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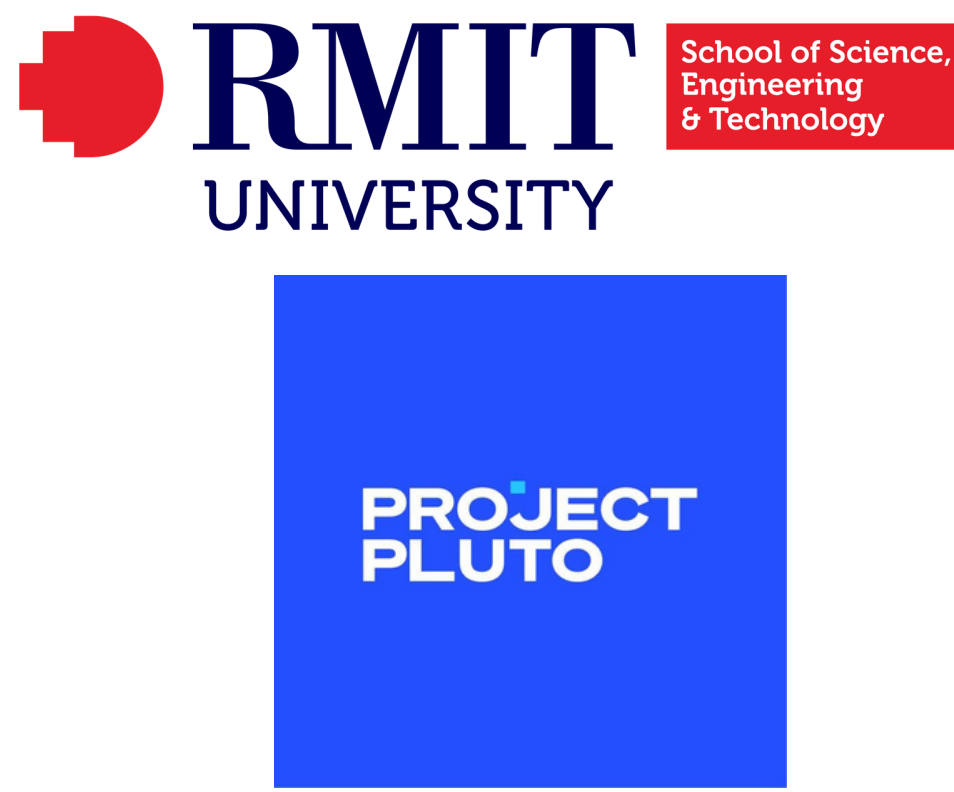
# Project Luvcraft: AI Fandom Search for Marketing Team

