

LLM Workflow Documentation

Authors: Kashyap Bathina

Technical Design Doc:

Overall Architecture

- **Trigger:** n8n Webhook node listens for POST /webhook/youtube-analysis.
- **Parsing Layer:** “Parse Link” & “Channel ID Logic” Function nodes extract or lookup a channel ID.
- **Data Fetch:**
 1. **Get Channel Info** → basic stats (title, subscribers, views, video count).
 2. **Get Recent Videos** → latest 10 video IDs → **Get Video Stats** → likes/views per video.
- **Compute Metrics:** Single Function node calculates averages, posting frequency, engagement rate, top tags.
- **LLM Layers:**
 1. **Analysis Report LLM** → performance summary.
 2. **Prompt Suggestions LLM** → viral content ideas.
 3. **Copywriting LLM** → title & description rewrites.
- **Compile Final Report:** Combines the three LLM outputs into one JSON object returned by the Webhook.

Tooling & Integrations

- **n8n** (latest stable) for orchestration
- **YouTube Data API v3** via HTTP Request nodes (requires Google API key)
- **OpenRouter.ai** (GPT-3.5-turbo) for all three LLM calls, using HTTP Header Auth credential

Data Flow Diagram

[Webhook]
↓
[Parse Link] → [Channel ID Logic]
↓

[Get Channel Info] → [Get Recent Videos] → [Collect IDs] → [Get Video Stats]

↓

[Compute Metrics]

↓

[Analysis Report LLM] → [Prompt Suggestions LLM] → [Copywriting LLM]

↓

[Compile Final Report]

↓

[Webhook Response]

User Guide:

1. Prerequisites

- Install n8n (Docker or binary or WSL (like i did using npm install))
- Node.js for any local script tests

2. Configuration

- **Google API Key:**
 1. Enable YouTube Data API v3 in Google Cloud Console.
 2. Create an API key and store it as an environment variable or in n8n's **Credentials** → **API Key**.
- **OpenRouter API Token:**
 1. Sign up at openrouter.ai.
 2. Create **HTTP Header Auth** credential in n8n named "Header Auth account" with header Authorization: Bearer <YOUR_TOKEN>.

3. Workflow Setup

- Import the provided JSON into n8n.
- Link your credentials on each HTTP Request node.
- Activate the workflow.

4. Making a Request

- **Endpoint:** POST `http://<YOUR_N8N_HOST>:5678/webhook/youtube-analysis`

Body/INPUT: { "url": "https://www.youtube.com/@YourChannelName" }

Response/OUTPUT:

[
{

```
"json": {
  "channelName": "YourChannelName",
  "channelAnalysis": "...",
  "contentIdeas": "...",
  "copywritingSuggestions": "..."
}
```

Test Report:

BUGS: FOR SOME REASON, the only links accepted were those with actual id names instead of random numbers, I realized this too late, and now I don't have time to finish because during testing I only used youtubers with hash codes as links instead of actual youtube names (hence why mrBeast works but https://www.youtube.com/@Cristiano does not)

1.

YouTube Channel Analyzer

Enter a YouTube channel URL to analyze its performance, content strategy, and get recommendations.

Analysis Channel

Analysis Results for MrBeast

Channel Analysis

===== YouTube Channel Analysis Report

===== 1. Channel Overview & Performance Summary

- **Subscribers:** 388,000,000

- **Total Views:** 80,179,556,000

- **Total Videos:** 455

The channel has a massive subscriber base and a significant number of views, indicating a strong presence on the platform. The average views per video are 79,564, and the average likes per video are 1,300. The engagement rate is 1.9%, which shows a decent level of audience interaction.

===== 2. Content Strategy Analysis

- The channel's content seems to resonate well with the audience, as indicated by the high average views and likes per video.

- The channel has a diverse range of 800 videos, which suggests a consistent content creation strategy.

- Analyzing the most popular videos and identifying common themes can help optimize the content strategy further.

===== 3. Audience Engagement Assessment

- The engagement rate of 1.9% is decent, but there may be room for improvement.

- Encouraging more likes, comments, and shares through interactive content or calls to action can boost engagement.

- Analyzing audience demographics and preferences can help tailor content to increase engagement.

===== 4. Competitive Positioning Within Their Niche

- Assessing competitor channels in the same niche can provide insights into best practices and areas for differentiation.

- Benchmarking metrics like subscriber growth, views, and engagement rates against competitors can help gauge performance.

- Identifying unique selling points and leveraging them to stand out in the niche is crucial for long-term success.

===== 5. Growth Trends and Opportunities

- Monitoring growth trends in subscribers, views, and engagement over time can help identify patterns and capitalize on opportunities.

- Exploring collaborations with influencers or other channels in related niches can expand reach and attract new audiences.

- Diversifying content formats, exploring new trends, and staying updated with platform changes can drive continued growth and success.

