VoiceMark: Safeguarding Voice Authenticity in the AI Era

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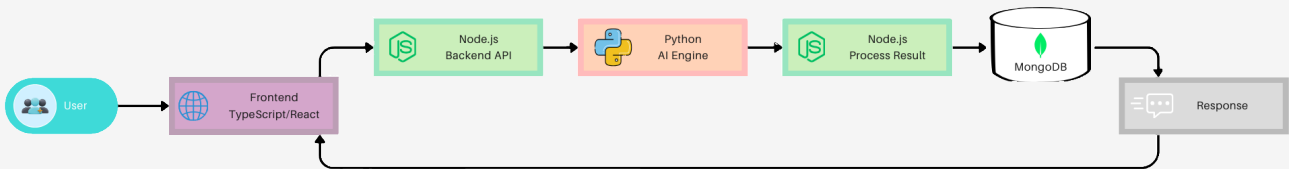Nguyen Minh Nhat - s3924871

→ from left to right

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Background and Motivation

Nowadays, audio content is widely shared and can easily be duplicated, making it vulnerable to unauthorized use and distribution. For jobs such as content producers, musicians,... protecting intellectual property is crucial to ensure ownership rights. Traditional copyright methods are often slow, difficult to enforce, and provide little immediate proof of authenticity. VoiceMark addresses this gap by offering an efficient, user-friendly solution for embedding and verifying digital watermarks in audio files. By helping creators to prove ownership instantly and securely, VoiceMark allows users to protect their work while promoting trust and integrity online.
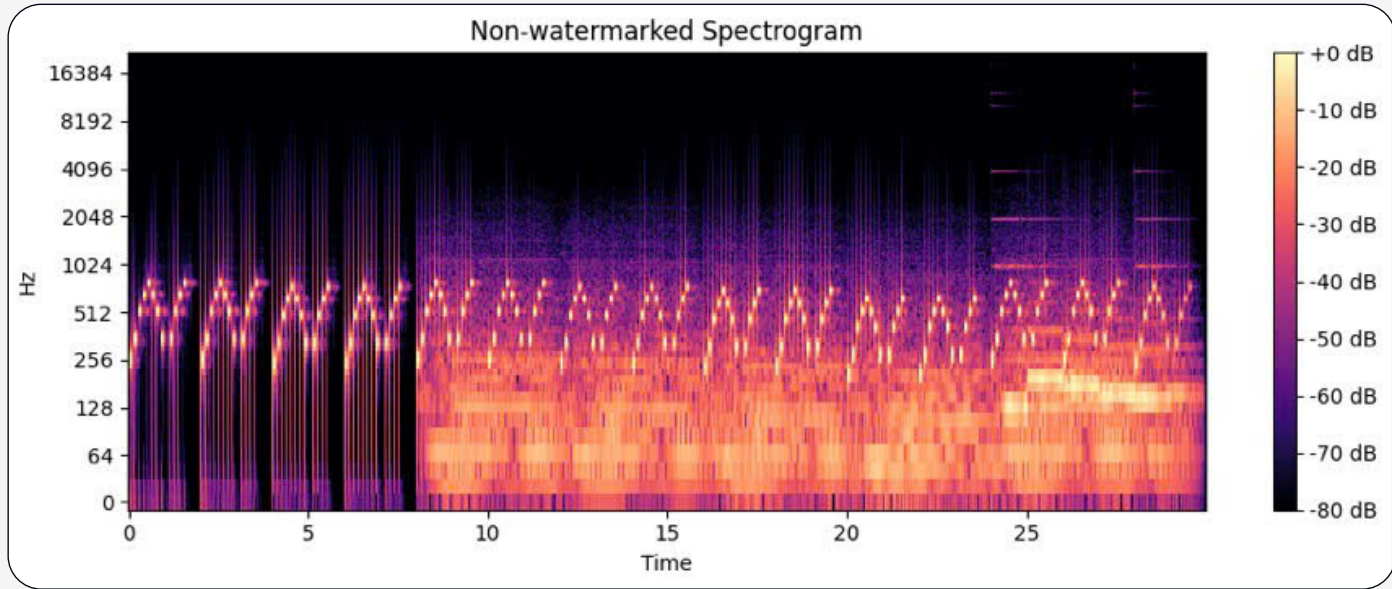
Objectives

- Enable secure audio ownership verification through robust, invisible digital watermarking that can be reliably detected without degrading audio quality.

