Transformers.js

Run  Transformers in your browser!

https://github.com/xenova/transformers.js

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Introduction

The what, how, and why of Transformers.js

Library Overview

ML + JS

Run ML models directly in the browser with JavaScript!

Open source

Community-driven development on GitHub. New features added daily!

Stars 2.7k

Forks 126

Easy to use

Add state-of-the-art ML to your web-app in just a few lines of code!

```
npm i @xenova/transformers
```

What can it do?

Text	Vision	Audio	Multimodal
Translation, summarization, text-generation, classification, NER, and much more!	Classification, captioning, segmentation, and object detection.	Automatic Speech Recognition (ASR) and audio classification.	Zero-shot image classification

Transformers.js supports over 20 popular model architectures, including:

BERT, T5, GPT-2, BART | ViT, Vision Encoder Decoder, DETR | Whisper | CLIP

We have **over 100** *ready-to-use* models available on the Hugging Face Hub!

How does it work?

1

Convert your model to ONNX with 🤗 Optimum

Supports PyTorch, TensorFlow, and JAX models.

2

Write JavaScript code

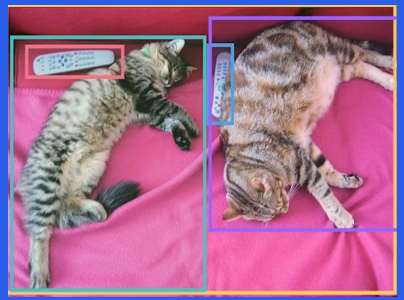
Get started with just a few lines!

```
import { pipeline } from '@xenova/transformers';

let detector = await pipeline('object-detection');

let predictions = await detector('cats.png');
```

3

Run in the browser

It's really that simple!




```
{
  "boxes": [
    [30.09, 68.47, 187.94, 118.53],
    [329.51, 66.39, 370.07, 192.87],
    [-2.80, 0.13, 636.90, 472.21],
    [6.57, 53.89, 321.98, 468.69],
    [331.87, 21.79, 648.55, 369.94]
  ],
  "classes": [75, 75, 63, 17, 17],
  "scores": [0.998, 0.996, 0.995, 0.998, 0.999],
  "labels": ["remote", "remote", "couch", "cat", "cat"]
}
```

Why was it created?

Original reason

Browser extension for removing spam YouTube comments

Current plan

To support all 🤗 Transformers models,
tokenizers, processors, pipelines, and tasks.

Ultimate goal

Help bridge the gap between web development and machine learning

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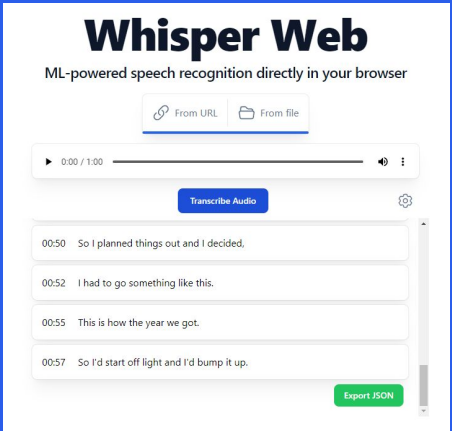
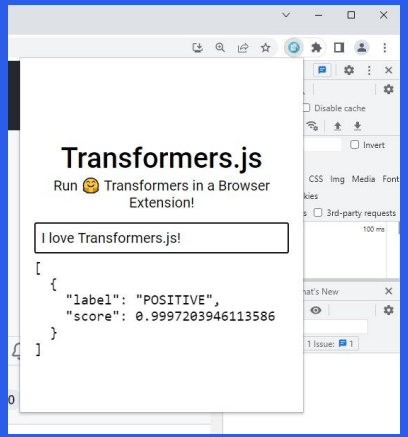
Applications

What are the use-cases?

