Snap Point

TEAM JitterBug

18기 | 오중균
18기 | 김창영

Data Collection

121.147.60.81:8089/snapPoint/web/fileUpload/upload.jsp

User

Backend

Web Server

DataBase
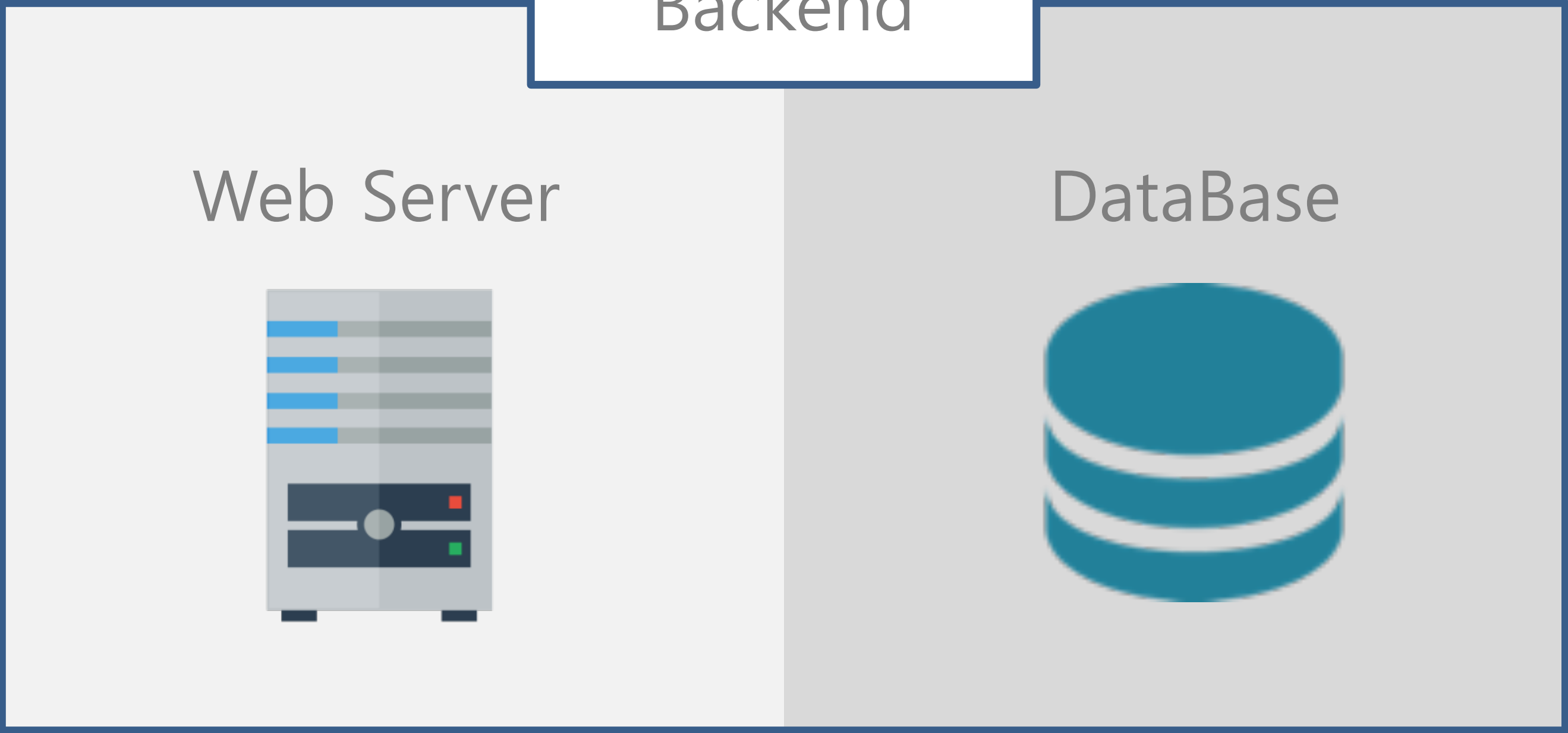
Apache Tomcat

Oracle

Preprocessing

Librosa

Python Package
for Music and Audio Analysis

```python
import librosa

filename = '30_times.wav'
y, sr = librosa.load(filename)
d = librosa.get_duration(y=y, sr=sr)

# y : Audio Time Series
# sr : Sampling Rate of y (default = 22050)

print(d)        # 18.52 seconds
```
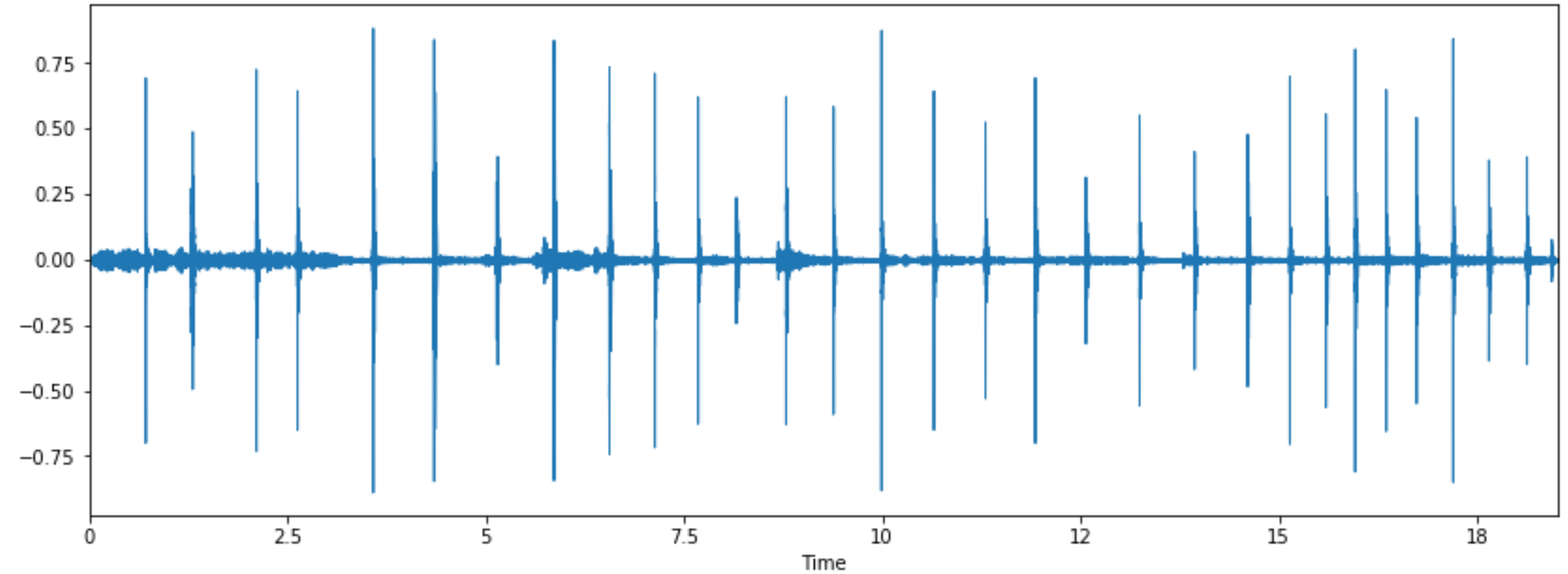
librosa.display.waveplot

