Social Media Hashtag Analysis Dashboard

Real-Time Trend, Sentiment & Crisis Monitoring

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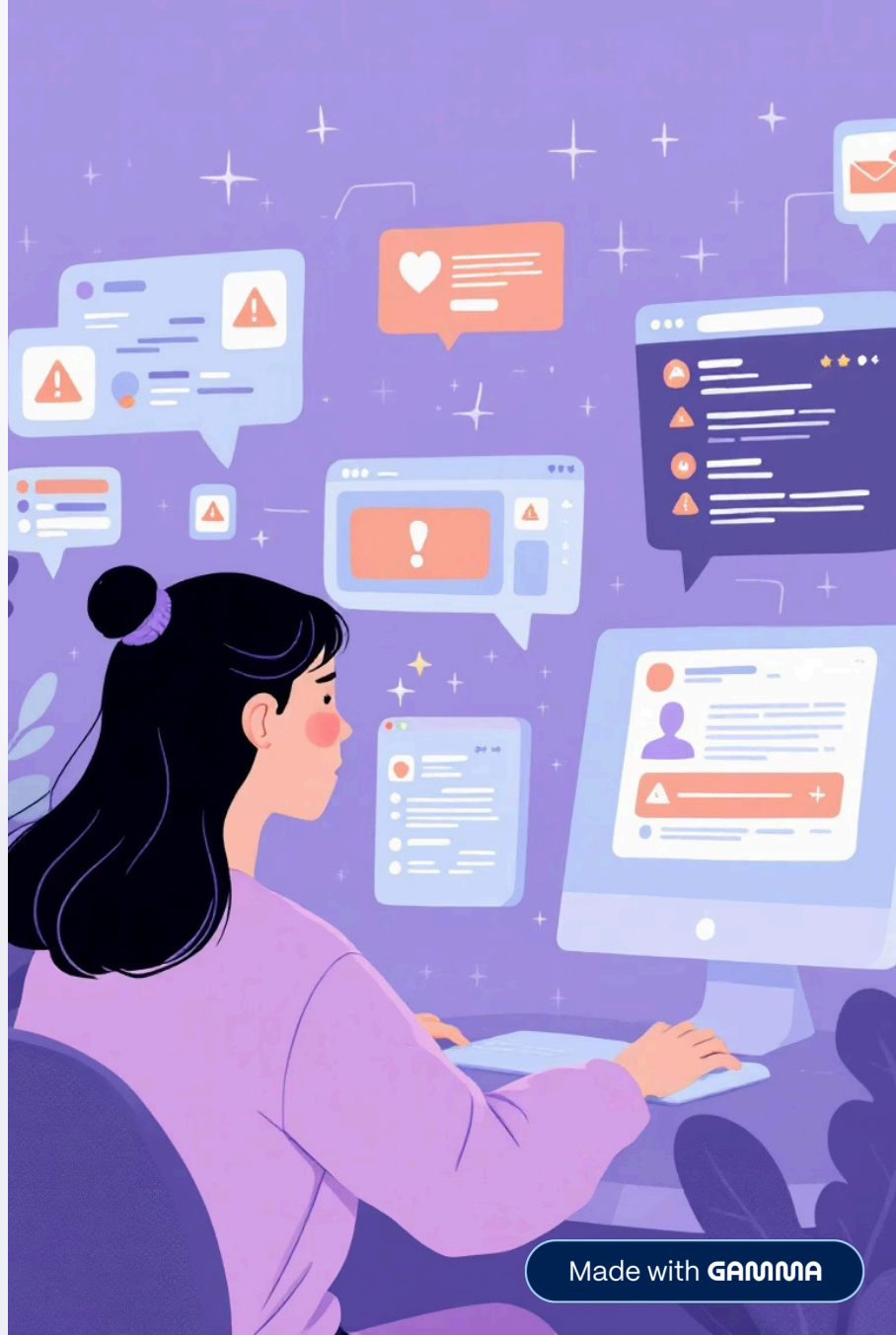
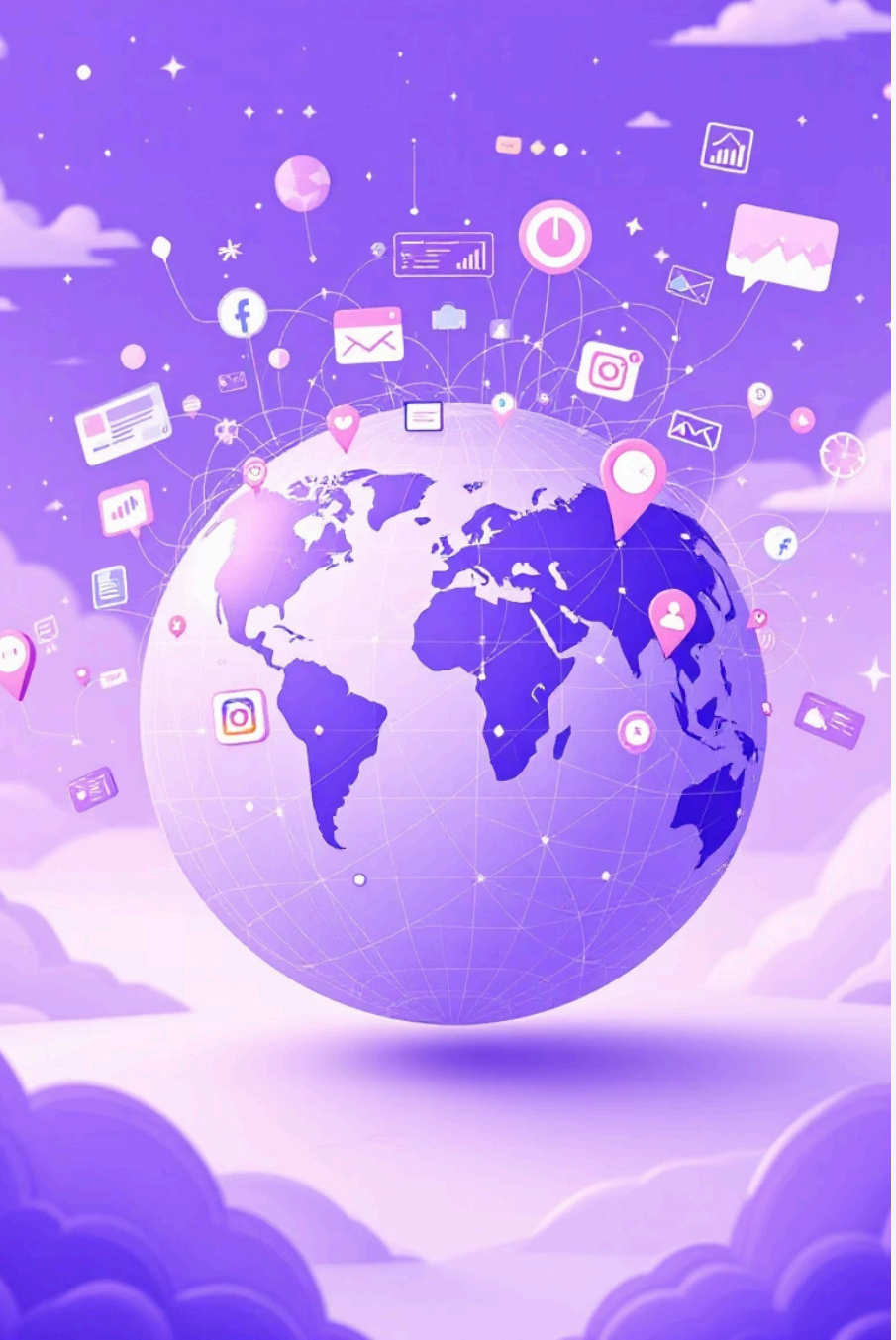
Problem Definition