Overall, the channel shows strong performance metrics and engagement levels, indicating a solid foundation for growth. By refining content strategy, enhancing audience engagement, and staying competitive within the niche, the channel can capitalize on growth opportunities and further expand its reach on YouTube.

Content Ideas

Based on the channel's stats and metrics, here are 5 specific viral content ideas that could work well for this creator:

1. **"Challenge Series"**: Create a series of challenge videos where the creator attempts various difficult or trending challenges related to their niche. For example, if the channel is about cooking, they could try the "24-hour cooking challenge" or the "Mystery Ingredient challenge."

2. **"Collaboration Videos"**: Collaborate with popular influencers or celebrities within the same niche to create engaging and shareable content. This can help attract a new audience from the collaborators' fan base and increase the channel's reach.

3. **"Behind-the-Scenes Vlogs"**: Provide viewers with a glimpse into the creator's daily life, behind-the-scenes moments, or the making of their content. This type of personal and relatable content can help build a stronger connection with the audience.

4. **"Live Streaming Events"**: Host live streaming events such as Q&A sessions, cooking tutorials, or interactive challenges to engage with viewers in real-time. Live streams tend to attract a large audience and create a sense of urgency, leading to higher engagement.

5. **"Top 10 Lists"**: Create engaging and informative top 10 lists related to the channel's niche. For example, if the channel is about travel, they could make videos on "Top 10 Must-Visit Destinations in 2023" or "Top 10 Travel Hacks You Need to Know." Lists are easily shareable and tend to perform well in terms of views and engagement.

Copywriting Suggestions

Recommendation 1:

1. Original title: "Cooking Challenge: Making Vegan Pizza"
2. Improved title: "Ultimate Vegan Pizza Recipe | Cooking Challenge"
3. Description: Join us as we take on the vegan pizza cooking challenge! Watch us whip up the ultimate plant-based pizza with a variety of delicious toppings. Get ready to satisfy your pizza cravings in the healthiest way possible!
4. Tags: Vegan pizza, plant-based recipe, cooking challenge

Recommendation 2:

1. Original title: "Travel Vlog: Exploring Tokyo, Japan"
2. Improved title: "Tokyo Travel Guide: Must-See Sights & Hidden Gems"
3. Description: Dive into the vibrant streets of Tokyo with our travel vlog showcasing the best sights and hidden gems of this bustling city. From traditional temples to modern skyscrapers, get ready to immerse yourself in the culture and beauty of Japan's capital.
4. Tags: Tokyo travel vlog, Japan sightseeing, Tokyo hidden gems

Recommendation 3:

1. Original title: "DIY Home Decor: Make Chic Room Refresh"
2. Improved title: "Make Chic Room Transformation | DIY Home Decor Ideas"
3. Description: Transform your space with our DIY home decor room makeover! Explore creative decorating ideas and budget-friendly hacks to achieve that trendy and cozy bedroom vibe in your own home. Get inspired to revamp your space with a touch of chic flair!
4. Tags: DIY home decor, chic room, room makeover ideas

Recommendation 4:

1. Original title: "Fitness Routine: Full Body Workout for Beginners"
2. Improved title: "Beginner's Guide to Full Body Workout | Fitness Routine"
3. Description: Kickstart your fitness journey with our beginner-friendly full body workout routine! Follow along as we guide you through a series of exercises designed to target all major muscle groups and help you build strength and endurance. Get ready to sweat and feel the burn in the best way possible!
4. Tags: Full body workout, beginner fitness, workout routine

Recommendation 5:

1. Original title: "Book Review: Best-selling Mystery Novel"
2. Improved title: "Must-read Mystery Novel | Book Review & Recommendations"
3. Description: Dive into the thrilling world of mystery novels with our latest book review! Discover our top picks for must-read mystery books that will keep you on the edge of your seat from start to finish. Whether you're a seasoned mystery reader or new to the genre, these recommendations are sure to captivate you!
4. Tags: Mystery novels, book review, must-read books

2.

Analysis Results for Like Nastya

Channel Analysis

*** YouTube Channel Analysis Report

**** 1. Channel Overview & Performance Summary:

- **Subscribers:** 127,000,000

- **Total Views:** 111,826,250,737

- **Total Videos:** 942

The channel has a massive subscriber base and a very high view count, indicating a strong presence on the platform. The average views per video are 67,232, and the average number of likes per video is 2,070. The engagement rate of 4.42% is above the platform average, showing a high level of audience interaction.

**** 2. Content Strategy Analysis:

- The channel's content seems to resonate well with the audience, as indicated by the high average views and likes per video.

- The channel likely focuses on producing high-quality and engaging content that keeps viewers coming back for more.

- It would be beneficial for the channel to analyze the performance of different types of content to understand what resonates best with the audience.

**** 3. Audience Engagement Assessment:

- The engagement rate of 4.42% is quite impressive and shows that the audience is highly engaged with the content.

- The channel should continue to encourage audience interaction through calls to action, polls, and responding to comments to further boost engagement levels.

