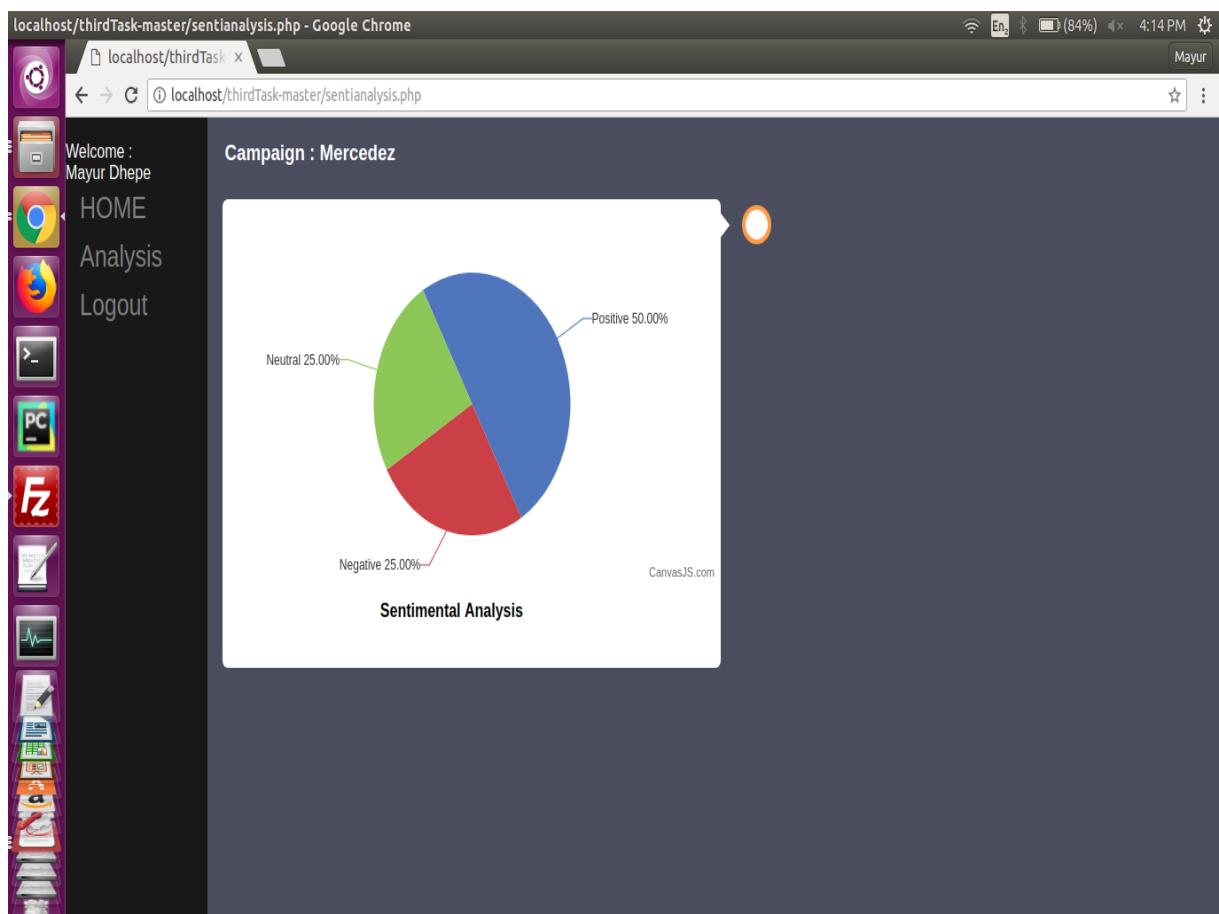
#DiaDeCanarias 7,086 Tweets

#بن\_العاشر 10.1K Tweets

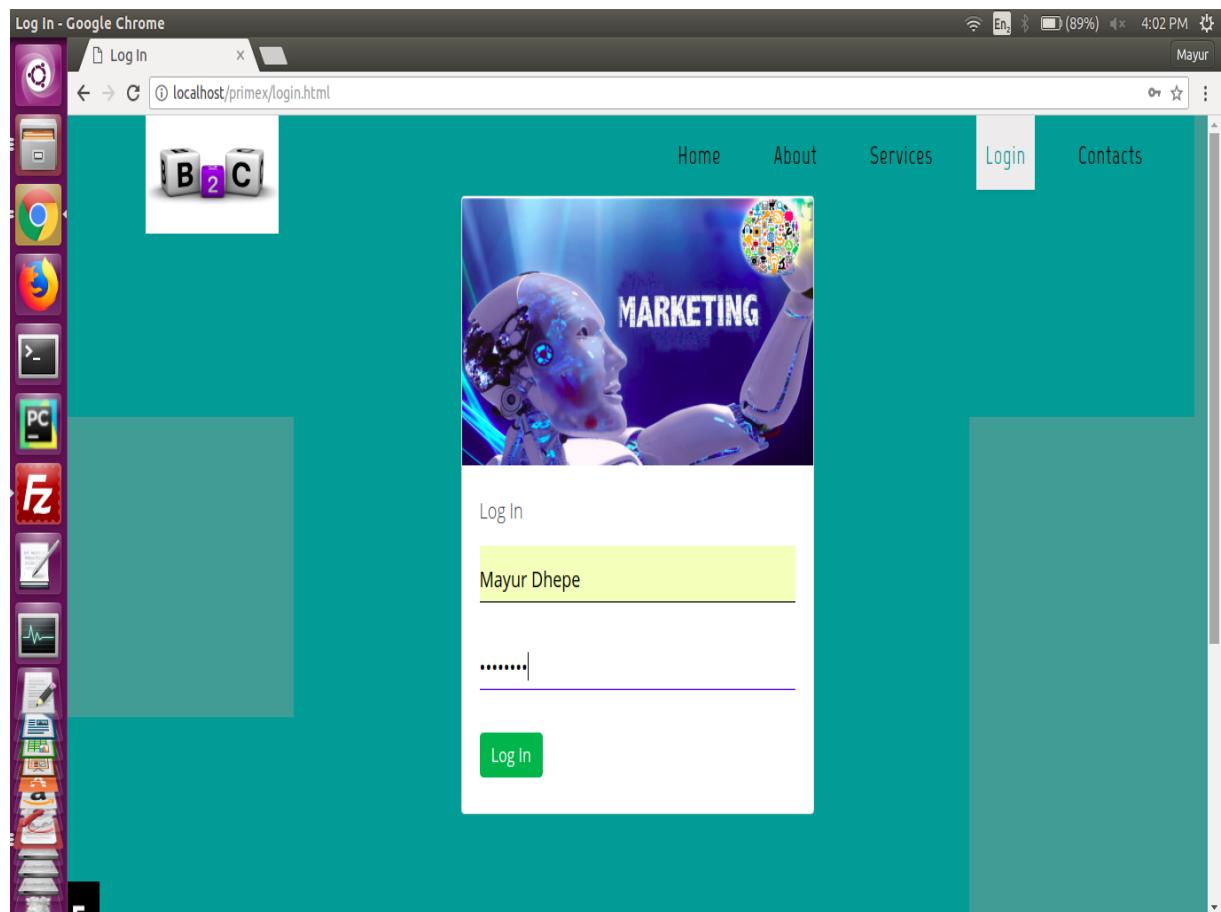
ITZH



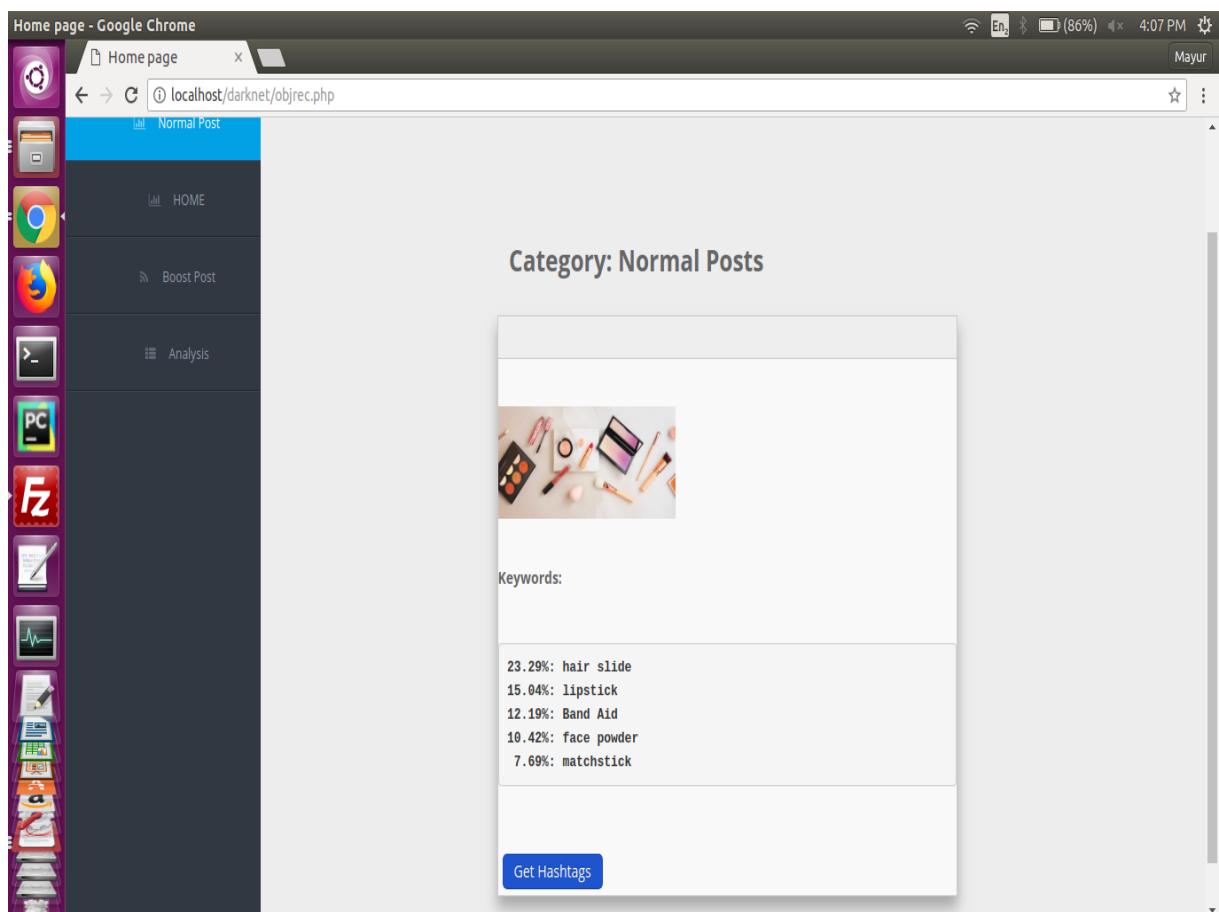
2. Proper sentiment analysis of comments on particular post::check results of Sentiment analysis to check whether campaign is in profit or not.



3. Log In:: To verify that only authentic user can log in.



4. Object recognition in image:: Algorithm should detect appropriate and correct objects from image uploaded by user.



# **Chapter 9**

## **RESULTS**

In result, images define services given by the Object recognition, Smart hash tags, Posting, Analysis and News module. These modules help the marketer to create and execute campaigns on various social media. These modules also help in Content creation to the marketer.

