INSTAGRAM POST AUTOMATION

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report **"Instagram Post Automation: Upload, Delete, and Messaging Using UiPath RPA"** is the bonafide work of **"DIVYA SURESH (220701069)"** who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

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ABSTRACT

This project leverages UiPath Robotic Process Automation (RPA) to automate multiple Instagram tasks, including post uploading, post deletion, messaging contacts, and liking the latest reels. The solution utilizes a variety of UiPath activities such as Starting Browser to initiate Instagram, Web Recording for task sequence automation, and Anchors for dynamic element positioning to ensure smooth interaction with the Instagram interface. Additionally, Screen Scraping and Data Scraping are employed to extract visual and structured data from Instagram, while PDF Extraction allows for the handling of downloadable content. The automation process is supported by robust selectors and debugging techniques to ensure accuracy and reliability, especially when dealing with dynamic content. This approach enhances efficiency by eliminating manual effort and streamlining common social media management tasks. Future enhancements could further improve scalability and integration with other social media platforms, expanding the capabilities of the automation.

LIST OF FIGURES

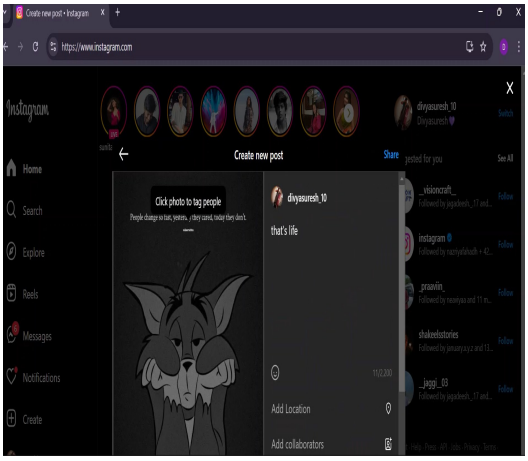


Fig 1-uploading

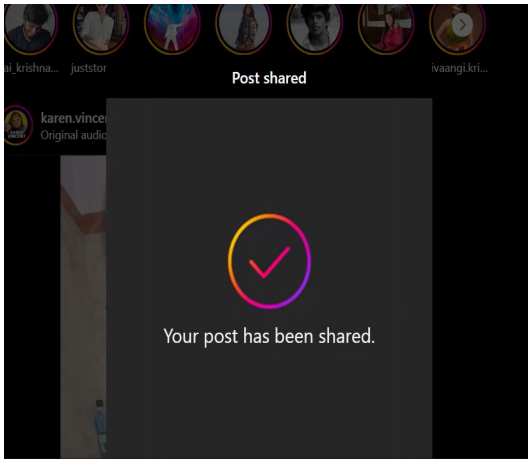


Fig 2-post uploaded

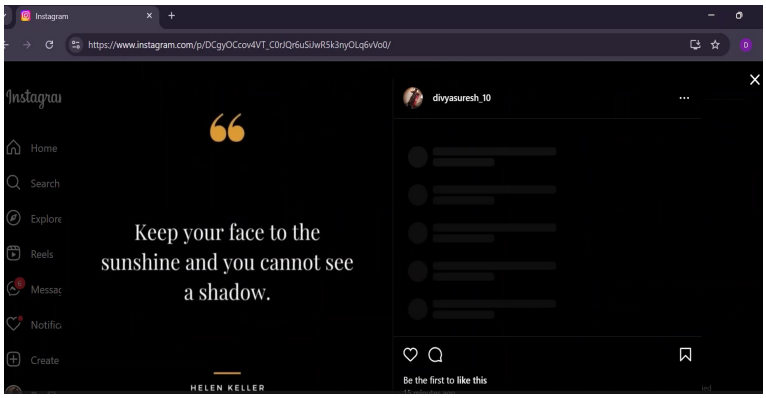


Fig 3-post selection

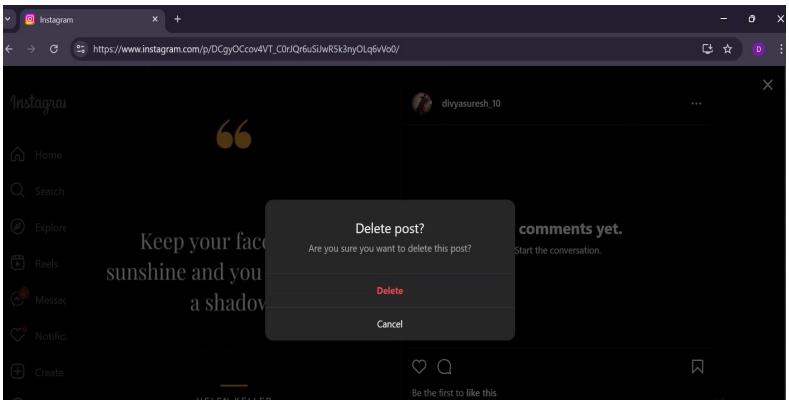


Fig 4-post deletion

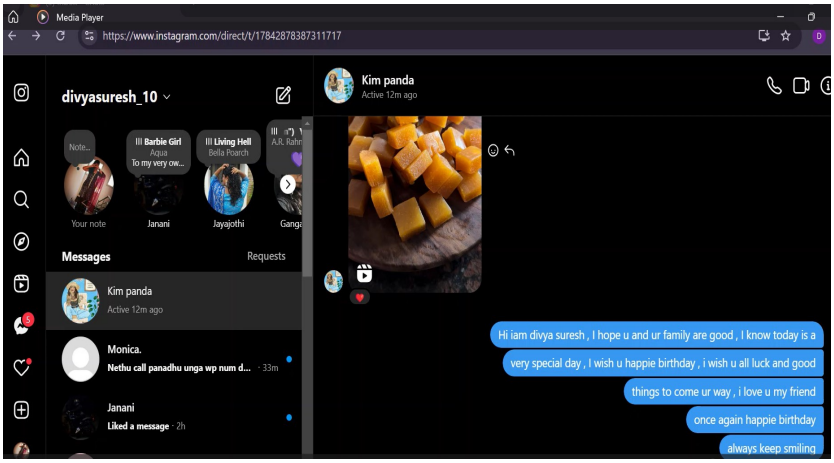


Fig 5-automated messages

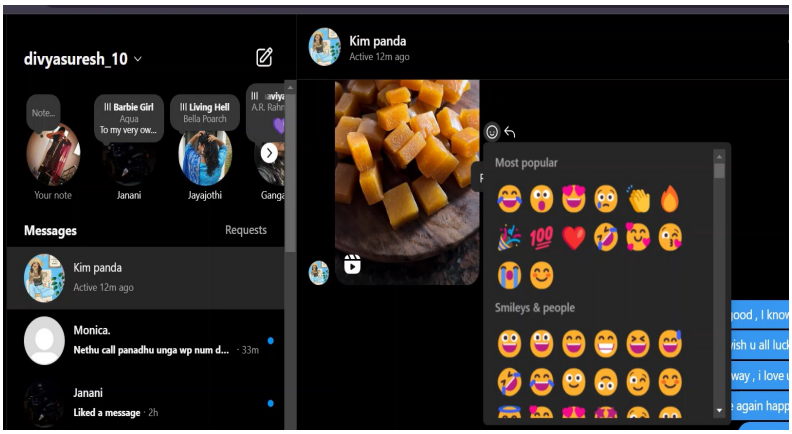


Fig-6-reacting for reel

INTRODUCTION

GENERAL

In today's digital age, social media platforms like Instagram play a crucial role in personal and professional interactions. Managing repetitive tasks on such platforms can be time-consuming and prone to errors. This project focuses on leveraging Robotic Process Automation (RPA) tools, specifically UiPath, to automate common Instagram tasks. The project aims to simplify activities such as uploading posts, deleting selected posts, sending messages to contacts, and interacting with reels (liking the latest one). By using automation, these tasks are performed with speed, accuracy, and minimal human intervention, demonstrating the practical application of RPA in real-world scenarios. Through this project, we also explore and utilize various UiPath functionalities, including screen scraping, web scraping, PDF extraction, and image recognition, to enhance the efficiency and accuracy of automation processes. The proposed solution is not only scalable but also adaptable to other social media platforms, paving the way for further enhancements in digital automation.

