

Deep Learning for Everyone

Gabriela de Queiroz

Sr. Machine Learning Manager, IBM
Founder, R-Ladies & AI Inclusive

 [@gdequeiroz](https://twitter.com/gdequeiroz) | k-roz.com

IBM Developer

slides: bit.ly/dsse-dl

IBM

Gabriela de Queiroz

- Founder of R-Ladies
- Founder of AI Inclusive (ai-inclusive.org)
- Sr. Engineering and Data Science Manager, IBM



**Data Scientist + Developer Advocate + Open Source Developer + Manager +
Statistician + Epidemiologist + Community Builder + Mentor + Speaker**



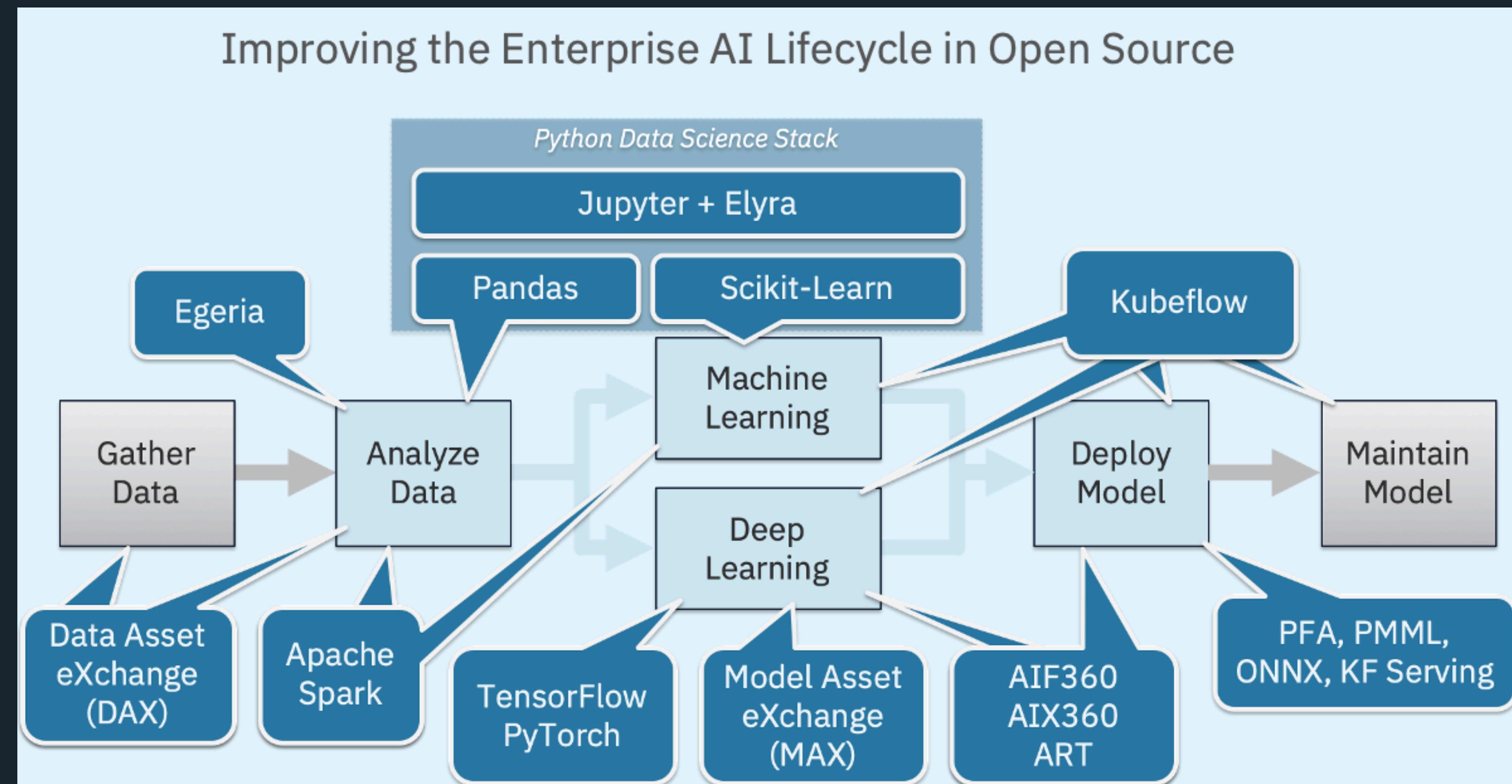
Center for Open Source Data and AI Technologies (CODAIT)



codait.org

Open Source @ IBM

- CODAIT aims to make AI solutions dramatically easier to create, deploy, and manage in the enterprise
- We contribute to and advocate for the open-source technologies
- 30+ open source developers