## 9.1 Screenshots

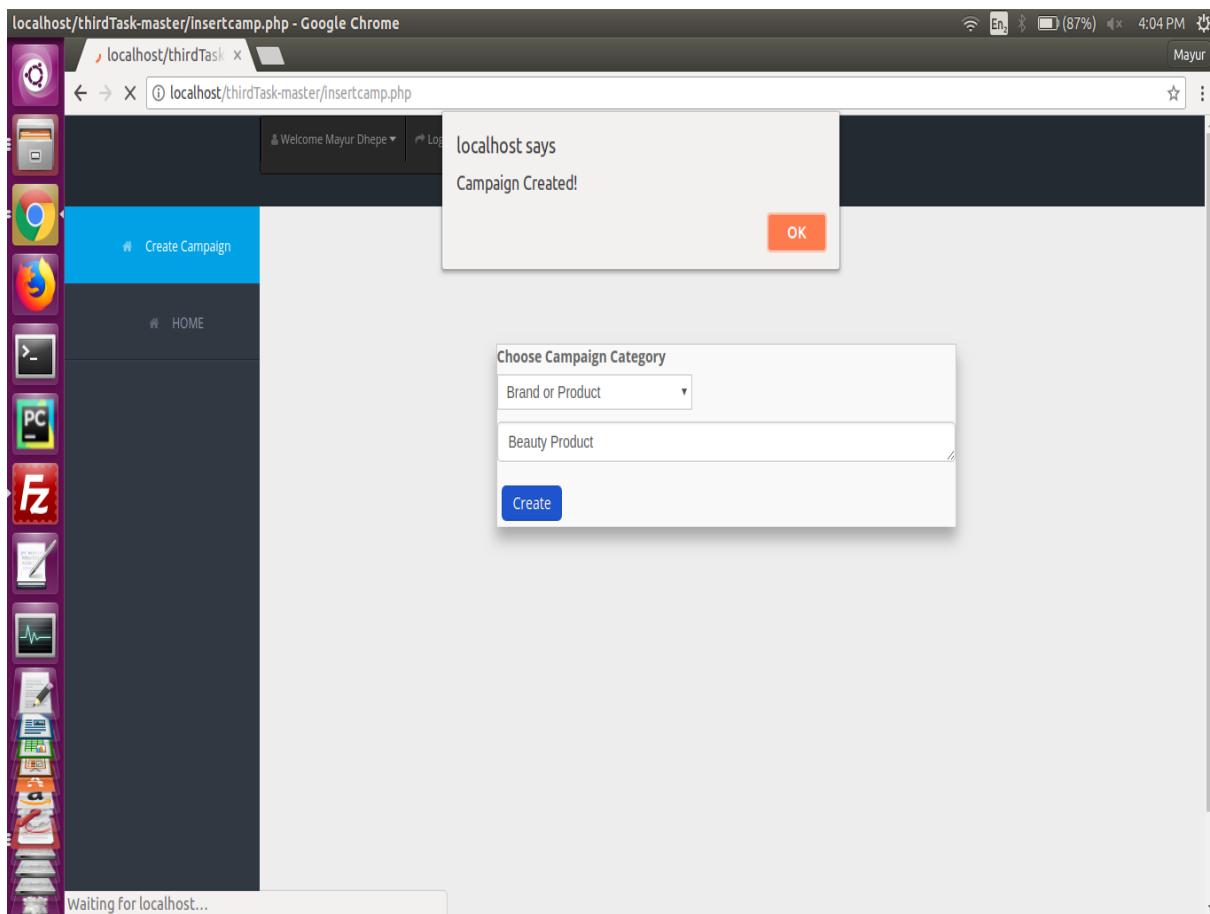


Figure 9.1: Campaign created successfully dialog box

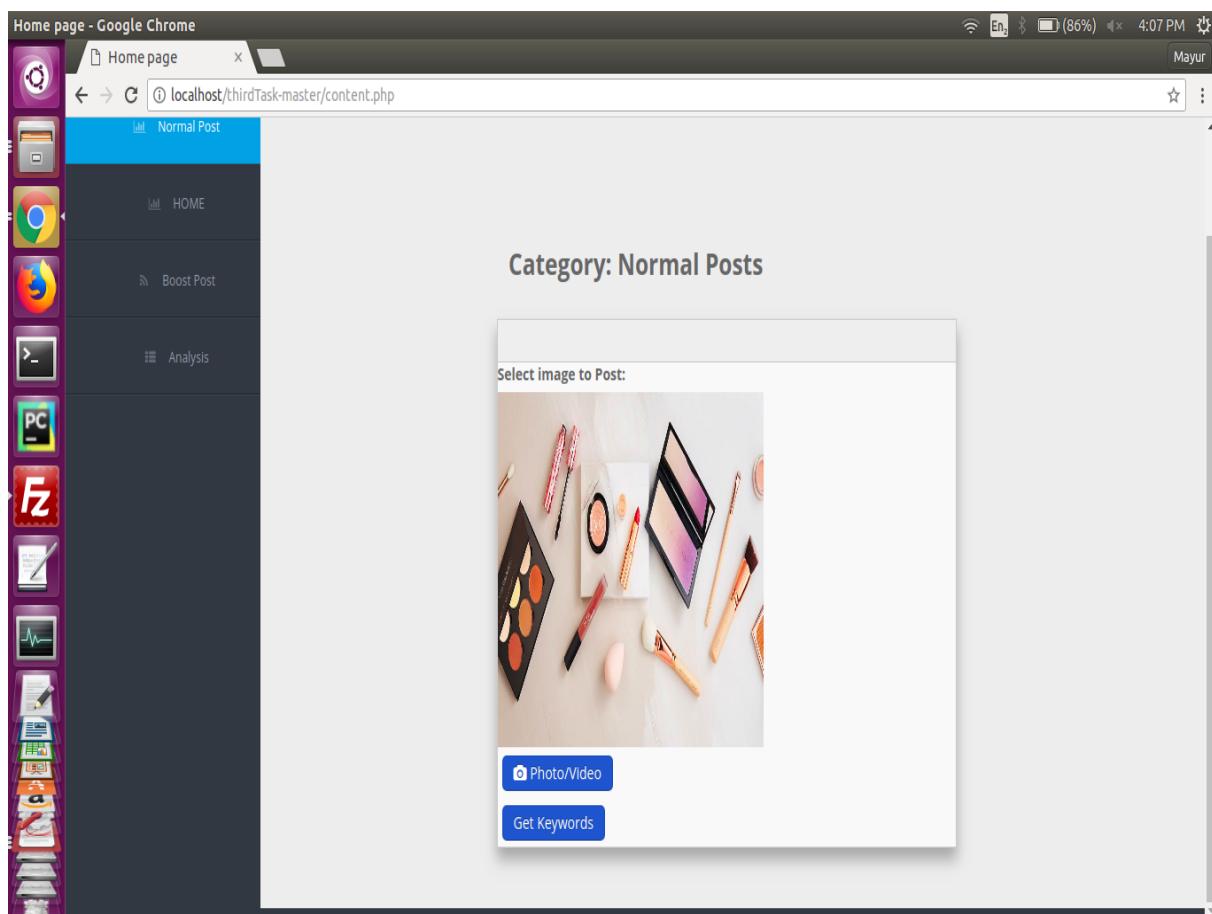


Figure 9.2: Image Uploaded Successfully

The image consists of two vertically stacked screenshots from a mobile application interface.

**Screenshot 1: Object Recognition Module**

This screenshot shows the "Category: Normal Posts" section. At the top is a collage of various makeup items. Below it is a "Keywords:" section containing the following list:

- 23.29%: hair slide
- 15.04%: lipstick
- 12.19%: Band Aid
- 10.42%: face powder
- 7.69%: matchstick

A blue "Get Hashtags" button is located at the bottom of this section.

**Screenshot 2: Smart Hashtags Feature**

This screenshot shows a posting interface titled "Campaign Name: Beauty Product". It features a header with social media sharing icons (Facebook, Twitter, LinkedIn) and a text input field with placeholder "Write something here". Below the input field is a preview area showing the same makeup collage and a character count of "300".

The hashtags generated by the system are displayed below the preview:

#eyes #lips #lipstick #glitter  
#makeupaddict

A blue "POST" button is located at the bottom of the posting area.