OBJECTIVE

The primary objective of this project is to automate common Instagram tasks using UiPath Robotic Process Automation (RPA) to improve efficiency and reduce the time spent on repetitive manual processes. The specific objectives include Enable automatic uploading of images to Instagram by interacting with the platform's user interface, saving users time on manual posting tasks. Provide a solution to identify and delete specific posts, ensuring that users can easily manage and clean up their Instagram feed. Implement a feature to send messages to selected contacts, allowing users to engage with their Instagram network without manual intervention. Automatically like the most recent reels shared by a user's contact, improving user engagement and maintaining an active Instagram presence. Utilize Screen Scraping and Data Scraping techniques to extract visual and structured data from Instagram for analysis and backup purposes, supporting decision-making processes. Ensure robustness and reliability of the automation by using Selectors and Debugging Selectors to handle dynamic elements and unexpected changes in the Instagram interface. The project aims to streamline Instagram management for users, saving time, enhancing user engagement, and providing an efficient, automated solution for social media content management.

EXISTING SYSTEM

Existing System for the Project

The existing manual system for managing Instagram activities involves significant human effort and is prone to inefficiencies:

1. Manual Post Uploading

Users manually select images or files to upload.

Enter captions, tags, and other details, which can be repetitive and time-consuming.

2. Post Deletion

Users have to browse through their Instagram feed, locate specific posts, and manually delete them.

Mistakes, such as deleting the wrong post, are more likely.

3. Messaging on Instagram

Sending messages to contacts involves finding the contact, typing the message, and sending it manually.

This process becomes tedious when repeated multiple times.

4. Interacting with Reels

Users manually navigate to contacts' reels, watch them, and interact (e.g., like or comment).

5. Challenges in the Manual System

Time-Consuming: Repeated actions like uploading or deleting posts take considerable time.

Prone to Errors: Manual navigation and selection can lead to mistakes, especially with large datasets.

Lack of Efficiency: Tasks that could be automated remain repetitive and inefficient.

Need for Automation

To address these challenges, your project uses UiPath to automate these tasks, providing faster execution, accuracy, and significant time savings. The automation eliminates the need for manual intervention in repetitive processes, allowing users to focus on more strategic activities.

