**Tip-Line Data Fields and Corresponding AI Actions**

| **Field Name** | **Description** | **AI/Automation Actions** |
| --- | --- | --- |
| **Tip Line Belongs to Year** | Year of tip submission (e.g., 2025) | - Aggregate trends yearly - Compare year-over-year patterns |
| **Tip Line Belongs to March** | Month of tip submission (can be renamed to month) | - Monthly trend analysis - Peak periods detection |
| **Tip Line Number** | Unique ID of the tip | - Key for cross-referencing - Used in logging and reports |
| **Tip Line Category** | Type of incident (e.g., Scam, Fraud, Harassment) | - Auto-classify using **Topic Modeling (BERTopic)** or **Zero-shot classification** - Route to appropriate team - Trigger category-specific alert |
| **Portal Name** | Source portal (e.g., Telegram, WhatsApp, Web) | - Channel-wise analysis - Detect misuse patterns on specific portals |
| **Date of Tip Line** | Full datetime of tip received | - Timeline visualization - Time-based correlation with events - Use in anomaly detection |
| **Phone Number** | Submitted phone number (if any) | - Lookup reputation score - Check if number appears in other tips (clustering) - Validate format/region using phonenumbers |
| **ESP** (Email Service Provider, e.g., Gmail, Outlook) | - Flag throwaway/spammy ESPs - Pattern analysis across ESPs |  |
| **Mail ID** | Email of the tip sender | - Risk scoring (e.g., multiple tips from same email) - NER & pattern detection - Alert if from high-value reporter or repeated abuser |

**AI & Automation Actions**

**1. Tip Classification & Categorization**

* Use **BERTopic**, **Zero-shot Classification**, or **Keyword Matching**
* Assign **topic labels** or detect if multiple categories apply
* Can auto-fill or validate “Tip Line Category”

**2. Sentiment & Emotion Analysis**

* Detect tone of the tip (e.g., Urgent, Fear, Panic, Aggression)
* Classify based on **priority or escalation need**

**3. Duplicate / Similar Tip Detection**

* Compare phone number, email, keywords
* Use **sentence embeddings + cosine similarity** to flag duplicates
* Cluster by similarity across time

**4. Geo & Time-Based Pattern Recognition**

* If locations mentioned in the message, extract via **NER**
* Map reports by month/year to detect **hot zones or seasonal patterns**

**5. Reporter Profiling**

* Profile users based on repeated tips
* Flag suspicious behavior (e.g., repeated abuse, spam patterns)
* Evaluate **credibility score** per reporter

**6. Escalation Rules**

* If category = "Harassment" AND sentiment = "Angry" or "Fear" → escalate
* If phone/email appears in >5 tips → alert
* If tip comes from new portal → notify admin to verify channel

**7. Dashboards & Analytics**

* Portal-wise trend chart (Telegram vs WhatsApp)
* Category pie chart
* Heatmap of tip frequency by date/time

**8. Risk/Threat Detection**

* Combine **NER**, **Sentiment**, **Toxicity detection** to assign **threat scores**
* Integrate with Perspective API or Detoxify for toxicity scoring

**9. Data Cleaning / Validation**

* Phone number validation with phonenumbers library
* Email validation + domain extraction
* Normalize date fields