

YouTube Channel Analytics Dashboard

USER MANUAL v0.1

Mohamed Zameer Zain
Cardiff Student ID: 20285803

ICBT Student ID: CL/MCSDS/CMU/05/18

7-10-2023

Contents

1. GENERAL INFORMATION.....	1
1.1 Purpose of the Manual	1
1.2 Overview of the Dashboard	1
2. DASHBOARD INSTALLATION & CONFIGURATION	1
2.1 System Requirements	1
2.2 Installation/Setting Up the Dashboard Locally	1
2.2.1 Prerequisites:	1
2.2.2 Steps:	2
2.3 Getting a YouTube Data API Key	5
2.4 Dashboard Initial Setup.....	11
2.4.1 Dashboard Settings Input.....	11
3. DASHBOARD OVERVIEW	12
3.1 Main Interface.....	12
3.2 Data Filters	12
4. FEATURES AND FUNCTIONALITIES	13
4.1 Viewership Growth Over Time Sections	13
4.2 Common Tags, Like-To-View Ratio and Detailed Video Statistics	14
4.3 Video Data Page.....	15
4.4 Unique Commenters, Trends, Sentiment Analysis & Comment Network Analysis	15
4.5 Network Insights, Visualization and Community Detection	16
4.6 Post Scheduler Page.....	17
4.7 Refresh Data Button.....	18
5. TROUBLESHOOTING.....	18
5.1 Common Issues and Solutions	18
5.2 Reporting Bugs/Issues.....	19
6. SAFETY AND SECURITY	19
6.1 Data Privacy	19
6.2 API Key Management.....	19
6.3 Direct Integration with YouTube.....	19
7. TIPS AND BEST PRACTICES	19
7.1 Optimizing Data Filters.....	19
7.2 Making the Most of Predictive Analytics	19

7.3 Regularly Updating the Dashboard	19
8. CONCLUSION AND CONTACT INFORMATION	20
8.1 Feedback and Suggestions	20
8.2 Support Contact	20

1. GENERAL INFORMATION

1.1 Purpose of the Manual

This manual provides detailed guidance on how to navigate and utilize the YouTube Analytics Dashboard effectively. It covers all features, functionalities, and best practices to ensure a seamless user experience.

1.2 Overview of the Dashboard

The YouTube Analytics Dashboard is a comprehensive tool designed to provide insights into video performance, viewer engagement, and content scheduling. It integrates data directly from YouTube to offer real-time analytics and predictive insights.

2. DASHBOARD INSTALLATION & CONFIGURATION

2.1 System Requirements

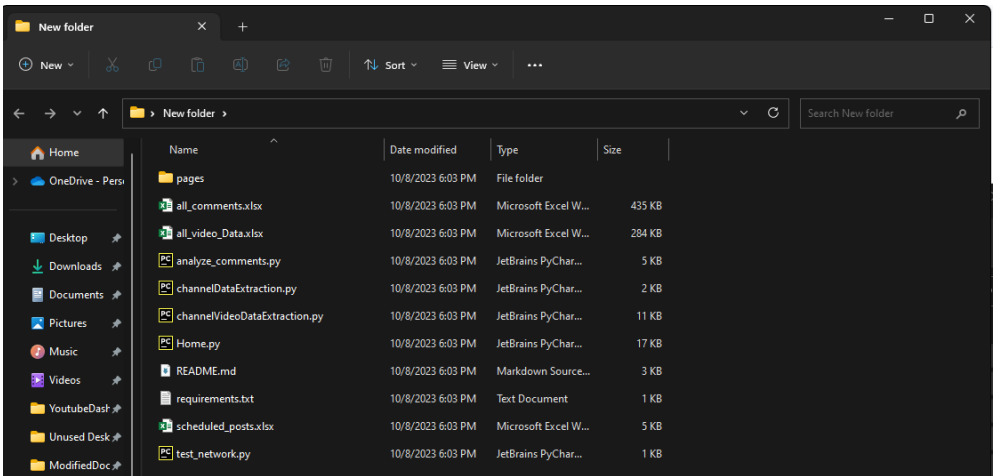
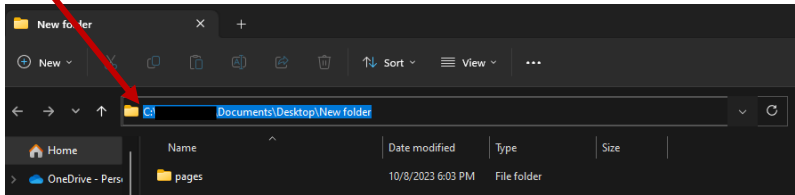
- Python Version 3.11 (Learn how to install python on windows [here](#))
- A modern web browser (e.g., Chrome, Firefox).
- An internet connection.
- YouTube Data API Key. (Instruction on how get a key is available in [Section 2.3](#))

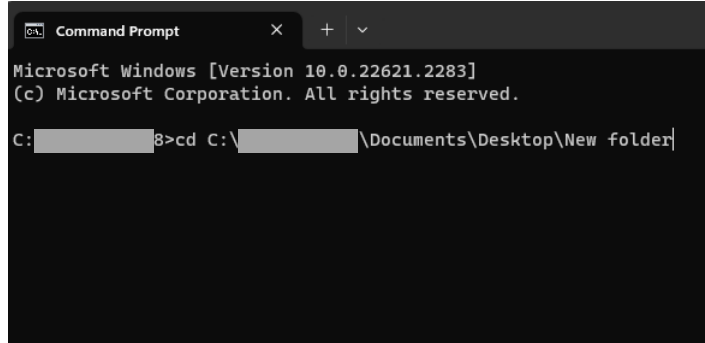
2.2 Installation/Setting Up the Dashboard Locally

2.2.1 Prerequisites:

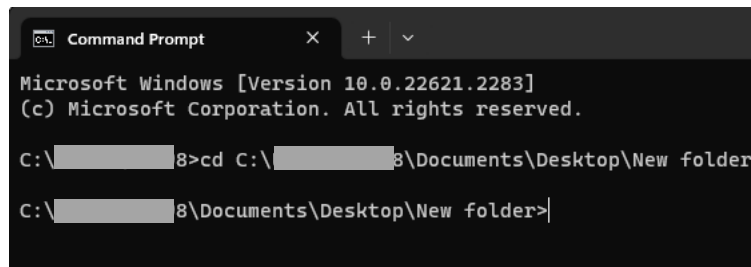
- Python (version 3.11 or higher recommended).
- Pip (Python package installer).