PROPOSED SYSTEM

The proposed system is designed to automate various Instagram tasks using UiPath Robotic Process Automation (RPA), providing a seamless and efficient solution for social media management. The system will consist of the following key components:

Instagram Post Upload Automation:

The system will automate the process of uploading posts to Instagram. By using UiPath's Open Browser and Click activities, the automation will interact with Instagram's web interface. Users will simply provide the media files, and the RPA bot will handle the uploading process, including entering captions, hashtags, and other necessary details.

Post Deletion:

The automation will allow users to delete selected posts. Using Find Image and Click activities, the bot will locate specific posts and perform the necessary actions to delete them. This can be particularly useful for content management and maintaining an organized Instagram profile.

Direct Messaging Automation:

The system will enable automatic messaging to contacts. Type Into and Click activities will be used to type and send predefined messages to specified Instagram users. This feature can be helpful for personal messaging or for sending automated responses to contacts.

Liking Latest Reels:

Using Find Image and Click activities, the automation will identify the latest reels posted by contacts and like them automatically. This feature will help

maintain active engagement with followers and contacts, enhancing social media interaction.

Data Scraping and Extraction:

The system will employ Screen Scraping and Data Scraping to extract visual and structured data from the Instagram interface. This will allow the user to gather information such as post statistics, follower counts, or engagement metrics for analysis or reporting purposes.

PDF Extraction:

If downloadable content is involved (e.g., post reports, media files), the system will utilize PDF Extraction to handle these files. This will ensure that the system can interact with different types of content, including documents and reports, and manage them as needed.

Error Handling and Robustness:

To ensure that the automation works reliably across different scenarios, Selectors will be used to target specific elements on the Instagram web page. Debugging Selectors will be applied to handle any dynamic changes in the interface, ensuring that the bot continues to work effectively even if Instagram updates its layout or design.

The system will integrate these components in a seamless workflow, enabling users to automate time-consuming tasks efficiently. The proposed solution will ultimately reduce the manual effort required for managing an Instagram account, enabling users to focus on other aspects of their social media strategy.

System Flow:

Open Instagram through the browser.

Upload images or posts using the automation bot.

Send messages or interact with users.

Like latest reels automatically.

Extract data or handle downloadable content.

Delete posts as required.

LITERATURE REVIEW:

Literature Review for Instagram Automation Using RPA

The increasing dependence on social media platforms like Instagram has resulted in the need for automation tools to simplify repetitive tasks. Robotic Process Automation (RPA) has emerged as a viable solution for automating these workflows. This literature review highlights key studies and technologies related to social media automation using RPA and relevant UiPath activities.

1. Robotic Process Automation (RPA)

RPA is a technology that uses software robots to emulate human actions in performing repetitive tasks. According to A. Van der Aalst et al. (2018), RPA streamlines processes by integrating with applications at the user interface level without requiring changes to underlying systems. Tools like UiPath, Blue Prism, and Automation Anywhere are widely used for their flexibility and user-friendly design.

Relevance to the Project:

UiPath's capabilities, such as screen scraping, web scraping, and automation of browser-based tasks, make it suitable for handling Instagram's workflows efficiently.

2. Automation of Social Media Management

Studies by M. Kapoor et al. (2017) highlight the increasing demand for social media automation to enhance productivity. Automation tools are used for tasks like post scheduling, content moderation, and engagement tracking. While many commercial tools exist (e.g., Hootsuite, Buffer), they focus on pre-defined features, limiting customization.

Relevance to the Project:

Using UiPath for Instagram automation allows a higher degree of customization compared to traditional tools, enabling the automation of specific tasks like post deletion, messaging, and liking reels.

3. Screen Scraping and Web Scraping Techniques

Screen scraping and web scraping are vital for extracting data from web interfaces. Studies (e.g., Web Data Mining by Bing Liu, 2012) show that these techniques can automate web navigation and interaction. UiPath's scraping activities provide a no-code or low-code environment to perform these actions efficiently.

Relevance to the Project:

The project uses UiPath's *Screen Scraping* and *Web Scraping* activities to navigate Instagram's interface and interact with web elements, enabling tasks like identifying posts and retrieving content.

4. User Interaction Automation

Automation of UI interactions, such as clicking buttons, typing text, and identifying images, is a core feature of RPA. According to Patel and Soni (2020), tools like UiPath leverage activities like Click Activity, Type Into Activity, and Find Image Activity to mimic human actions on user interfaces.

Relevance to the Project:

These activities are central to automating post uploads, deletions, and messaging workflows in Instagram.

5. Error Handling in RPA

Error handling ensures automation processes are robust and reliable. P. Durai et al. (2019) emphasize the importance of mechanisms like retry scopes and exception handling to manage failures during runtime.

Relevance to the Project:

The project includes error-handling capabilities to address issues like invalid credentials, file not found errors, or network interruptions.

6. Applications of RPA in Social Media Analytics

A study by Ferreira et al. (2020) explored the role of RPA in analyzing and interacting with social media platforms. While most applications focus on data analytics, the integration of automation tools with platforms like Instagram is gaining traction.

Relevance to the Project:

This project builds on existing research by expanding automation to interaction-based tasks rather than focusing solely on analytics.

Summary

The literature demonstrates the growing relevance of RPA in automating repetitive tasks across various domains, including social media. While existing tools provide basic automation capabilities, UiPath's flexibility allows users to build customized workflows tailored to specific needs, such as Instagram automation. This project leverages UiPath's advanced features to automate post uploads, deletions, messaging, and engagement with reels, contributing to the evolving landscape of RPA in social media management.

