AI-TRUTHSCAN

DETECTING AI-GENERATED INTERVIEW RESPONSES

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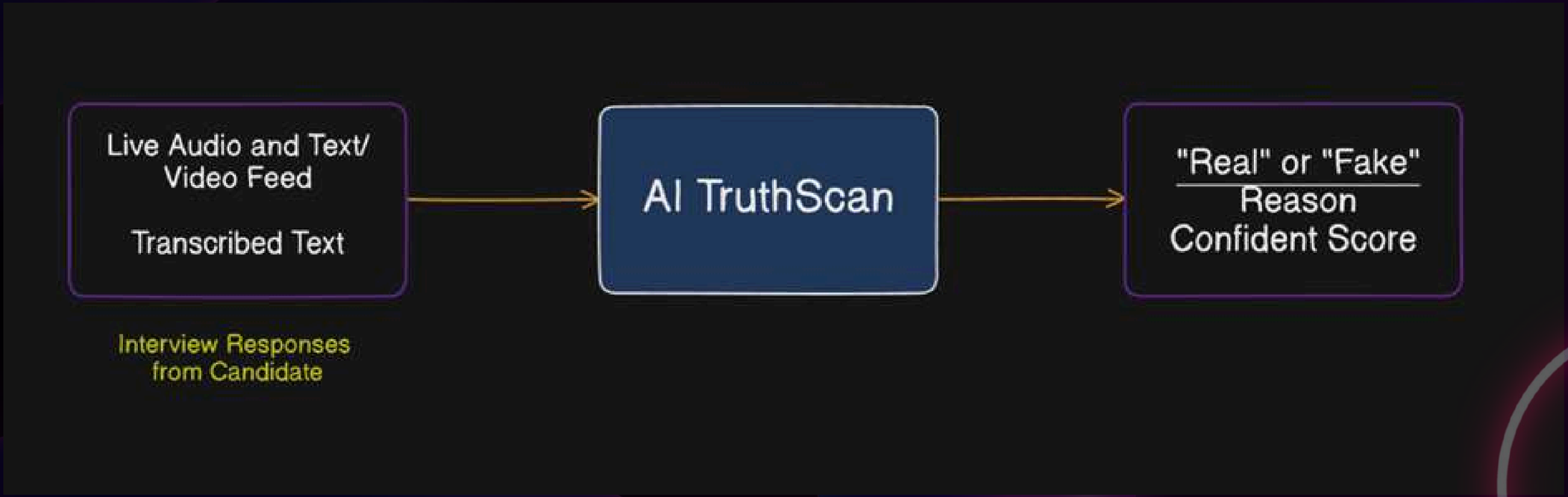
PROBLEM STATEMENT

