



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

MARKETING AUTOMATION FRAMEWORK

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Abstract: The main aim of this study is to examine the effect of marketing automation on business performance by mainly focusing on the effect on sales and customer experience along with identifying the barriers that frighten the successful implementation of this technology. Marketing automation improves customer experience, saves time by relieving the daily tasks such as posting messages and sending emails, ensures steadiness because same events will produce the same results, leads to optimization of the marketing strategy and also produces a coordinate multi-channel campaign that allows companies to reach the customers with conditional content, smart and relevant segmentation. To implement this, we have used different approaches -

Email is the most widely used format especially in big organizations. Most of the email responses are the same so there is a need to automate them which will save a lot of time and links can be maintained. Search Engine Optimization has become a mainstream activity in marketing nowadays. As every firm is trying to increase their online presence, SEO is most crucial in improving the ranking of the firms. Since users search keywords of their use instead of the names of the organizations, it becomes important for the business organizations to take up top positions in search engines results. Search Engine Optimization is necessary for websites to improve the rank for search outcomes and get more page views requested by the user. These search engine ranks provide the better and optimized result to users, which will help them to view the popular page among the number of pages available in the search results. Apart from this search engine ranking, it also enables the websites to compete with other rival's websites as each and every website owner expects to see their own website on the list before other websites. Web scraping is a very imperative technique which is used to generate structured data on the basis of available unstructured data on the web. Scaping generates structured data then stored in a central database and analyzed in spreadsheets. It set up an interface that would use web scraping techniques and Python modules to scrape the website data. Advanced machine learning algorithm is being used for predicting the data and categorizing them. The basic idea is to create a model that predicts the value of a particular target variable by learning simple decision rules that are taken from the data which is available in the database. The decisions and the test are to be performed on the basis of features of the actual given dataset.

Index Terms - Search Engine Optimization (SEO), Python, Excel, On page, Off page, Web Scraping, Selenium, Beautiful soup, Selenium Web driver, website optimization, Machine Learning, Lead Generation.

I. INTRODUCTION

The main goal of the Marketing automation framework involves the use of the software program to mechanize customer data integration, customer segmentation, and campaign management. Some of the marketing automation approaches that are currently used by businesses include email marketing, social media marketing, video marketing, webinar marketing, and mobile marketing. Effective implementation of marketing automation benefits companies to accelerate buyers through the sales funnel with a reduced employee involvement which eventually terminates to their costs. Automation can potentially help firms to centralize data, nature leads into customers, track accomplishment for marketing campaigns, and deliver contact strategy. Marketing automation is perceived as one of the strategic plans that enables businesses to reach a significant market share. However, firms that fail to effectively plan every aspect of the marketing campaigns might not benefit from the strategy. Marketing automation can be employed by both small and large corporations to affect buying decisions among the target customers. Adapting this technology helps businesses to maximize productivity as well as optimize company outreach. Therefore, understanding how important automation is to the firm can enable businesses to increase their competitive landscape. Automation is a technique by which a process or series of tasks can be performed without any human intervention. Email has a general format and there is a need to automate this email reply system and handle most of these queries automatically considering their repetitive nature.

Search Engine Optimization (SEO) is an effective digital marketing tool which is being used in many areas nowadays. As every organization is now trying to grow their online presence, SEO is most crucial in improving the ranking of the organization's online offerings on the search engine; SEO has become a mainstream activity in marketing. SEO techniques make use of original results, which are analyzed by search engines to increase the popularity of websites. These procedures help government and business firms/ organizations to promote their websites and increase the movement of traffic in and out of their websites.

Simply to say Search Engine Optimization (SEO) is the method of manipulating a website's prominence in the "normal" or unpaid ("organic") search results of a search engine. There are different popular search engines. Google, Bing, Yahoo etc., but Google uses even more than 80 percent of searches through Google most frequently. With their search results, most people do not go past the search engine's first page, so Search Engine Advertising (paid way) and Search Engine Optimization (free technique) are better used to boost the search engine's website / web page ranking. Most economical way to improve search engine ranking of website/webpage/blog site is SEOs as its free of cost so start-ups or small and micro-organizations can easily implement it. The higher or on top position a website/webpage is ranked on a search engine like Google, the more its chances to grab high traffic on the website, ultimately it will lead to more sales depending upon the business model of the firm. Search engines store web page details and extract it from HTML document markup. Such pages are retrieved by an "automated web crawler" that follows every link on the site. SEO is used as a tool of digital marketing which is used to analyze people's search keywords and their preferences. Website optimization is done by doing on page SEOs i.e., including keywords in the content, description, URL, metadata of a website as well as by off page SEOs i.e., creating linkages to other websites/pages. SEO is free of cost as compared to SEM (Search Engine Marketing) and that's why it's being used by most of the firms. SEM is optional but SEO is essential for improving online existence. Since there are little studies being done focusing on the role of SEO as a digital marketing tool.

There are 2 types of SEOs On-Page and Off-Page SEOs

On-page SEO focuses on the website itself & its content. It allows users to locate, use and appreciate the content effectively through search engines & searchers. It helps Google or any other search engine decide whether the content on the website/webpage is relevant & helpful. Examples include title tags, meta descriptions, headings, paragraphs, URLs. Since last decade the internet penetration as well as the content on the internet has massively increased. Thus, it becomes very crucial for the firms to take up top positions on the search engines especially on Google. Website owners "seek to change those processes to make their website available to organic or compensated search engines queries, known as Search Engine Optimization." On-Page SEOs is the most crucial method of using relevant keywords on the content of the website itself as well as on the metadata, URLs of the website. Off-page SEO refers to the creation of linkages, external links to promote websites. It can be done through online partnerships or strategic alliances. Targeting complementary business websites are more logical like online smartphone sellers creating linkages with online smartphone accessory sellers or technology bloggers.