## RMIT Capstone 2026

**TEAM Nightswatch**  
Duong Phu Dong  
Vu Thien Minh Hao  
Huynh Quang Dong  
Tran Vu Nhat Tin  
Ho Quang Huy

**Academic Supervisor**  
Mr. Kapil Dev

**Industry Partner: Project Pluto Studio**  
Mr. Danh Pham  
Mr. Hien Nguyen  
Mr. Gia Kiet



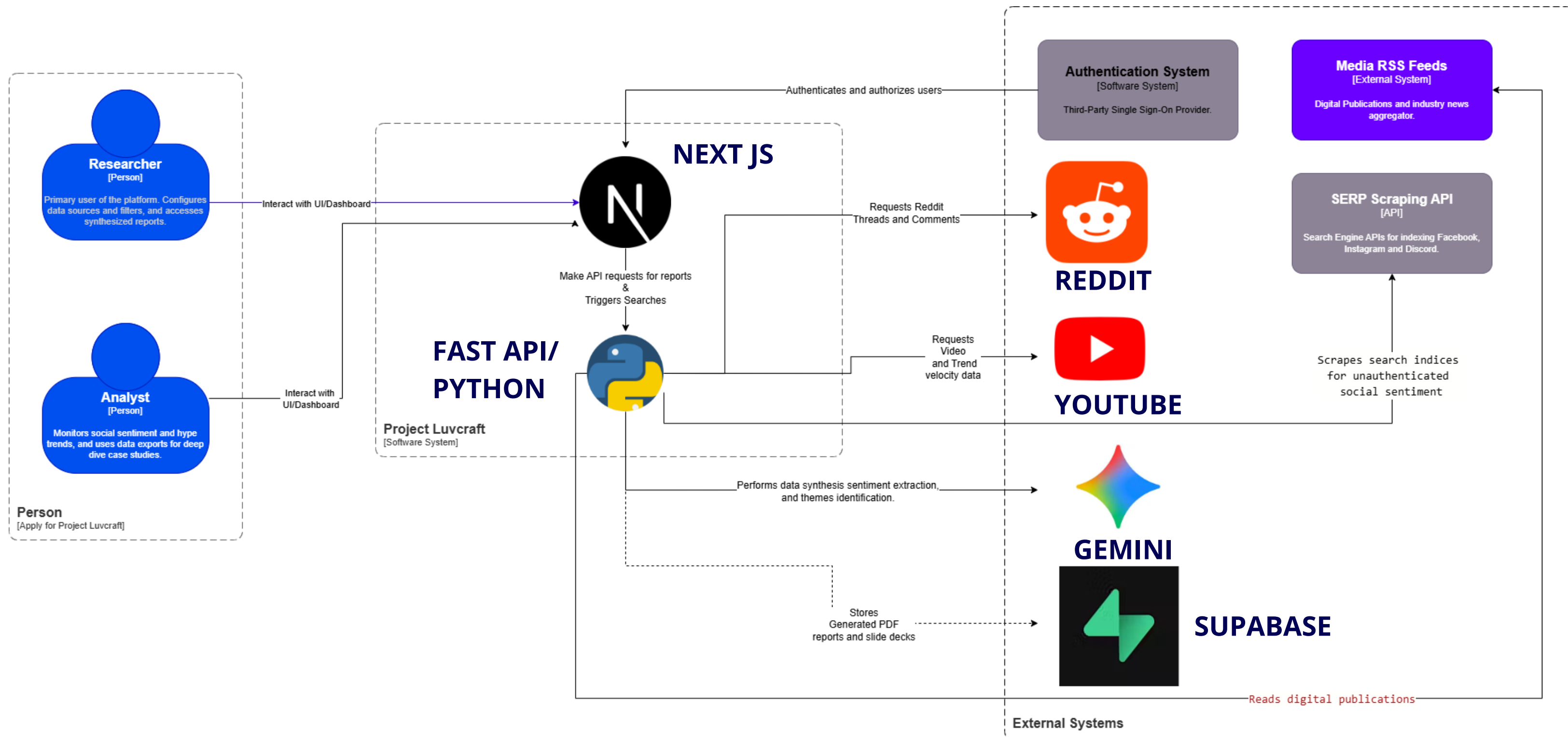
## BACKGROUND & MOTIVATION

- In modern digital commerce, brands receive high-velocity consumer sentiment and mentions across fragmented channels (YouTube, GitHub, Web Search, Social Networks). Manual monitoring is labour-intensive, error-prone, and incapable of detecting emerging hype spikes or brand risks in real time.
- Project Luvcraft** bridges this gap by delivering an end-to-end, multi-tenant social listening and brand intelligence platform. Built in collaboration with **Project Pluto Studio**, the platform combines distributed asynchronous data harvesting with deterministic and generative AI analysis to transform noisy public signals into actionable business insights.

## OBJECTIVES & KEY GOALS

- Automate Signal Aggregation:** Build an asynchronous, fault-tolerant collection engine to ingest public video discussions, threads, and search trends in real time.
- Ordered Analytical Pipeline:** Enforce strict sequential execution: Sentiment → Keywords → Trend → Engagement analysis.
- Dual-Provider Vibe Synthesis:** Compile qualitative brand intelligence with Gemini LLM models paired with zero-latency deterministic fallbacks.
- Enterprise-Grade Security & RBAC:** Supabase JWT authentication, strict 4-tier RBAC (Admin, Analyst, Client, Viewer), and silent 404 tenant isolation.
- Robust CI/CD Quality Gates:** Automated multi-stage test pipelines ensuring zero regressions across all analytical modules.

