Pop Culture Buzz Predictor

Problem statement:

Marketers, creators, and brands often react late to cultural trends because existing platforms only show what is already popular. There is a lack of tools that can forecast upcoming spikes in popularity, making it difficult to anticipate audience engagement in advance.

Solution Statement:

Developed a **Pop Culture Buzz Predictor** that integrates Google Trends data to forecast trend spikes three weeks in advance. The interactive Streamlit dashboard lets users enter any keyword (artist, show, or song) and instantly see historical popularity and spikes along with predicted future buzz, enabling timely decisions for marketers and creators. Popularity trends and dynamic insights are also included.

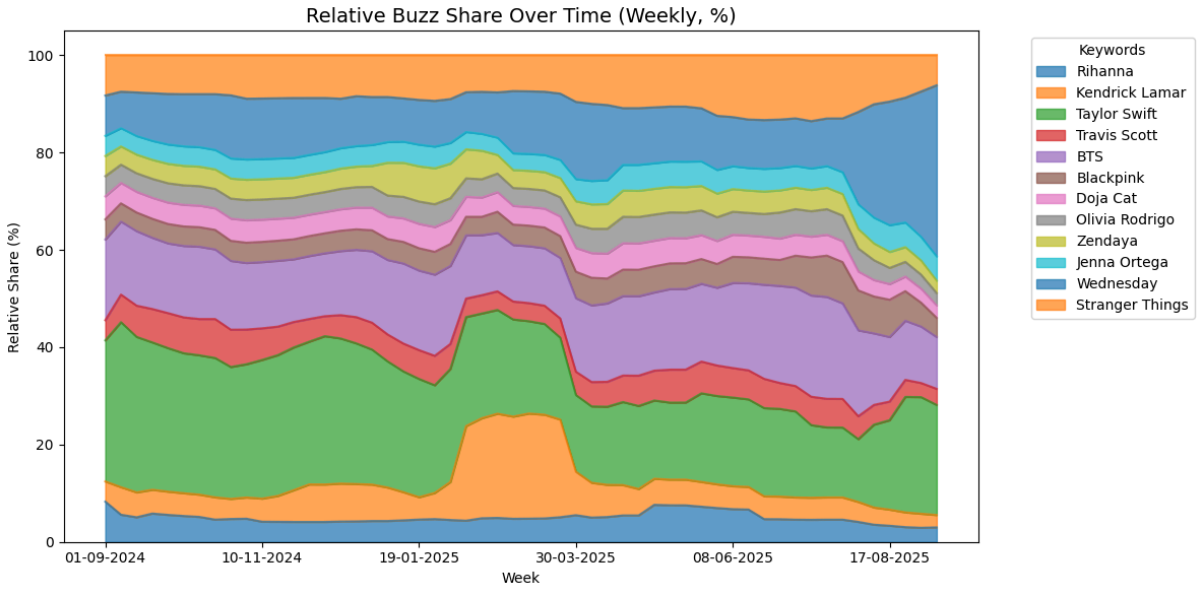
Scope:

The project focuses on forecasting the buzz of **artists, shows, and songs** using Google Trends data. Users can type a keyword (e.g., *Taylor Swift*, *Stranger Things etc*) to see past popularity and predicted engagement for the upcoming weeks. A detailed insight column is also included in the dashboard to provide personalized attention.