Web Scraping - Copying of information on the website to user local storage is prohibited by most of the website authority. So, the user manually copies the data from the website to local computer file storage. But such a task is very exhausting and not time efficient. Web scraping techniques are introduced due to such limitations. By using web scraping techniques users can extract data available on many websites into a single spreadsheet. So, information can be easily visualized and analyzed for further use. The main aim of this paper is to review the different web scraping techniques and software which can be used to extract required information from web sites. Information Extraction (IE) is one of the parts of artificial intelligence. It mainly focuses on extracting valuable data out of unstructured data which is available on a website. Videos, images, audio and text are some of the common examples of unstructured data. Web Scraping is an important technique used for extracting unstructured data from the websites and transforming that into structured data in a spreadsheet. It is a form of data mining, Web Scraping is also known as web data scraping, web harvesting, web data extraction, or screen scraping. The basic and main goal of the web scraping procedure is to extract information from a different and unstructured website and change it into an understandable structure like spreadsheets, database or a comma-separated values (CSV) file. Data like item market pricing, different reports, item pricing, stock pricing, and product details, can be collected through web scraping. Extracting targeted data from websites helps to take effective decisions in business processes.

II. EXISTING WORK

As per the criteria goes into automation many projects related to e-mail automation and RPA (Robotic process automation) have been implemented. The process was indeed considered to be allowing access for automation technologies, also considering the fact of automation the basic criteria is to avoid human interference and provide human efficiency. Thus, it would not only help in utilizing time efficiently but also motivating new technologies for human needs. Considering the fact of SEO (Search Engine Optimization) projects have been developed to increase the probability of enhancing the SEO of a particular website, thus to increase the traffic ratio accordingly and enhancing the overall experience. We know that gathering data from useful websites is a crucial part of information technology thus some projects have been developed keeping in mind the importance of information with the name as Web Scraping.

III. MOTIVATION

The project has been developed keeping in mind human efficiency with respect to time and cost, thus making this project very reliable and usable according to the business specification, also motivating and understanding the importance of Marketing automation methods, makes this project very reliable and unique with respect to today needs, thus considering the fact of implementing the immense power of technology and making tasks more efficient. Through this project we can achieve the goals which cannot be possible by humans manually and saving a lot of time and work.

IV. OBJECTIVES

- To Scrape data from websites and integration of scraped data into database.
- To Implement Email-Automation and integrate connections within servers.
- To Build a simple marketing automation framework using Machine Learning.
- Page creation using automation and ranking up SEO.
- To Integrate all the above modules into our framework and advance to the final module implementation.

V. LITERATURE SURVEY

[1] Mahmoud, Mohammad & Alomari, Yazan & Badawi, Usama & Salah, Abderrazak & Tayfour, Mohammad & Alghamdi, Fahad & Aseri, Abdulah. (2020). **IMPACTS OF MARKETING AUTOMATION ON BUSINESS PERFORMANCE**. In this paper the main aim of this study is to study the effect of marketing automation on business performance by primarily focusing on the outcome on sales and customer experience along with identifying the barriers that prevent the successful implementation of this technology. Marketing automation improves customer experience, saves time by relieving the daily responsibilities such as posting messages and sending emails, ensures steadiness because same actions will generate the same results, leads to optimization of the marketing strategy and also produces a coordinate multi-channel campaign that allows companies to reach the customers with conditional content, smart and relevant segmentation.

[2] Ashar, N., Tolar, P. and Bathe, K., 2020. **Sentiment Analysis for Automated Email Response: A Review**. Available at SSRN 3565490. In this paper they have Artificial bots which are incorporated with various methods to handle different situations and to come up with correct solutions using Artificial Intelligence. Researchers have used different machine learning practices for sentiment study. As we know a business breathes on the satisfaction of its clients. The experience of customers can be either positive, negative or neutral. Owing to the internet era this experience becomes the text of their online feedback in the form of email or review. Email is the most broadly used format especially in big establishments. Most of the email responses are repetitive so there is a need to mechanize them which will save a lot of time. Lack of delivery to detect emails with complaints cause the delay in the response and resolution process. The goal of this paper is to review the research work done by different researchers in sentiment study and find new ways of improving it using Robotic process Automation and sentiment analysis. It uses RPA to extract the data and also makes best use of machine learning algorithms which satisfies the customer by providing correct results. Sentimental Analysis refers to management of sentiments, opinions and subjective texts. It is implemented using Neural Networks.

[3] Matta, H., Gupta, R. and Agarwal, S., 2020, June. **Search Engine optimization in Digital Marketing: Present Scenario and Future Scope**. In **2020 International Conference on Intelligent Engineering and Management (ICIEM)** (pp. 530-534). IEEE. This study focuses on exploring Search Engine Optimization from the managerial viewpoint as well as recognizing the role and importance of SEO in increasing the productivity of organizations. It also examines the present situation and future scope of SEO in Digital Marketing. The research is based on data collected through secondary sources. It was highlighted in the majority of the papers the importance of keyword analysis and ranking of webpages on search engines as well as the role of Search Engine Optimization. Use of SEO will benefit organizations to position their websites better on the search engines and increase the traffic flow on their websites. This will in turn increase the productivity and market share in the long run if White Hat SEO practices are used.

[4] Lemos, J.Y. and Joshi, A.R., 2017, February. **Search engine optimization to enhance user interaction**. In **2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)(I-SMAC)** (pp. 398-402). IEEE. This paper puts forward knowledge about SEO techniques and basic strategies. It also expresses different methods that are employed by search engines to improve its results. It also expresses the comparative analysis of SEO techniques in this paper. Web pages are displayed according to their rank, which is calculated by using factors like content, number of incoming and outgoing links etc. This analysis will help to improve the complete performance of search engine in a competitive world. One of the important features of search engine is to improve the performance and usability of search engines through various techniques so that user interaction will be increased to that specific website.

[5] Pratiba, D., Abhay, M.S., Dua, A., Shanbhag, G.K., Bhandari, N. and SINGH, U., 2018, December. **Web Scraping And Data Acquisition Using Google Scholar**. In **2018 3rd International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS)** (pp. 277-281). IEEE. In this paper it attempts to set up an interface which uses web scraping methods and Python modules to connect a researcher's list of publications present on Google Scholar to a MySQL database and Excel application, permitting them to access and manipulate their works in minimal procedure. Thus, by using the above discussed methodologies, the platform was created successfully which references an excel sheet with the codes randomly allotted to each scholar, scrapes data from the Google scholar and represents it in a table form in an excel sheet as well as a MySQL record.