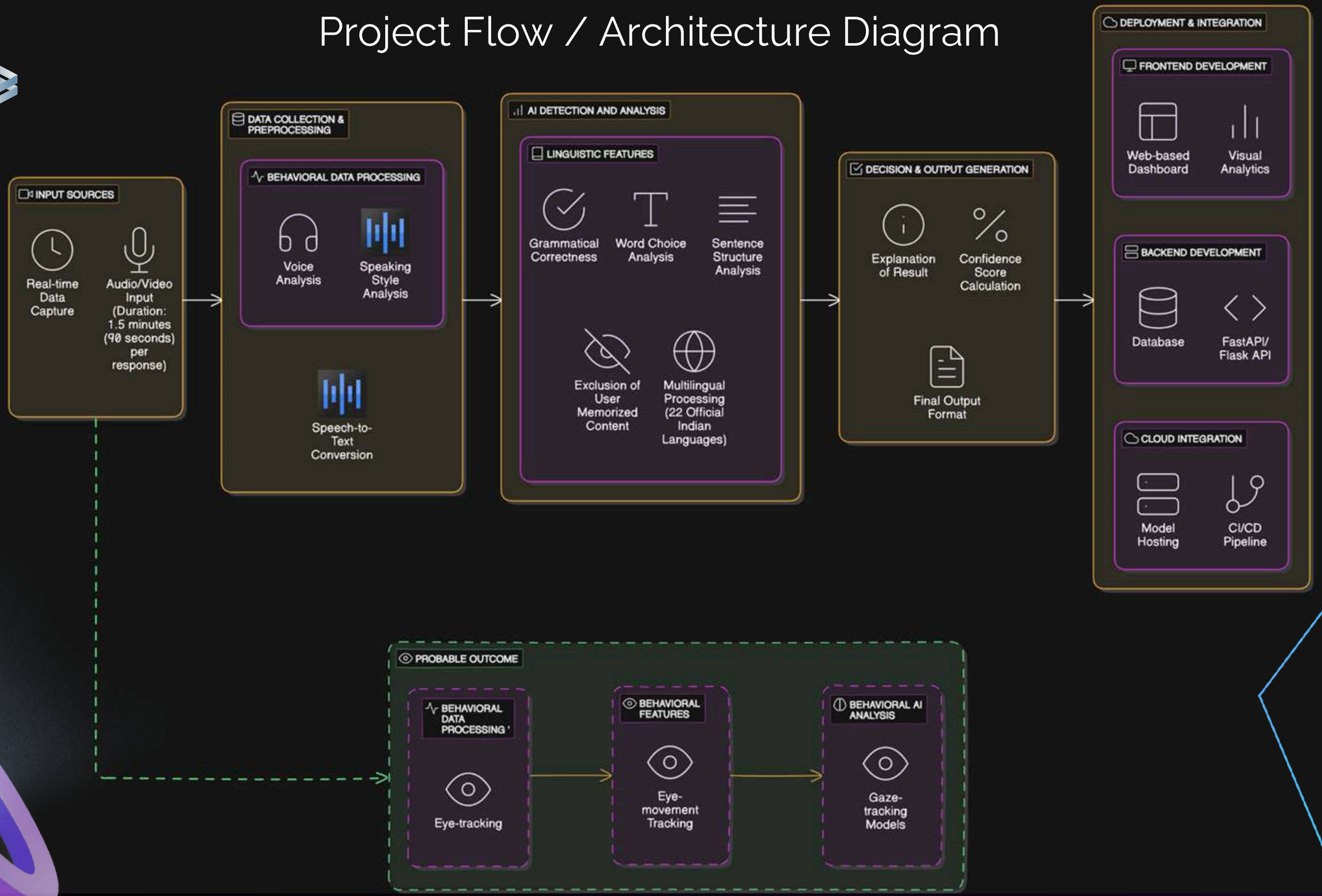
As AI becomes more advanced, AI-generated interview responses are being used to manipulate recruitment processes. This creates challenges for hiring managers, as AI-generated responses can appear grammatically flawless, overly structured, and lack human-like inconsistencies such as pauses, self-corrections and emotional depth.

Solution diagram

Block Diagram



Project Flow / Architecture Diagram



COMPONENTS UTILISED

Large Language Model (LLM) - Gemini 1.5 Pro

Speech-to-Text (STT) API

NLP & AI Detection Models

Streamlit (Frontend UI)

SQL Database (Backend & Data Storage)

Video Processing Module

AI-Based Decision Engine

APPROACH TAKEN

Stylistic & Linguistic Analysis	Response Complexity & Variability	Behavioral Analysis
Detects structured, formal responses lacking a personal touch.	AI-generated responses are often too perfect, with no self-corrections or pauses.	AI-generated responses tend to lack natural inconsistencies found in human speech.

INNOVATIONS

Live Video Recording & Analysis

Detects AI-generated responses in real-time
Integrated eye tracking using video to analyze user eye gazing.

Video Uploading Support

Users can analyze pre-recorded interview videos.
Enhancing real-time interaction insights.