WebML environments

Websites and PWAs	Browser extensions	Server-side / Electron apps
Reach + scale of the web. Use browser APIs. Zero install.	Enhancing the browsing experience with ML-powered extensions	JS/TS server-side Or desktop apps using Electron



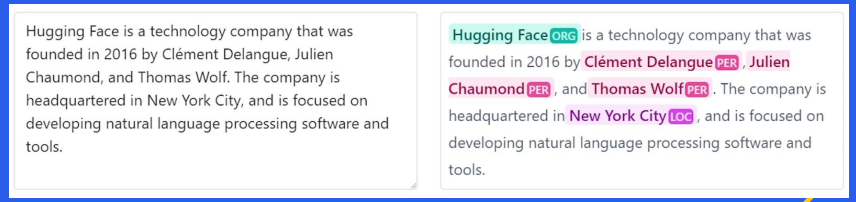


Feasible tasks

Text | Vision | Audio | Multimodal

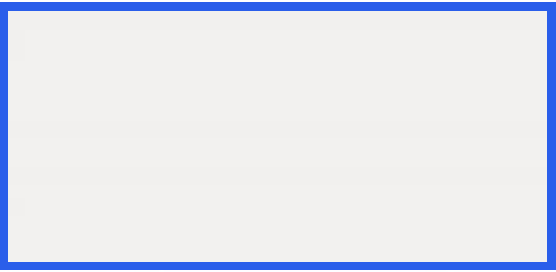
Text Classification

Sentiment analysis, NER, etc.



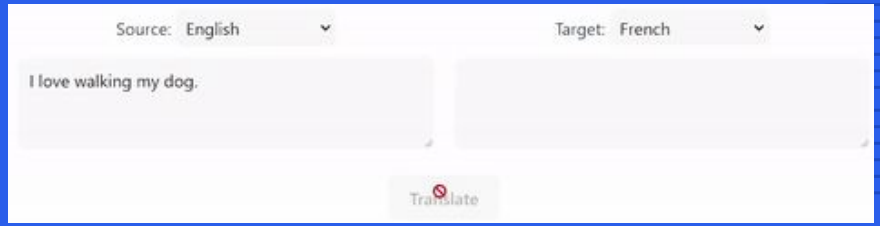
Code Completion

Constrained text-generation problems



Text-to-text

Translation, summarization, etc.

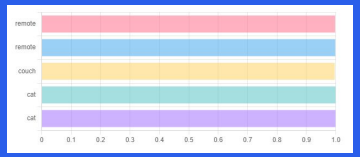


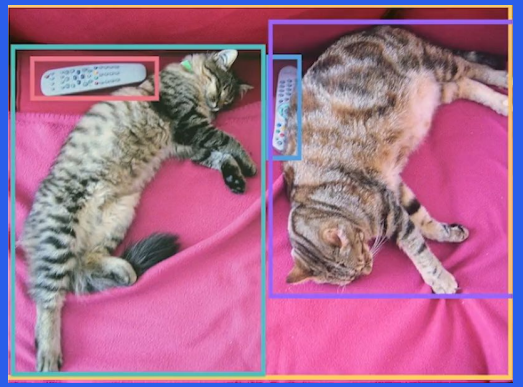
Feasible tasks

Text | **Vision** | Audio | Multimodal

Image Classification

Label images according to predefined classes





Object Detection

Compute bounding boxes for objects

Segmentation

Divide an image into meaningful parts

Segment Anything Model (Meta)

