

# Off-the-shelf HuggingFace models for audio deepfake detection

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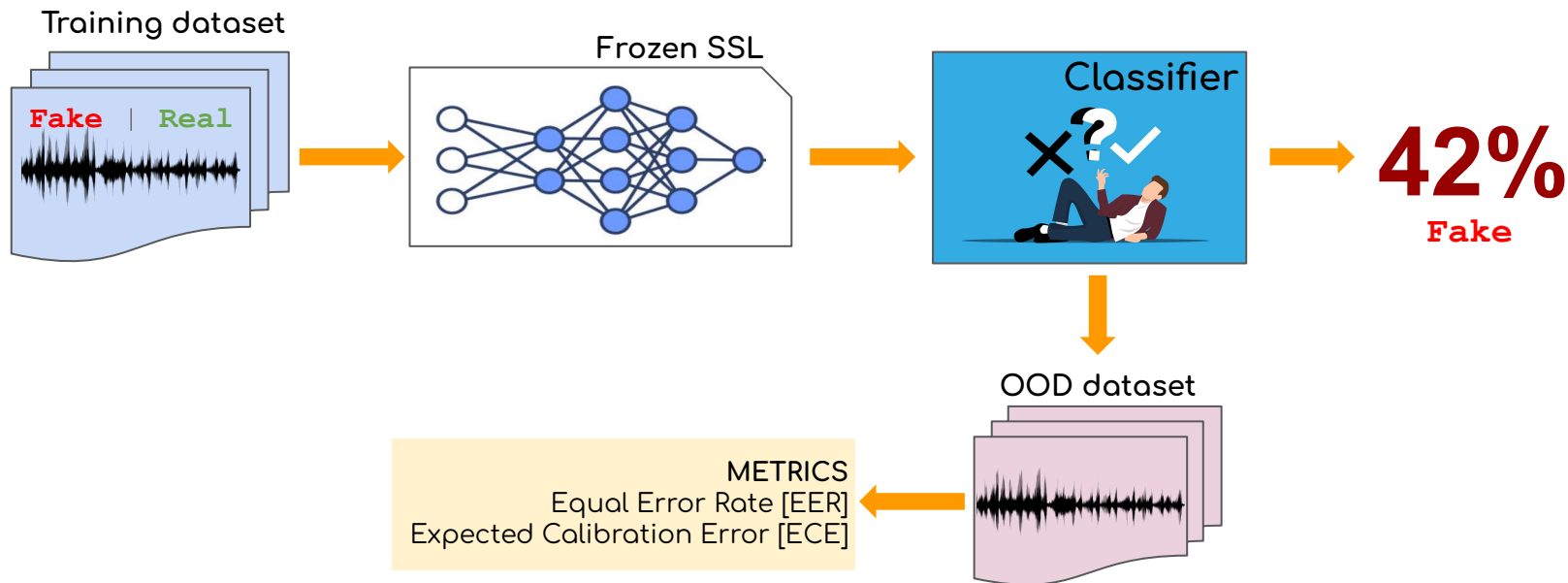
# Audio deepfakes

# Generating audio deepfakes

- Text-to-speech
- Voice cloning



# Deepfake detection

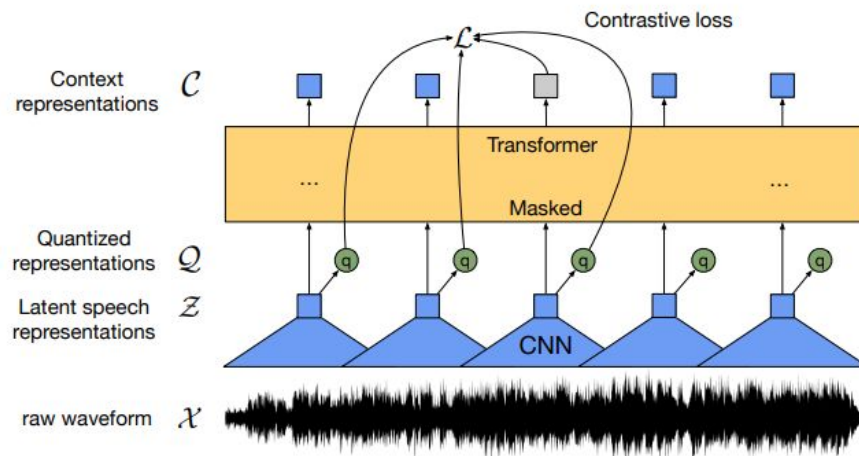


Q: SSL models?

