Audio Feature Extraction: FFT & Spectrogram

Fast Fourier Transform (FFT)

Frequency Domain Transformation

Time Domain Signal → **Frequency Domain Components**

Reveals frequency components present in audio signal

Spectrogram

Visual representation of frequency spectrum over time

Temporal Info
Time

+

Spectral Info
Frequency

STFT (Short-Time Fourier Transform): Applies FFT to windowed segments

Essential Applications

Audio Analysis | Speech Recognition | Music Processing

Trade-off

Between time and frequency resolution (determined by window size)