Feasible tasks

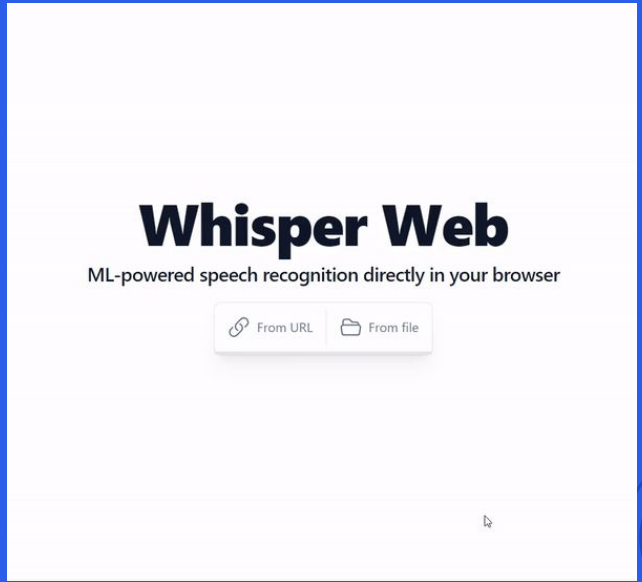
Text | Vision | **Audio** | Multimodal

Speech-to-Text

Automatic speech recognition

Text-to-Speech

Coming soon



https://hf.co/spaces/Xenova/whisper-web

Feasible tasks

Text | Vision | Audio | **Multimodal**

Embeddings

Semantic search, clustering, data analysis

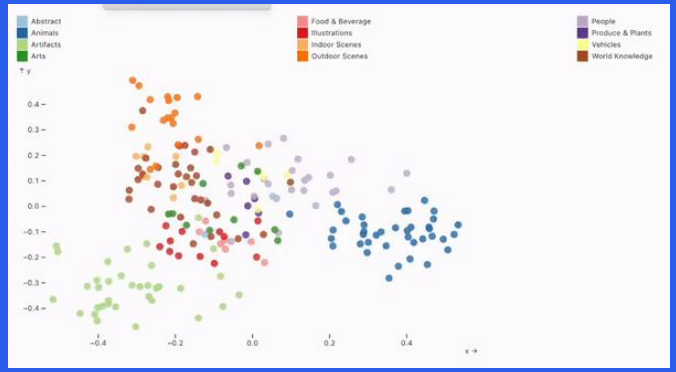
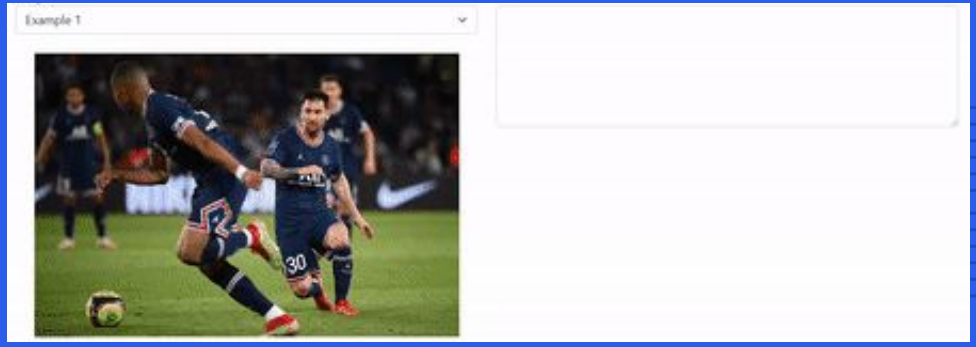


Image-to-text

Adding captions to images



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Limitations

The ~~good~~, the bad, and the ugly.

What do we wish were better?

Speed

Currently CPU-only (WebGPU on the way!)

Memory

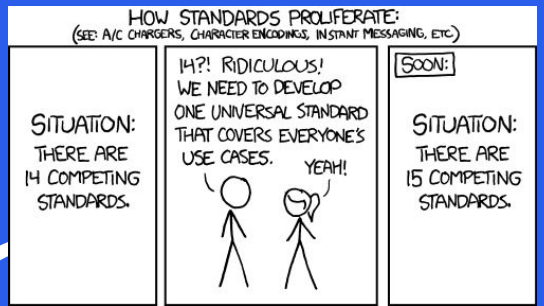
WASM models can't exceed 4GB in size.

Models

Standards, distribution and interoperability

Browsers

Unified model caching, Tensor API



Thanks!

Any questions?

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