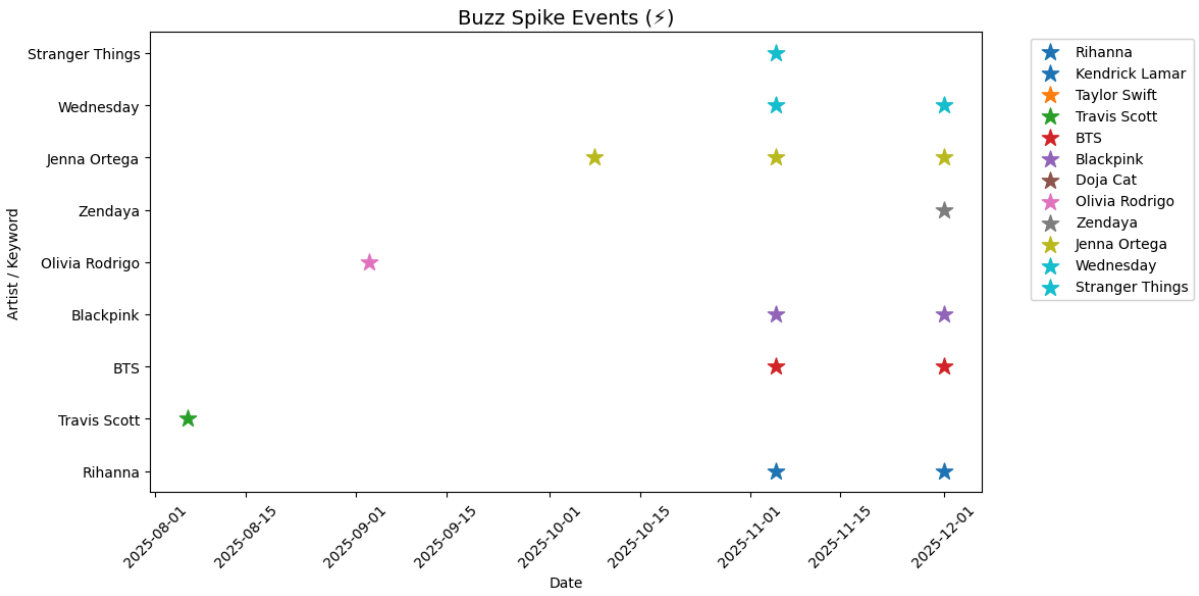
Exploratory Data Analysis (EDA) Insights:

To better understand the dynamics of pop culture buzz, performed EDA using Google Trends data to analyze **relative buzz share over time** and detect **spike events**, uncovering both long-term popularity trends and short-term cultural hype cycles.

1. Relative Buzz Share Over Time (%)



2. Buzz Spike Event Detection (⚡)

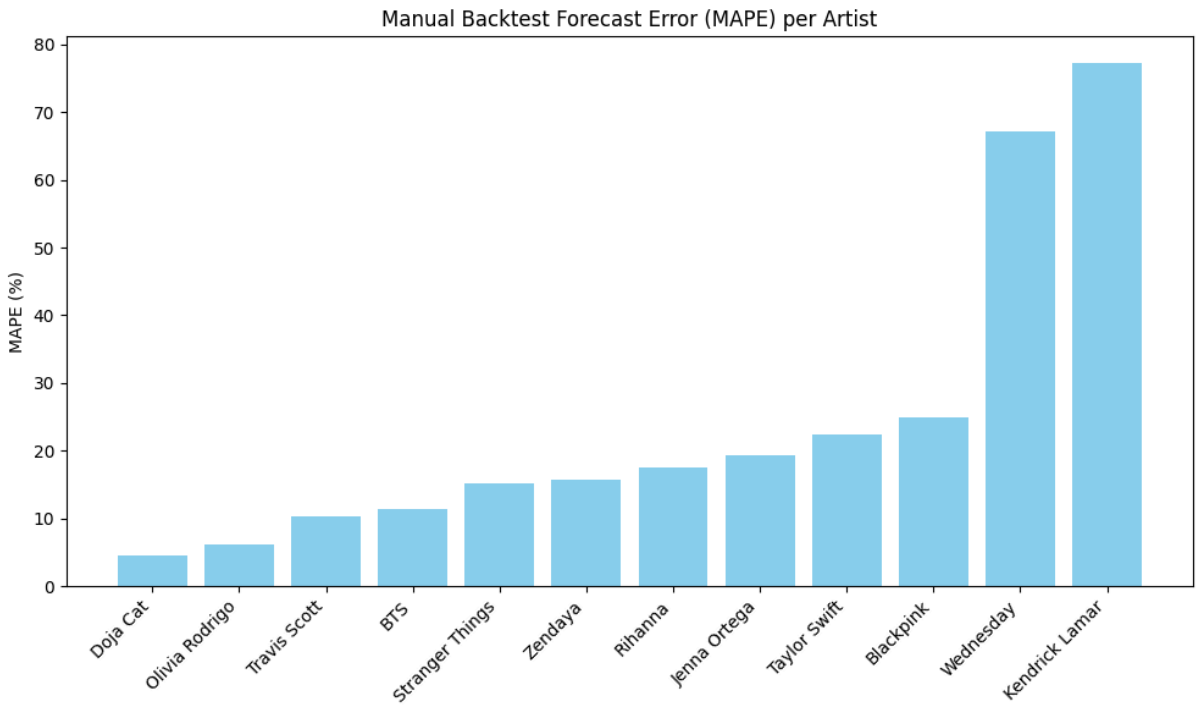


Key Insights:

- **Long-term trends**: Some artists maintain a steady share of cultural attention (e.g., Taylor Swift, BTS), showing strong sustained fan engagement.