[6] Mittal, M.K., Kirar, N. and Meena, J., 2018, October. **Implementation of Search Engine Optimization: Through White Hat Techniques.** In **2018 International Conference on Advances in Computing, Communication Control and Networking (ICACCCN)** (pp. 674-678). IEEE. The purpose of SEO is to improve the organic ranking of a website with top search engines. Article introduces and discusses the techniques of white hat search engine optimization (SEO). This study works on the latest algorithms of search engines specifically for Google without getting sandboxed. Proposed mechanism used in this paper is harmless and practically possible to grow the search traffic. This is done by On-page and Off-page Search engine optimization techniques. The higher the outcome of any website in the organic result of any search operation, there is more possibility that the user will view that website. It uses meta tags, keywords and their examination, links and content for human readers.

[7] Singrodia, V., Mitra, A. and Paul, S., 2019, January. **A Review on Web Scrapping and its Applications.** In **2019 International Conference on Computer Communication and Informatics (ICCCI)** (pp. 1-6). IEEE. This paper focuses on various aspects of web scraping, beginning with the basic introduction and a brief discussion on various software's and tools for web scraping. It explains the process of web scraping with an explanation on the various types of web scraping techniques and finally concludes with the advantages and disadvantages of web scraping and an in-detail description on the various fields where it can be applied. Throughout this paper they have reviewed the various aspects of Web Scraping techniques. Starting with the tools and software for web scraping, they have mentioned the operating principle, strength and drawbacks and finally viewed the applications of web scraping systems.

[8] Fariborzi, E. and Zahedifard, M., 2012. **E-mail Marketing: Advantages, Disadvantages and Improving Techniques.** **International Journal of e-Education, e-Business, e-Management and e-Learning**, 2(3), p.232. Email marketing is a method of direct marketing which uses electronic mail as a medium for communicating commercial or fund-raising messages to an audience or clients. In this paper, there is a systematic review on its advantages and disadvantages of the system. In addition, there are some recommendations to Iranian Marketing Company regarding improving E-mail Marketing. More results are subsequently explained in the paper about Email Marketing.

[9] Saurkar, A.V., Pathare, K.G. and Gode, S.A., 2018. **An overview on web scraping techniques and tools.** **International Journal on Future Revolution in Computer Science & Communication Engineering**, 4(4), pp.363-367. In this paper they have discussed that Web scraping is a very imperative technique which is used to generate structured data on the basis of available unstructured data on the website. Scaping generated structured data then kept in the central database and inspected in spreadsheets. Traditional Text grapping, copy-and-paste, and HTTP programming, HTML parsing, DOM parsing, regular expression matching, Web scraping software, Vertical aggregation platforms, Semantic annotation recognizing and Computer vision web-page analyzers are some of the common methods used for data scraping. As compared to these methods web scraping software is the simplest scraping technique. Their paper is focused on the overview on the data extraction technique i.e., web scraping, different methods of web scraping and some of the recent tools used for web scraping. To get automatic information from websites, web scraping is the most effective and efficient technique. Web scraping is a more reliable, fast and automatic data retrieval system. By using web scraping terminology operators can simply retrieve unstructured data on single or multiple websites into a structured data automatically. The main aim of this technique is to get data from the web and collect into a new dataset. They also discussed the basics of web mining.

[10] Gojare, S., Joshi, R. and Gaigaware, D., 2015. **Analysis and design of selenium webdriver automation testing framework.** **Procedia Computer Science**, 50, pp.341-346. In this paper they have designed and executed an automation testing framework for testing web applications. This new testing framework has been implemented using selenium WebDriver tool. Using this framework, testers can simply write their test cases efficiently and in less time. Testers need not to learn the selenium web driver tool in detail. This framework is very helpful to developers to examine their code due to the feature of screenshot property of the framework. The automation test scripts are simple to understand using this framework tool. This framework gives the customized test report to the tester for the further process. Using this framework, it is very simple to maintain and repair the test suite for a new release of the application. This tool is very useful and efficient for dynamically changing web applications. In this way automation framework supports organizations to test web applications efficiently.

VI. RESEARCH GAP

As marketing automation continues to be an essential aspect in today's business environment, more studies have focused on it by identifying the impact it has on the performance of organizations and identification of various challenges that hinder successful implementation. Little studies have researched on how successfully marketing automation can be implemented by both small and large organizations. Businesses need to understand how they can successfully leverage technology to realize reduced costs and increased business efficiency and how marketing automation can lead to significant improvements of the firm's performance.

VII. LIBRARIES WHICH ARE USED:

BEAUTIFULSOUP - BeautifulSoup is a Python library for extracting information out of XML and HTML files. It works with parser to provide idiomatic ways of searching, navigating, and modifying the parse tree. It saves programmers hours of work and time. BeautifulSoup is a library that makes it easy to scrape or extract useful data from web pages.

REQUESTS - Requests library is 1 of the important parts of Python for creating HTTP requests to a specific URL. Whether it be Web Scraping or REST APIs, requests are must to be learned for proceeding further with these technologies. When one makes a request to a URI, it returns or gives a response to that. Python requests offer inbuilt functionalities for handling both the response and request.

- It is an Apache2 Licensed HTTP library that lets you send HTTP/1.1 requests using Python Programming language.
- To play with web different parts, Python Requests must be used.
- Requests play a major role in dealing with Web Scraping, and REST APIs.

PANDAS - Pandas is a software library for the Python programming language for data management and analysis. Pandas offers data structures and procedures for manipulating numerical tables and time series. pandas are a powerful, flexible, fast and easy to use open-source data analysis and manipulation tool, built on top of the Python programming language.

OPENPYXL - Openpyxl is a Python library for reading and writing Excel with the following extension xlsx/xlsm/xltx/xltn files. The openpyxl module allows Python programs to read and modify Excel files easily. It is used to perform excel tasks such as read data from excel or write data to excel, draw some charts, accessing excel sheet, renaming sheet, modification adding and deleting in formatting, styling in the sheet, excel sheet, and any other task. Openpyxl is very efficient and can easily perform these tasks.