Figure 9.3: Object Recognition Module and Smart Hashtags

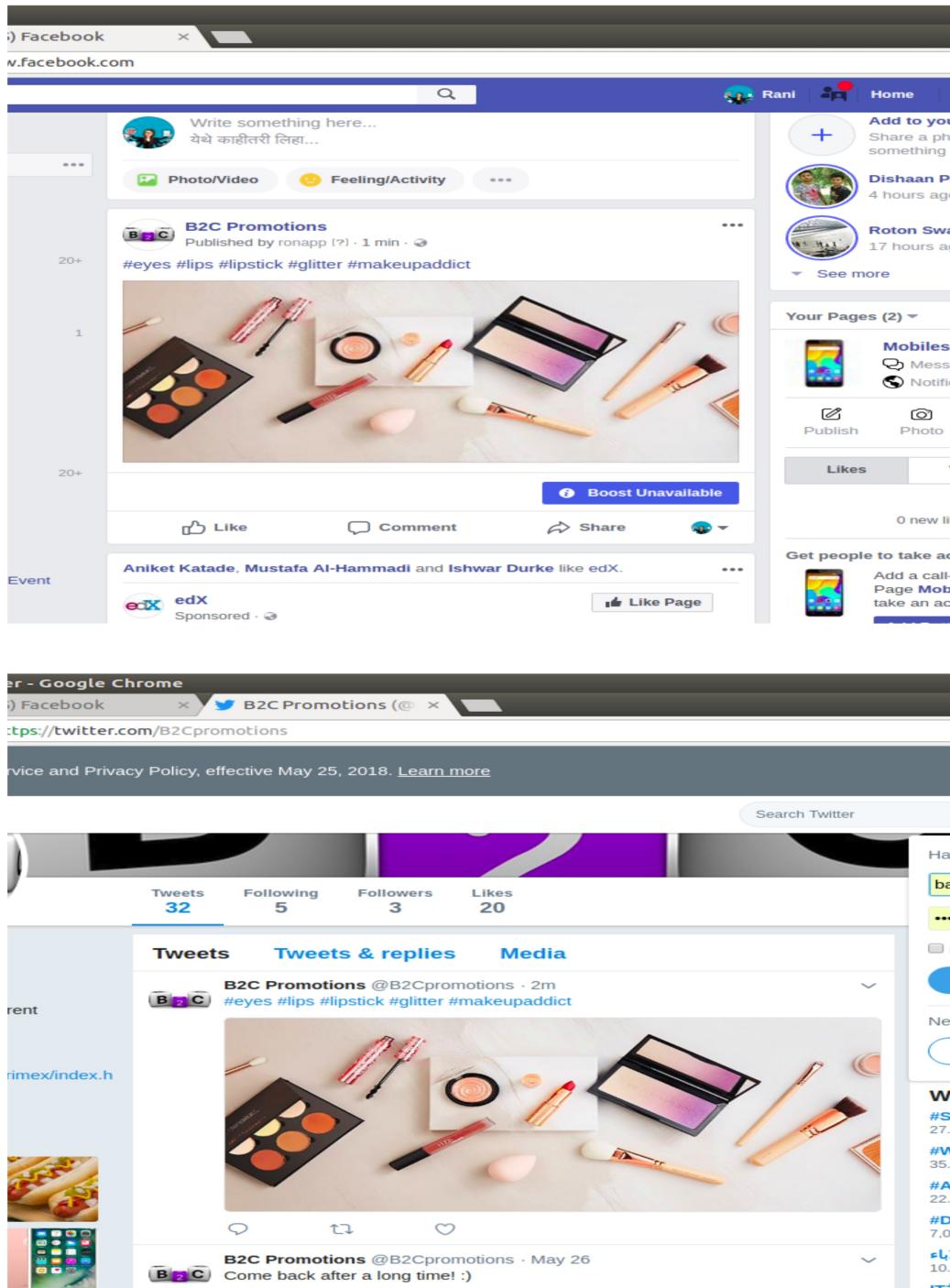


Figure 9.4: Posted successfully on Facebook and Twitter

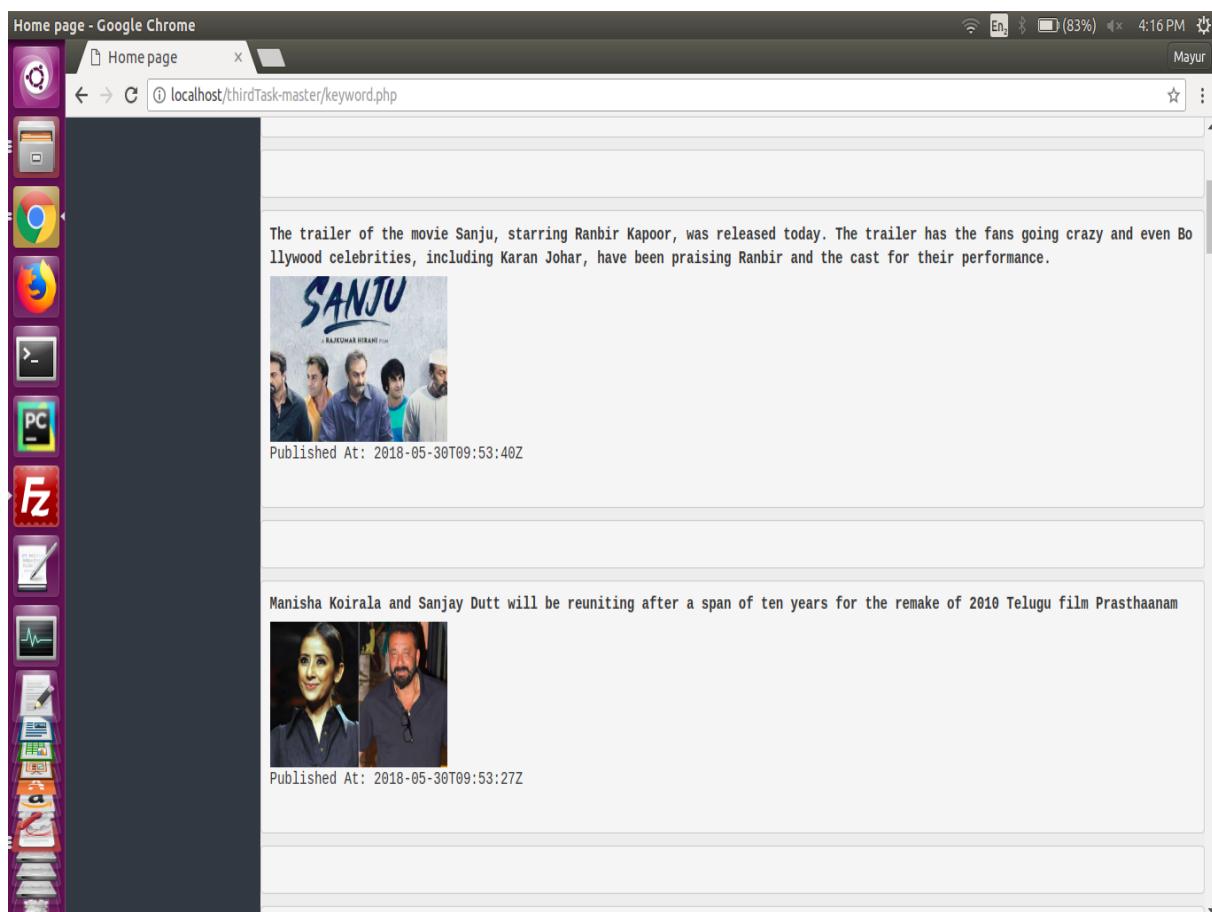


Figure 9.5: News Module Output

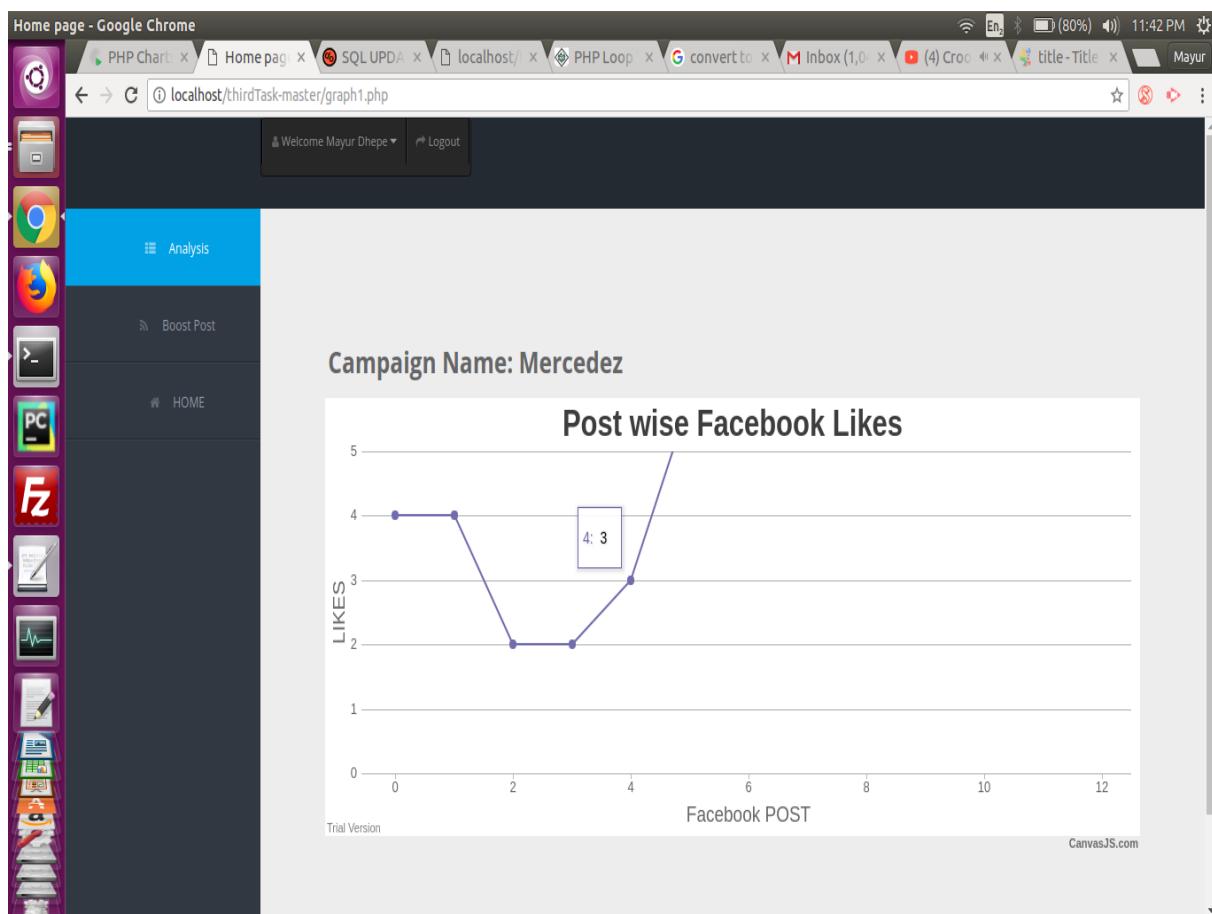


Figure 9.6: Post wise Analysis of Likes

# **Chapter 10**

## **DEPLOYMENT AND MAINTENANCE**

## 10.1 User Help

### AUTHOR NAMES:

Smart B2C Marketing is a platform that enables marketers to create and execute Campaigns over various Social media and provide help in creating proper content for his promotions over social media.