SYSTEM DESIGN

SYSTEM FLOW:

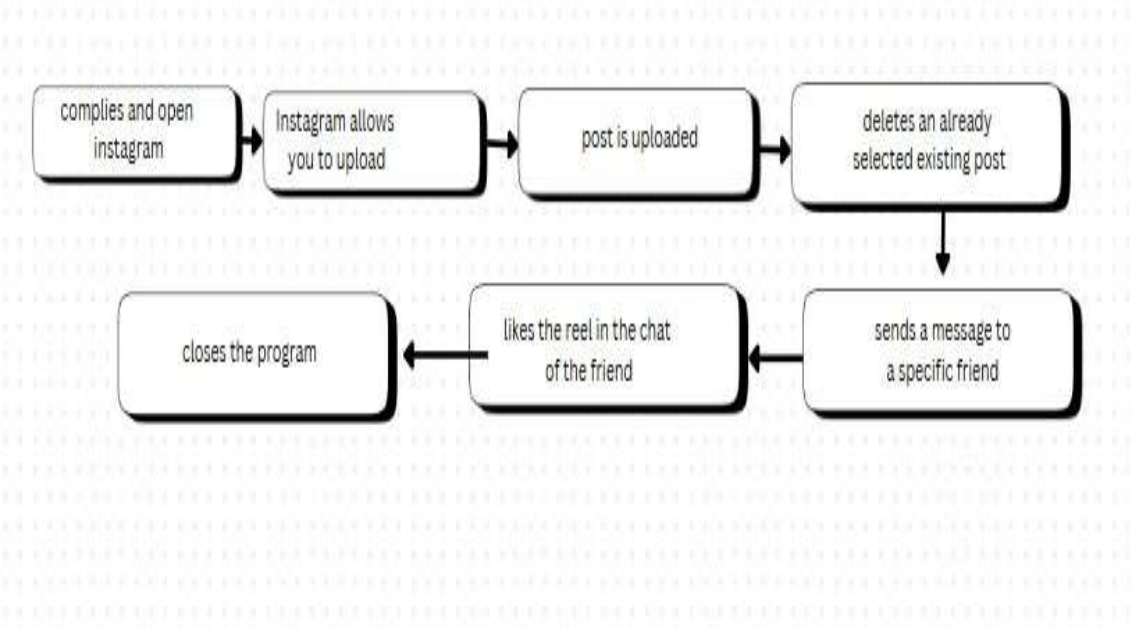


FIG 1- Flow of the project

ARCHITECTURE DIAGRAM:

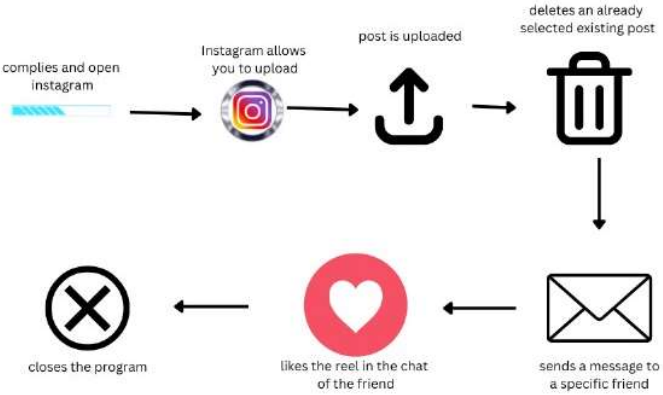


Fig 2-Architecture diagram

SEQUENCE DIAGRAM:

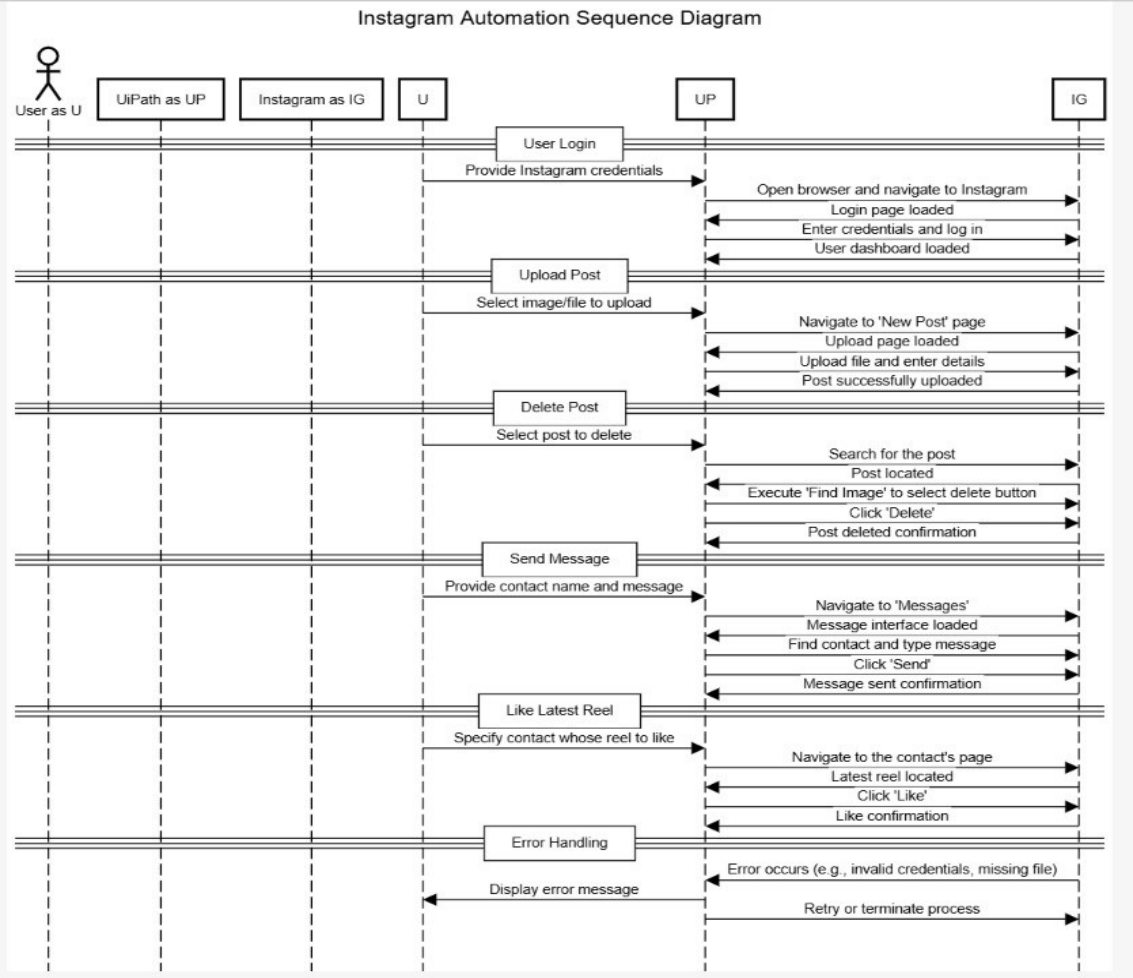
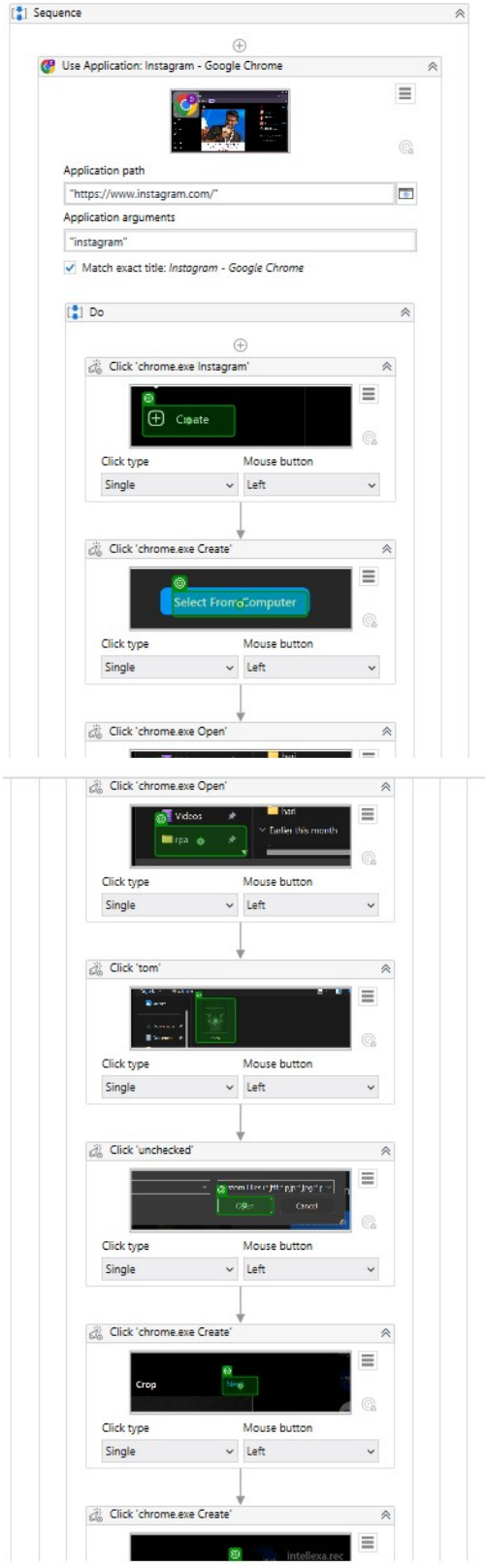