AI Detection Percentage with Reasoning

The system explains why a response might be AI-generated for both video and audio.

TECH STACK

- Programming Language: Python
- Framework: Streamlit
- Database: SQL
- AI Models: NLP-based AI detection models
- APIs Used: Speech-to-Text, Behavioral Analysis APIs
- Video Processing: OpenCV, Media Pipe.
- LLM: Gemini 1.5 pro.

LLM USED

Gemini 1.5 pro.

- Handles long interview transcripts efficiently
- Advanced NLP to detect AI-generated responses accurately
- Multimodal capabilities for speech, text, and behavioral analysis
- More reliable than previous models with fewer hallucinations

5-Step Framework

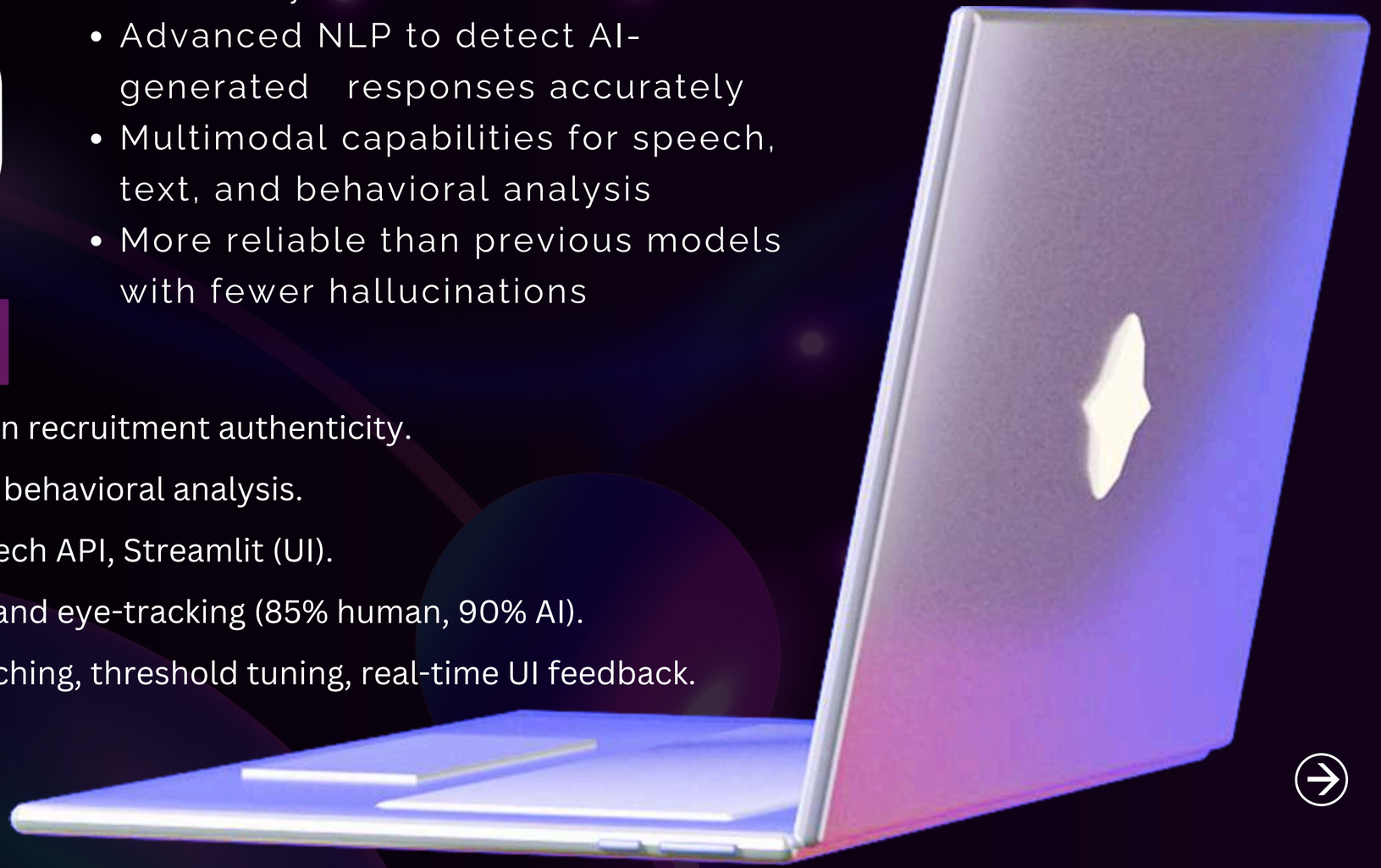
1.Problem: AI-generated responses threaten recruitment authenticity.