# Audio SSL: wav2vec2 and wavLM

# wav2vec2

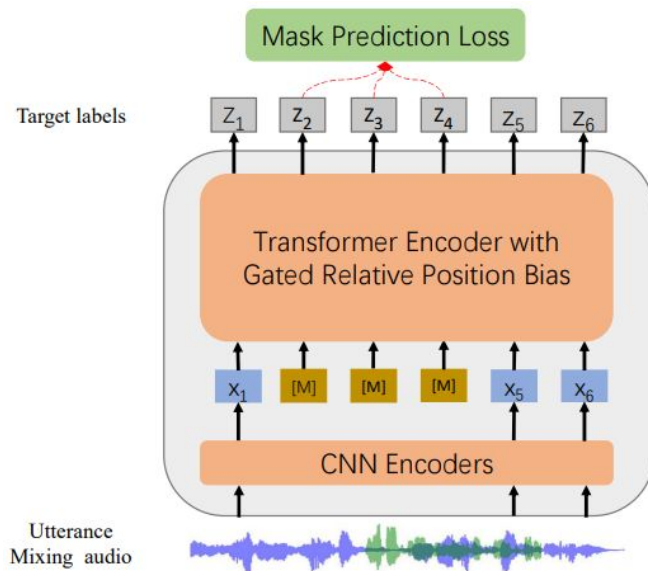
<https://huggingface.co/collections/facebook/wav2vec-20-651e865258e3dee2586c89f5>



<https://arxiv.org/abs/2006.11477>

# wavLM

<https://huggingface.co/microsoft/wavlm-large>



<https://arxiv.org/abs/2110.13900>





**Hugging Face**



# Hugging Face

- **Open-Source ML Hub:** Hugging Face is a popular platform providing an extensive repository of pre-trained machine learning models, particularly for Natural Language Processing (NLP), such as transformers for tasks like text generation, translation, and question-answering.
- **Transformers Library:** It offers the widely-used Transformers library, which makes it easy to integrate and fine-tune state-of-the-art transformer models from BERT, GPT, T5, and many others in a few lines of code.
- **Community and Collaboration:** Hugging Face fosters a collaborative environment where researchers and developers can share models and datasets, and it also provides tools for deploying, managing, and scaling ML models through their Inference API and Spaces platform.



# Hugging Face

Models 1,144

audio

Full-text search

Sort: Trending

stabilityai/stable-audio-open-1.0

Text-to-Audio • Updated Jul 31 • 21.3k • 906

nvidia/audio-flamingo

Updated 13 days ago • 16

LeroyDyer/SpydazWeb\_AI\_Text\_AudioVision\_Project

Text Generation • Updated 4 days ago • 8 • 2

MIT/ast-finetuned-audioset-10-10-0.4593

Audio Classification • Updated Sep 6, 2023 • 75.9M • 257

MU-NLPC/whisper-tiny-audio-captioning

Updated Mar 12 • 141 • 11

descript/descript-audio-codec

Updated Jun 14, 2023 • 11

Jmica/audiobook\_maker

Updated Jun 10 • 13

slseanwu/beats-conformer-bart-audio-captioner

Updated Jan 6 • 10 • 5

audio/stable-audio-open-1.0

Updated Jun 5 • 6

facebook/audiogen-medium

Updated Mar 12 • 3.38k • 115

Qwen/Qwen2-Audio-7B-Instruct

Text2Text Generation • Updated Aug 9 • 77.4k • 211

Talha/urdu-audio-emotions

Audio Classification • Updated Jul 2, 2022 • 27 • 11

bookbot/distil-ast-audioset

Audio Classification • Updated Sep 12, 2023 • 947 • 15

MU-NLPC/whisper-small-audio-captioning

Updated Mar 13 • 1.3k • 9

cvssp/audioldm2

Updated Apr 16 • 3.62k • 37

Qwen/Qwen-Audio-Chat

Text Generation • Updated Dec 8, 2023 • 32.2k • 71

hf-audio/wav2vec2-bert-CV16-en

Automatic Speech Recognition • Updated Jan 15 • 1.03k • 5

MelodyMachine/Deepfake-audio-detection-V2

Audio Classification • Updated Jun 18 • 617 • 6



# Hugging Face

<https://huggingface.co/facebook>

### Wav2Vec 2.0

A collection for the first release of Wav2Vec 2.0, a speech encoder that learns ...

