2030 Trust Engine: Real-Time Synthetic Voice Detection

Problem

- It now takes only 3.0 seconds of compressed social media audio to clone a target’s voice with 99.9% acoustic parity.
- Traditional voice-based security at banks and telecoms is largely ineffective against these attacks

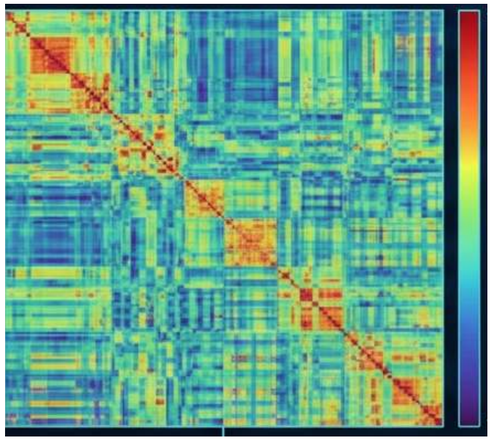
- Synthetic voice fraud is rapidly growing (≈48% annually), with projected losses exceeding $8.1B by 2030.
- Most attacks happen within telecom networks, bypassing user-level protections entirely.

Solution: The 2030 Trust Engine

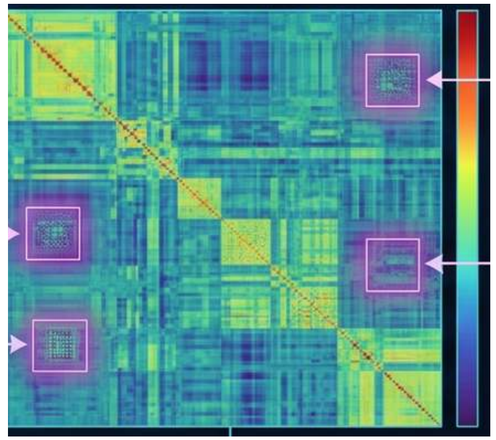
- 40-Dimensional Acoustic Fingerprinting: Utilizing Mel-Frequency Cepstral Coefficients (MFCCs) to decompose raw audio into a high-fidelity mathematical matrix, exposing "spectral ghosts" left by AI synthesis (Olasiyan, 2026).

- 92.25% Validated Accuracy: Powered by a high-performance XGBoost Gradient Boosting architecture trained on 25,380+ verified samples (ASVspoof 2019), optimized for sub-100ms real-time inference.

human:



AI:



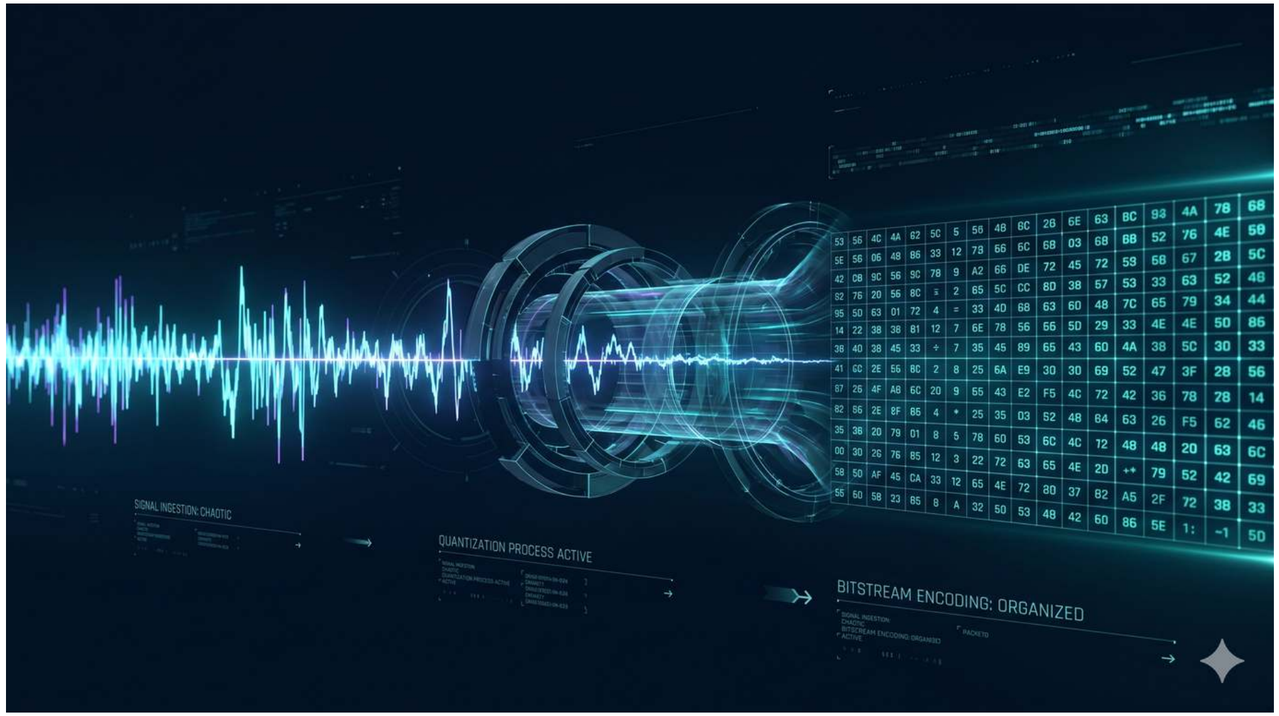
ASV spoof

Automatic Speaker Verification and Spoofing Countermeasures Challenge

25 GB dataset. with human-generated, and synthetic (AI) voices

 # The Core Extraction Algorithm

```
mfccs = librosa.feature.mfcc(y=audio, sr=sample_rate, n_mfcc=40)
mfccs_processed = np.mean(mfccs.T, axis=0)
```



Technical Details about Model

Data Split: 80/20 Train/Test (Stratified Sampling)

Dataset Balance: 1:1 Class Ratio (2,580 Human / 2,580 Spoof)

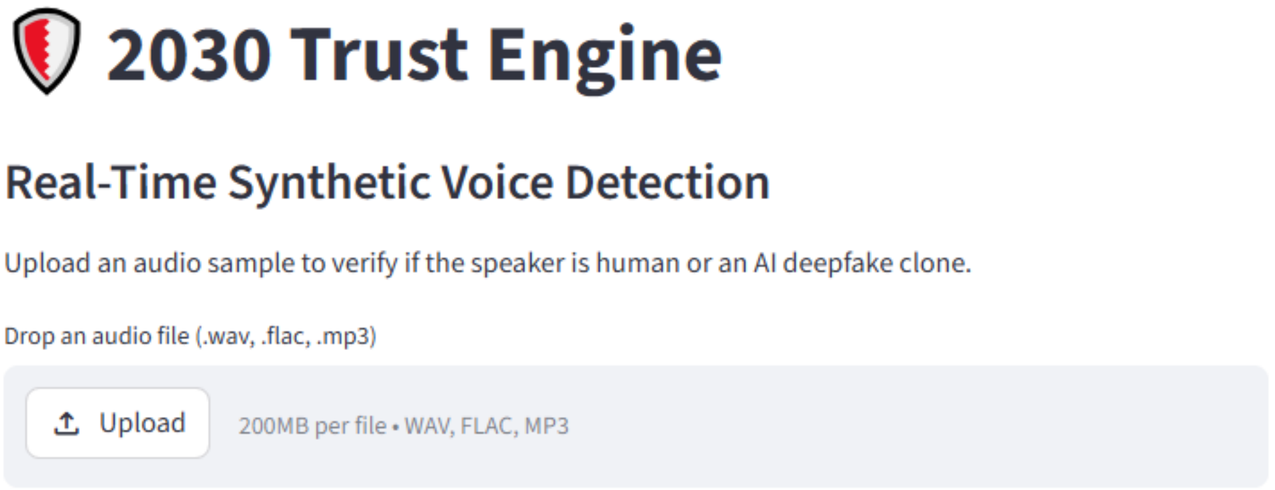
Model Config: XGBoost | max_depth: 6 | gamma: 0.2| lr: 0.1 (w hyperparameter tuning)