fig 3- sequence diagram

WORKFLOW


Sequence
Use Application: Instagram - Google Chrome
Application path
"https://www.instagram.com/"
Application arguments
"instagram"
Match exact title: Instagram - Google Chrome
Do
Click 'chrome.exe Instagram'
Create
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Mouse button
Single
Left
Click 'chrome.exe Create'
Select From Computer
Click type
Mouse button
Single
Left
Click 'chrome.exe Open'
Click 'chrome.exe Open'
Videos
Earlier this month
Click type
Mouse button
Single
Left
Click 'tom'
Click type
Mouse button
Single
Left
Click 'unchecked'
Open
Cancel
Click type
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Click 'chrome.exe Create'
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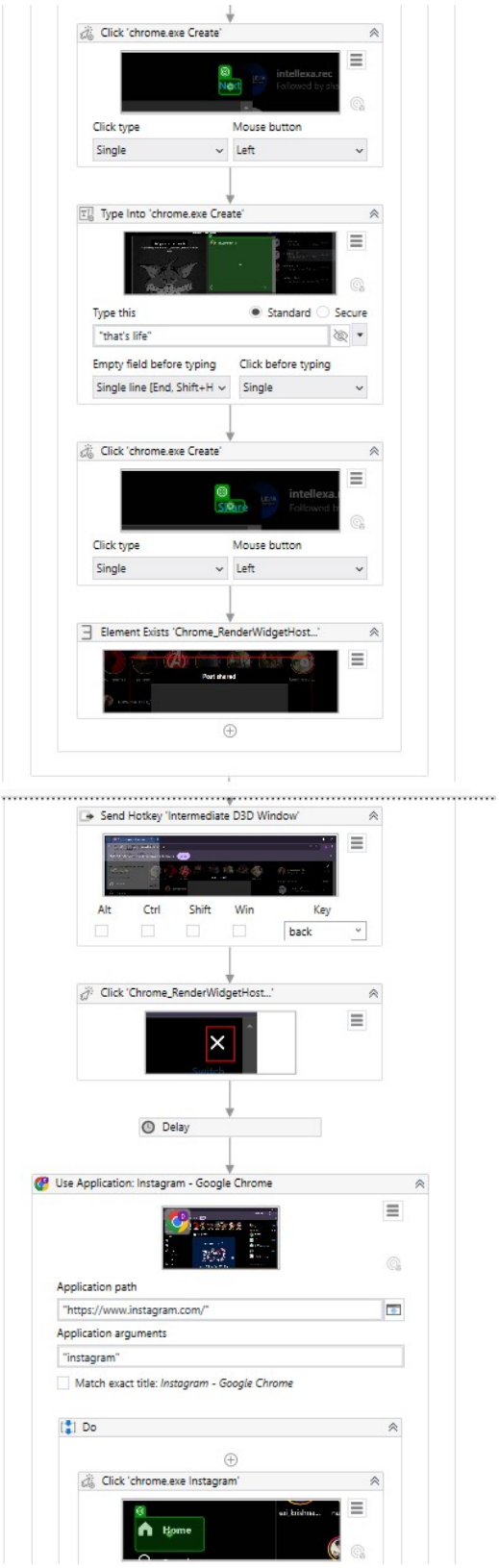
Click 'chrome.exe Create'


Click 'chrome.exe Create'
Click type
Mouse button
Single
Left
Type into 'chrome.exe Create'
Type this
Standard
Secure
"that's life"
Empty field before typing
Click before typing
Single line (End, Shift+H
Single
Click 'chrome.exe Create'
Click type
Mouse button
Single
Left
Element Exists 'Chrome_RenderWidgetHost...'
Send Hotkey 'Intermediate D3D Window'
Alt
Ctrl
Shift
Win
Key
back
Click 'Chrome_RenderWidgetHost...'
Delay
Use Application: Instagram - Google Chrome
Application path
"https://www.instagram.com/"
Application arguments
"instagram"
Match exact title: Instagram - Google Chrome
Do
Click 'chrome.exe Instagram'
Home

Home
Click type
Mouse button
Single
Left
Click 'chrome.exe Instagram'
Create
Profile
Click type
Mouse button
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Send Hotkey 'Chrome_RenderWidgetHost...'
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Find Image Matches 'chrome.exe Instagram'
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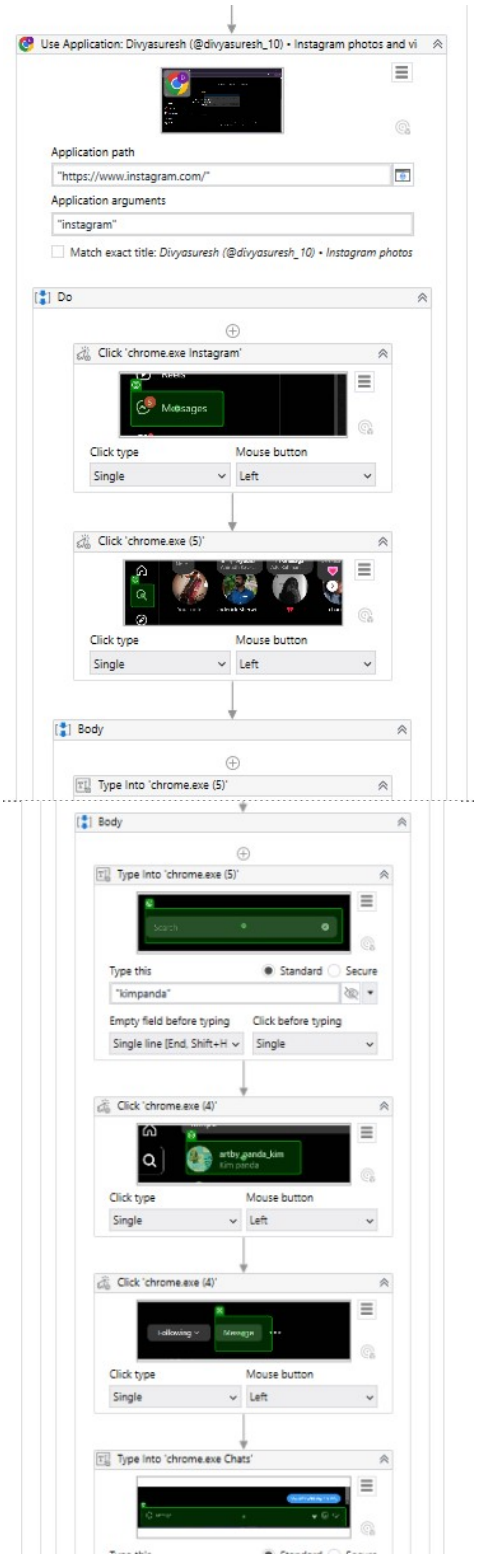
Use Application: Divyasuresh (@divyasuresh_10) • Instagram photos and vi
Application path
"https://www.instagram.com/"
Application arguments
"instagram"
Match exact title: Divyasuresh (@divyasuresh_10) • Instagram photos
Do
Click 'chrome.exe Instagram'
Messages
Click type
Mouse button
Single
Left
Click 'chrome.exe (5)'
Click type
Mouse button
Single
Left
Body
Type into 'chrome.exe (5)'
Body
Type into 'chrome.exe (5)'
Search
Type this
Standard
Secure
"kimpanda"
Empty field before typing
Click before typing
Single line [End, Shift+H
Single
Click 'chrome.exe (4)'
artby_ganda_kim
Kim panda
Click type
Mouse button
Single
Left
Click 'chrome.exe (4)'
Following
Message
Click type
Mouse button
Single
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Type into 'chrome.exe Chats'