SMTPLIB - Simple Mail Transfer Protocol (SMTP) is a protocol, which allows sending e-mail and routing email between mail servers. Python programming language provides SMTPLIB module to send email. Simple Mail Transfer Protocol (SMTP) is used as a protocol to send the email transmission using Python programming language. It is used to send emails between email servers. The receiver retrieves email using the protocols IMAP (Internet Message Access Protocol) and POP (Post Office Protocol).

URLLIB - Urllib module is the URL handling module for Python programming language. It is used to retrieve URLs (Uniform Resource Locators). URL open function is used to fetch URLs using a diversity of different protocols. Urllib is a package that gathers several modules for working with URLs, such as:

1. urllib.request for opening and reading.
2. urllib.parse for parsing URLs
3. urllib.error for the exceptions raised
4. urllib.robotparser for parsing robot.txt files

DECISION TREE CLASSIFIER - Decision Tree is a Supervised learning method that can be used for both classification and Regression problems, but mostly it is preferred for solving Classification problems. The basic idea is to create a model that predicts the value of a particular target variable by learning simple decision rules that are inferred from the data features. It is a tree-structured classifier, there are two nodes, which are the Decision Node and Leaf Node. Decision nodes are basically used to make any particular decision and have multiple branches accordingly, whereas Leaf nodes are known as the output of those decisions and they do not contain any further branches. The decisions and the test are to be performed on the basis of features of the actual given dataset. It is basically a graphical representation thus for getting all the possible solutions to a problem based on given conditions. It is known as decision tree because it is similar to a tree structure, it starts with the root node thus expanding on further its branches and constructs a tree-like structure. We are using the CART algorithm in order to build a tree. Decision trees are the most popular machine learning algorithms given their intelligibility and simplicity. In decision analysis, a decision tree can be used to visually and clearly represent decisions and decision-making. In data mining, a decision tree defines data but the resulting classification tree can be an input for decision making.

SCIKIT-LEARN - Scikit-learn, which is also known as sklearn, is a free software machine learning library for the Python programming language. It features various regression, classification, and clustering algorithms including support vector, random forests, gradient boosting machines, k-means and DBSCAN, and it is designed to work with the Python numerical and scientific libraries NumPy and SciPy.

OS - Python OS module provides the feature to establish the communication between the user and the OS (Operating System). It offers many useful Operating System functions that are used to perform OS-based tasks and get related information about operating systems in Python programming language. It comes under Python's standard utility modules and it is very efficient. The module offers a portable method of using operating system dependent functionality.

VIII. PROPOSED SYSTEM

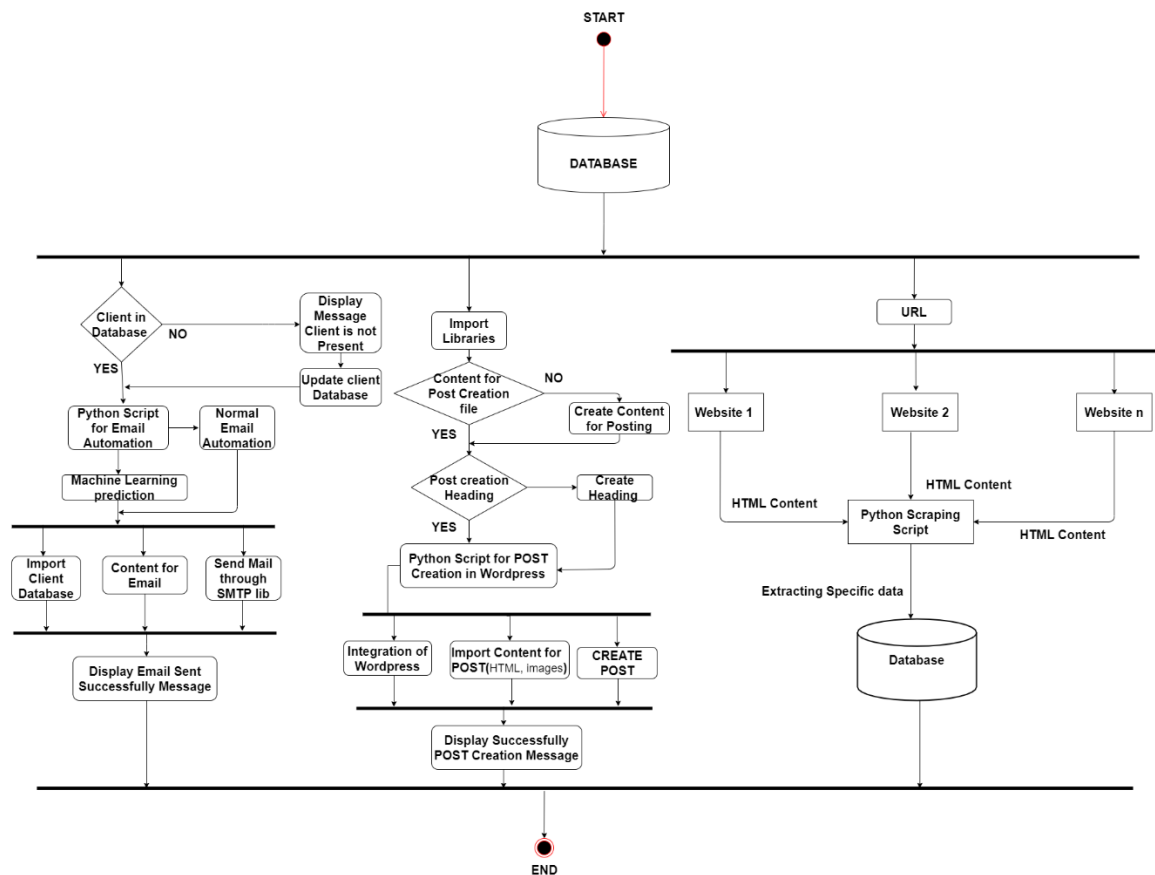


Fig. 1: Framework Architecture

The above diagram shows the working of our marketing automation framework where all the different modules are been integrated and have been successful with the implementation this framework consist of following modules:

1. Web Scraping

In the above diagram we are scraping data into our database from multiple sources using automation script, parallelly we are integrating this module into our framework. We are using BeautifulSoup which is a Python library for extracting information out of XML and HTML files. BeautifulSoup is a library that makes it easy to scrape or extract useful data from web pages. It saves programmers hours of work and time for extracting data from the website. Python Request is being to return a response to that URL. Python requests offer inbuilt functionalities for handling both the response and request. To work with different web parts Request saves a lot of time and work. We have used the Urllib module which is the URL handling module for Python programming language. It is used to retrieve URLs. In this we have used libraries for scraping website data like Selenium, BeautifulSoup, Requests, URLLIB and implemented the same. All the data which has been retrieved were saved in Structured format in Excel file. This will help to extract specific contents from the website, more than 15 thousand school (like School name, school address, Phone number, Email ID, etc.) data has been scraped using automation script and it was working efficiently and saved human manual work and time.