Machine Learning Team (10 open source developers)

Data Asset eXchange

Explore useful and relevant data sets for enterprise data science

The screenshot shows a grid of data sets. Top row: NOAA Weather Data - JFK Airport (Dataset | CSV, September 12, 2019), Double Pendulum Chaotic (Dataset | CSV, H.264, September 12, 2019). Bottom row: Contracts Proposition Bank (Dataset | CoNLL-U, September 12, 2019), MedNLI (Dataset | JSON Lines, September 17, 2019). Each item has a blue arrow icon at the bottom right.

Learn More →
Join the community →

Dataset CSV NOAA Weather Data - JFK Airport September 12, 2019 →	Dataset CSV, H.264 Double Pendulum Chaotic September 12, 2019 →	Dataset CSV Fashion-MNIST September 12, 2019 →
Dataset CoNLL-U Contracts Proposition Bank September 12, 2019 →	Dataset JSON Lines MedNLI September 17, 2019 →	Dataset CSV, JSON Nutch July 16, 2019 →

Model Asset eXchange

Free, deployable, and trainable code. A place for developers to find and use free and open source deep learning models.

The screenshot shows a grid of machine learning models. Top row: Toxic Comment Classifier (Model | Deployable, June 04, 2019), Text Sentiment Classifier (Model | Deployable, Trainable, Mar 29, 2019), Image Segmente (Model | Deployable, Trainable, Sep 21, 2018). Bottom row: Object Detector (Model | Deployable, Trainable, Sep 21, 2018), Audio Classifier (Model | Deployable, Sep 21, 2018), Image Caption Generator (Model | Deployable, Sep 21, 2018). Each item has a blue arrow icon at the bottom right.

Try the tutorial →
Join the community →

Featured Deployable Trainable

Model Deployable Toxic Comment Classifier Detect 6 types of toxicity in user comments Jun 04, 2019 →	Model Deployable, Trainable Text Sentiment Classifier Detect the sentiment captured in short pieces of text Mar 29, 2019 →	Model Deployable, Trainable Image Segmente Identify objects in an image, additionally assigning each pixel of the image to a particular object. Sep 21, 2018 →
Model Deployable, Trainable Object Detector Localize and identify multiple objects in a single image. Sep 21, 2018 →	Model Deployable Audio Classifier Identify sounds in short audio clips. Sep 21, 2018 →	Model Deployable Image Caption Generator Generate captions that describe the contents of images. Sep 21, 2018 →

ibm.biz/data-exchange

ibm.biz/model-exchange

1) TensorFlow

2) PyTorch

3) Keras

4) Apache Arrow

important skills for data scientists



All News Images Videos Shopping More Settings Tools

About 262,000,000 results (0.55 seconds)

Technical Skills: Computer Science

- Python Coding. Python is the most common coding language I typically see required in data science roles, along with Java, Perl, or C/C++. ...
- Hadoop Platform. ...
- SQL Database/Coding. ...
- Apache Spark. ...
- Machine Learning and AI. ...
- Data Visualization. ...
- Unstructured data.

9 Must-have skills you need to become a Data Scientist, updated

<https://www.kdnuggets.com/2018/05/simplilearn-9-must-have-skills-data...>



A data scientist needs strong math skills, particularly in multivariable calculus and linear algebra.

- Identifying Algorithms.
- Creating and Maintaining Algorithms.
- Information Retrieval Data Sets.
- Linear Algebra.
- Machine Learning Models.
- Machine Learning Techniques.
- Multivariable Calculus.
- Statistics.