2.2.2 Steps:

Step No.	Instructions
1	<p>Clone or Download the Dashboard Repository:</p> <p>If you have Git installed, you can clone the repository using the command:</p> <pre>git clone https://github.com/zainmz/Youtube-Channel-Analytics-Dashboard.git</pre> <p>Alternatively, download the ZIP file from the below link of the repository and extract it to a suitable location like the Desktop on your computer as seen in below image.</p> <p>https://github.com/zainmz/Youtube-Channel-Analytics-Dashboard/archive/refs/heads/main.zip</p>  <p>Copy the file path of the extracted folder</p> 
2	<p>Navigate to the Dashboard Directory:</p> <p>Open a terminal or command prompt.</p> <p>Change the directory to where you cloned or extracted the dashboard files by typing the below command replacing the path with the path your copied previously:</p> <pre>cd path_to_dashboard_directory</pre>



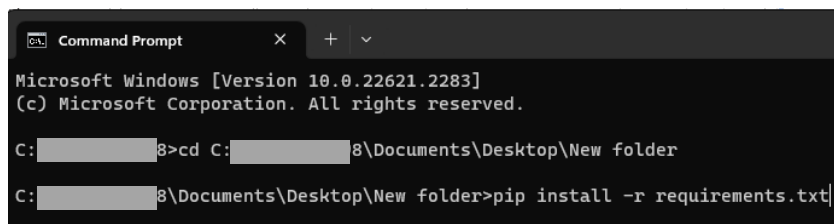
Hit enter and you should notice that the command prompt is now in the extracted folder.



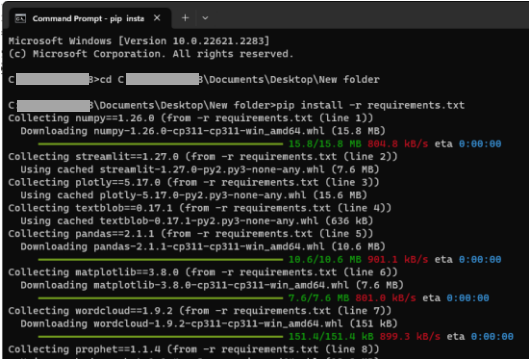
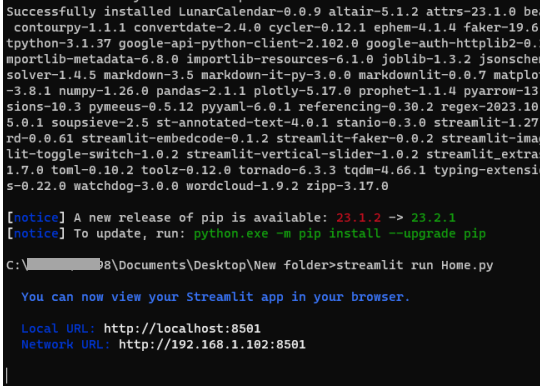
Install Required Python Libraries:

In the same command prompt/terminal window type the below command to install the necessary libraries:

```
pip install -r requirements.txt
```

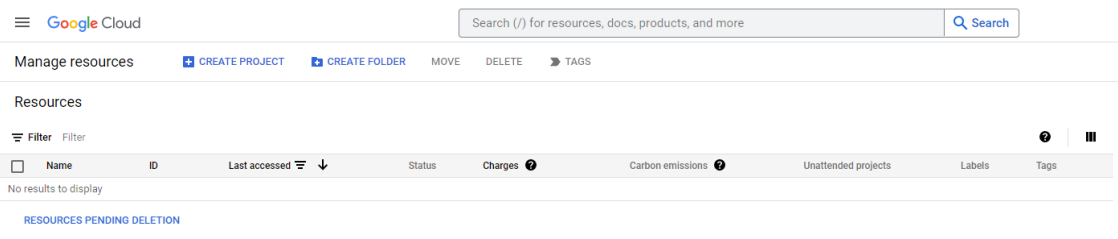
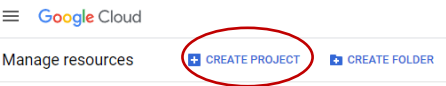


If it has run successfully and you have python installed, you should be able to see packages getting downloaded and installed like below:

	
4	<p>Run the Dashboard:</p> <p>Start the dashboard using Streamlit in the terminal / command prompt window:</p> <pre>streamlit run Home.py</pre>  <p>This command will start a local server and the dashboard should automatically open in your default web browser. If not, you can manually access it by entering the provided local URL (usually http://localhost:8501/) in your browser's address bar.</p>
5	<p>Accessing the Dashboard:</p> <p>Once the dashboard is running, you can interact with it through your web browser just like you would with any online website.</p> <p>Note: To stop the dashboard, simply go back to your terminal or command prompt and press CTRL+C.</p>

2.3 Getting a YouTube Data API Key

The YouTube Data API v3 allows you to integrate your application with YouTube and fetch channel and video data. To use this API, you need to have an API key. If this is your first time getting a YouTube Data API key or using the Google Cloud Console, follow the instructions below:

Step No.	Instructions
1	<p>Google Cloud Console:</p> <p>Visit the Google Cloud Console Link Create an account or sign in with an existing Google account</p> <p>Once signed it navigate to the project page via the following Link, you should be able to see the panel below:</p> 
2	<p>Create a New Project:</p> <p>Next click on the Create Project Button.</p>  <p>Enter a Project Name and location (if available) and click Create</p>

Google Cloud

New Project

You have 11 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[MANAGE QUOTAS](#)

Project name *
Youtube Test Project

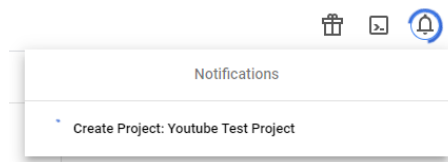
Project ID: youtube-test-project-401311. It cannot be changed later. [EDIT](#)

Location *
No organization [BROWSE](#)

Parent organization or folder

CREATE CANCEL

You will be shown a notification of your project being created on the top bar.



Go to the newly created project:

Once the project is created, reload the current page to display the newly created project.