- Provide a user-friendly platform for embedding and verifying watermarks, ensuring accessibility for both technical and non-technical users.
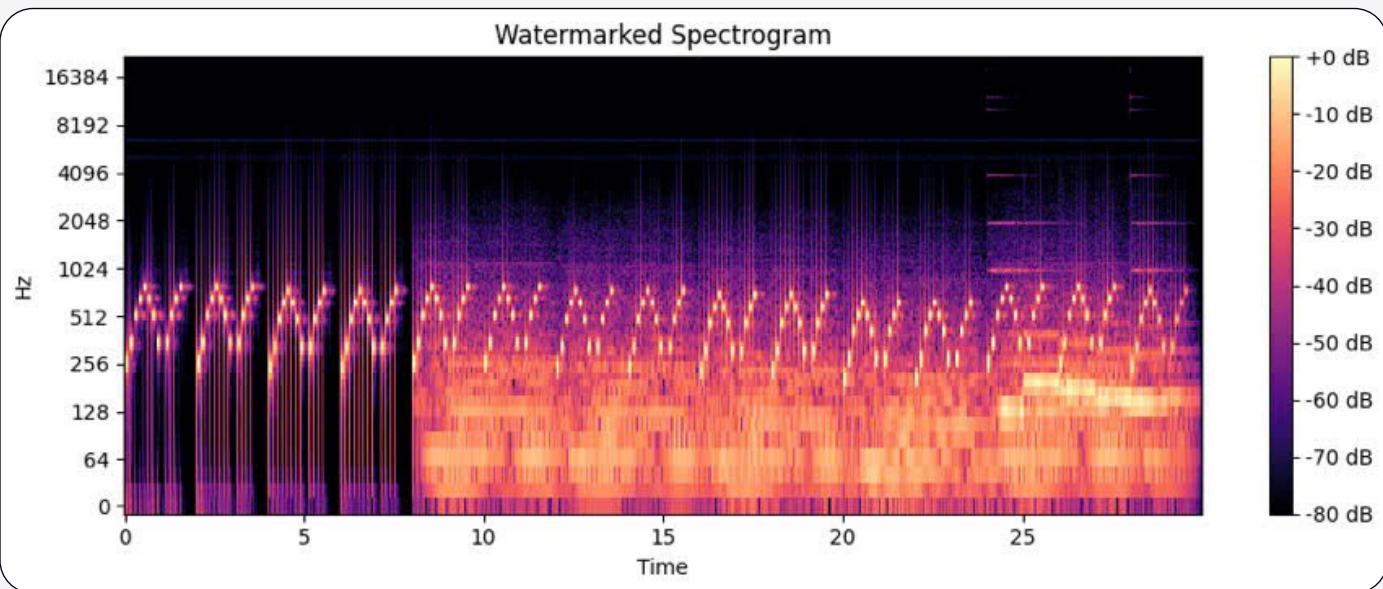
Flow chart

Evaluation table

Edit	AudioSeal				SVD & STFT			
	Acc	TPR/FPR	BER	NC	Acc.	TPR/FPR	BER	NC
MP3	0.94	0.89/0.00	0.109	0.893	0.52	1.0	0.485	1.0
Resampling	0.96	0.92/0.00	0.093	0.907	0.46	1.0	0.537	1.0
Speed	0.52	0.15/0.10	0.281	0.719	0.57	1.0	1.0	1.0
White Noise	0.91	0.92/0.10	0.088	0.911	0.31	1.0	1.0	1.0
Pink Noise	0.97	0.95/0.00	0.089	0.912	0.43	1.0	1.0	1.0

Methods	SI-SNR	PESQ
AudioSeal	39.335	4.272
SVD & STFT	35.225	4.95

Spectrogram

non- watermarked

watermarked