## METHODOLOGY



## METHODOLOGY

### A. Asynchronous Ingestion & Preprocessing

- Independent Collectors:** YouTube API v3, Community/Reddit, and Search Trends/SERP execute concurrently via background Celery workers.
- Idempotency & Resilience:** Transactional outbox pattern, Celery Beat periodic dispatchers, and distributed rate limiting.

- Compliance & Sanitization:** Mandatory PII redaction and spam/bot exclusion before database persistence.(volume normalization).

### B. Analytical Pipeline Execution

- Immutable Snapshot Isolation:** Sealing data into versioned **AnalysisDataset** snapshots ensures identical inputs always produce reproducible analytical outputs.
- 4-Stage Modeling:** Sentiment (multilingual hybrid) → Keywords (n-gram & topic clustering) → Trend & Velocity (30-day slope & acceleration) → Engagement

### C. Advanced Intelligence Modules

- Geo-Based Trend Comparison:** Identifies regional engagement spikes and localized sentiment divergence.
- Statistical Anomaly Detection:** Evaluates time-series deviations against dynamic  $\sigma$  thresholds to catch viral spikes or backlash.
- Brand-IP Collaboration Fit:** Multi-factor matrix evaluating demographic overlap, core value alignment, and risk sentinels (*Proceed, Monitor, Avoid*).

## SECURITY & WORKFLOW

- Authentication:** Supabase JWT
- Roles:** admin, analyst, client, viewer
- Tenant isolation and audit logs
- Protected main branch
- Branches:** feat/... · fix/... · chore/...
- Two-reviewer pull request model
- Project Leader plus independent reviewer
- Conventional Commits

## DATA SOURCES & ANALYSIS

- Active sources:**
  - YouTube Data API
  - GitHub Community data
  - Serp API
- SocialCollector:** currently disabled
- BaseCollector**
- SLA timeout tracking
- Spam and bot filtering
- PII stripping

## SIX-STAGE LIFECYCLE

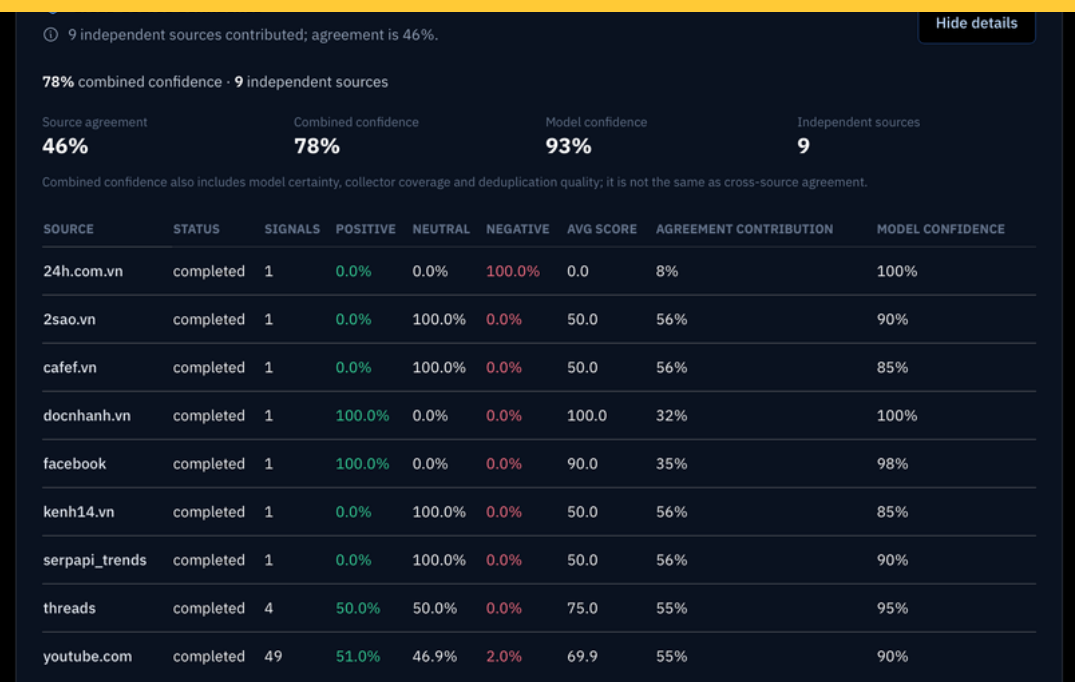
- INSERT KEYWORDS**
- DATA INGESTION LAYER**  
YouTubeAPIv3 • Community&Reddit API • Search Trends / SerpApi
- MESSAGE BROKER & TASK QUEUE**  
PostgreSQLTransactionalOutbox→CeleryBeat (5s) → RabbitMQ → Celery Workers
- STORAGE & DATA SANITIZATION LAYER**  
Spam/BotFilteringGate→PIIRedaction→Supabase PostgreSQL (31 Tables, ACID)
- HYBRID AI SYNTHESIS & ANALYTICAL PIPELINE**  
ImmutableDatasetSnapshot→Sentiment / Trend / Engagement / Geo / Anomaly → Google Gemini 3.1 Flash-Lite
- CLIENT PRESENTATION & EXPORTS**  
Next.js16(React19)/Dashboard • ServerRBAC (4-Tier) • Executive PDF / CSV Exports