It is developed by Aafaq Inamdar, Mayur Dhepe, Arpita Chidderwar, Sheetal Raut.

### INTRODUCTION:

Now days Social Media like Facebook, Twitter and many more playing key role in advertising. Business-to-consumer marketing (B2C Marketing) focuses on companys sales operations ,i.e.: creating, advertising, and selling products for customers to use in their everyday lives. Consumers are usually looking for content, entertainment, and connections. So the biggest problem while designing this advertising is content creation. Automated B2C Marketing system provides solution to this problem by generating content based on object detected in image that user wants to post. Other feature like Creating new Marketing Campaign, Analyzing ongoing campaign, Monitoring it are also provided. It provides the customer, a single platform through which executing campaigns on different social media is possible and also analyzing them based on likes and comments. The main objective behind this platform is to help the marketer to frame proper, appealing context by embedding popular hashtags to the post and creating, analyzing multiple marketing campaigns at once and reporting the results to the marketers.

### LANGUAGES OF USE:

While developing this platform we used PHP, HTML/CSS, Python, My SQL.

### REQUIREMENTS:

We require following things to run the platform:

Operating System

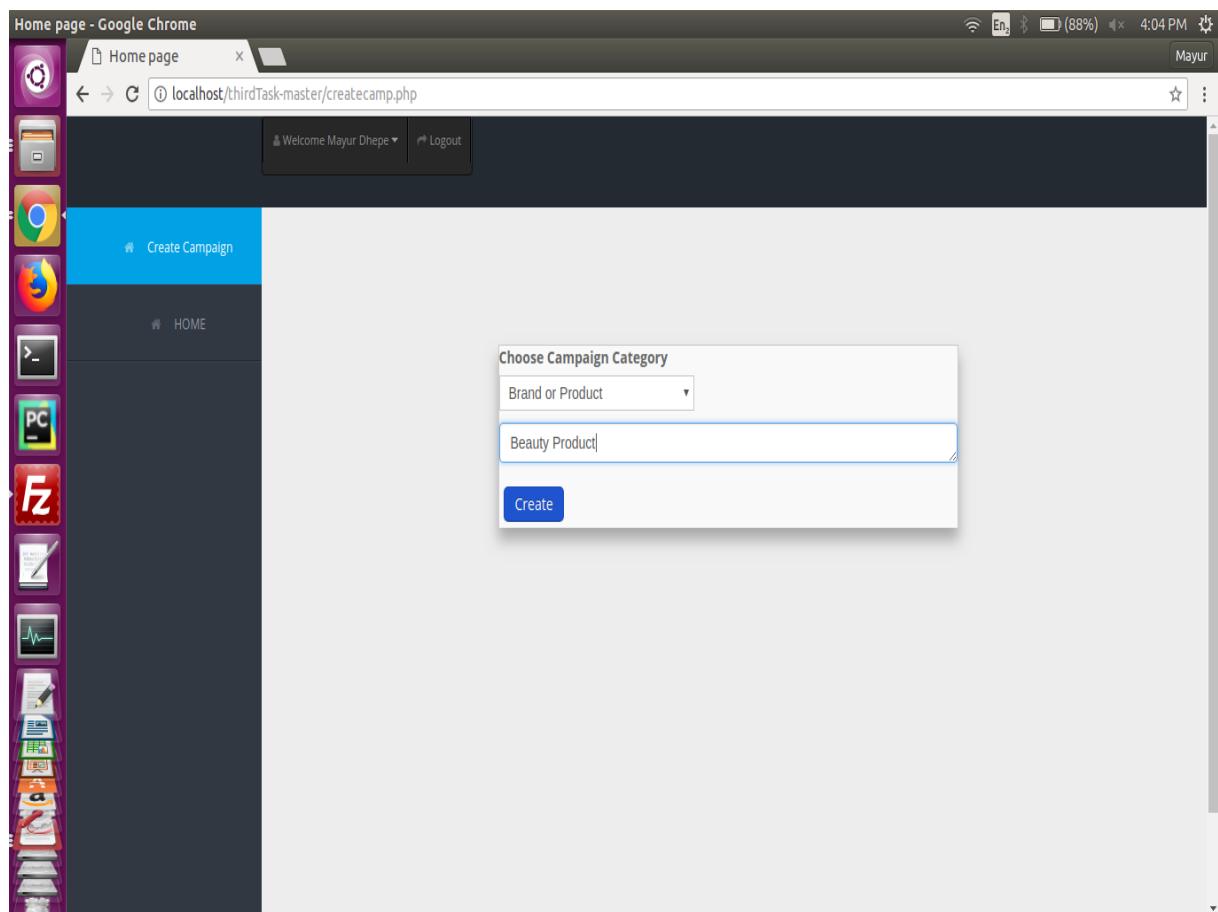
Browser (Firefox, Google Chrome)

### HOW TO USE THE SYSTEM:

1. Register/Login to the website.
2. Upload a photo to post on campaign.
3. Enter caption for the social media post and also embed the Hashtags and select social media options to post on.
4. If you want to Schedule a particular post in Campaign, Go to Schedule POST and enter the scheduling details.
5. If you want to set a Reminder for the marketer, Go to Set Reminder and enter the Reminder details.
6. If you want to see Trending News for framing a proper content for a post Go to News Section and type in the required Topic name to get News for.
7. For viewing the Campaign posts in Time-line format, enter campaign name.
8. To view the sentimental analysis results in Graphical format, go to ANALYSIS and select a campaign name.