2. Post creation

In the above diagram we are building an automation script for post creation which will be parallelly integrated into our framework. In these different libraries like SMTPLIB, Time, OS, MIME (Multipurpose Internet Mail Extensions), OpenPYXL. The OS library for os operations in the file where the content of post will be saved, the mimetext and mime image libraries are been used to allow the integration of images and content in our post. Once the script successfully runs it will show how many posts have been created. Not only posts/pages created, but it also ranked up at the top of the SEO (Search Engine Optimization). The visitors can then possibly be transformed into customers. As the content was unique it ranked top in the SEO.

3. Email automation

In the above diagram we are able to automate email using python and different libraries like SMTPLIB, Time, OS, MIME (Multipurpose Internet Mail Extensions), OpenPYXL. Using these libraries, we were able to automate emails according to the business needs to specific clients thus time scheduling, html template, contents were some of the aspects of this module. The smtplib is a Python library for sending emails using the Simple Mail Transfer Protocol (SMTP). The openpyxl module allows Python programs to read and modify Excel files easily. We have imported client's data (Email ID) which were stored in the company database from a CSV file for sending Emails to them. The emails which we are sending were not just

simple text messages, but also able to send HTML formatted (Images, Videos, Embedded links) Email messages. The process of sending Email to the clients was fully automated and was implemented the same with the help of python script. In this module we have used advanced algorithms like Machine Learning for sending email, and we were able to automatically classify the clients with the help of this. After classifying the clients, it shoots emails accordingly. The algorithm will give the best prediction according to the information. With the help of Machine Learning it analyzes data and predicts the best outcome.

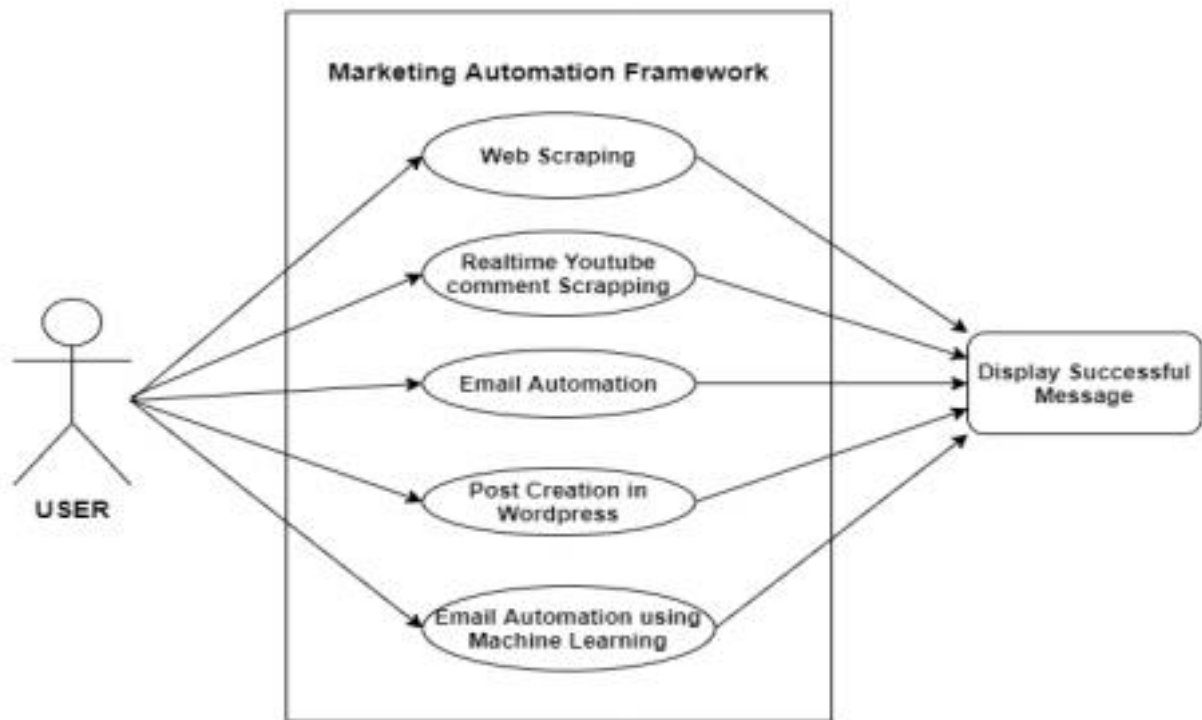


Fig. 2: Marketing Automation Framework Use Case diagram Description:

In the above diagram it shows the integration of different modules we have built basically this framework is capable of performing different task as per business needs like one can use this project for multiple purpose like Email Automation, Web Scraping, Auto Post Creation, Real Time YouTube Scraping and Email Automation using Machine learning. The libraries used for this framework are BeautifulSoup, MIME, Openpyxl, OS, SMTPLIB, Selenium, Request, Urllib.