## OUTCOMES

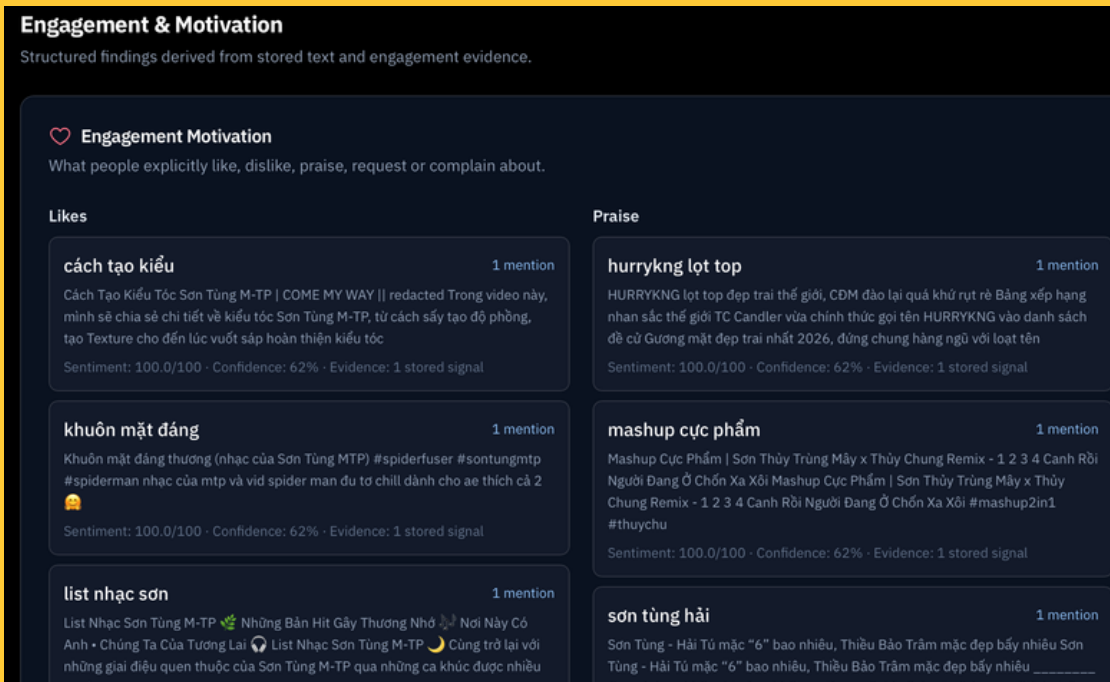
### SENTIMENT ANALYSIS



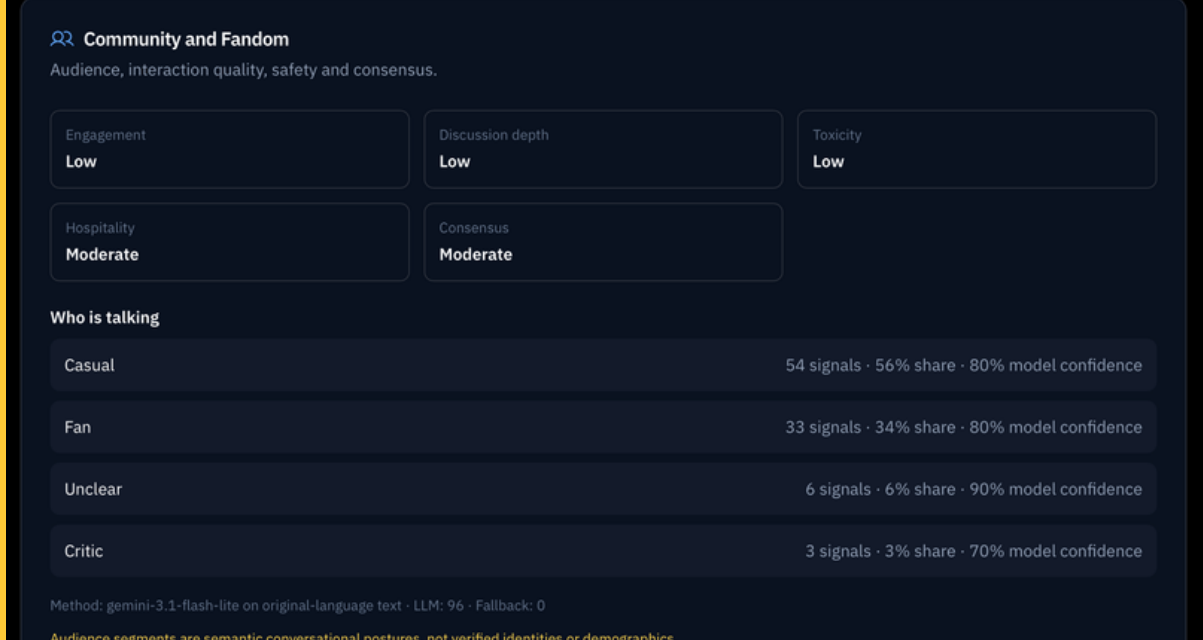
### CONFIDENT SCORE



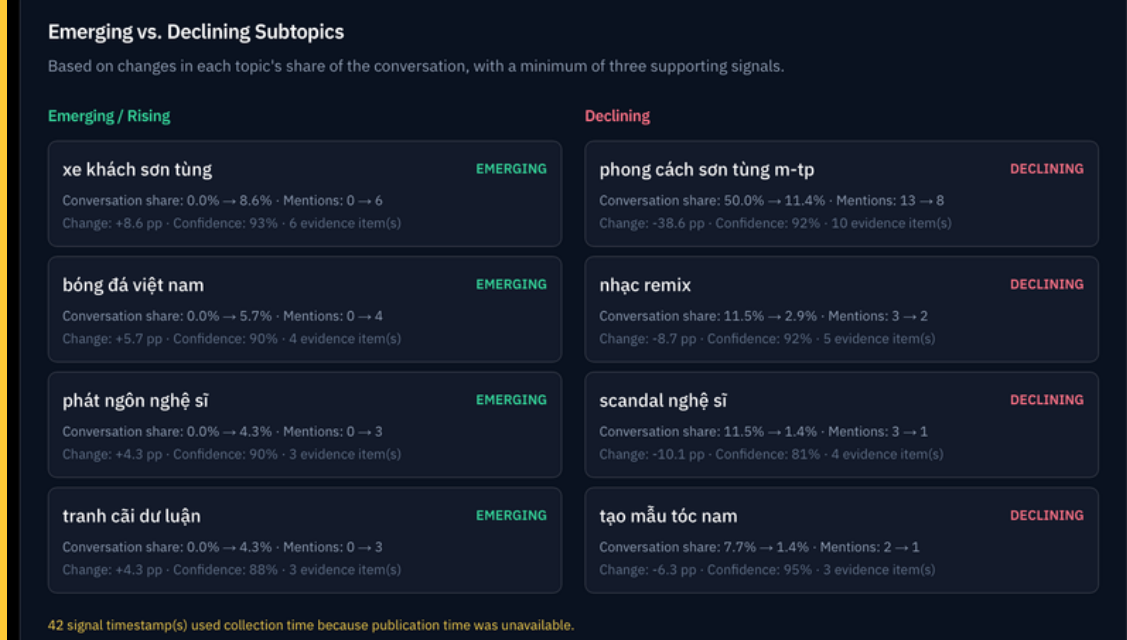