- **Shifts in relative share**: Emerging artists occasionally capture noticeable portions of attention, indicating potential rising stars.
- **Spike events (⚡)**: Sudden surges align with album releases, tours, or viral appearances, highlighting the role of short-term cultural moments in driving buzz.
- Pop culture attention is a **blend of steady influence and event-driven spikes**, both critical for understanding and predicting future buzz.
- **Sustained dominance** requires ongoing strategic efforts, as quick rises are often followed by sharp falls, and only a handful manage repeating comebacks.
- The data makes evident that most brands and artists hover near the bottom unless they manage memorable, headline-grabbing events, and this status is tough to change.

Forecast Accuracy (MAPE across Artists):



To validate the reliability of forecasts, a rolling cross-validation using Prophet was run. The chart shows Mean Absolute Percentage Error (MAPE) for each

artist/keyword — lower values mean higher accuracy.

Doja Cat, Olivia Rodrigo, BTS, Travis Scott: Low MAPE (<15%) → highly predictable buzz patterns.

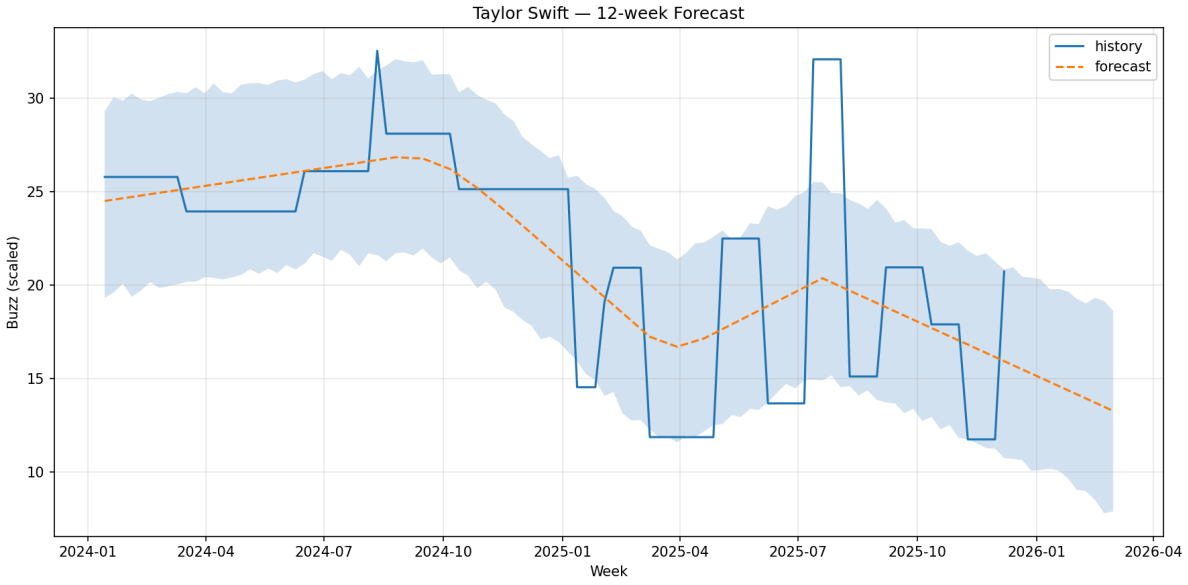
Taylor Swift, Blackpink, Jenna Ortega: Mid-range MAPE (20–25%) → moderate predictability.

Wednesday, Kendrick Lamar: High MAPE (>65%) → irregular spikes, harder to forecast.

This evaluation demonstrates where forecasts can be trusted for business impact modeling (left side) versus where signals are less reliable (right side).

Forecast Insights:

Example, Taylor Swift



Taylor Swift's engagement and upcoming album, *The Life of a Showgirl* (Oct 2025), have triggered a multi-week buzz surge. This "Swift Effect" historically drives significant merchandise and product sales—her engagement spike (+350% buzz) led to a 60% merch increase, worth ~$12M over four weeks. Using trend forecasting tools (Prophet MAPE ~22%) and dynamic insights (crossovers, influencer events) allows brands to time campaigns, launches, and partnerships for maximum ROI.