Google Cloud

Search (/) for resources, docs, products, and more [Search](#)

Manage resources [CREATE PROJECT](#) [CREATE FOLDER](#) [MOVE](#) [DELETE](#) [TAGS](#)

Resources

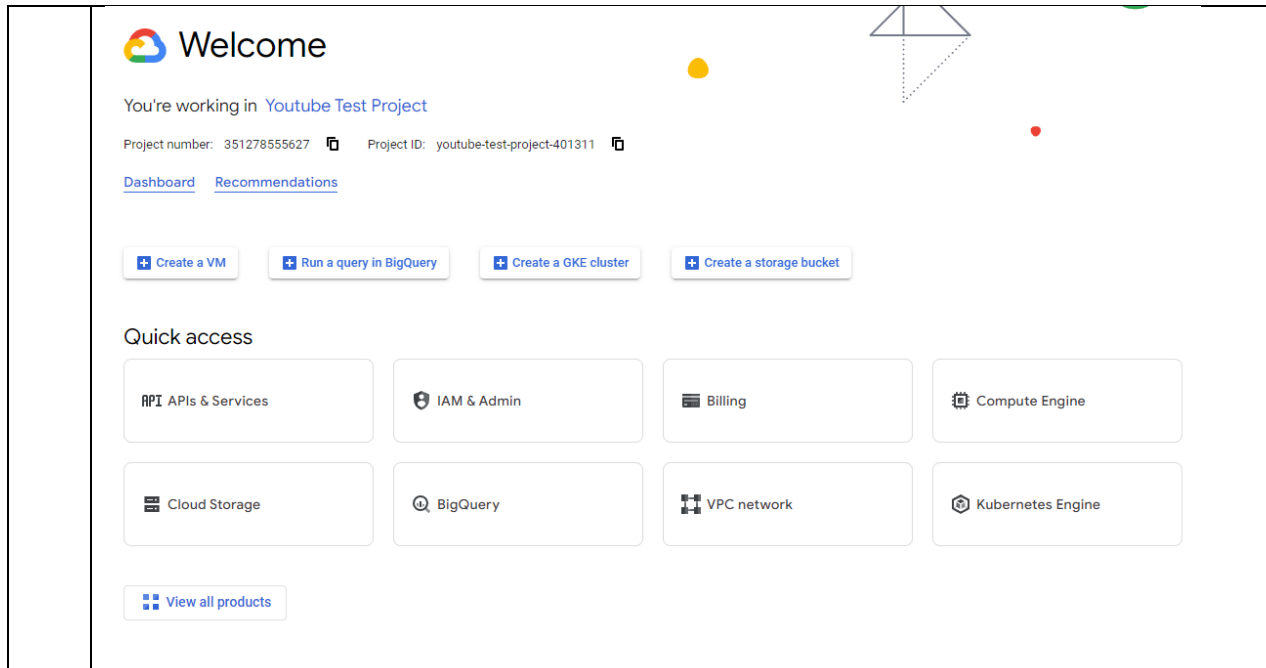
Filter Filter

<input type="checkbox"/>	Name	ID	Last accessed	Status	Charges	Carbon emissions	Unattended projects	Labels	Tags
<input type="checkbox"/>	No organization		October 7, 2023				—		
<input type="checkbox"/>	Youtube Test Project	youtube-test-project-401311	October 7, 2023				—		

[RESOURCES PENDING DELETION](#)

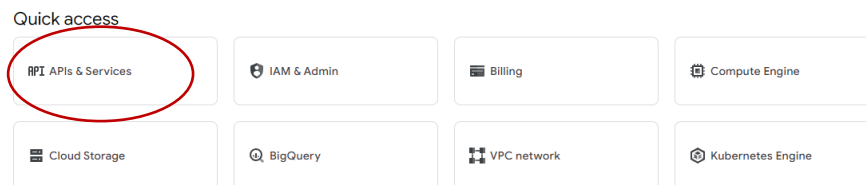
3

Now navigate back the Google Console home page by clicking the Google Cloud logo or by using this [link](#). Your project should be visible like below image:



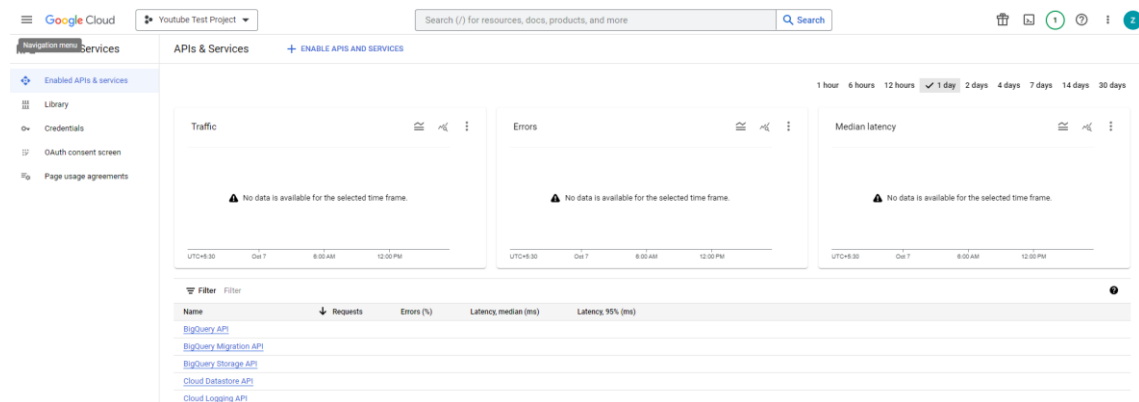
Go to API & Services:

Under the Quick access section, click on the APIs & Services Button.



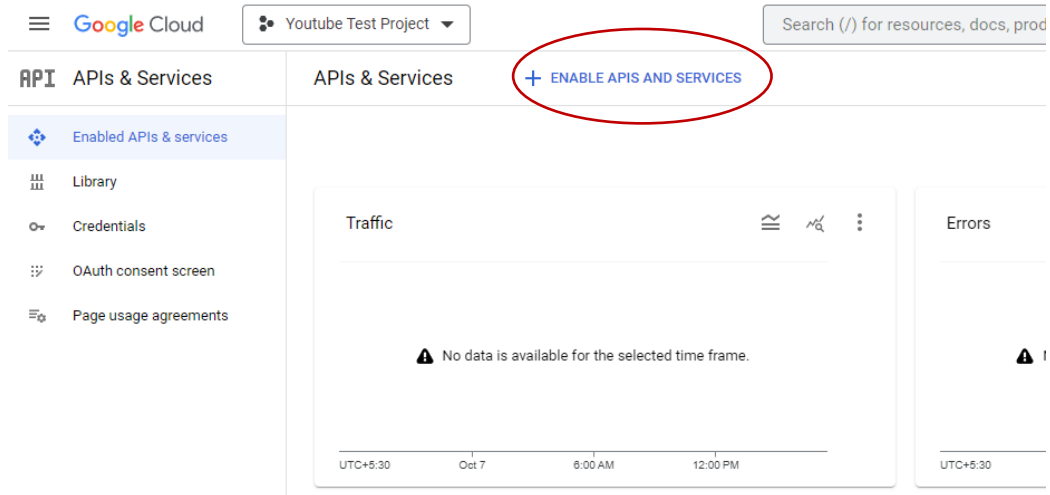
Once clicked the below page should be visible:

4

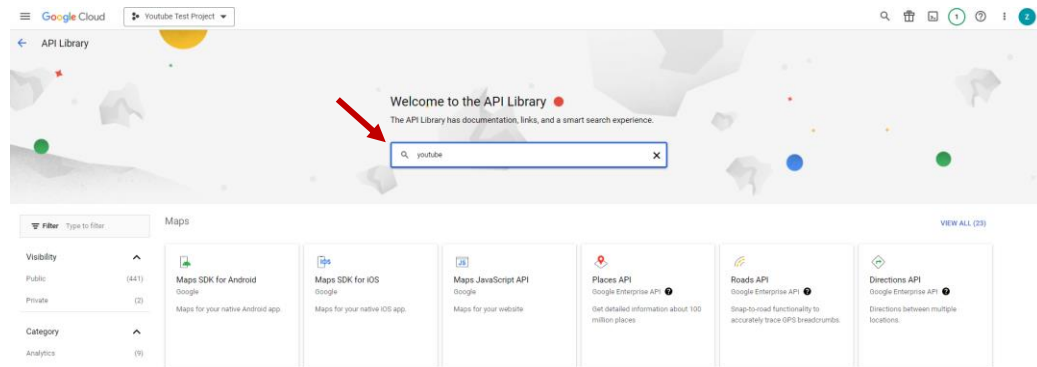


Enable API AND SERVICES:

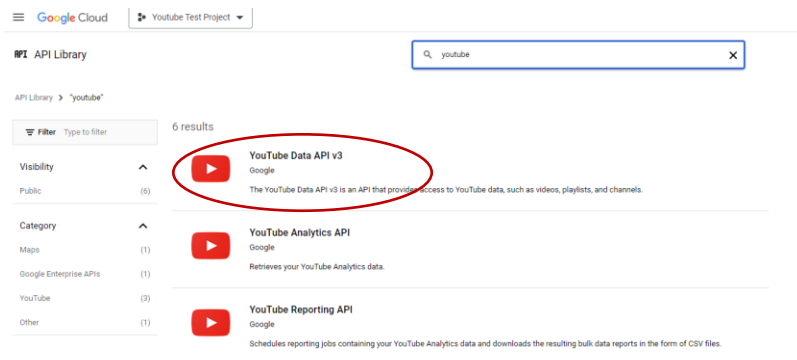
On the top click on + ENABLE APIS AND SERVICES



You will be taken to the API Library page shown below, in the search bar type in “Youtube” and hit enter.



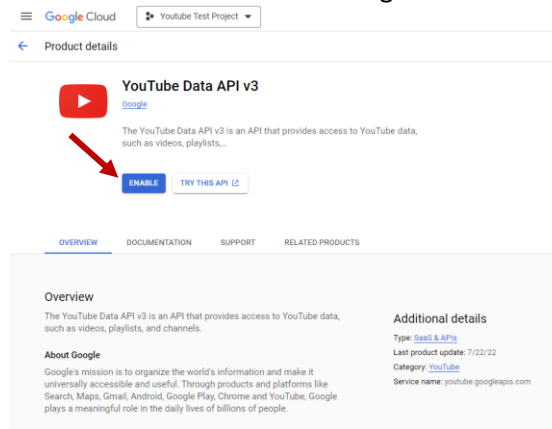
Then click on “Youtube Data API v3”



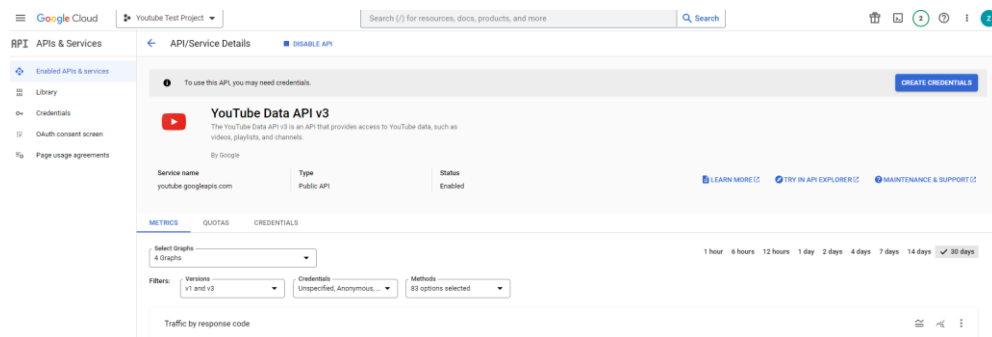
6

Enable Youtube Data API v3:

Next click on the enable button to enable to the API usage for our own use.



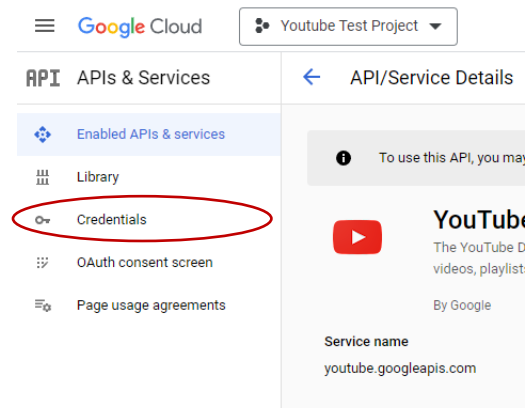
Once enabled, you will be taken to the Youtube Data API v3 configuration page as below:



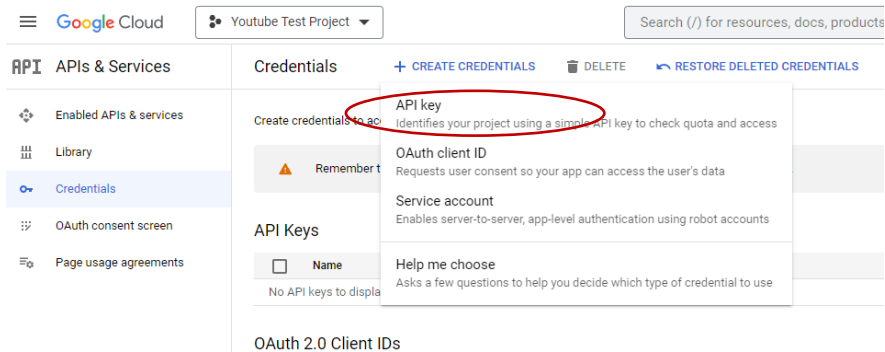
7

Creating API Credentials:

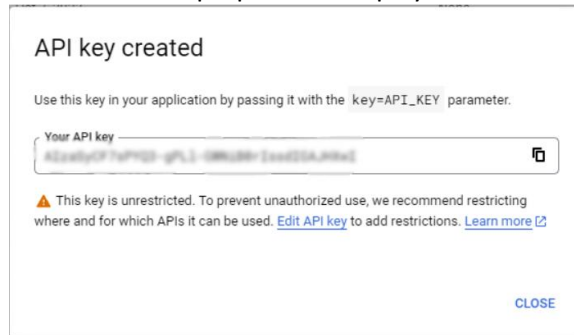
On the left side navigation bar click on “Credentials” to navigate to the credential’s creation page.