IX. RESULT AND ANALYSIS

Web Scraping

Academic Heights Public School Medium : English Address : P.d Pandya College Campus , Po:vatva G.i.d.c , Ghodasar State : Gujarat City : Ahmedabad Pincode : 382445 Contact : + 079 65434424 Email : ahps5054@academichights.in Website : WWW.AHPSAHMEDABAD.COM	Adani Vidya Mandir Medium : English Address : B/h Adani Cng Pump, Off. S. G. Highway, Makarba State : Gujarat City : Ahmedabad Pincode : 380051 Contact : + 079 25557725 Email : principal@adanividyamandir.com Website : www.adanividyamandir.org	<ul style="list-style-type: none"> • CBSE Schools in Bharuch • CBSE Schools in Bhavnagar • CBSE Schools in Bhuj • CBSE Schools in Dahod • CBSE Schools in Dang-ahwa • CBSE Schools in Devbhumi Dwarka • CBSE Schools in Gandhinagar • CBSE Schools in Jamnagar • CBSE Schools in Junagadh • CBSE Schools in Kheda • CBSE Schools in Kutch-bhuj • CBSE Schools in Mehsana • CBSE Schools in Narmada • CBSE Schools in Navsari
Airport School Medium : English Address : Aai Residential Quarters, Sardarnagar State : Gujarat City : Ahmedabad	Amrita Vidyalayam Medium : English Address : Plot No.83 Near Revamani Hall Janata Nagar Road Ghatlodia, Distt Ahmedabad, Gujarat State : Gujarat City : Ahmedabad	

Fig. 3: Screenshot of Website from which data will be scraped

Description: This image shows the site from which we will be scraping data, In this we are going to scrap all the data from all the schools from different states and different cities that will be needed for further classification.

```

demo1.py
1 import requests
2 import urllib.request
3 from bs4 import BeautifulSoup
4 import lxml
5 import csv
6
7 print("Enter the Website URL: ")
8 url = str(input())
9 url = url + '?page={}'
10 print(url_1+"\n")
11
12 for page in range(1,5):
13
Run: demo1
"C:\Users\AKSHAY M\anaconda3\python.exe" "C:/Users/AKSHAY M/Desktop/RTOTAL_Internship_Backup/CI/demo1.py"
Enter the Website URL:
https://www.careerindia.com/cbse-schools-in-pune-c464.html
https://www.careerindia.com/cbse-schools-in-pune-c464.html?page={}
https://www.careerindia.com/cbse-schools-in-pune-c464.html?page=1
page: 1
CBSE Schools in Pune
https://www.careerindia.com/cbse-schools-in-pune-c464.html?page=2
page: 2

```

Fig. 4: Web Scraping Code Screenshot

Description: This above image shows the working of our python script for Web Scraping as you can see; we are passing a URL from which it will scan all the pages for that particular keyword and scrap the entire page accordingly and save it to an csv file format which will be integrated to our database.

School_name	Medium	Address	State	City	Pincode	Contact	Email	Website
Aaryans School	Medium : English	Address : S.no.12/15,bhilarewad	State : M	City : Pun	Pincode :	Contact :	Email : pa	Website : www.aaryansworldschool.com
Abhinav English School	Medium : English	Address : Sr. No.23/2/3, A/p. Na	State : M	City : Pun	Pincode :	Contact :	Email : as	Website : www.abhinavcbse.org
Abhinav Public School	Medium :	Address : Sr. No 659/660, Manja	State : M	City : Pun	Pincode :	Contact :	Email : abhinavpublicschoolcbse@gmail.com	
Academic Heights Public Sch	Medium : English	Address : Gat No. 1660 / 2, Patil	State : M	City : Pun	Pincode :	Contact :	Email : ahps.phlox@gmail.com	
Aditya English Medium Sch	Medium : English	Address : Sr. No. 70, Dhankude	State : M	City : Pun	Pincode :	Contact :	Email : ad	Website : http://www.adityahorizonnschool.com
Air Force School	Medium : English	Address : Air Force Station Vima	State : M	City : Pun	Pincode :	Contact :	Email : pr	Website : www.airforceschoolpune.ac.in
Akshara International Scho	Medium : English	Address : S. No. 109, Wakad, Pur	State : M	City : Pun	Pincode :	Contact :	Email : ad	Website : www.akshara.in
Alard Public School	Medium : English	Address : S.no 50, Near Rajiv Gar	State : M	City : Pun	Pincode :	Contact :	Email : ap	Website : www.alardpublicschool.com
Amanora School	Medium : English	Address : No.2, Sect As-3, Amanc	State : M	City : Pun	Pincode :	Contact :	Email : pr	Website : www.amanoraschool.edu.in
Amrutwel Global School	Medium : English	Address : A/p Shikrapur Tal.shir	State : M	City : Pun	Pincode :	Contact :	Email : an	Website : http://www.amrutwelglobalschool.co.in

Fig. 5: Storing Scraped data in Excel sheet

Description: The above image shows the csv file where we are having all the data scraped from a particular website which will be saved in this very file. Also, the data will be sorted according to the name, phone number and address accordingly.