librosa.display.specplot
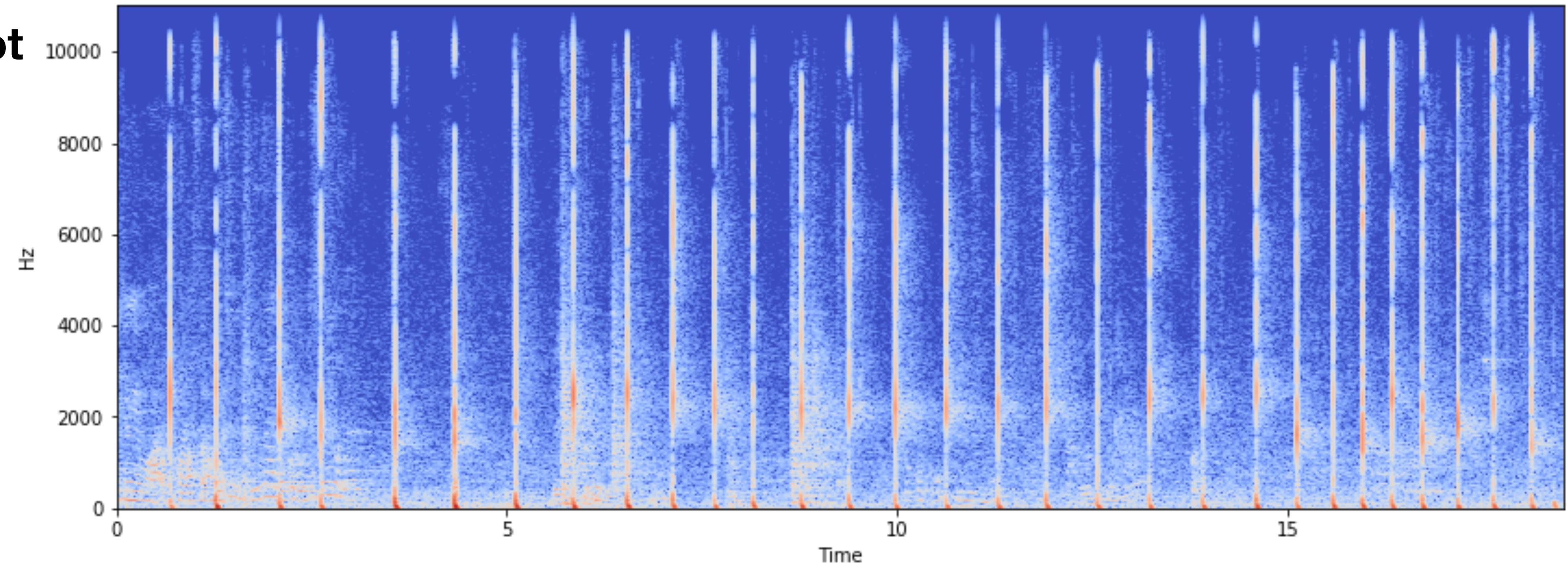
```python
tempo, beat_frames =
librosa.beat.beat_track(y=y, sr=sr)

beat_times =
librosa.frames_to_time(beat_frames, sr=sr)
```

```
print(beat_times)
print("times : " + len(beat_times))
```

```
[ 0.06965986  0.71981859  1.32353741  2.11301587  2.85605442  3.59909297
  4.36535147  5.15482993  5.87464853  6.57124717  7.15174603  7.68580499
  8.19664399  8.80036281  9.40408163 10.00780045 10.65795918 11.30811791
 11.93505669 12.58521542 13.2585941  13.95519274 14.62857143 15.30195011
 15.9753288  16.60226757]
```

```
times : 26
```