### ENGAGEMENT & MOTIVATION



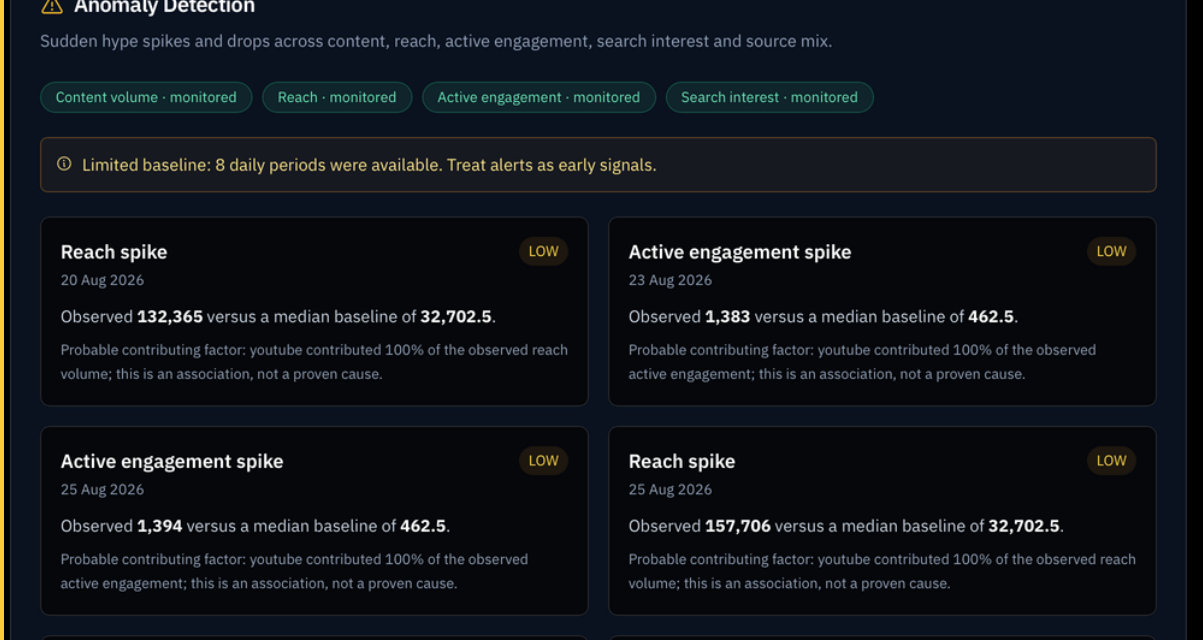
### COMMUNITY & FANDOM ANALYSIS



### EMERGING VS DECLINING