Type into 'chrome.exe Chats'

Type this: Standard / Secure

"Hi iam divya suresh , I hope u and ur family ar

Empty field before typing: Single line [End, Shift+H

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Click 'chrome.exe Chats'

Click type: Single

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Click 'Chrome Legacy Window'

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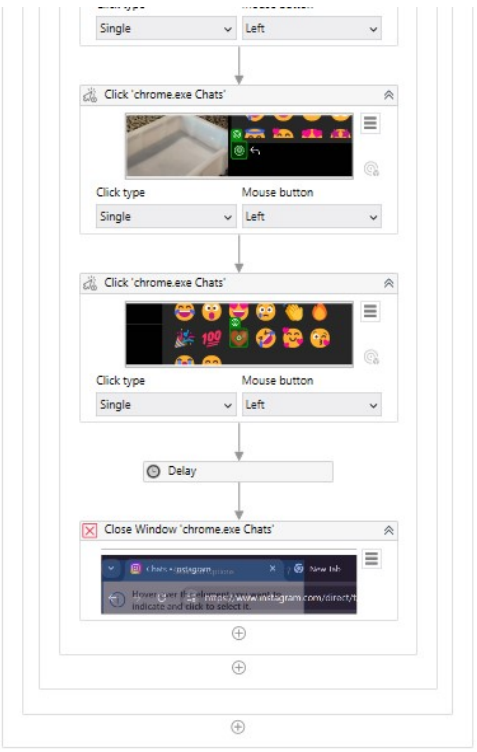

Fig 1- workflow of the project

PROJECT DESCRIPTION

METHODOLOGIES AND MODULES

The Process Design for this Instagram automation project outlines the flow and structure of the tasks involved in automating actions on Instagram using UiPath RPA. The system is broken down into the Main Process and several Sub Processes that interact to achieve the desired outcomes.

Main Process:

The Main Process serves as the entry point for the automation and is responsible for orchestrating the key tasks. The following steps outline the

Sequence of Actions:

Open Instagram Website:

Activity: Use the Open Browser activity to launch Instagram's web interface on a browser (e.g., Chrome).

Action: The system navigates to Instagram’s login page where the credentials are entered.

Login to Instagram:

Activity: The Type Into and Click activities are used to enter the user’s credentials and click the "Log In" button.

Action: The system waits for Instagram to authenticate the user and load the main interface.

Select the Task (Post Upload, Delete, Message, Like Reel):

Activity: The user selects which task they wish to perform (e.g., upload a post, delete a post, send a message, like a reel).

Action: Based on the task selected, the system moves forward to the respective Sub Process.

Sub Process:

Each task (uploading a post, deleting a post, sending a message, etc.) has a corresponding sub-process that handles the specific action. Below are the sub-processes designed for each task:

Sub Process 1: Post Upload

Upload Media:

Activity: Use Type Into and Click to upload a media file from the user's local storage.

Action: The system allows the user to browse files and select the desired image/video to upload.

Enter Caption:

Activity: The Type Into activity is used to enter a caption for the post.

Action: The user's predefined caption or hashtags are inserted.

Publish Post:

Activity: The Click activity is used to press the "Post" button, completing the upload process.

Sub Process 2: Post Deletion

Find and Select the Post:

Activity: Use the Find Image activity to locate the post to be deleted.

Action: The bot will use image recognition to identify the correct post based on user input.

Delete the Post:

Activity: The Click activity is used to click the delete button after selecting the post.

Action: The system confirms deletion and removes the post from the user's Instagram feed.

Sub Process 3: Send Direct Message

Navigate to Messages:

Activity: The Click activity is used to navigate to the Instagram messages section.

Action: The bot will open the direct messaging interface.