Validation Accuracy: 92.25% (Balanced)

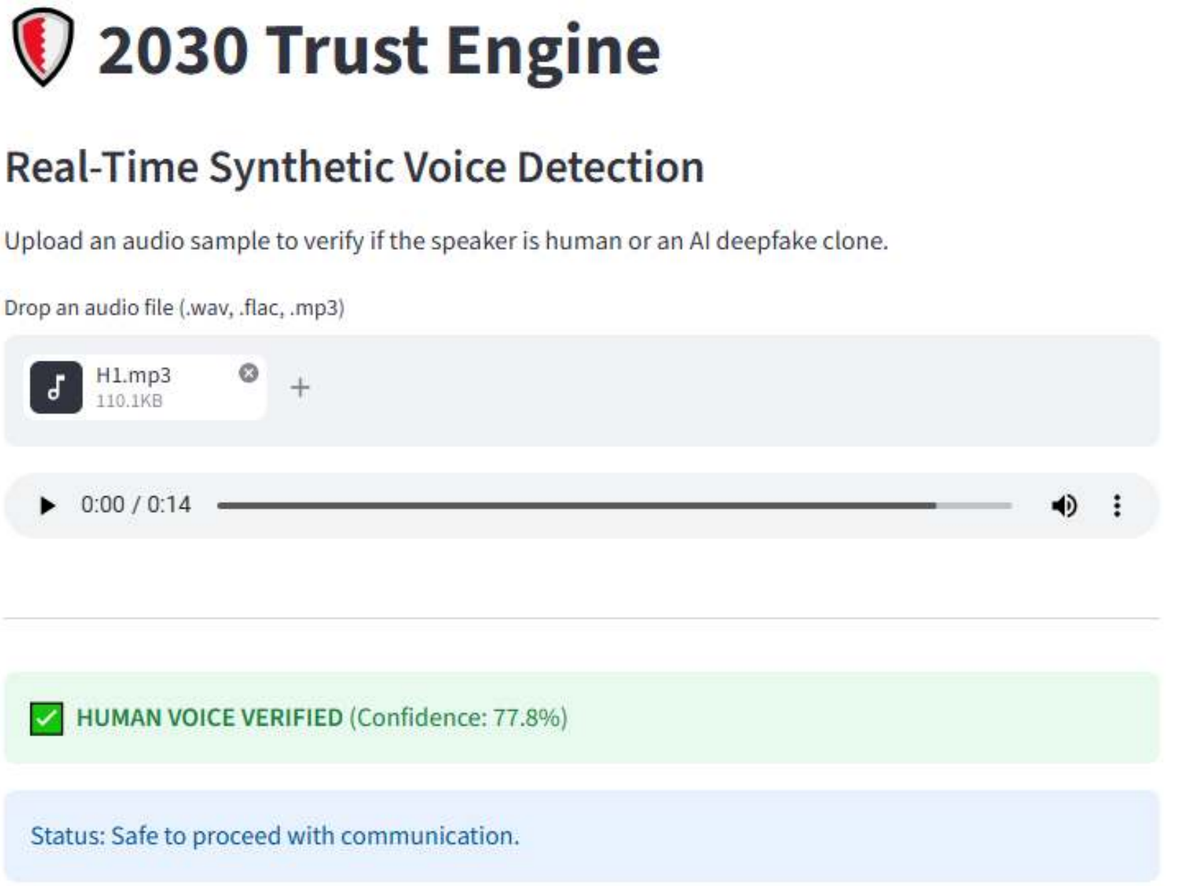
Inference Latency: <100ms (Edge-Ready)

