CYBER BULLYING DETECTION

**Project Architecture**

1. **Frontend**

* Technologies: Streamlit (Python), HTML, CSS
* Files: app.py
* Purpose: Handles user interface, text input for cyberbullying detection, and reporting feature.

2. **Backend**

* Technologies: Flask (Python)
* Files: model.py, api.py
* Purpose:
  + Loads the trained Machine Learning model for cyberbullying detection.
  + Handles requests from the frontend (text input, predictions, reporting).
  + Sends responses back to the Streamlit UI.

3. **Database**

* Technologies: MongoDB
* Files: database.py
* Purpose:
  + Stores reported messages for further review.
  + Manages user-reported texts and allows retrieval for display.

2.**FLOW DIAGRAM**

A diagram of a computer program

Description automatically generated

3. **NO. OF MODULES AND HOW THEY WORK**

**1. Authentication Module**

* Files: auth.py
* Function: Handles user registration, login, and logout using hashed passwords and session tokens.

**2. Cyberbullying Detection Module**

* Files: ml\_model.py, text\_preprocessing.py
* Function: Uses Machine Learning models to detect cyberbullying in messages, comments

**3. Reporting & Review Module**

* Files: report.py, admin\_review.py
* Function: Allows users to report abusive content and moderators to review flagged reports.

**4. User Profile & History Module**

* Files: profile.py, user\_history.py
* Function: Displays user details, past reports, and flagged content history.

## ****5. Notification & Action Module****

* **Files:** notifications.py
* **Function:** Sends email or SMS alerts to victims, moderators, and offenders based on actions taken.

**4.DATABASE DESIGN**

#### **1. Messages Collection (**messages**)**

Stores user-entered text and model results.

* \_id (ObjectId) – Unique ID
* user\_id (ObjectId) – References users.\_id (optional)
* text (String) – User-entered message
* timestamp (DateTime) – Message submission time
* is\_flagged (Boolean) – True if detected as bullying
* model\_score (Float) – ML model’s confidence score

#### **2. Reports Collection (**reports**)**

Stores user-reported bullying messages.

* \_id (ObjectId) – Unique Report ID
* message\_id (ObjectId) – References messages.\_id
* reported\_by (ObjectId) – User who reported the message
* reason (String) – Reason for reporting
* status (String) – Pending, Reviewed, Action Taken
* created\_at (DateTime) – Report submission time