Feature Extraction

MFCC

Mel-Frequency Cepstral Coefficient
음성인식에서 가장 널리 사용되는 알고리즘!
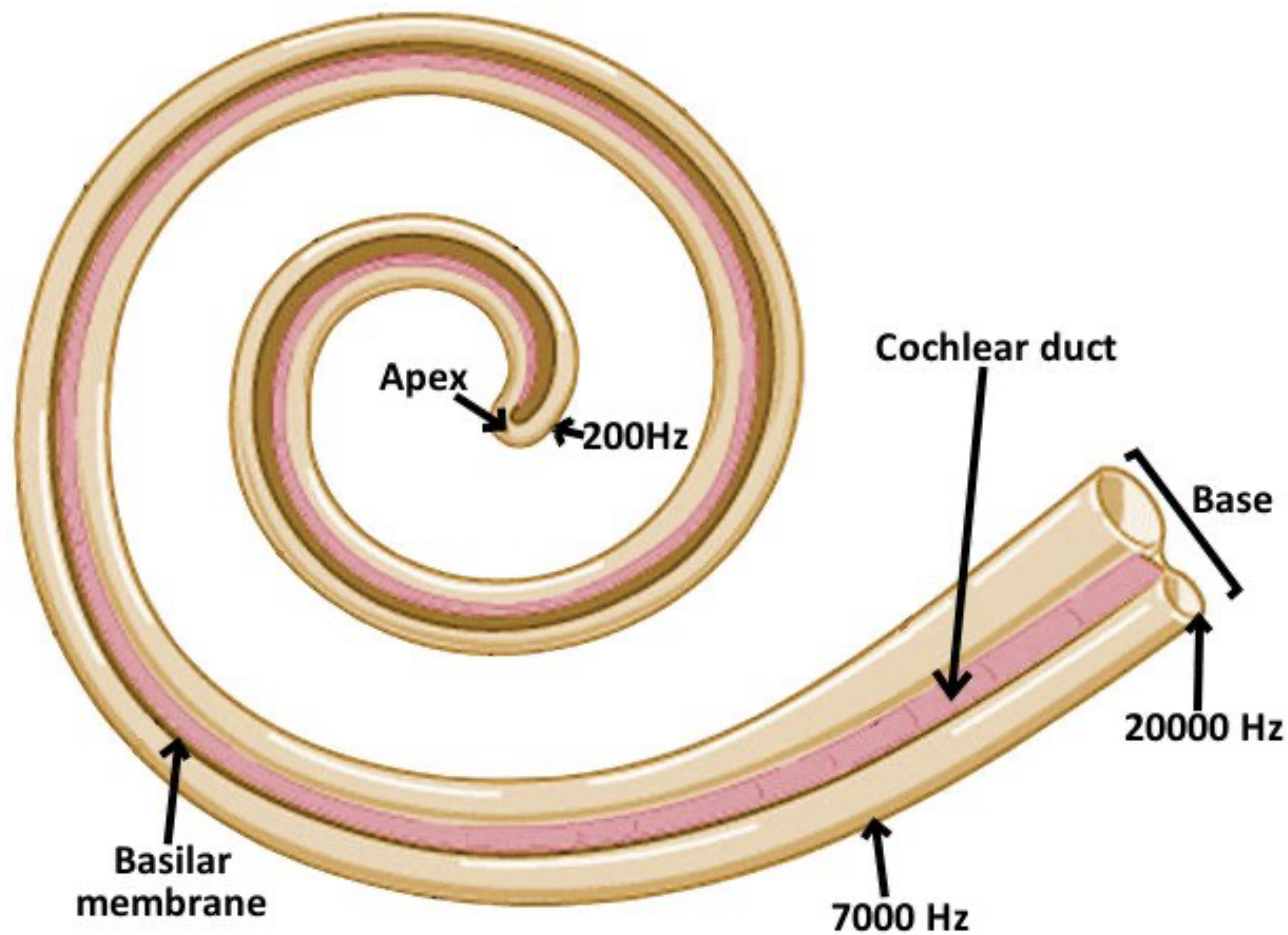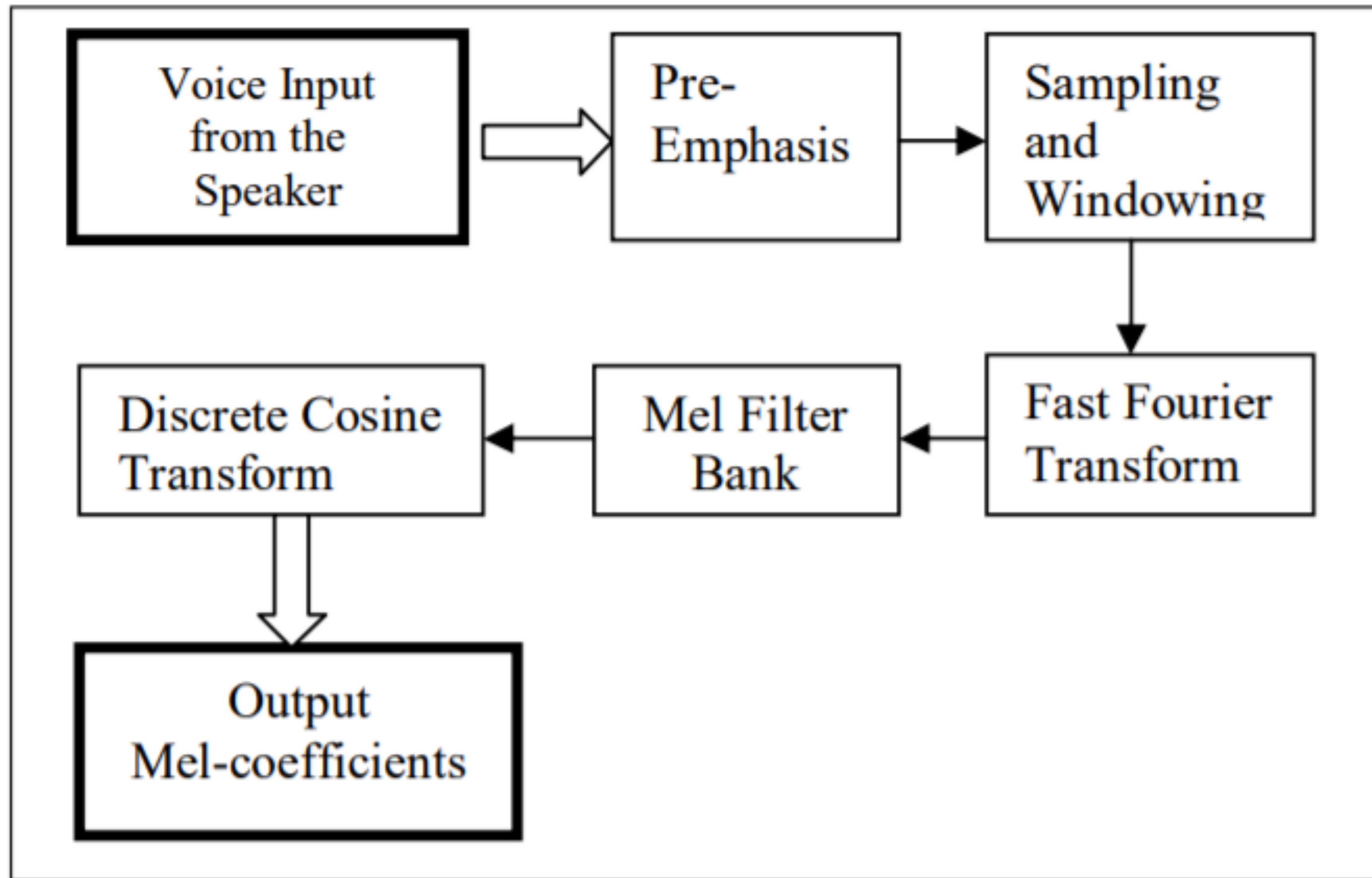