At the credentials page click on “+ CREATE CREDENTIALS” and select “API KEY” in the dropdown.



Your API key will be generated and a Pop-up will be displayed with the Key,



Note: Save this key in a safe location for future use in this dashboard.

Note: Restrict the API Key (Optional):

To prevent misuse, you can set restrictions on your API key.

More information on how to do this can be found [here](#).

2.4 Dashboard Initial Setup

Navigate to the Dashboard which is already opened on your browser. If you don't have the dashboard open on your browser, follow the instructions at [Section 2.2](#) on how to run the dashboard.

On first run of the dashboard, you will be shown the below page asking you to enter the YouTube API and Channel ID.

Note: Not able to find your YouTube channel ID? Use the online tool available at this [link](#) to find it.

2.4.1 Dashboard Settings Input

Enter your YouTube API key and the required YouTube channel ID in the settings section as shown in the *Figure 1* and hit "Enter" key on your keyboard.

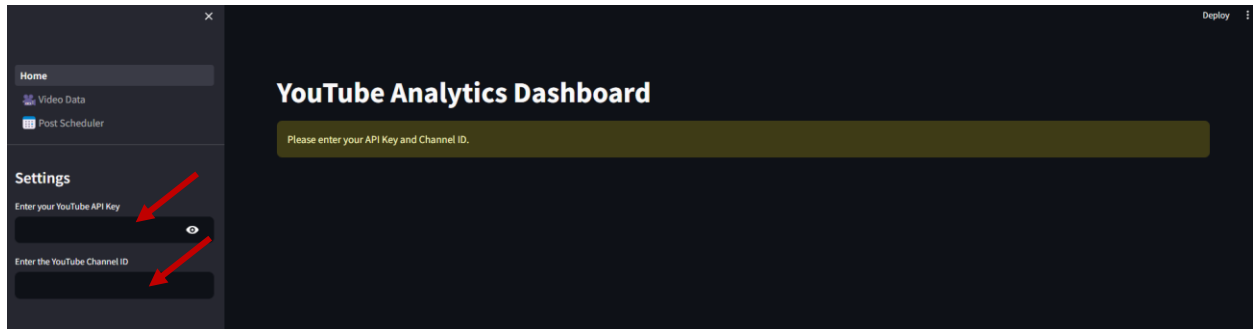


Figure 1 – Settings Input Area

If successful, the YouTube data related to that channel should have started downloading as can be seen in *Figure 2*, and finally the Channel overview will be displayed as shown in *Figure 3*.

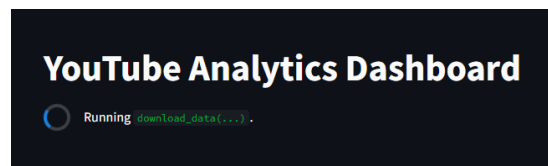


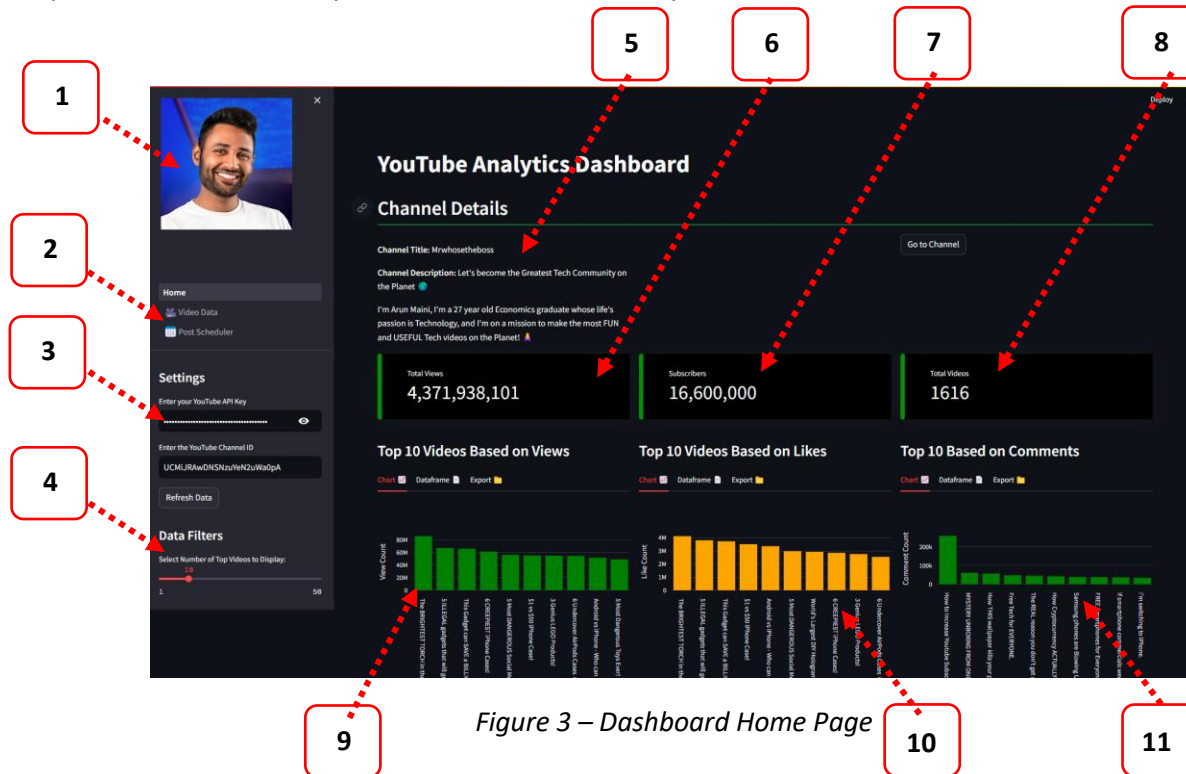
Figure 2 – Downloading YouTube Channel Data

Note: The data is downloaded and cached, if you would like to use another YouTube Channel ID, make sure to clear cache by using the shortcut key "C".

3. DASHBOARD OVERVIEW

3.1 Main Interface

The main interface displays a series of charts, graphs, and tables providing insights into video performance, viewership trends, and comment analytics.



1. **YouTube Channel Thumbnail:** Displays the YouTube Channel's current logo
2. **Navigation Bar:** switch to other available pages in the dashboard.
3. **Settings Section:** Input fields for YouTube API key and the YouTube Channel ID
4. **Data Filters Section:** Options to fine tune analytics based on selectable parameters.
5. **Channel Details Section:** Displays the channel name & description.
6. **Total Views Box:** Displays the total number of views the channel has received
7. **Total Subscribers Box:** Displays the total number of subscribers to the channel.
8. **Total Videos Box:** Displays the total number of videos available on the channel.