- Massive social media data → impossible to monitor manually
- Need to identify real-time incidents, sentiments & trends
- Hard to collect & clean posts from multiple platforms
- No unified system for trend analysis, sentiment & location insights
- Lack of early detection for emergencies/disasters



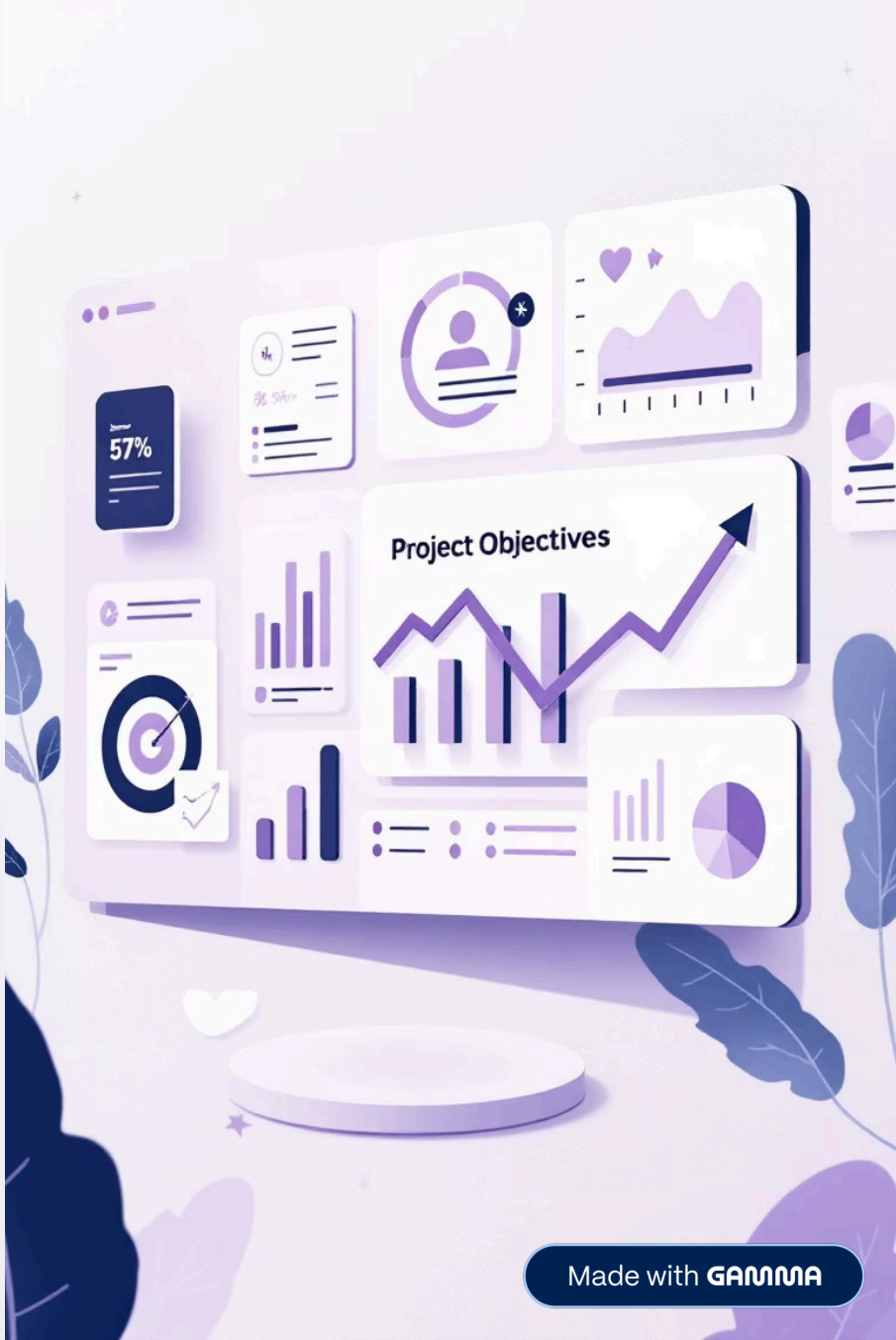


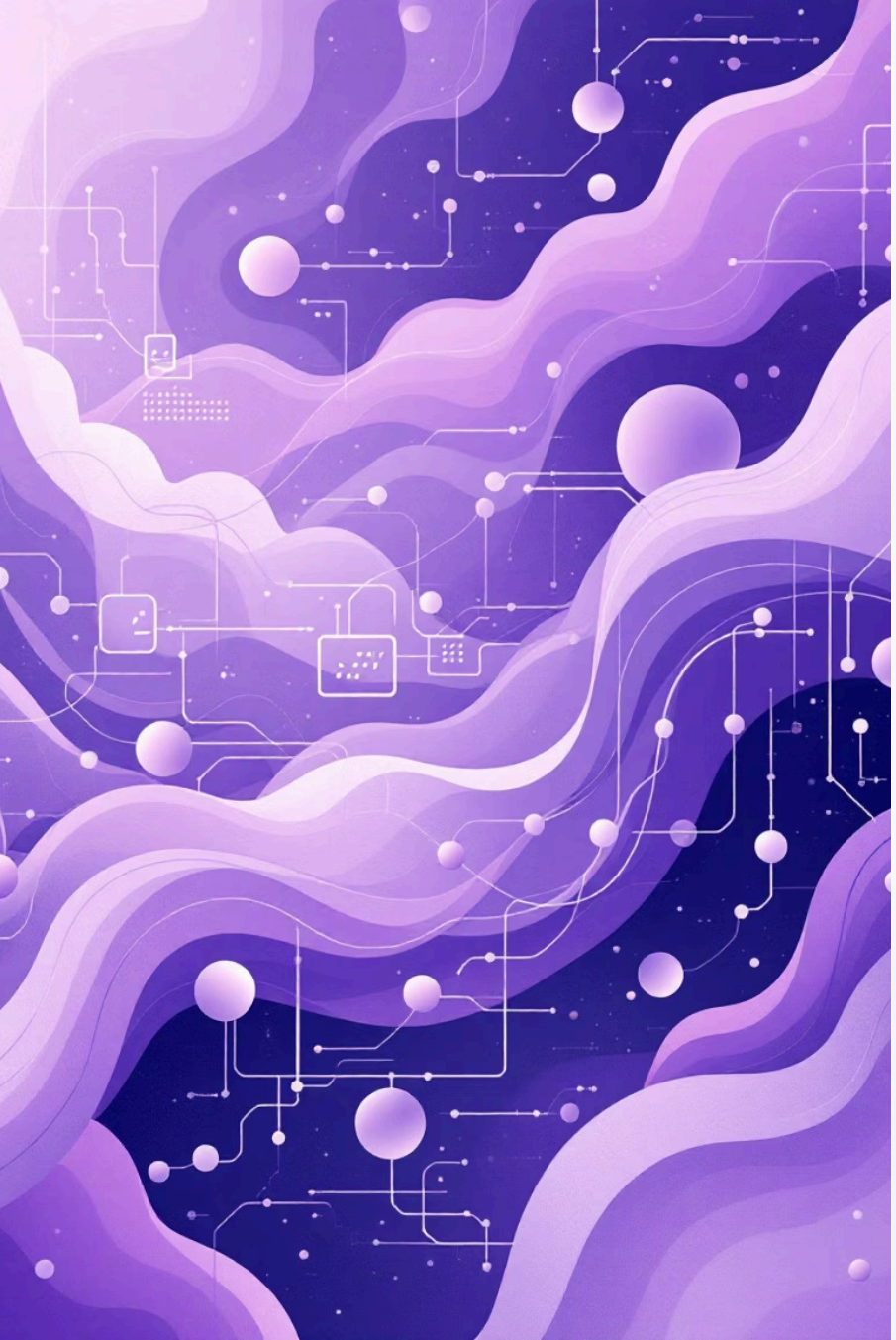
Importance of the Problem

- Social platforms are **fastest channels for real-world events**
- Helps detect blasts, accidents, crisis signals earlier
- Understand public emotion & misinformation patterns
- Supports government, media & businesses in decision-making
- Enables global visibility of trends & critical events

Project Objectives

- Build a unified dashboard for hashtag-based social media analytics
- Multi-platform support (Twitter / X, Reddit, Bluesky, Mastodon, etc.)
- Enhanced 6-class sentiment analysis
- Crisis detection with scoring
- Insights: top hashtags, influencers, locations
- Visualizations: charts, heatmaps, word clouds.