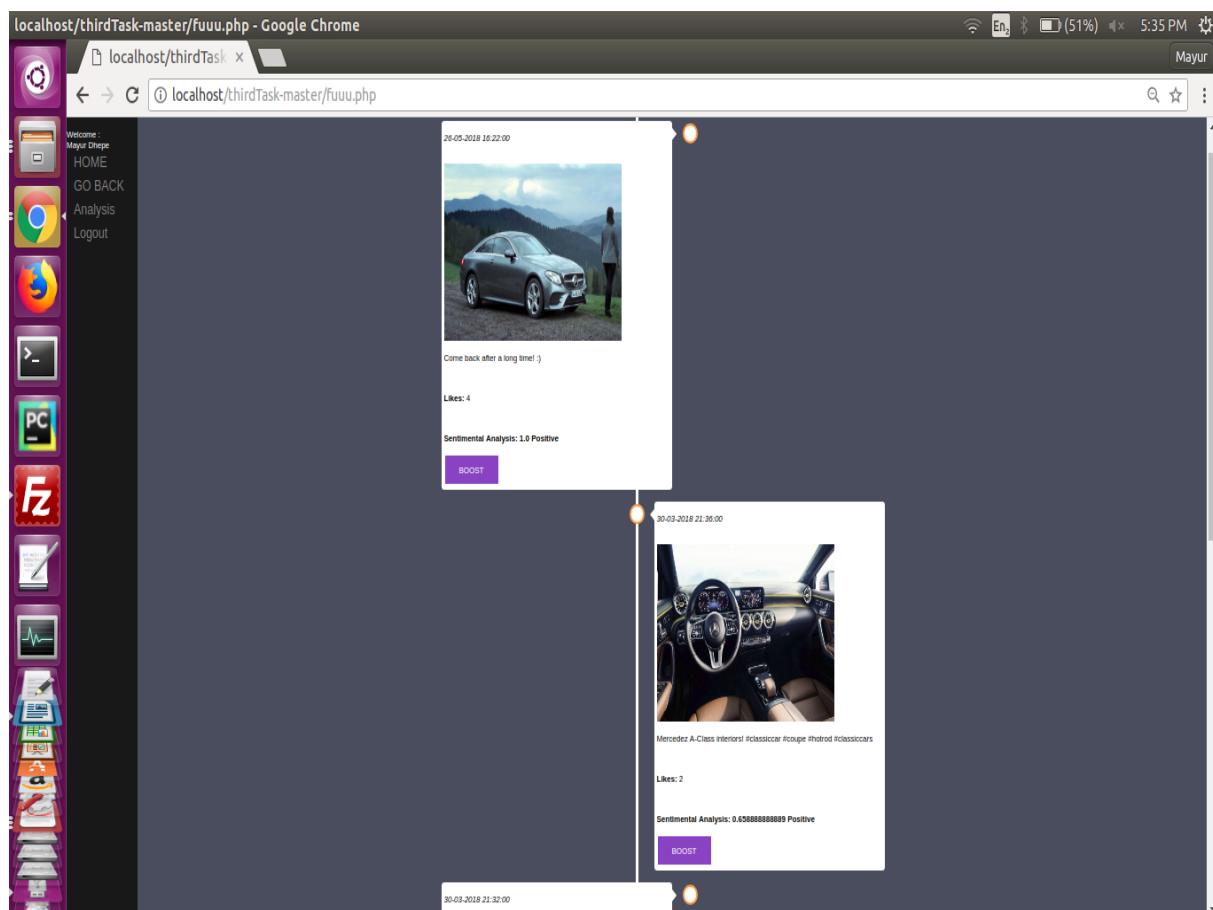
## SCENARIO 1

To login and post photo to a campaign.  
Go to POST to Campaign.



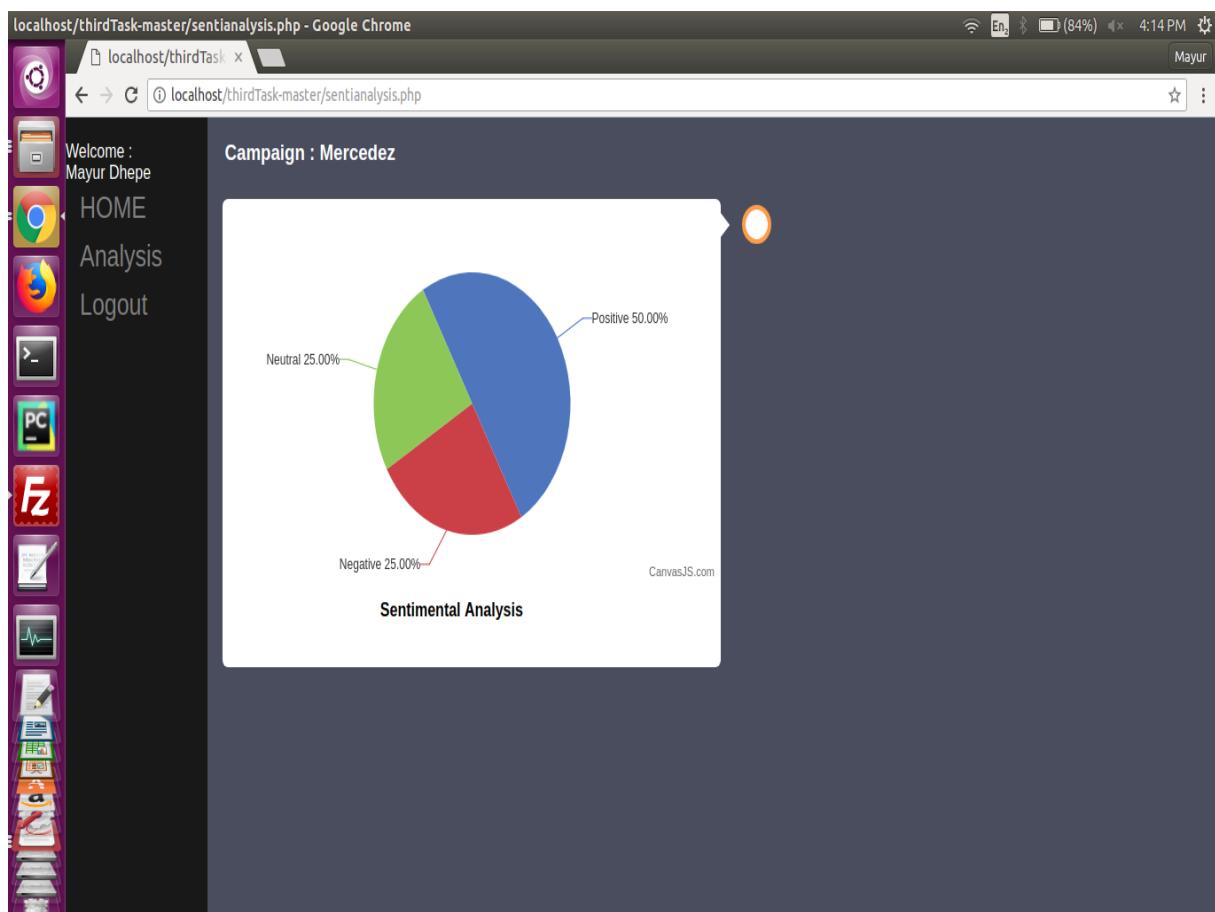
## SCENARIO 2

To log in and view Time-line of Posted photos for a particular campaign.  
Go to Campaign Timeline.



**SCENARIO 3**

To log in and View Sentiment Analysis.  
Go to POST to ANALYSIS.



# **Chapter 11**

## **CONCLUSION AND FUTURE SCOPE**

## 11.1 Conclusion and future scope

This platform can be used to execute marketing campaigns of different businesses and ensure that they get profit out of it. This is more beneficial for companies having less revenue and who want to get more profit by framing appealing Advertisement content for promotion of their products and eventually engage more customers in buying their products. Multiple social media platforms can be taken care of at once and even users who are not familiar with technology can work without putting in efforts for learning new social media platforms. We provide a common interface for users to post and analyze advertising campaigns.

B2C Marketing involves all those tactics and practices businesses use, to promote their products and services to consumers. This platform enables the marketer to create and execute multiple campaigns on various social media. And also in creating proper content for the post. The future scope of this product would be to add some more functionalists like Audience targeting in B2C. Audience targeting is important in B2C Marketing to increase revenue of businesses and avoid unnecessary investments to target unnecessary audience.

## **Appendix A**

## **REFERENCES**

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## Appendix B

# TERM-I PROJECT LABORATORY ASSIGNMENTS

### B.1 Laboratory Assignment No.1

#### Title of Assignment:

To develop the problem under consideration and justify feasibility using concepts of knowledge canvas and IDEAMatrix. Objective of Assignment: To check the feasibility of the project using the concepts of knowledge canvas and IDEAMatrix.

#### Theory:

#### Feasibility Knowledge Canvas:

Knowledge canvas is one that depicts the knowledge forces and knowledge flow across the organization and extended organizations. It captures the current knowledge state and knowledge forces in the environment. It tries to build the bigger and broader knowledge scenario for you and your environment. It helps you to identify the knowledge opportunities, prospective knowledge partners, and the knowledge losses. It is a simple representation of knowledge opportunities, with reference to the environment. It is used to establish association among these knowledge opportunities. It is different than other knowledge auditing tools, mainly because it is the representation of togetherness and association among knowledge opportunities, and not merely the knowledge gaps. This information can be represented mathematically or graphically, so that organizations can keep track of knowledge building.