3.2 Data Filters

The filters in the sidebar can be used to refine the data displayed based on specific criteria like date ranges or tags. Detailed overview can be seen below in *Figure 4*

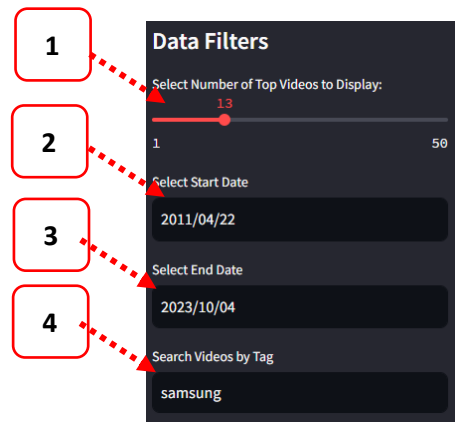


Figure 4 – Data Filters Sidebar Section

1. **Top Number of Videos to Display:** Modifies the Top 10 graphs to display a configurable number of videos based on the slider selection.
2. **Select Start Date:** Allows to filter channel video data based on a starting date.
3. **Select End Date:** Allows to filter channel video data based on an ending date.
4. **Search Videos by Tag:** Allows to filter channel video data based on a given tag.

Note: These filters modify all graphs available on the home page.

4. FEATURES AND FUNCTIONALITIES

4.1 Viewership Growth Over Time Sections

Below the top 10 graphs we have a visualization of the channel's viewership growth over a specified period, with predictive insights into future growth.

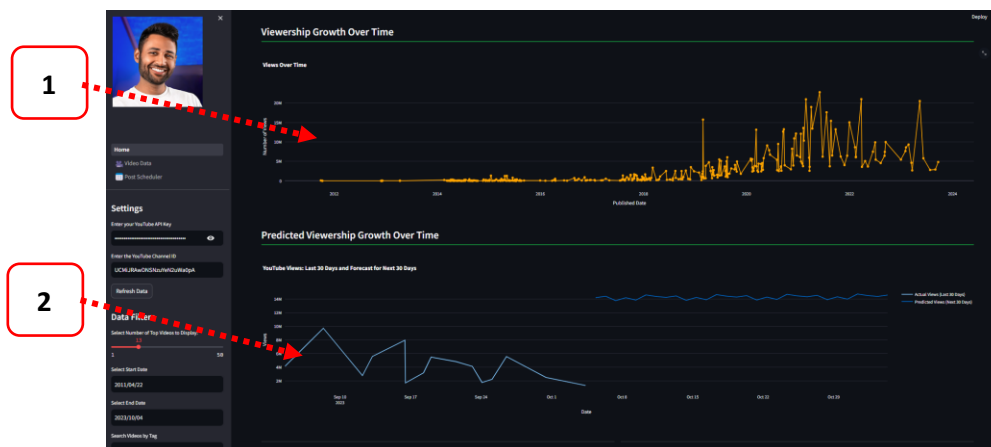


Figure 5 – Viewership Growth Over Time Sections

1. **Viewership Growth Over Time:** Displays the number of viewers based on time frame.
2. **Predicted Viewership Growth Over Time:** Displays the viewership count for the previous 30 days and the expected viewership count for the next 30 days.

4.2 Common Tags, Like-To-View Ratio and Detailed Video Statistics

Below the predicted viewership graph we have a visualization of the channel's most commonly used tags, a graph on the like-to-view ratio and a list of videos that can be selected for detailed analysis.

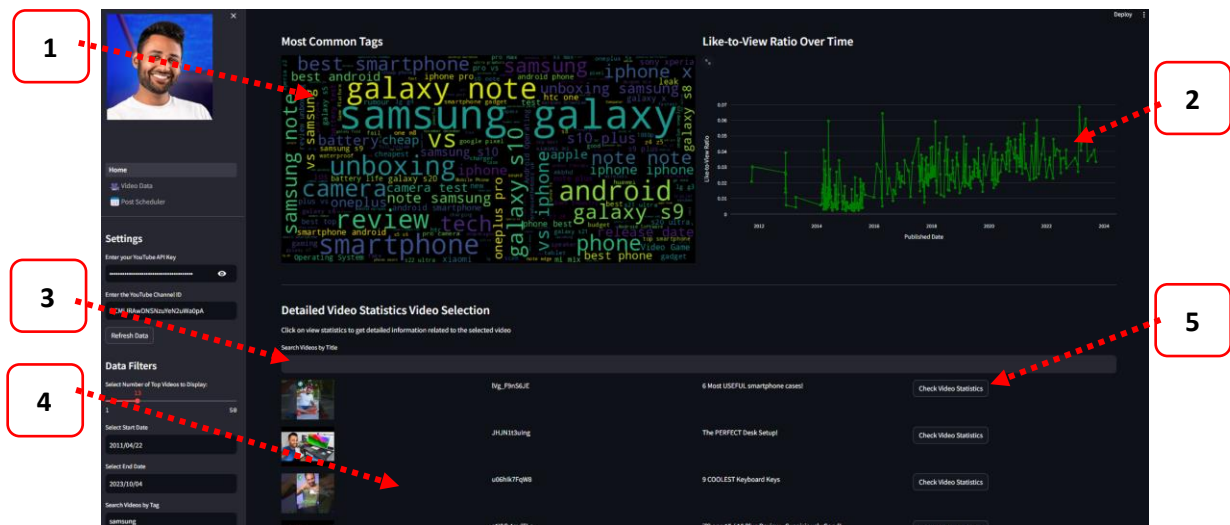


Figure 6 - Common Tags, Like-To-View Ratio and Detailed Video Statistics

1. **Most Common Tags:** Displays the most commonly used tags in the form of a word cloud.
2. **Like-to-View Ratio:** A metric that represents the proportion of likes a video receives relative to its total number of views. It's a way to gauge audience engagement and the overall reception of a video.
3. **Video Search Input:** Search for a specific video title for detailed analytics.
4. **Video Details:** Displays the unique video ID and the video title.
5. **Check Video Statistics Button:** Navigated to the Video Data page where detailed video statistics can be seen.

4.3 Video Data Page

This page provides the detailed analytics based on a selected video from the video list of the home page.