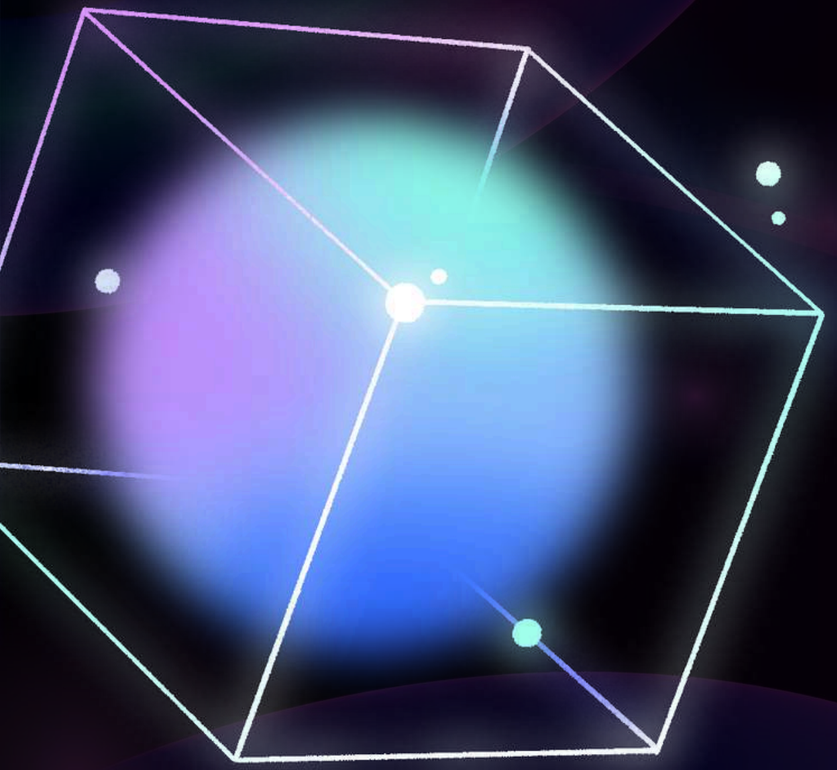
2. Data: Human & AI audio, eye-tracking for behavioral analysis.

3. Model: Gemini 1.5 Pro (NLP), Google Speech API, Streamlit (UI).

4. Implementation: Integrated audio, LLM, and eye-tracking (85% human, 90% AI).

5. Optimization: 90 seconds audio limit, caching, threshold tuning, real-time UI feedback.





CHALLENGES FACED

Latency

Accuracy

Processing Time

- Initial API calls were slow, delaying results; mitigated by limiting audio duration and implementing caching.
- Early versions produced false positives; resolved by refining the LLM prompt and incorporating preprocessing steps.
- High latency was reduced by simplifying the prompt and caching frequent queries.

IMPACT OF THE SOLUTION PROPOSED

- Enhances Interview Fairness – Prevents AI-assisted cheating.
- Improves Hiring Authenticity – Ensures candidates provide original responses.
- Scalable & Adaptable – Can be integrated into various industries.
- Detailed AI Detection Insights – Provides percentage-based analysis for transparency.