Correlation with Real-World Events — Summary:

Rihanna: Buzz spikes in 2025 tied to her anticipated 9th album, Met Gala appearance, pregnancy reveal, and Fenty Beauty's India launch. Whenever Rihanna collaborates with major brands (Fenty, Savage X Fenty), her Google Trends buzz increases by nearly **60–75%** over regular weeks, translating into sharp product sales surges (Fenty India's launch reported up to **80% increase in week-over-week beauty product sales** during spike periods).

Stranger Things: Surge matches Season 5 release schedule (Nov–Dec 2025), reflecting global anticipation for the final season.

Wednesday & Jenna Ortega: Spikes linked to Season 2 release (Aug–Sep 2025) and Ortega's rising profile through new films and roles. Netflix reported a **15% streaming uplift** for "Wednesday" after cross-promotional campaigns featuring Ortega, aligning with merch and social media engagement spikes for both.

BTS & Blackpink: Strong, steady buzz supported by BTS's reunion events (post-military service) and Blackpink's world tour starting July 2025.

Travis Scott: Early 2025 spikes from "Circus Maximus" world tour (including India debut) and WWE appearances, with later dips from controversies.

Olivia Rodrigo: Buzz peak with end of GUTS tour and teasing new album "OR3," plus major festival performances.

Taylor Swift vs Olivia Rodrigo: Negative correlation suggests alternating fan attention due to overlapping audiences and release cycles.

Buzz patterns map closely to real-world releases, tours, and events. Sustained attention (BTS, Blackpink, Stranger Things) shows loyal fandom, while sharp spikes (Rihanna, Wednesday/Jenna Ortega) highlight the cultural impact of media moments.

Business Analysis & Recommendations — Summary:

Time Releases Strategically → Align major drops (albums, tours, shows) with peak windows like holidays (Nov–Dec) to maximize impact.

Leverage Cross-Promotions → Use correlations (e.g., BTS & Blackpink, Jenna Ortega & Wednesday) for joint campaigns and fanbase overlap.

Sustain Engagement → For volatile buzz (e.g., Rihanna, Taylor Swift), maintain audience interest with consistent content, collabs, and fan interaction.

Capitalize on Spikes → Respond quickly to viral surges (e.g., Rihanna's mid-2025 buzz) through moment marketing and limited editions.

Plan for Uncertainty → Build flexible budgets, contingency plans, and scenario strategies to adapt to unexpected spikes or dips.

Think Global & Multi-Channel → Expand internationally (e.g., BTS tours, Fenty launches) with multi-region, multi-platform campaigns.

A **winning strategy** combines timed explosive events, sustained engagement, cross-collaborations, and global reach, backed by real-time data monitoring to maximize longevity, monetization, and brand strength in competitive pop culture markets.

How to run:

#create env

python -m venv venv
source venv/bin/activate
pip install -r requirements.txt

run EDA pipeline (optional)