Technology Stack

Python

Core Language

Streamlit

Dashboard UI

Apache Spark

Big Data Processing

SQLite

Database

spaCy & TextBlob

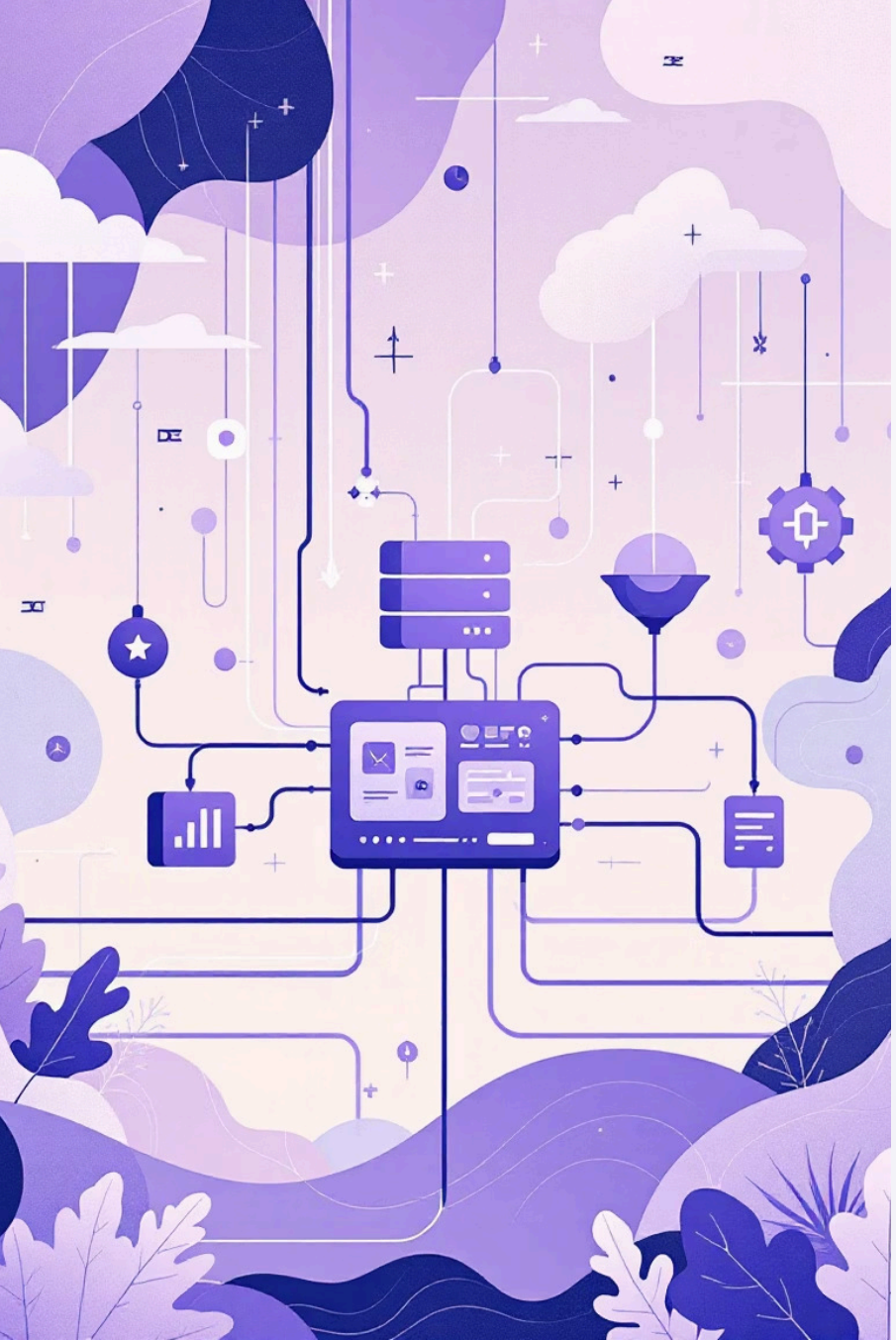
NLP Libraries

Plotly & Folium

Visualization

Pandas

Data Manipulation



System Architecture

Flow: CSV/API → Processing Layer → NLP Engine → Hashtag Extractor → Location Parser → SQLite DB → Streamlit Dashboard → Visual Analytics

Data Input

(CSV/API)

Processing

(Spark, Pandas)

NLP

(spaCy, TextBlob)

Storage

(SQLite)