**Idea Matrix:**

IDEA MATRIX			
PROJECT NAME: AUTOMATED B2C MARKETING			
	IDEA	Process	Parameters Dealt
1	Increase	Increases the accuracy of object detection in an image.	Accuracy
2	Improve	Improves the ease of posting Ads on various social media platforms.	User friendliness
3	Ignore	Database, web-hosting site, browser	Storage, Display user-interface
4	Drive		
5	Deliver	Aids in posting, scheduling and analysing various marketing campaigns.	Eases B2C Marketing process
6	Decrease	Decreases the time needed to display time line of Ads posted and time to post Ads.	Provide accurate results in less time
7	Educate	Using image processing concepts and neural networks to get optimized results	Image processing, Neural Networks
8	Evaluate	Evaluate parameters like Likes, Favourites, Polarity of comments	Data mining
9	Eliminate	Unnecessary keywords in Object recognition module.	Accurate results.
10	Accelerate	Post and analyse Ads on various social media faster.	Optimize things.
11	Associate	Process of B2C Marketing	Associate businesses involved.
12	Avoid	Longer search time of time line posts and inaccurate results	Huge time toll, Search inaccuracy

**IDEA Matrix:**

This framework identifies the key parameters to be enhanced for creating knowledge value for systematic knowledge Innovation.

**B.1.1 Conclusion:**

Hence the feasibility of the given problem under consideration is justified on the basis of knowledge canvas and IDEAMatrix.

## B.2 Laboratory Assignment No.2

### B.2.1 Title of Assignment:

Use of above to draw functional dependency graphs and relevant Software modeling methods, techniques including UML diagrams or other necessities using appropriate tools. Objective of Assignment: Understand the problem statement through various modelling methods.

### B.2.2 Theory:

#### MODELS

Using models is a critical step in helping students transition from concrete manipulative work with word problems to the abstract step of generating an equation to solve contextual problems. By learning to use simple models to represent key mathematical relationships in a word problem, student can more easily make sense of word problems, recognize both the number relationships in a given problem and connections among types of problems, and successfully solve problems with the assurance that their solutions are reasonable.

#### UML Diagrams

UML stands for Unified Modeling Language which is used in object oriented software engineering. Although typically used in software engineering it is a rich language that can be used to model an application structures, behavior and even business process. The Unified Modeling Language is a standard visual modeling language intended to be used for modeling business and similar processes analysis, design and implementation of software-based systems UML is a common language for business analysts, software architects and developers used to describe, specify, design, and document existing or new business processes, structure and behavior of artifacts of software systems.

UML can be applied to diverse application domains (e.g., healthcare, banking, finance, internet, aerospace, etc.) It can be used with all major object and component software development methods and for various implementation platforms. UML is a standard modeling language, not a software development process provides guidance as to the order of a team's activities, specifies what artifacts should be developed, directs the tasks of individual developers and the team as a whole and offers criteria for monitoring and measuring a project's products and activities. UML is intentionally process independent and could be applied in the context of different processes. Still, it is most suitable for use case driven, iterative and incremental development processes.

## Activity Diagram:

In unified modeling language (UML), an activity diagram is graphical representation used to model a large activity's sequential work flow by focusing on action sequences and respective action initiating conditions.

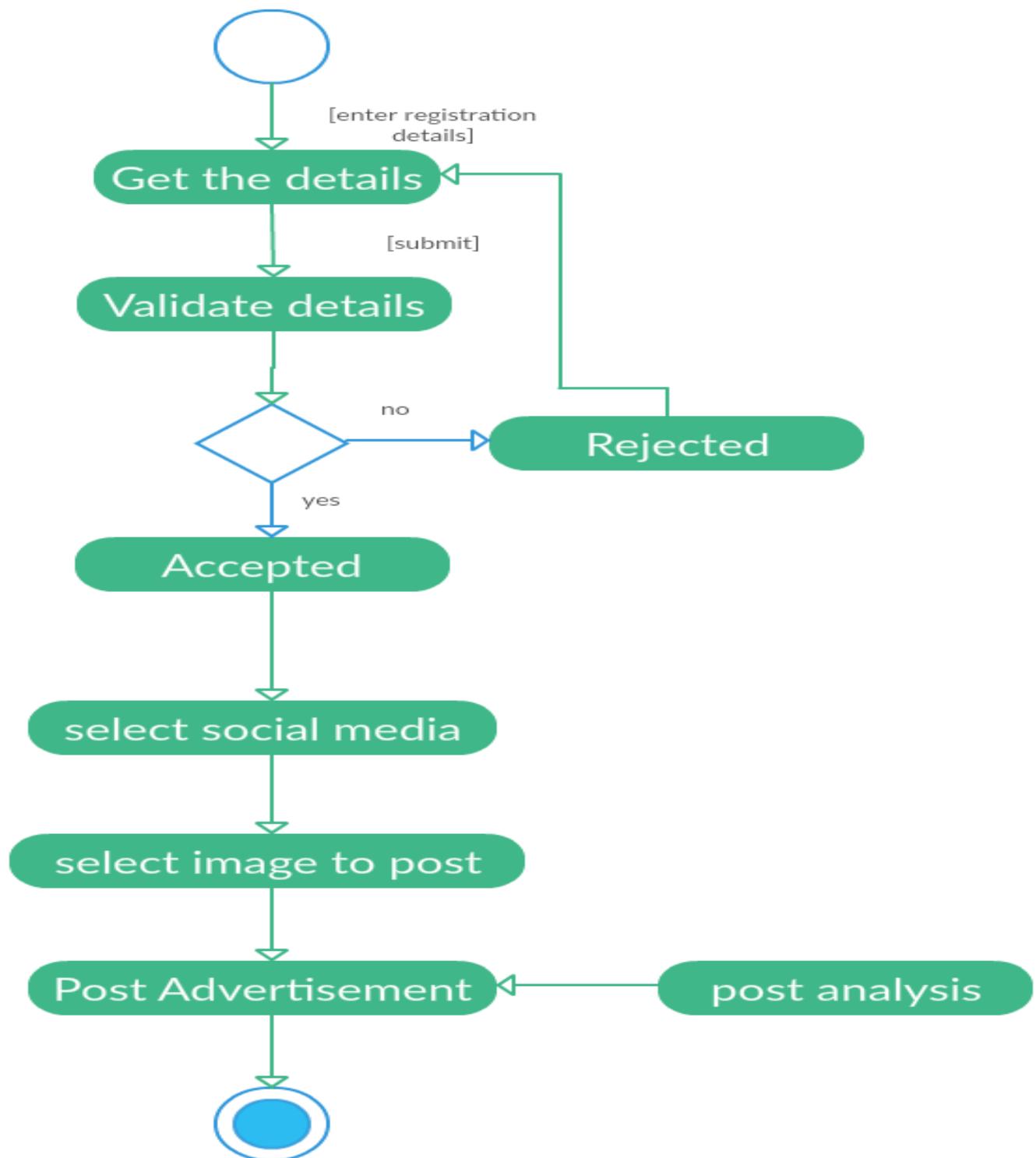


Figure B.1: Activity Diagram

## Deployment Diagram

Deployment diagram specifies a set of construct that can be used to define the execution architecture of system architecture of system that represents assignment of software artifacts to deployment node. Node represents either hardware device or software environment and can be connected through communication path.