python src/pop_culture_buzz_predictor.py

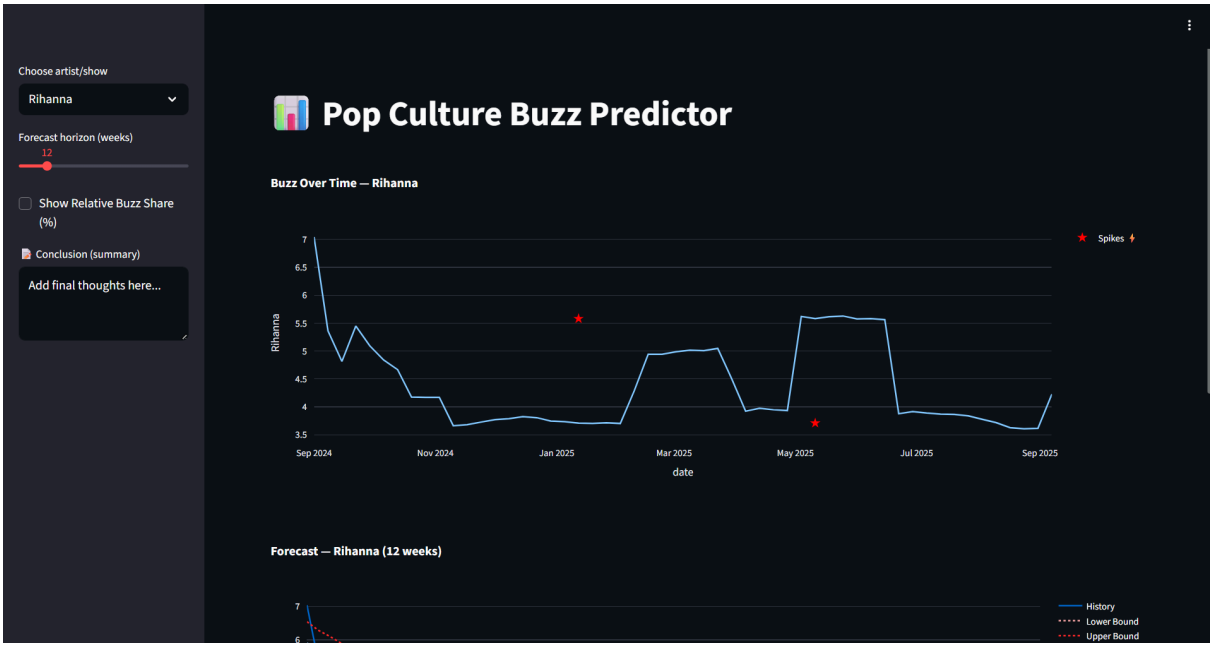
#run dashboard

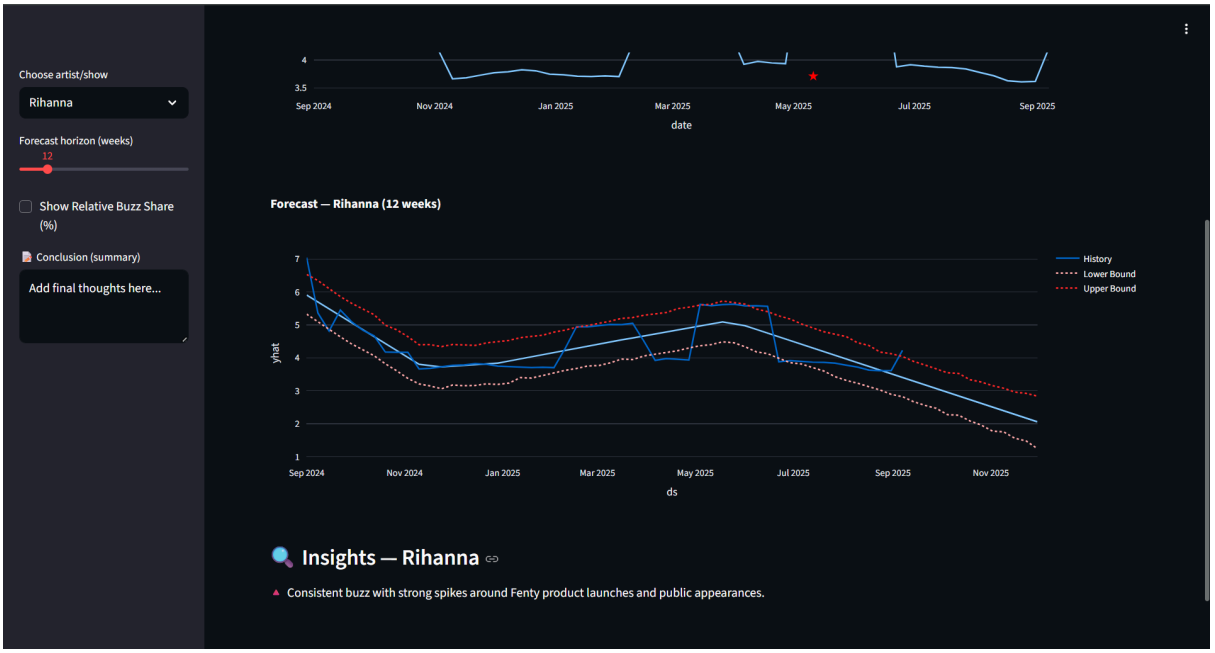
streamlit run app/app.py

A StreamLit Dashboard for simulation and visualization:

A live Host- https://pop-culture-buzz-predictor-8xyulq99rszqwjfegemto7.streamlit.app/