- facebook/wav2vec2-large-960h-lv60-self
  - Automatic Speech Recognition · Updated May 23, 2022 · 29.5k · 125
- facebook/wav2vec2-large-960h
  - Automatic Speech Recognition · Updated Apr 5, 2022 · 49.4k · 24
- facebook/wav2vec2-base-960h
  - Automatic Speech Recognition · Updated Nov 14, 2022 · 1.35M · 289
- facebook/wav2vec2-base-100h

### SeamlessM4T

SeamlessM4T is designed to provide high quality translation, allowing people ...

Seamless M4T 945

- facebook/hf-seamless-m4t-large
  - Text-to-Speech · Updated Dec 8, 2023 · 2.86k · 54
- facebook/hf-seamless-m4t-medium
  - Text-to-Speech · Updated Dec 8, 2023 · 8.14k · 28
- facebook/seamless-m4t-large

### XLSR

A collection of multilingual Wav2Vec 2.0 checkpoints pre-trained on 53 langua...

- facebook/wav2vec2-large-xlsr-53
  - Updated Mar 18, 2022 · 120k · 111
- facebook/wav2vec2-xlsr-53-espeak-cv-ft
  - Automatic Speech Recognition · Updated Dec 10, 2021 · 354k · 23
- facebook/wav2vec2-large-xlsr-53-dutch
  - Automatic Speech Recognition · Updated Jul 6, 2021 · 47 · 2
- facebook/wav2vec2-large-xlsr-53-french

### XLS-R

First release checkpoints for XLS-R, a large-scale model for cross-lingual spee...

- facebook/wav2vec2-xls-r-300m
  - Updated Aug 10, 2022 · 664k · 76
- facebook/wav2vec2-xls-r-1b
  - Updated Aug 10, 2022 · 9.68k · 27
- facebook/wav2vec2-xls-r-2b
  - Updated Aug 10, 2022 · 1.46k · 31
- facebook/wav2vec2-xls-r-300m-en-to-15

### Robust Wav2Vec 2.0

A collection of "robust" Wav2Vec 2.0 checkpoints pre-trained on datasets fro...

- facebook/wav2vec2-large-robust
  - Updated Nov 5, 2021 · 2.09k · 30
- facebook/wav2vec2-large-robust-ft-libri-960h
  - Automatic Speech Recognition · Updated Jun 23, 2023 · 32.4k · 11
- facebook/wav2vec2-large-robust-ft-swbd-300h
  - Automatic Speech Recognition · Updated Apr 5, 2022 · 542 · 17

Robust wav2vec 2.0: Analyzing Domain Shift in Self-Supervised Pre-T...

### VoxPopuli v2

A collection of checkpoints from the second VoxPopuli release.

VoxPopuli: A Large-Scale Multilingual Speech Corpus for Representat...

Paper · 2101.00390 · Published Jan 2, 2021 · 1

- facebook/wav2vec2-base-bg-voxpupuli-v2
  - Automatic Speech Recognition · Updated Feb 27, 2022 · 14
- facebook/wav2vec2-base-cs-voxpupuli-v2

### VoxPopuli

A collection of open-source artefacts (datasets + checkpoints) from the first Vo...

- facebook/voxpupuli
  - Viewer · Updated Oct 14, 2022 · 169k · 7.86k · 84

VoxPopuli: A Large-Scale Multilingual Speech Corpus for Representat...

Paper · 2101.00390 · Published Jan 2, 2021 · 1

- facebook/wav2vec2-base-100k-voxpupuli
  - Automatic Speech Recognition · Updated Nov 5, 2021 · 192 · 3
- facebook/wav2vec2-base-10k-voxo0011-ft-cs

### HuBERT

A collection of checkpoints from the HuBERT release, a speech encoder that le...

HuBERT: Self-Supervised Speech Representation Learning by Maske...

Paper · 2106.07447 · Published Jun 14, 2021 · 2

- facebook/hubert-base-ls960
  - Feature Extraction · Updated Nov 5, 2021 · 59.4k · 45
- facebook/hubert-large-1160k

# Running the experiment...

[Colab notebook](#)

# Thank you for your attention!

Questions?



**Code:** [github.com/adrianastan/deepfake\\_pydata](https://github.com/adrianastan/deepfake_pydata)

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