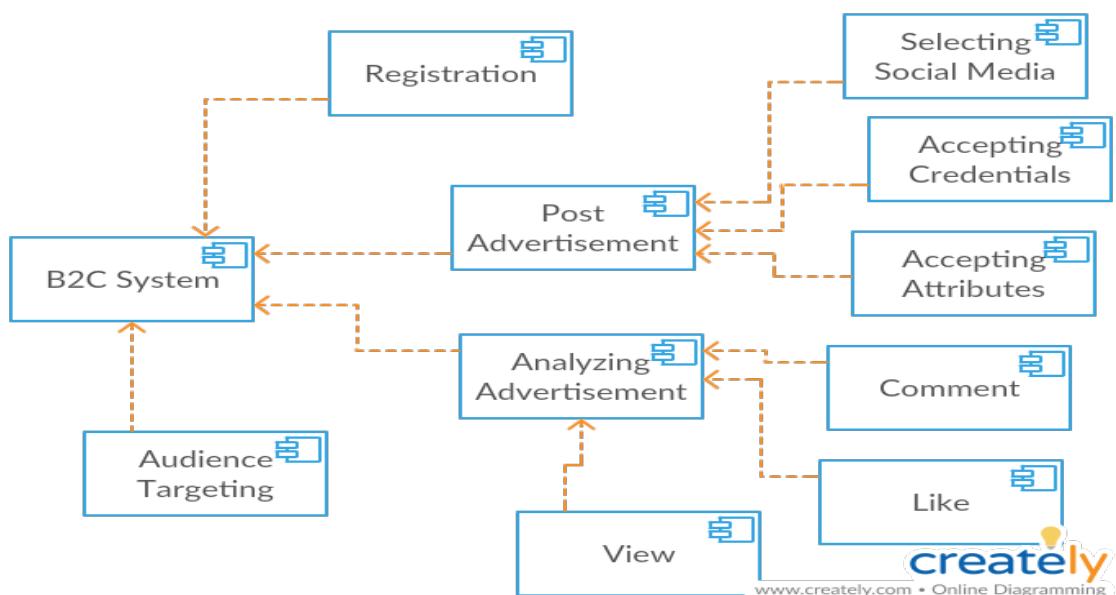


Figure B.2: Deployment Diagram

## Use Case Diagram:

Use case is a behavior of classifier that captures the requirement of system, where actor is role played by external entity that interact with subject and use case is a single unit of meaningful functionality intended by actors.

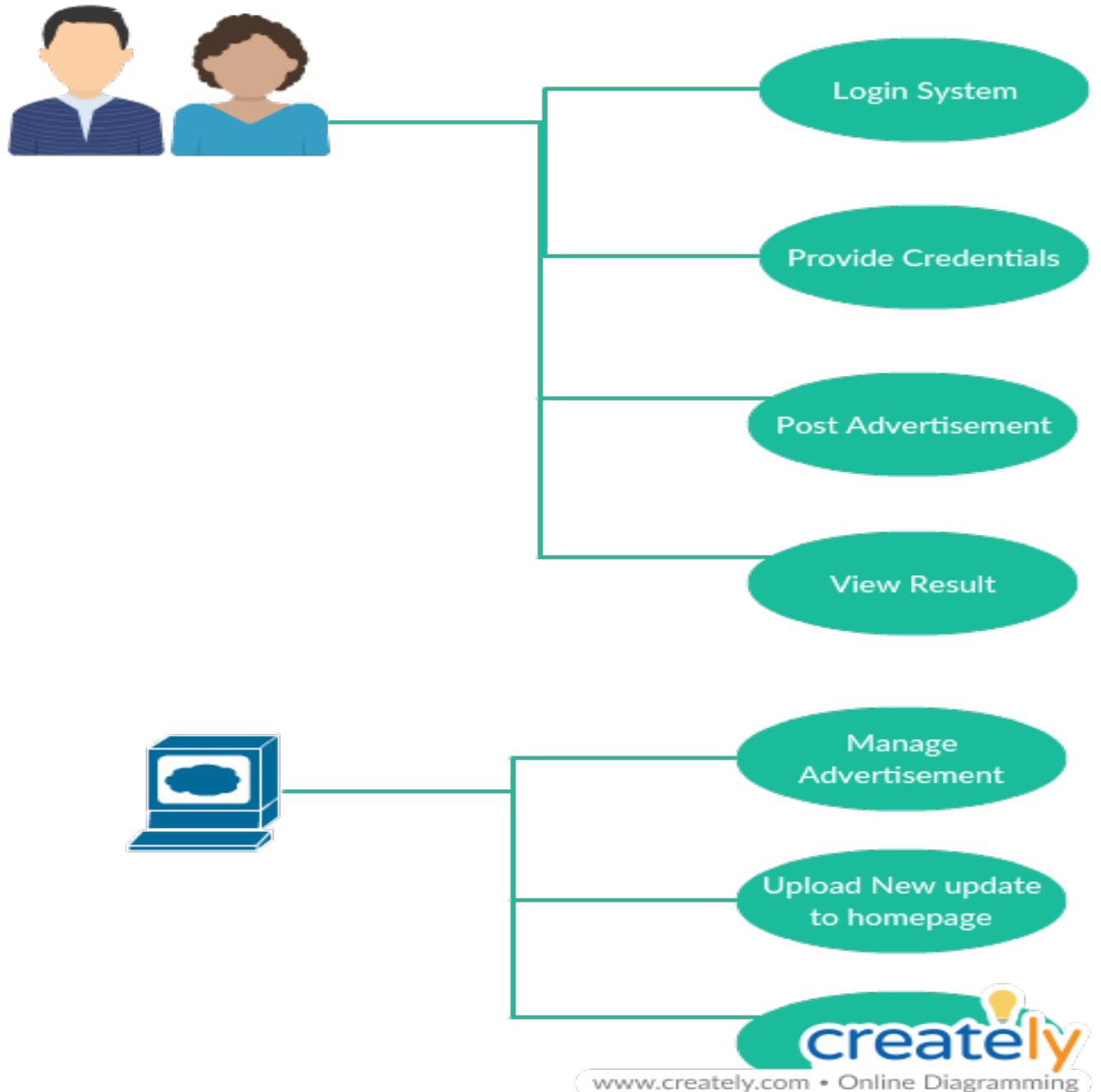


Figure B.3: Use Case Diagram

**B.2.3 Conclusion:**

We successfully understood the problem statement using various modelling methods.

## **Appendix C**

# **REVIEWERS COMMENTS OF PAPER SUBMITTED**

- Innovative and out of the box, we would like to see a successful prototype to promote our startup.
- Good for making small companies will make them concentrate less on marketing and concentrate more on more important work.
- A lot of the things from Twitter seems redundant but it's good that you guys are providing uniform platform for all the Social platforms.
- Object recognition for Hashtags generation is really original and inventive, the responsiveness and accuracy is also very impressive.

## Appendix D

### PLAGIARISM REPORT

## D.1 Plagiarism Report:

### AUTOMATED B2C MARKETING

#### ORIGINALITY REPORT

**8%** SIMILARITY INDEX      **9%** INTERNET SOURCES      **0%** PUBLICATIONS      **5%** STUDENT PAPERS

#### PRIMARY SOURCES

1	medium.com Internet Source	2%
2	dept.is Internet Source	2%
3	pjreddie.com Internet Source	2%
4	Submitted to Savitribai Phule Pune University Student Paper	2%

Exclude quotes      On  
Exclude bibliography      On

Exclude matches      < 2%

## **Appendix E**

### **INFORMATION OF PROJECT GROUP MEMBERS**

## **Appendix F**

# **Information Of Project Group Members:**

### **F.1 Mayur Dhepe**



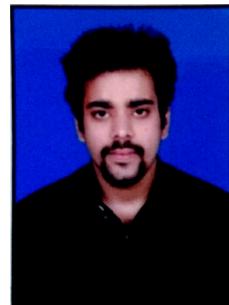
1. Name:Mayur Dhepe
2. Date Of Birth: 12/03/1996
3. Gender: Male
4. Permanent Address: C-6, Maurya Society, Koregaon Park, Pune-411001
5. Email: mayurdhepe@gmail.com
6. Mobile/Contact no.:8983038009
7. Placement Details: Placed in Mediaocean
8. Paper Published: 'Reinforcement Learning in B2C Advertising over social media' published in Vishwakarma Journal Of Engineering Research(VJER)

## **F.2 Arpita Chiddarwar**



1. Name:Arpita Chiddarwar
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