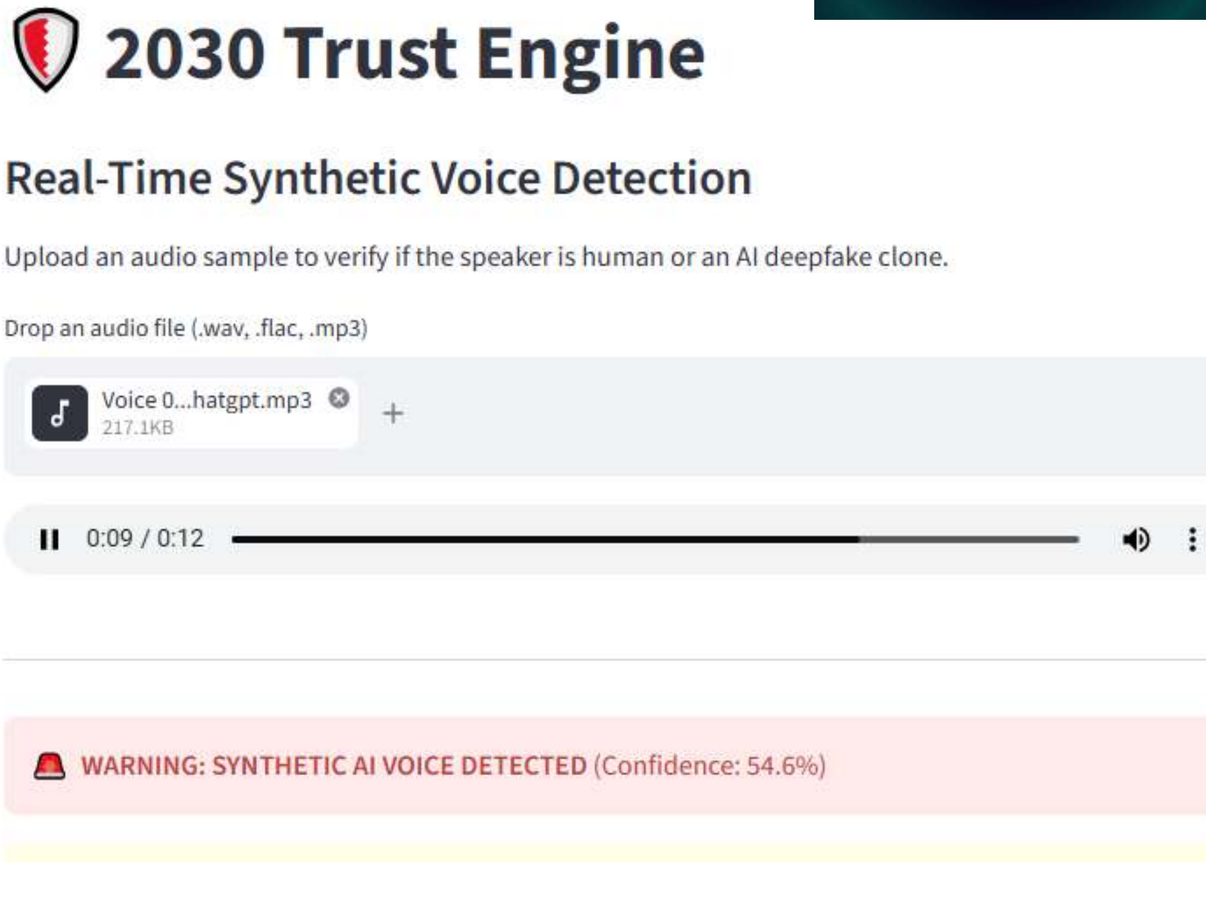
Target Metric: 90% False Positive Reduction in noisy environments

Interface


2030 Trust Engine
Real-Time Synthetic Voice Detection
Upload an audio sample to verify if the speaker is human or an AI deepfake clone.
Drop an audio file (.wav, .flac, .mp3)
Upload
200MB per file • WAV, FLAC, MP3

Interface


2030 Trust Engine
Real-Time Synthetic Voice Detection
Upload an audio sample to verify if the speaker is human or an AI deepfake clone.
Drop an audio file (.wav, .flac, .mp3)
H1.mp3
110.1KB
0:00 / 0:14
HUMAN VOICE VERIFIED (Confidence: 77.8%)
Status: Safe to proceed with communication.