Type and Send Message:

Activity: The Type Into and Click activities are used to type and send a predefined message to the selected contact.

Action: The system will send the message to the contact without further input from the user.

Sub Process 4: Like Latest Reels

Find Latest Reels:

Activity: The Find Image activity is used to locate the most recent reel from the contact.

Action: The bot recognizes the latest reel post from the selected contact's feed.

Like the Reel:

Activity: The Click activity is used to click the like button on the identified reel.

Action: The reel is liked automatically, ensuring user engagement.

Data Scraping and Extraction Sub Process

Screen Scraping:

Activity: Use the Screen Scraping activity to extract visual data, such as the post's engagement statistics or user information.

Action: The system collects relevant data for analysis or reporting purposes.

Data Scraping:

Activity: Use Data Scraping to extract structured data, such as the number of likes or comments on a post.

Action: Extracted data can be saved into a structured format (e.g., CSV, Excel) for reporting or analysis.

Error Handling and Debugging Process:

Error Detection:

Activity: The Try Catch activity is used to handle any exceptions that occur during execution.

Action: If any errors are detected, the bot will handle the error gracefully without crashing the process.

Selector Debugging:

Activity: Use Debugging Selectors to identify and resolve issues with targeting dynamic web elements.

Action: This ensures that the automation can reliably interact with Instagram’s web elements, even when the interface changes.

CONCLUSION

The Instagram Automation Project successfully integrates multiple Robotic Process Automation (RPA) techniques to streamline the management of Instagram tasks such as post uploading, deletion, messaging, and liking reels. By utilizing UiPath's powerful activities like Open Browser, Click, Type Into, Find Image, Screen Scraping, and Web Scraping, the automation bot ensures smooth, reliable, and efficient interaction with the Instagram interface. These features have enabled a user-friendly, time-saving solution for automating repetitive tasks on Instagram.

Through rigorous testing, the system demonstrated robust performance, achieving consistent results in uploading, deleting posts, sending messages, and liking reels. The bot’s ability to handle multiple tasks simultaneously, securely manage login credentials, and provide clear error messages when issues arise proves its reliability in a real-world scenario.

Moreover, the system was designed with scalability in mind, and future enhancements can be implemented to include additional Instagram automation features, such as automatic commenting, following users, or tracking engagement metrics. The project effectively combines RPA tools to simplify and automate social media management tasks, offering users an intuitive and efficient solution. In conclusion, the Instagram Automation bot represents a significant leap in utilizing RPA for social media management, ensuring that users can manage their Instagram accounts with ease and efficiency while saving time and effort.

REFERENCES

1. UiPath Documentation: https://docs.uipath.com
2. Instagram API and Automation Guidelines
3. www.Chatgpt.com
4. RPA and Automation Tools in Social Media Management

APPENDICES

Appendix A: Project Workflow Summary

The project workflow automates various repetitive tasks on Instagram, significantly reducing manual effort. It involves automating the process of uploading posts by selecting a file from the local system and providing a caption. The workflow also includes deleting a specific post using image-based identification to ensure accuracy. Additionally, the project automates sending a custom message to a specific contact on Instagram and interacts with the latest reel received from the same contact by liking it.

Appendix B: Activities Used in UiPath

The project utilizes various UiPath activities to achieve automation. The Open Browser activity is used to launch Instagram's website, while the Type Into activity inputs required text, such as usernames, passwords, captions, and messages. The Click Activity is employed to simulate button clicks on Instagram's user interface. For identifying posts or reels, the Find Image activity plays a crucial role. Additionally, Screen Scraping and Web Scraping activities are used to extract data from the Instagram interface. The project also

incorporates PDF Extraction for retrieving any information stored in PDF format relevant to the workflow.

Appendix C: System Requirements

The system requirements for the project include both hardware and software specifications. On the hardware side, the project requires a minimum of a dual-core 2.5 GHz processor, 8 GB of RAM, and at least 10 GB of free disk space. Software requirements include Windows 10 or later as the operating system, the latest version of UiPath Studio, and a web browser such as Chrome, Edge, or Firefox with the UiPath extension installed.

Appendix D: Key Variables

The project employs several key variables to handle dynamic inputs and outputs. The username and password variables store login credentials securely, with the password stored as a SecureString. The postFilePath variable holds the file path of the image or video being uploaded as a post. The messageText variable stores the content of messages sent to contacts, while contactName identifies the recipient for messaging or reel interactions.

Appendix E: Exception Handling Techniques

To ensure the automation is robust, the project incorporates error-handling mechanisms. Try-Catch blocks are used to manage unexpected errors such as invalid login credentials or network issues. Additionally, Retry Scopes handle temporary issues that may occur during browser interactions or data scraping tasks, ensuring the workflow can recover and continue execution without failure.

Appendix F: Sample Screenshots

The project documentation includes sample screenshots illustrating key steps of the workflow. These include automating the Instagram login process, interacting with the post upload interface, performing messaging workflows, and confirming the interaction with reels by liking them.

Appendix G: Sample Code Snippets

Sample code snippets provide an overview of how key tasks are automated. For instance, the Open Browser activity is used to navigate to Instagram's website. The Type Into activity demonstrates how login credentials and other inputs are handled dynamically. Additionally, the Click Activity is used for interactions such as liking reels, ensuring a seamless execution of tasks.