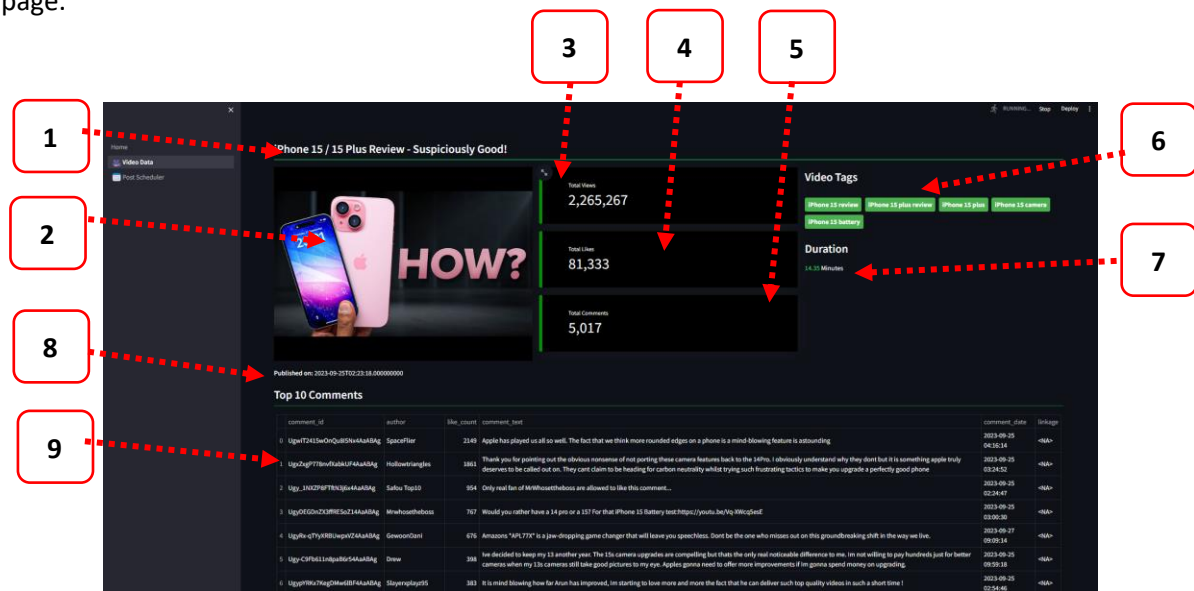


Figure 7 – Detailed Video Analytics Page

1. **Video Title:** Displays the video title of the selected video.
2. **Video Thumbnail:** Displays the video of the image that is displayed before it is played.
3. **Total Views Box:** Shows the total number of views the video has received.
4. **Total Likes Box:** Shows the total number of likes the video has received.
5. **Total Comments Box:** Shows the total number of comments the video has received.
6. **Video Tags:** Shows the tags used for describing the video.
7. **Duration:** Shows the duration of the video in minutes.
8. **Published On:** Shows when the video was published such as the date and time.
9. **Top 10 Comments:** Shows the top 10 comments on the video based on number of likes.

4.4 Unique Commenters, Trends, Sentiment Analysis & Comment Network Analysis

Right below the top 10 commenters, we have the unique commenters section, that shows the number of unique commenters and their names via a dropdown box. The next section is on comment trends such as likes and comment count along with a chart on the sentiment of the comments.

Below the trends and sentiment section we have the network analysis on the comment data retrieved.

Note: The greater the number of comments, the more time it will take to process the network analysis.

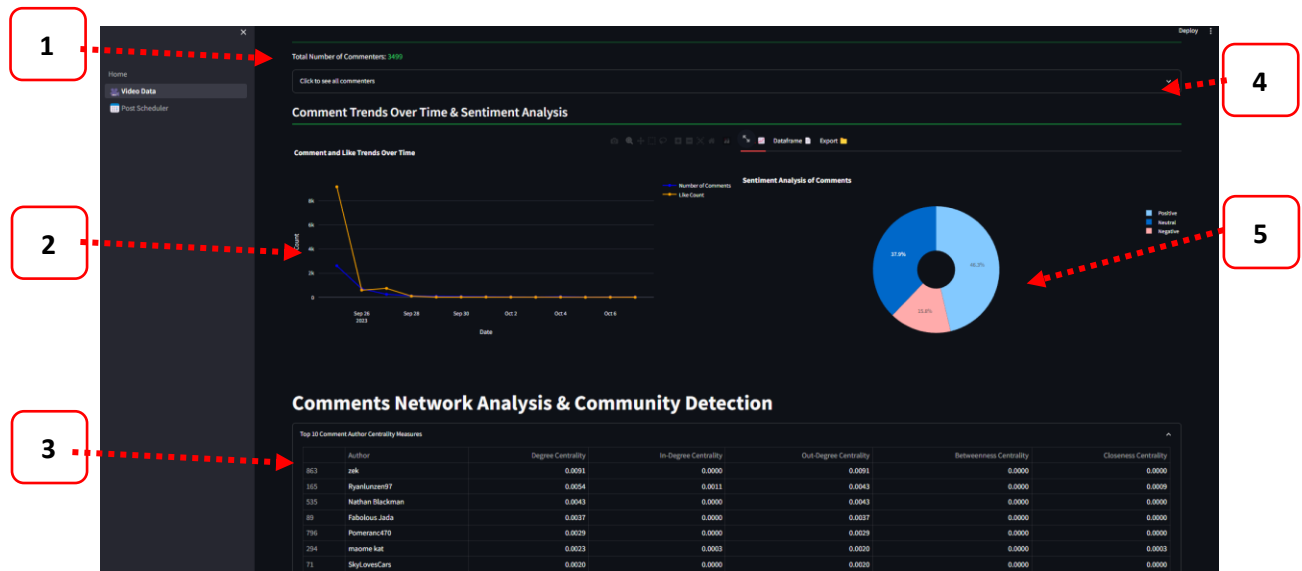


Figure 8 - Unique Commenters, Trends, Sentiment Analysis & Comment Network Analysis

- 1. Total Number of Commenters:** Displays the value of the total number of unique commenters for the video.
- 2. Comment & Like Trends Over Time:** Aims to provide insights into how the audience's engagement on the video in terms of comments and likes, has evolved over time.
- 3. Network Analysis Top 10 Authors Table:** A table consisting of calculated network metrics to retrieve the top 10 authors sorted on degree centrality.
- 4. Unique Commenters List Dropdown:** Provides the list of all the unique commenters on the video.
- 5. Sentiment Doughnut Chart:** Displays the comments sentiment and divides them into 3 categories, negative, positive and neutral.

4.5 Network Insights, Visualization and Community Detection

This section focuses on understanding the relationships and interactions among commenters on a selected video. By analyzing the network of comments, patterns, influential users, and communities within the commenters can be identified.