POST CREATION AND SEO RANKING

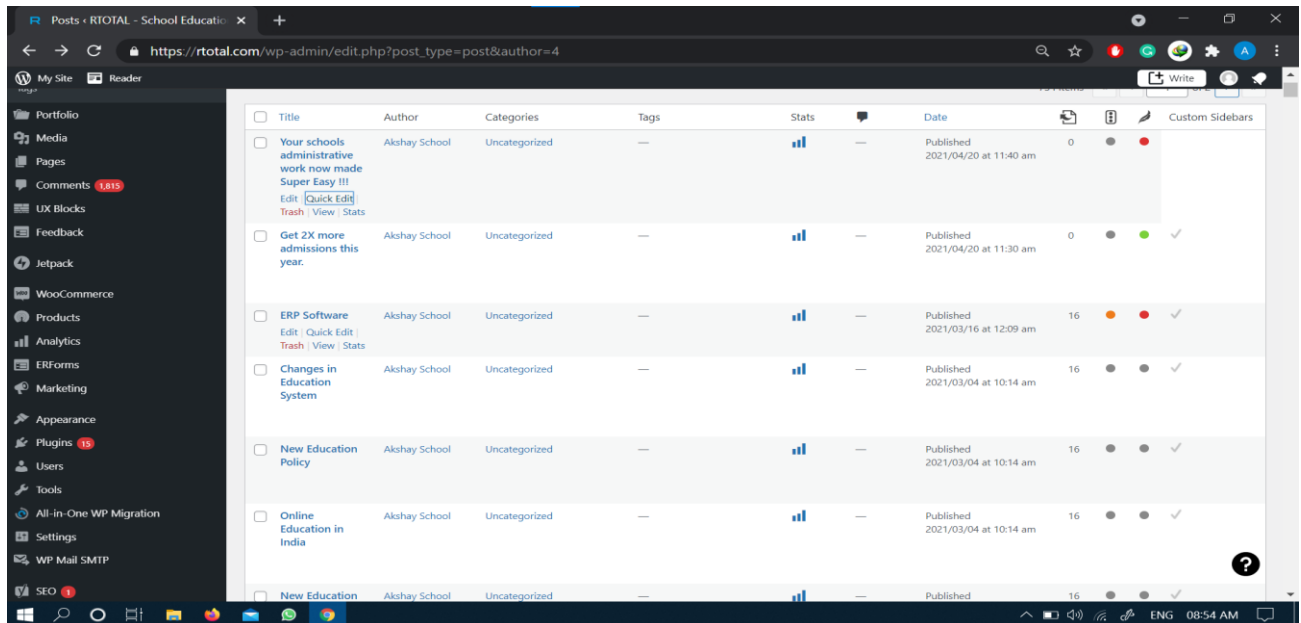


Fig. 6: Post Creation in WordPress

Description: In the above image it shows the WordPress administration panel which allow us to see how many and what kind of post have been posted from our website. As per the image we have successfully created and uploaded the post with our python script for auto posting, basically this helps in ranking up the SEO of our website for a particular keyword.

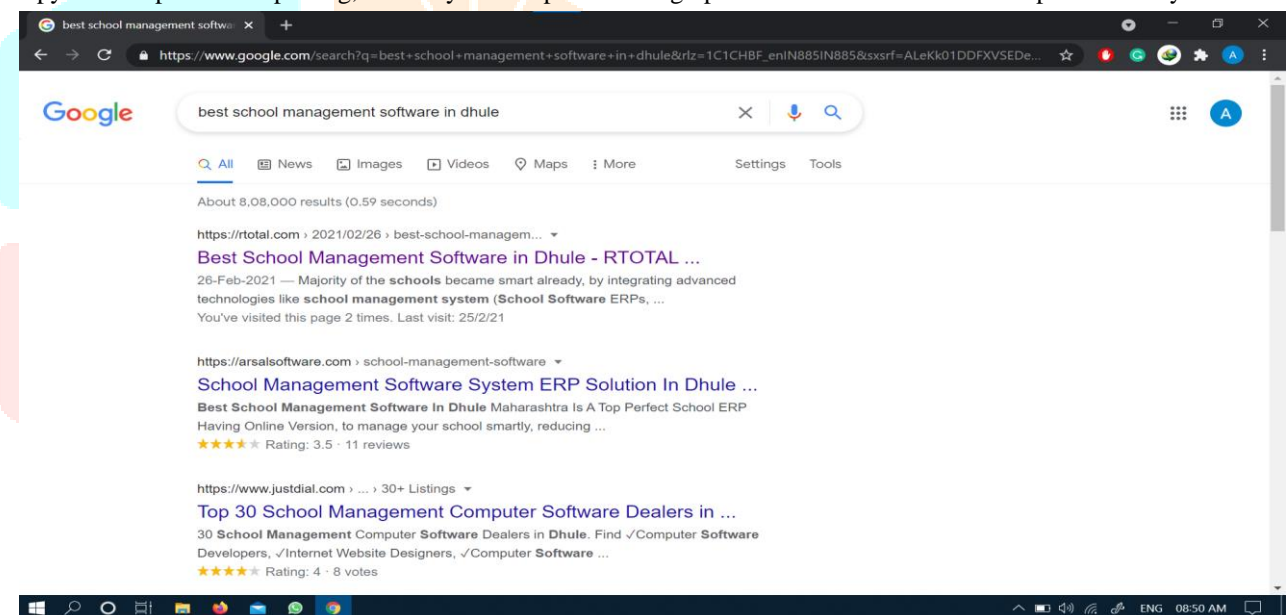
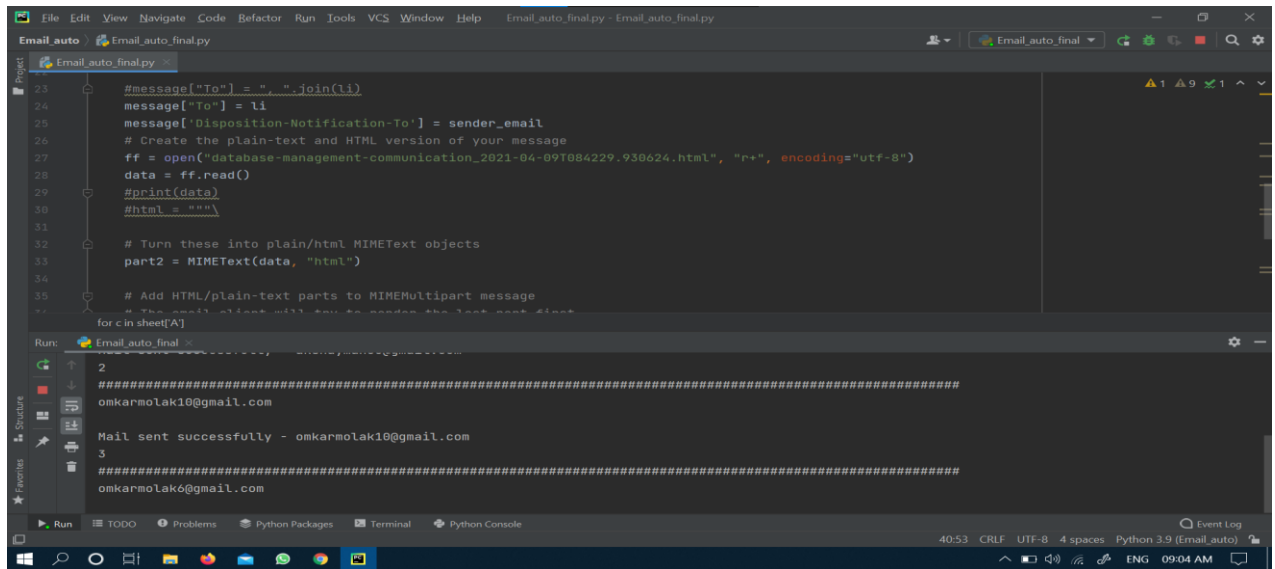


Fig. 7: Ranking Up of Post in Search Engine Optimization

Description: The above image shows the success of our post creation which was able to rank up the website SEO when a particular keyword is being searched. This was possible within 7 days itself. Thus, due to which we were able to increase traffic on our website successfully.