Visualization

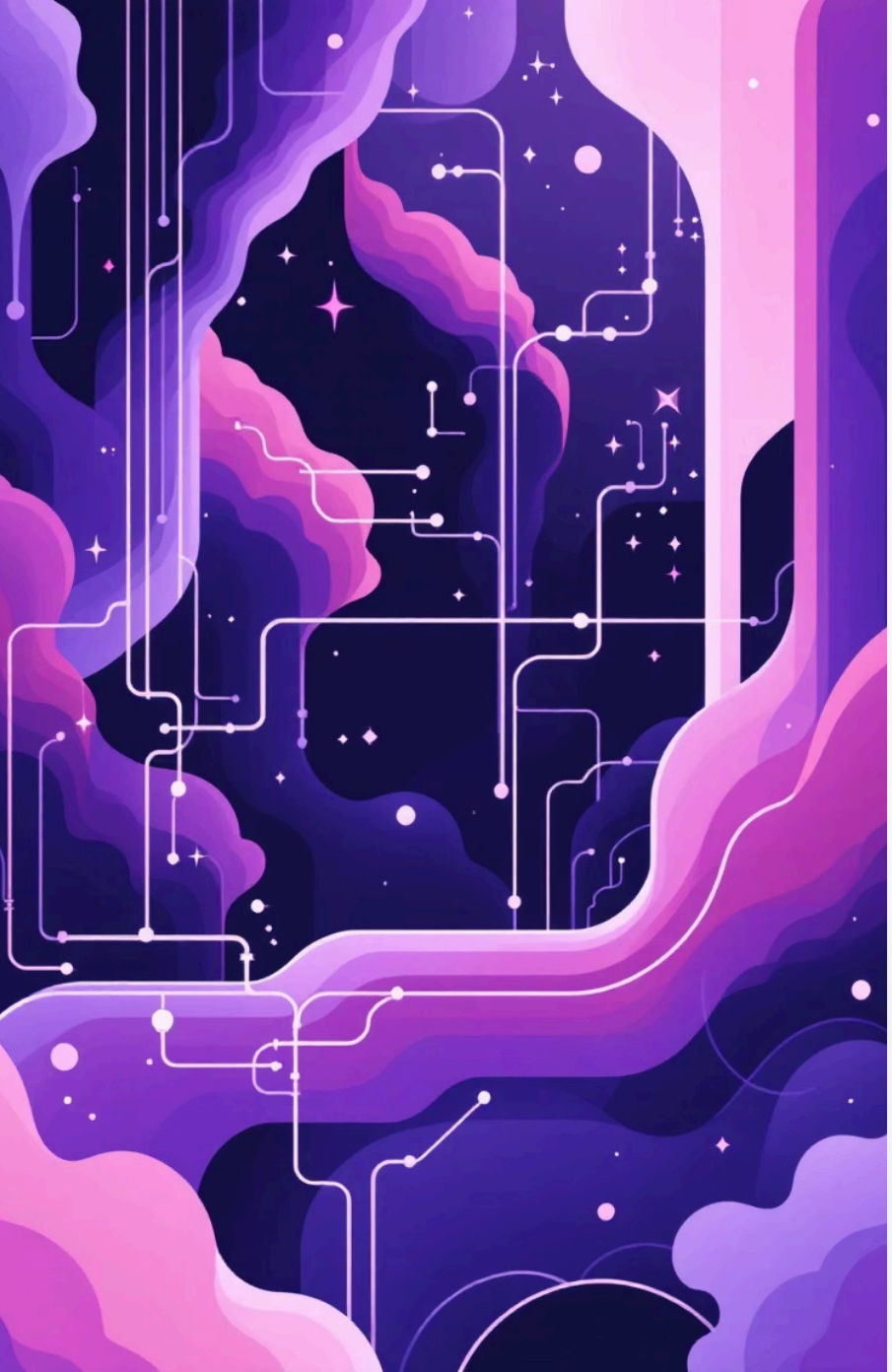
(Plotly, Folium)

Key Features

- Multi-platform post ingestion
- Enhanced Sentiment: Positive, Negative, Neutral, Happy, Sad, Disaster
- Crisis Alert System (Normal → Extreme)
- Top hashtags & trending topics
- Top influencers & engagement metrics
- Geo-heatmap & global distribution
- WordCloud & NER extraction
- Time-series post frequency

Sentiment Analysis Breakdown

- Happy
- Positive
- Neutral
- Negative
- Sad
- Disaster



Data Pipeline

1. Import posts (CSV/API)
2. Clean & preprocess text
3. Extract sentiment & named entities
4. Parse location → city/state/country
5. Store posts + analytics in SQLite DB
6. Generate metrics (sentiment, hashtags, crisis score)
7. Render insights in Streamlit UI

Crisis Detection Engine

- Detects "**Disaster sentiment**" posts using keyword-based NLP
- Computes a **Crisis Score (0–100)**
- Alert Levels:
  - 🟢 Normal
  - 🟡 Moderate
  - 🟠 High Alert
  - 🔴 Extreme Crisis
- Helps identify emergency events early & take action
- Displays top disaster-related posts for review

Dashboard Preview

Our intuitive dashboard provides a real-time overview of social media activity. Users can monitor sentiment analysis across six categories, track trending hashtags, identify key influencers, and visualize the geographic distribution of posts. The crisis alert system is prominently displayed for immediate attention to critical events.

Results Summary

Analyzes Thousands of Posts

Dashboard successfully processes and analyzes vast amounts of social media data.

Clear Sentiment Breakdown

Provides clear insights into sentiment distribution and platform usage.

Accurate Crisis Detection

Offers precise crisis detection with real-time alerts for immediate action.

Identifies Key Trends

Highlights top hashtags, influential users, and trending geographic regions.

Global Geographic Spread

Visualizes global spread of events using an interactive heatmap.

Strong Potential for Use

Highly applicable for government, media organizations, and enterprise solutions.

Conclusion

Conclusion: A complete social media intelligence system enabling sentiment tracking, crisis detection, and deep insights through interactive visualizations.

Thank you!