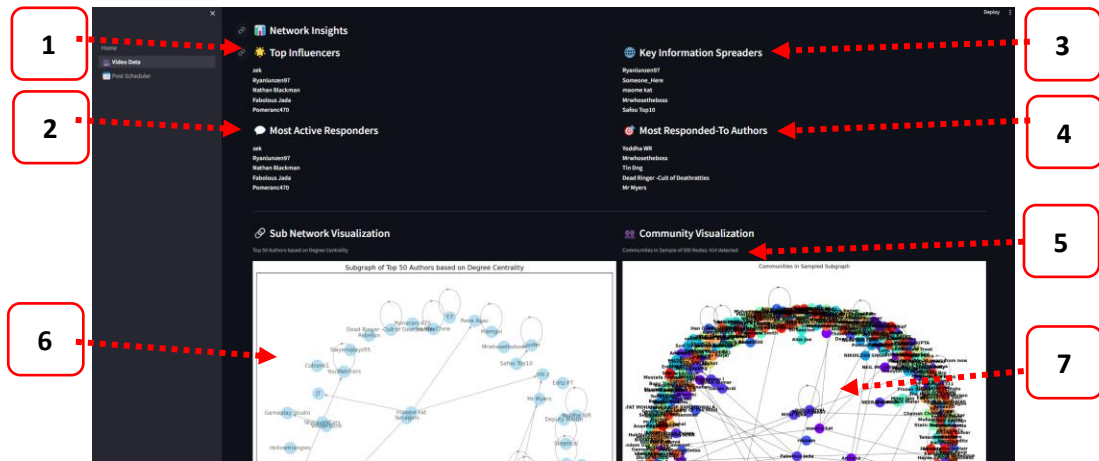


Figure 9 - Network Insights, Visualization and Community Detection

1. **Top Influencers:** Displays the users which are active in the comment section and often initiate discussions or get responses from other users.
2. **Most Active Responders:** Displays the users with which are active in responding to other user's comments
3. **Key Information Spreaders:** Displays the users that act as connections between different communities or groups.
4. **Most Responded-To Authors:** Displays the user comments that generate a lot of responses.
5. **No. of Communities:** Displays the number of communities identified in a sample of minimum 500 users.
6. **Network Visualization:** Displays comment network visualization for the top 50 authors based on degree centrality.
7. **Community Visualization:** Displays the communities detected and their interactions.

4.6 Post Scheduler Page

This page can be visited via the left navigation menu. It is designed to assist the content creator in scheduling their video uploads. By leveraging historical data, the dashboard provides the next optimal publishing date.

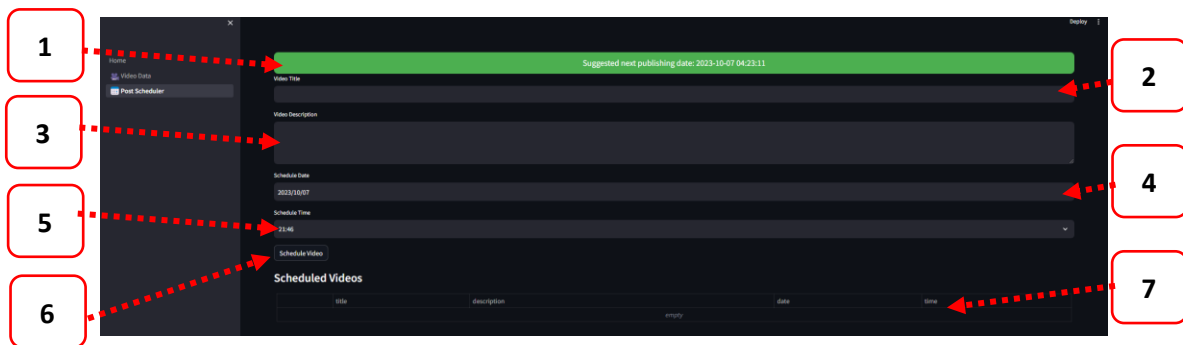


Figure 10 – Post Scheduler Page

1. **Suggest Publish Date:** Suggests the next time and date for publishing the next video based on previous video publishing history.
2. **Video Title Input:** Video title for the video to be input here.
3. **Video Description Input:** Video description for the video to be input here.
4. **Scheduled Date:** Schedule the date for the video to be published.
5. **Scheduled Time:** Schedule the time for the video to be published.
6. **Schedule Video Button:** Submit the new entry into the video publishing schedule.
7. **Scheduled Videos Table:** Shows the videos that have been scheduled previously.

4.7 Refresh Data Button

The refresh data button allows to refresh the entire dataset downloaded for the specified YouTube channel. Make sure to clear the dashboard cache for it to function properly.

Note: The data is downloaded and cached, if you would like to use another YouTube Channel ID, make sure to clear cache by using the shortcut key “C”.

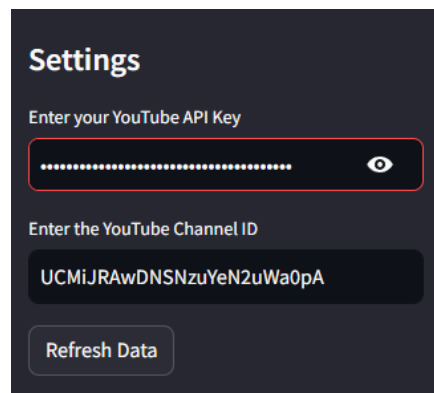


Figure 11 – Settings Section with Refresh Data Button

5. TROUBLESHOOTING

5.1 Common Issues and Solutions

- **API Key Errors:** Ensure the API key is valid and has the necessary permissions.
- **Data Loading Issues:** Check your internet connection and try refreshing the dashboard.
- **Graph Rendering Problems:** Ensure you're using a supported browser and consider clearing cache.

5.2 Reporting Bugs/Issues

If you encounter any unexpected issues, please contact our support team via the provided contact details.

6. SAFETY AND SECURITY

6.1 Data Privacy

The dashboard prioritizes user data privacy. No personal data is stored, and all analytics are generated in real-time.

6.2 API Key Management

Your API key is encrypted and securely stored. It's only used to fetch data from YouTube and is not shared with any third parties.

6.3 Direct Integration with YouTube

To ensure data privacy and security, the dashboard does not directly integrate with YouTube for content publishing. Users are advised to use YouTube's official platform for uploading and managing videos.

7. TIPS AND BEST PRACTICES

7.1 Optimizing Data Filters

Regularly update data filters to get the most relevant insights tailored to your current content strategy.

7.2 Making the Most of Predictive Analytics

Use predictive insights to inform your content strategy, but also consider other factors like current trends and audience feedback.

7.3 Regularly Updating the Dashboard

For the most accurate insights, ensure your dashboard data is regularly updated by re-entering your API key or refreshing the page.

Note: The data is downloaded and cached, if you would like to use another YouTube Channel ID or refresh existing data, make sure to clear cache by using the shortcut key “C”.

8. CONCLUSION AND CONTACT INFORMATION

8.1 Feedback and Suggestions

User feedback is valued. If you have suggestions for improvements or additional features, please contact me or open an issue on [GitHub](#).

8.2 Support Contact

For technical support or inquiries, reach out to zainmzameer@gmail.com or visit the [GitHub](#) Repository and open an issue.