FUTURE OUTLOOK

Local Speech Recognition

- Integrate pocketsphinx for offline transcription, reducing dependency on internet connectivity and improving speed.

Multi-Language Support

- Expand analysis to non-English languages for broader usability.

Advanced Metrics

- Incorporate sentiment analysis or deeper NLP features to enhance detection capabilities.

CASE STUDIES

Analysis of Human Perception in Distinguishing Real and AI-Generated Faces

- Aim: Analyze human perception in distinguishing real and AI-generated faces using eye-tracking.
- Method: Eye-tracking data collected to observe gaze patterns when viewing real vs. AI-generated images.
- Result: Humans struggle to differentiate AI-generated faces, but specific gaze behaviors reveal subconscious cues.

Real-Time Detection of AI-Generated Speech for DeepFake Voice Conversion

- Aim: Develop a real-time detection system for AI-generated speech (DeepFake voice conversion).
- Method: Machine learning model trained on temporal audio features from real vs. AI-generated speech.
- Result: Achieved 99.3% accuracy in distinguishing AI-generated speech from real human speech.

Synthetic Speech Detection through Short-Term and Long-Term Prediction Traces

- Aim: Detect synthetic speech using short-term and long-term prediction traces in audio.
- Method: Signal processing techniques analyzing prediction errors in speech waveforms.
- Result: Proposed method effectively differentiates synthetic speech from human speech, improving detection accuracy.

INDIVIDUAL CONTRIBUTIONS

ANUSHA G E: System architecture, LLM integration and code implementation.

AYUSH KUMAR: Code implementation and testing model.

REETISH KULKARNI: Report and readme file.

PRAJWAL R: UI design and Report.

MOHAMMAD KASHIF: Streamlit frontend, UX design

KEERTHANA.H: PPT implementation and feedback.

Images OF MODLES

AI-TruthScan: Detect AI-Generated Interview Responses

Upload Audio or Video File

Select file type to upload

- (•) Audio
- ( ) Video

Upload an audio file (mp3, wav, m4a)

Drag and drop file here

Limit 200MB per file • MP3, WAV, M4A

Browse files

without ai audio.wav 14.7MB

0:11 / 1:20

Analyze

Analysis Result

Transcription:

hello the question I would like to propose today is that the role of your parents in your academic career and your point of views on education to answer that I would say that my parents were always ok in whatever career I choose they gave me the freedom to choose the course I wanted and also trusted me when my views on education would be that Academics is not only studying I think it should be a balance between hard skills of skills Academics and also extra curricular activities which might include a Passion of anyone will this could also be a reason for a more satisfied college life because I believe that a person who is only studying and his life would be less happy and satisfied then a person who knows how to balance between Academics and extra curricular activities and that person would live his life without regrets and a more cheerful and satisfied college life

Gaze Analysis: Looking away 0.00% of the time

Classification: Real (Human-Created)

Probabilities: Real (Human-Created) - 85% | Fake (AI-Generated) - 15%

AI-TruthScan: Detect AI-Generated Interview Responses

Upload Audio or Video File

Select file type to upload

- Audio
- Video

Upload a video file (mp4, mov)

Drag and drop file here

Limit 200MB per file • MP4, MOV, MPEG4

Browse files

vid_ai_1.mp4 5.8MB

Live Recording

Select recording type

Analysis Settings

Analyze

Analysis Result

Transcription:

good afternoon sir my name is Priyanshu Bhargav and I have very good expertise in programming languages like Python and Java and I've also worked on many projects in my previous company I have been working on a development project in my previous company which was very successful in the industry and I hope I will contribute to this company as well in the same way I did in the previous one

Gaze Analysis: Looking away 40.24% of the time

Classification: Fake (AI-Generated)

Probabilities: Real (Human-Created) - 15% | Fake (AI-Generated) - 85%

Justification:

Justification: While the transcript contains two filler words ("um" or "uh" wasn't specified, but some word

THANK YOU!