Pixel League

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RadWatch

Problem statement :

AI Based Tool To Analyze Religious Preaching And Identify Radical Content

Our Solution

Our solution accepts user data in four formats for processing:

- Video
- YouTube link
- Image
- Direct text

video

We initially decided to process direct video and audio to extract maximum context. To do this, we separated the audio and video for individual analysis:

1. **Audio Processing**: Used Hugging Face's API for the Whisper model to convert audio into tokens for analysis.
2. **Video Optimization**:
    - Reduced video to 1 frame per second, improving processing time to 18-25 seconds per frame.
    - We further decided to apply a similarity check to eliminate redundant frames, enhancing speed.
    - Dropped resolution to 300x300 to further reduce processing time.
    - To further optimize we converted the frames to a histogram and used a sliding window protocol for more accurate similar frame detection.

By processing the video into text, we were able to analyze the content effectively.
These optimizations reduced the analysis time from 40 minutes to just 4 minutes, achieving improvement in efficiency by a factor of 10.

Image

For image analysis, we applied a similar approach as used for video:

1. **Text Extraction**: Used a model to detect and extract text from the image.
2. **Text Analysis**: The extracted text is then analyzed to evaluate and generate results.

Youtube Link

To analyze YouTube videos, users simply need to provide the video link:

1. **Video Download**: We use the `yt_dlp` library to download the YouTube video in MP4 format.
2. **Video Processing**: The video undergoes the same optimization and analysis process as regular videos.
3. **Results Generation**: The model processes the video and generates the analysis results.

Text

For text analysis, we took a straightforward approach:

1. **Direct Input**: The text is directly fed into the model.
2. **Evaluation**: The model evaluates the text and produces the results.

Model Overview

- We utilize the latest version of Llama 3, which is free and open-source, eliminating the need for any paid APIs.
- The model gives us the context , summary and score of the radicalness of data that it processes
- **Output**: These features enable us to derive comprehensive analysis results.

Vector Embeddings

We use ChromaDB to store and manage vector embeddings, facilitating fast similarity searches.

- **Contextual Understanding**: This enables quick access to contextual information and leverages historical data to optimize processing time for future queries.
- **Self-Learning**: As users interact with the system, it references past data, improving its responses over time and enhancing the overall user experience.

Important point

I want to stress on the part that we made this project without using any paid apis and made it run everything locally which made the project easily scalable at 0 cost and 10x harder than anticipated,

Softwares and languages used

- Python
- Typescript
- Tailwind
- Python
- Superbase
- Chroma db
- Hugging face whisper api
- latest-llama 3
- Shadcn
- llava

Another point

Even though we made this system specifically for detecting radical content I’d like to add that, we extended the system beyond its initial requirements . The model can produce summaries not only of radical content but can be used in generalised cases and it provides comprehensive reports on incidents captured in video footage.

Users can input any video, and the model will analyze it, delivering context on all relevant activities within the footage.

Faster
Utilizing edge technologies for quick processing.

Better Reasoning
Advanced algorithms for more accurate analysis.

Fully Local
Complete processing on your device for privacy.

Universal Pipeline
A highly adaptable reasoning and processing framework.

Content Detection Tool

Upload files, images, or provide a YouTube link to detect radical and hateful content.

Upload Image

Drag & drop an image here, or click to select one

Upload Video File

Drag & drop a video here, or click to select one

YouTube Link

Upload Video File

Drag & drop a video here, or click to select one

YouTube Link

https://www.youtube.com

Enter Text

Enter text here...

Analyze Content

This tool is for educational purposes only. Always respect privacy and legal guidelines.

https://www.youtube.com

Enter Text

Enter text here...

Analyze Content

This tool is for educational purposes only. Always respect privacy and legal guidelines.

Reports Dashboard

Sort Descending

Report ID: cf2a888d-dd6c-4cb7-bccd-42d66a99a134
Created At: 29/09/2024 16:24

Report ID: a84ca2b8-bd4a-432d-be7e-7dad812b158d
Created At: 29/09/2024 17:51

Report ID: 2fa328de-74fb-4d4c-aedd-28de31e76fec
Created At: 29/09/2024 17:53

Report ID: 8181bb13-5cd0-4348-9690-0c57e1977e4f
Created At: 29/09/2024 18:29

Print Report

Overall Safety Score

0%

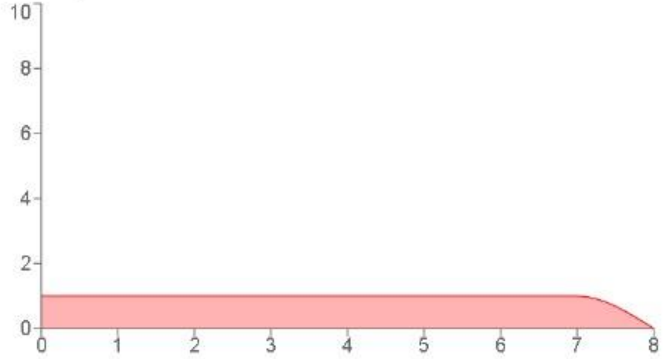
RADWATCH

Low Risk Detected

Frame Count

Total Frames: 9

Frame Analysis



Summary

The image shows a young man standing in an indoor setting with his back to the camera. There is no overt radical or extremist content visible in the picture. The individuals shown appear to be engaged in everyday activities such as reading a newspaper, playing video games, and having casual conversations.

Print Report

Overall Safety Score

80%

RADWATCH

High Risk Detected

Summary

The text contains religious themes and terminology that may be perceived as proselytizing or intolerant towards others with different beliefs. It also uses strong language to describe those who do not share the author's faith.

THANK YOU