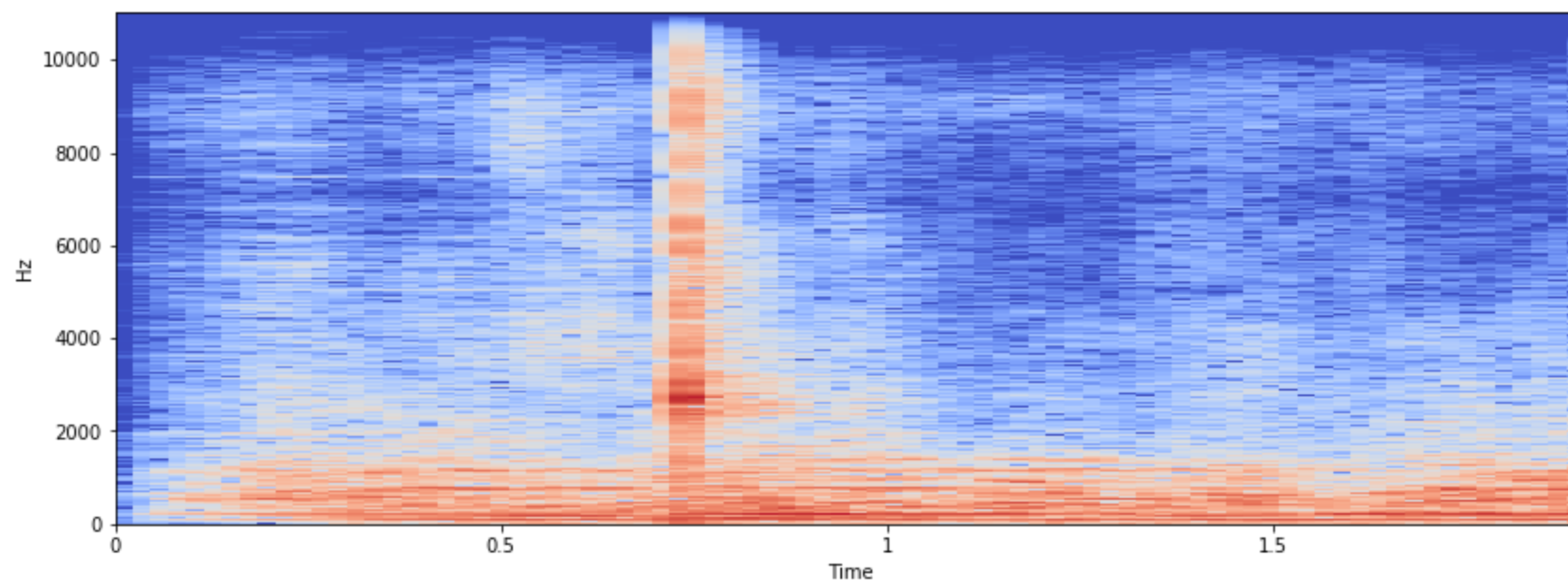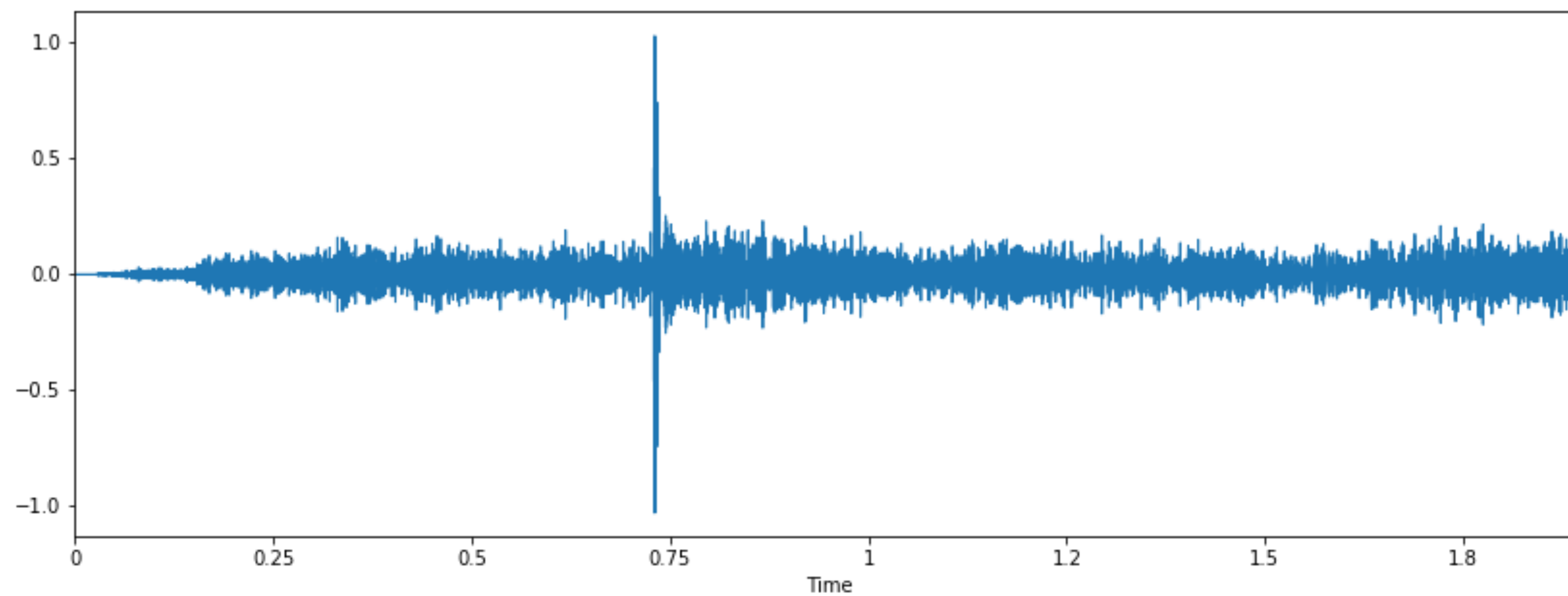
WTF is Mel?