Email Automation:



```
23 #message["To"] = ", ".join(li)
24 message["To"] = li
25 message['Disposition-Notification-To'] = sender_email
26 # Create the plain-text and HTML version of your message
27 ff = open("database-management-communication_2021-04-09T084229.930624.html", "r+", encoding="utf-8")
28 data = ff.read()
29 #print(data)
30 #html = ""
31
32 # Turn these into plain/html MIMEText objects
33 part2 = MIMEText(data, "html")
34
35 # Add HTML/plain-text parts to MIMEMultipart message
36 # The email object will take care of encoding the text part first
37 for c in sheet["A"]
38     #####
39     omkarmoLak10@gmail.com
40     #####
41     Mail sent successfully - omkarmoLak10@gmail.com
42     #####
43     omkarmoLak6@gmail.com
44     #####
```

Fig. 8: Email Automation Script

Description: The above image shows the python script for mail automation, in this we were able to automate email as per the business needs also, we were able to implement html template within the mail being sent thus being able to send a more precise and attractive mail to our clients using this script

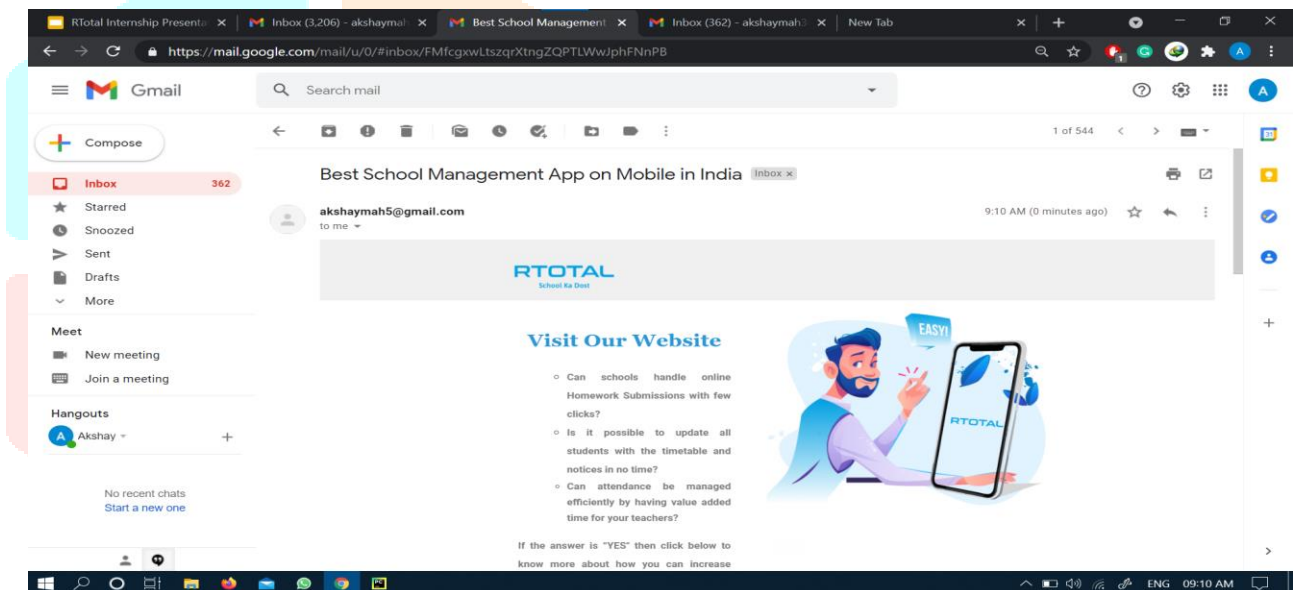


Fig. 9: Email Automation Sent Screenshot

Description: This image shows our success in email automation where we can see that not just a simple text mail but a more attractive and eye-catching email has been sent through our script to our clients thus satisfying the business needs.

```

Final_Integration.py
1 import pandas as pd
2 import csv
3 from sklearn import linear_model
4 from Career_India import *
5 from Justdial import *
6 from yt_comment import *
7 from Email_automation import *
8 from posting import *
9 count = 1
10 while count <= 2:
    while count <= 2 : elif x == 3

```

Run: Final_Integration

```

3. Post Creation
4. Email Automation using Machine Learning
Select the option from below:
1
WEB SCRAPING
1. Scrape data from CAREER INDIA Website
2. Scrape data from JUST DIAL Website
3. Scrape COMMENT from YouTube
Select the option from below:

```

Fig 10. Marketing Automation framework

The above diagram shows the working of our marketing automation framework where all the different modules have been integrated and have been successfully implemented. This framework consists of following modules:

- Web Scraping
- Email Automation
- Post/ Page Creation
- Email automation using Machine Learning

X. ACKNOWLEDGMENT

We thank our Head of the Department Dr. Rajneeshkaur Sachdeo Mam, for providing the necessary facilities for the completion of this project work in our college to make the project successful. Special thanks for the students who has contributed and made the project successful.

XI. CONCLUSION

Thus, we were able to successfully build a marketing automation framework which needs no human interference and is sufficient to form clusters as per the business needs and shoot proposed mails according to the specific cluster formed by our system algorithm. Also, decision tree algorithm has been successfully implemented to form the clusters as we needed thus solving the real time problem, which was helpful in saving time and forming the adequate clusters as per the business needs. Thus, making this project time and cost efficient.

XII. FUTURE WORK

In this framework we can implement advanced libraries to implement a GUI interface and a voice overlap thus to implement a very advanced framework which will be visually represented in a very systematic way where any non-technical person will be also able to work on it, also the voice overlap can help this project to be very assistive and futuristic. Implementation of GUI will not only make this project less complex but also will be very reliable as per any business needs.

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