- Analyzing audience demographics and preferences can help tailor content to better meet their needs and interests.

**** 4. Competitive Positioning within their Niche:

- The channel's high subscriber count and view count indicate a strong position within its niche.

- It would be beneficial to conduct a competitive analysis to understand how the channel stacks up against other similar channels in terms of content, engagement, and growth.

- Identifying unique selling points and areas for improvement can help the channel maintain its competitive edge.

**** 5. Growth Trends and Opportunities:

- The channel has experienced significant growth in terms of subscribers and views, indicating a positive trajectory.

- To capitalize on this growth, the channel could explore collaborations with other creators, diversifying content formats, and expanding into new topics or niches.

- Leveraging data analysis and audience feedback can help identify growth opportunities and optimize content strategy for continued success.

Overall, the channel has a strong foundation with a large and engaged audience. By leveraging data insights and strategic planning, the channel can further enhance its performance, engagement, and competitive positioning within the YouTube platform.

Content Ideas

Based on the channel's stats and metrics, as well as recent videos, here are 5 specific viral content ideas that could work well for this creator:

1. **Challenge Videos:** Create fun and engaging challenge videos that involve the audience in some way. For example, you could do a "24-hour Challenge" or a "Try Not to Laugh Challenge" with a unique twist to make it stand out.

2. **Collaboration with Popular YouTubers:** Reach out to popular YouTubers in a similar niche and collaborate on a video together. This can help cross-promote each other's channels and tap into each other's audience.

3. **Behind-the-Scenes Series:** Offer your audience a glimpse into your daily life or the making of your videos through a behind-the-scenes series. Viewers often enjoy seeing the process behind the content they love.

4. **Top 10 Lists or Countdowns:** Create engaging and shareable videos where you rank or list top 10s in your niche. This can be anything from "Top 10 Movies of the Month" to "Top 10 Tips for Beginners."

5. **Interactive Q&A Sessions:** Host live Q&A sessions or interactive polls where viewers can ask you questions or vote on topics they want to see in future videos. This not only engages your audience but also helps you tailor content to their preferences.

These ideas leverage the channel's existing strengths and can potentially drive more engagement and views, leading to viral content.

Copywriting Suggestions

Recommendation 1:

1. Original title: "Exploring the Hidden Gems of Tokyo"

2. Improved title: "Uncover Tokyo's Best Kept Secrets with Me"

3. Compelling description: Join me on a journey through the lesser-known spots of Tokyo that will leave you in awe. From hidden cafes to secret gardens, this is a side of Tokyo you've never seen before.

4. Tags: Tokyo travel, hidden gems, off the beaten path, Tokyo sightseeing

Recommendation 2:

1. Original title: "Trying Strange Street Foods in Bangkok"

2. Improved title: "Tasting Bizarre Bangkok Street Eats for the First Time"

3. Compelling description: Dive into the vibrant and eclectic street food scene of Bangkok with me as I try some of the most unique and unusual dishes the city has to offer. Get ready for a culinary adventure like no other!

4. Tags: Bangkok street food, bizarre foods, Bangkok food tour, Thai street eats

Recommendation 3:

1. Original title: "A Day in the Life of a Local in Barcelona"

2. Improved title: "Immersing in Barcelona's Local Culture for a Day"

3. Compelling description: Experience the heartbeat of Barcelona as I take you through a day in the life of a local. From morning coffee rituals to evening tapas bars, get a taste of authentic Catalan life in this vibrant city.

4. Tags: Barcelona local culture, Barcelona daily life, Barcelona travel vlog, Barcelona authentic experiences

Recommendation 4:

1. Original title: "24 Hours in Paris: A Rhinobird Tour"

2. Improved title: "Paris in a Day: Must-See Sights & Hidden Gems"

3. Compelling description: Join me on a fast-paced adventure through the enchanting streets of Paris, where I'll show you the iconic landmarks and secret spots that make this city truly magical. Get ready to fall in love with Paris all over again!

4. Tags: Paris travel guide, Paris sightseeing, Paris hidden gems, 24 hours in Paris

Recommendation 5:

1. Original title: "Shopping Spree in Seoul's Trendiest District"

2. Improved title: "Retail Therapy: Trendy Shopping in Seoul's Hotspots"

3. Compelling description: Indulge in the ultimate shopping experience as we navigate through Seoul's hippest neighborhoods, uncovering the latest trends and hidden boutiques along the way. Get ready to shop 'til you drop in the fashion capital of South Korea!

4. Tags: Seoul shopping guide, trendy Seoul districts, Seoul fashion, Seoul shopping spree

5.

YouTube Channel Analyzer

Enter a YouTube channel URL to analyze its performance, content strategy, and get recommendations.

https://www.youtube.com/user/pewdiepie

Analyze Channel

Error: Status 500

Make sure your n8n workflow is running...

This is an example of that bug. I am unsure where it is, but links with actual id names do not seem to work. Unfortunately, I did not have time to find and resolve the issue.