SUBTOPICS



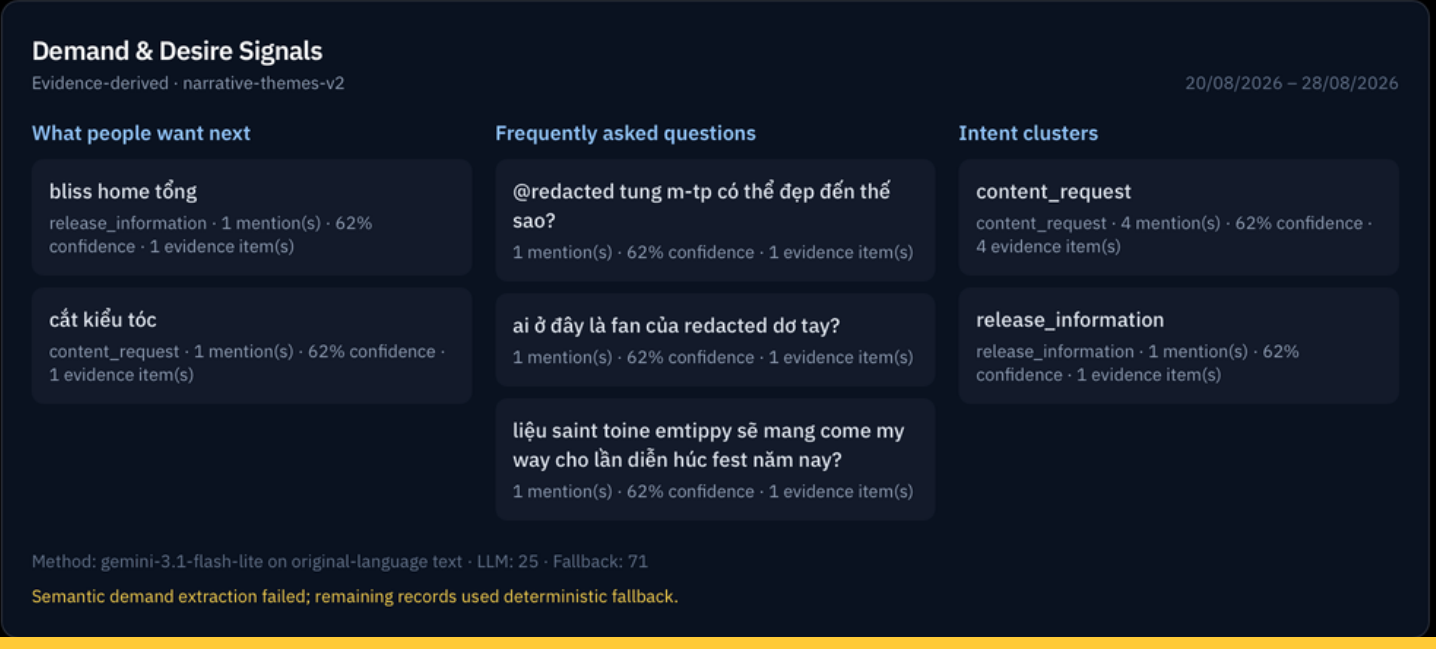
### ANOMALY DETECTION



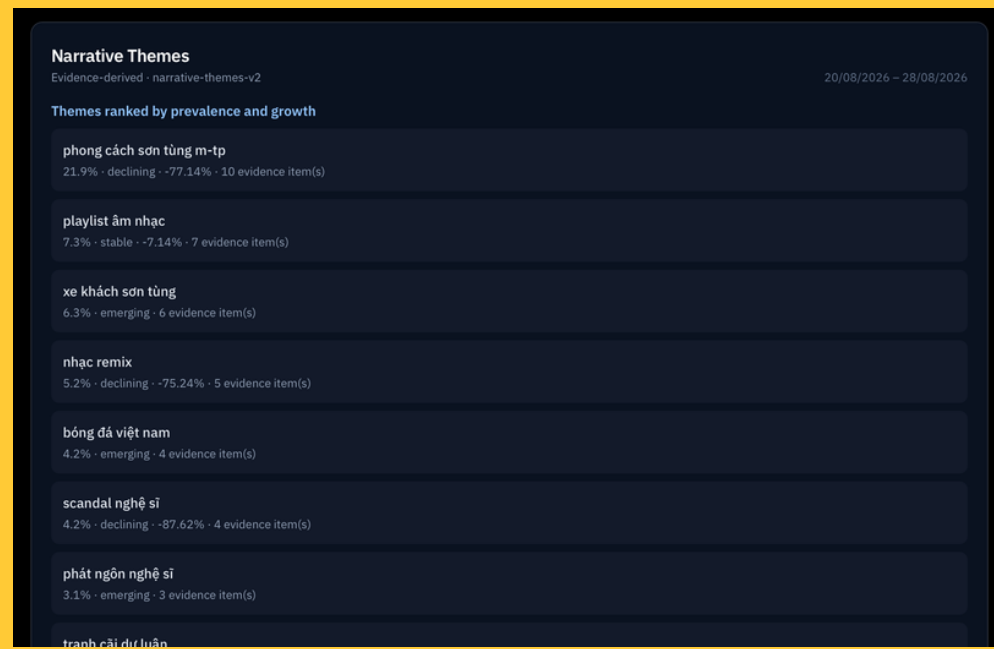
### TREND& MOMENTUM



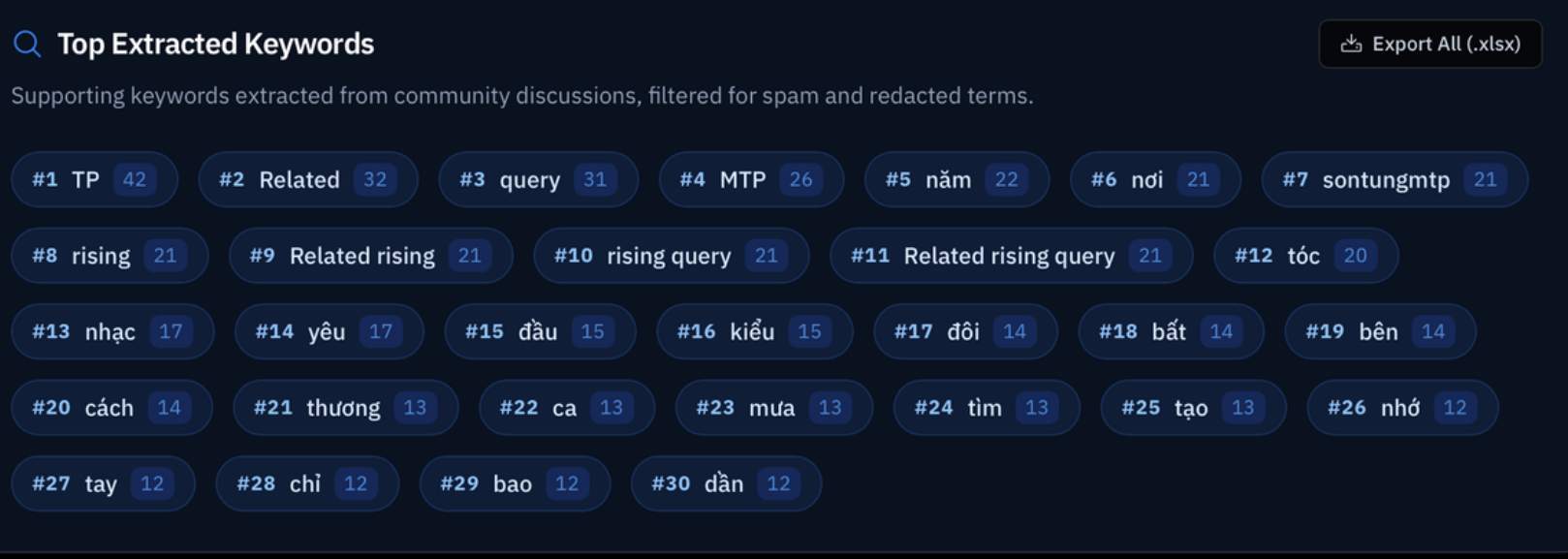
### DEMAND AND DESIRE SIGNALS



### NARRATIVE THEMES



## TOP KEYWORDS



## CONCLUSION & FINDINGS

Project Luvcraft proves that pairing modern async Python backends with dual-mode AI synthesis and strict engineering discipline creates a highly resilient, enterprise-ready brand intelligence solution.