2030 Trust Engine
Real-Time Synthetic Voice Detection
Upload an audio sample to verify if the speaker is human or an AI deepfake clone.
Drop an audio file (.wav, .flac, .mp3)
Voice 0...hatgpt.mp3
217.1KB
0:09 / 0:12
WARNING: SYNTHETIC AI VOICE DETECTED (Confidence: 54.6%)

Team

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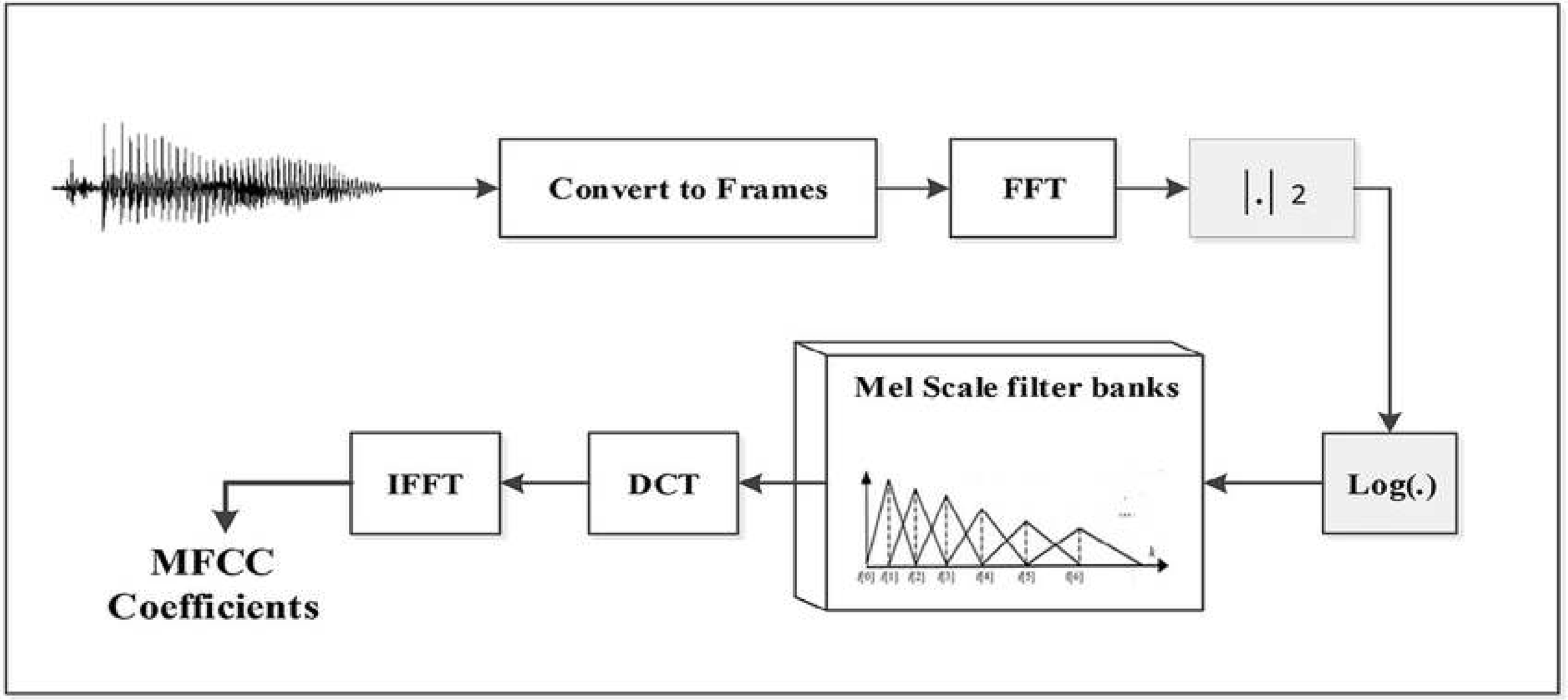
Thank you!

Appendix


Convert to Frames
FFT
|.| 2
Log(.)
Mel Scale filter banks
DCT
IFFT
MFCC
Coefficients