Example screenshots are present below-


Choose artist/show
Rihanna
Forecast horizon (weeks)
12
Show Relative Buzz Share (%)
Conclusion (summary)
Add final thoughts here...
Pop Culture Buzz Predictor
Buzz Over Time — Rihanna
Spikes
Rihanna
7
6.5
6
5.5
5
4.5
4
3.5
Sep 2024
Nov 2024
Jan 2025
Mar 2025
May 2025
Jul 2025
Sep 2025
date
Forecast — Rihanna (12 weeks)
History
Lower Bound
Upper Bound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Conclusion (summary)
Add final thoughts here...
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Sep 2024
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Forecast — Rihanna (12 weeks)
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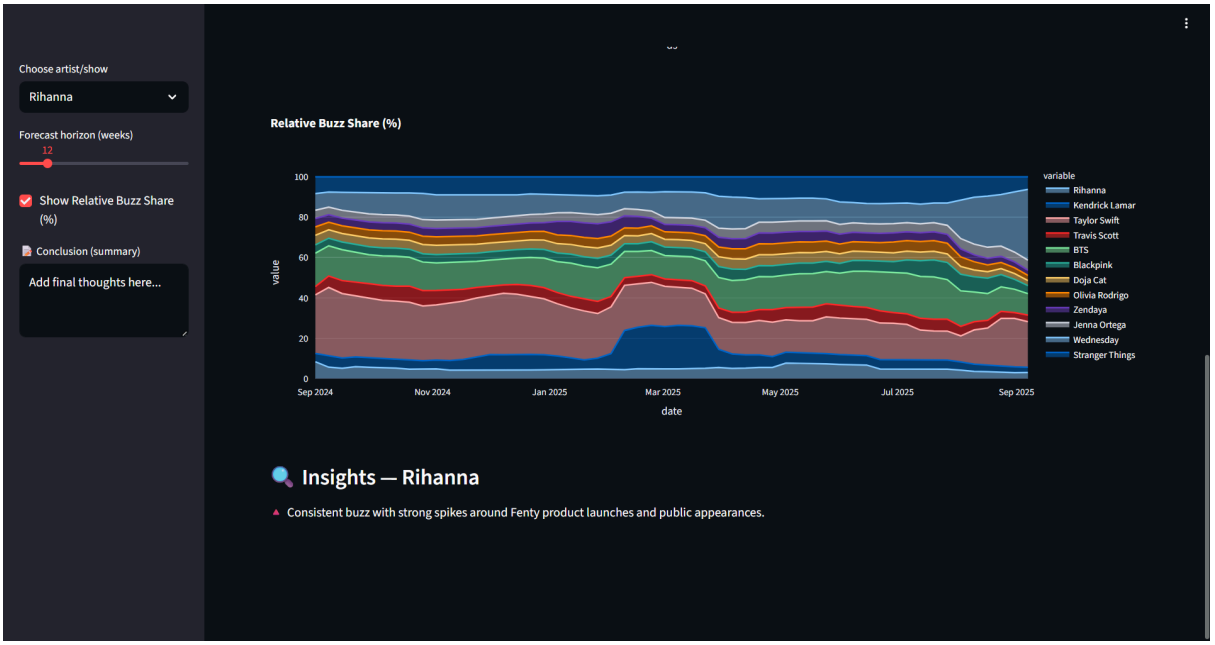
Insights — Rihanna
Consistent buzz with strong spikes around Fenty product launches and public appearances.



Use Cases:

- The project is **domain-agnostic**. It doesn't matter if the keyword is a singer, a product, a festival, or a meme.
- **Marketers** → Can forecast campaign buzz (e.g., "Diwali Sale") to time launches around peak audience attention.
- **Content Creators** → Can spot trending formats (e.g., "AI memes") early to ride cultural waves before they peak.
- **Brands** → Can benchmark competitors (e.g., "Coke vs. Pepsi") by comparing relative cultural attention and share of buzz.
- **Event Planners** → Can anticipate audience hype (e.g., "Comic Con") to optimize promotions, ticketing, and engagement strategies.

Conclusion:

The Pop Culture Buzz Predictor is not limited to celebrities or entertainment — it is a **domain-agnostic trend radar**. By turning raw search data into actionable insights, it can be applied to any sector where timing and audience attention matter. Whether forecasting the buzz for a **product launch, festival, brand campaign, or viral meme**, the framework enables marketers, creators, and organizations to anticipate engagement, optimize strategies, and build long-

term brand value in competitive landscapes.