Apex ← 200Hz

Cochlear duct

Base

20000 Hz

Basilar membrane

7000 Hz

```
┌─────────────────────────────────────────────────────────────────────────┐
│                                                                           │
│  ┌──────────────────┐          ┌──────────────┐      ┌──────────────┐    │
│  ┃                  ┃          │              │      │  Sampling    │    │
│  ┃  Voice Input     ┃ ══════▶  │  Pre-        │ ───▶ │  and         │    │
│  ┃  from the        ┃          │  Emphasis    │      │  Windowing   │    │
│  ┃  Speaker         ┃          │              │      │              │    │
│  ┃                  ┃          └──────────────┘      └──────┬───────┘    │
│  └──────────────────┘                                       │            │
│                                                             ▼            │
│  ┌──────────────────┐          ┌──────────────┐      ┌──────────────┐    │
│  │                  │          │              │      │  Fast Fourier│    │
│  │ Discrete Cosine  │ ◀─────── │  Mel Filter  │ ◀─── │  Transform   │    │
│  │ Transform        │          │  Bank        │      │              │    │
│  │                  │          │              │      │              │    │
│  └────────┬─────────┘          └──────────────┘      └──────────────┘    │
│           │                                                               │
│           ▼                                                               │
│  ┌──────────────────┐                                                     │
│  ┃                  ┃                                                     │
│  ┃  Output          ┃                                                     │
│  ┃  Mel-coefficients┃                                                     │
│  ┃                  ┃                                                     │
│  └──────────────────┘                                                     │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
```

Q&A

Thank You