

AI with JavaScript

The Future Is In the Browser

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JavaScript Libraries

TensorFlow.js



Google

Transformers.js



Hugging Face

TensorFlow.js & Transformers.js

- Open source libraries
- Client side machine learning
- Work with pretrained models
- Models may be converted to work with both libraries



TensorFlow.js & Transformers.js Installation

- CDN
- NPM package
- Node.js for server side inferencing

ML Models in the Browser

- Increases user privacy as user data doesn't have to leave their device
- Reduces latency
- Makes it possible to run models without an internet connection
- Deployment could be easier

ML Models in the Browser

- Initial load of model on user's device can be slow
- Models could be extracted or copied
- Performance issues if working with large language models
- Must determine how to update models and version control

TensorFlow.js



TensorFlow.js

- Work with existing models
- Use transfer learning to retrain models with own data
- Create and train models



TensorFlow.js Model Tasks

- Image classification
- Object detection
- Pose detection
- Speech command recognition



Transformers.js



Transformers.js

- Run pretrained models
- Can be used with custom models that have been converted



Transformers.js Supported Tasks

- **Natural Language Processing:** Ex. text classification, translation
- **Computer Vision:** Ex. image classification and object detection
- **Audio:** automatic speech recognition and audio classification
- **Multimodal:** zero-shot image classification

Transformers.js Pipeline API

- Groups a pretrained model with the preprocessing of inputs and postprocessing of outputs

```
import { pipeline } from '@xenova/transformers';  
  
let pipe = await pipeline('sentiment-analysis');  
let out = await pipe('Conf42 JavaScript is a great  
conference!');  
  
[{'label': 'POSITIVE', 'score': 0.999817686}]
```

Resources

TensorFlow.js: <https://www.tensorflow.org/js>

Transformers.js: <https://huggingface.co/docs/transformers.js>

Slides & Code Examples