[More items...](#)

Important Job Skills for Data Scientists - The Balance Careers

<https://www.thebalancecareers.com/list-of-data-scientist-skills-2062381>

[About Featured Snippets](#)

[Feedback](#)



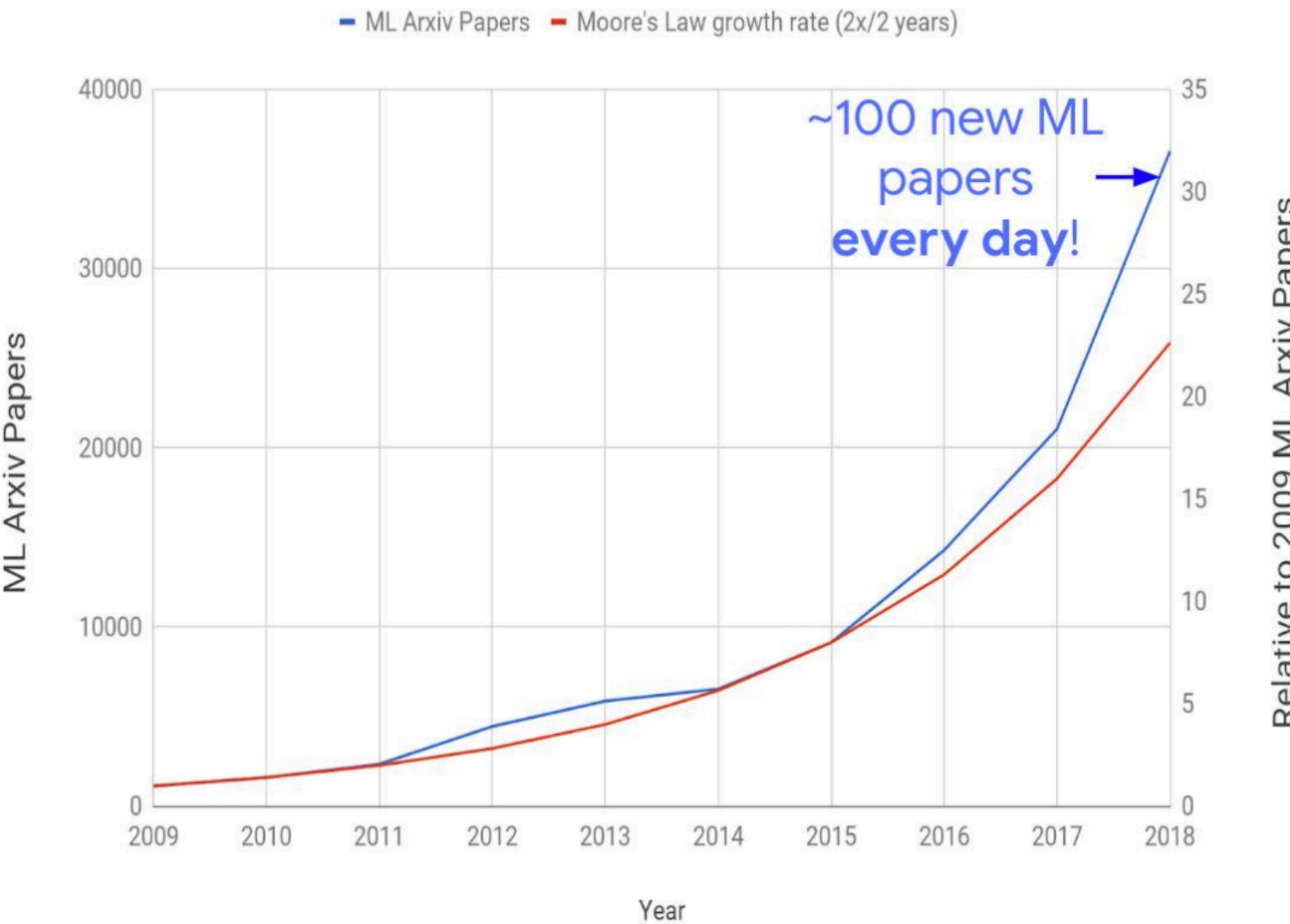
Jeff Dean ✅
@JeffDean

Arxiv ML papers/day

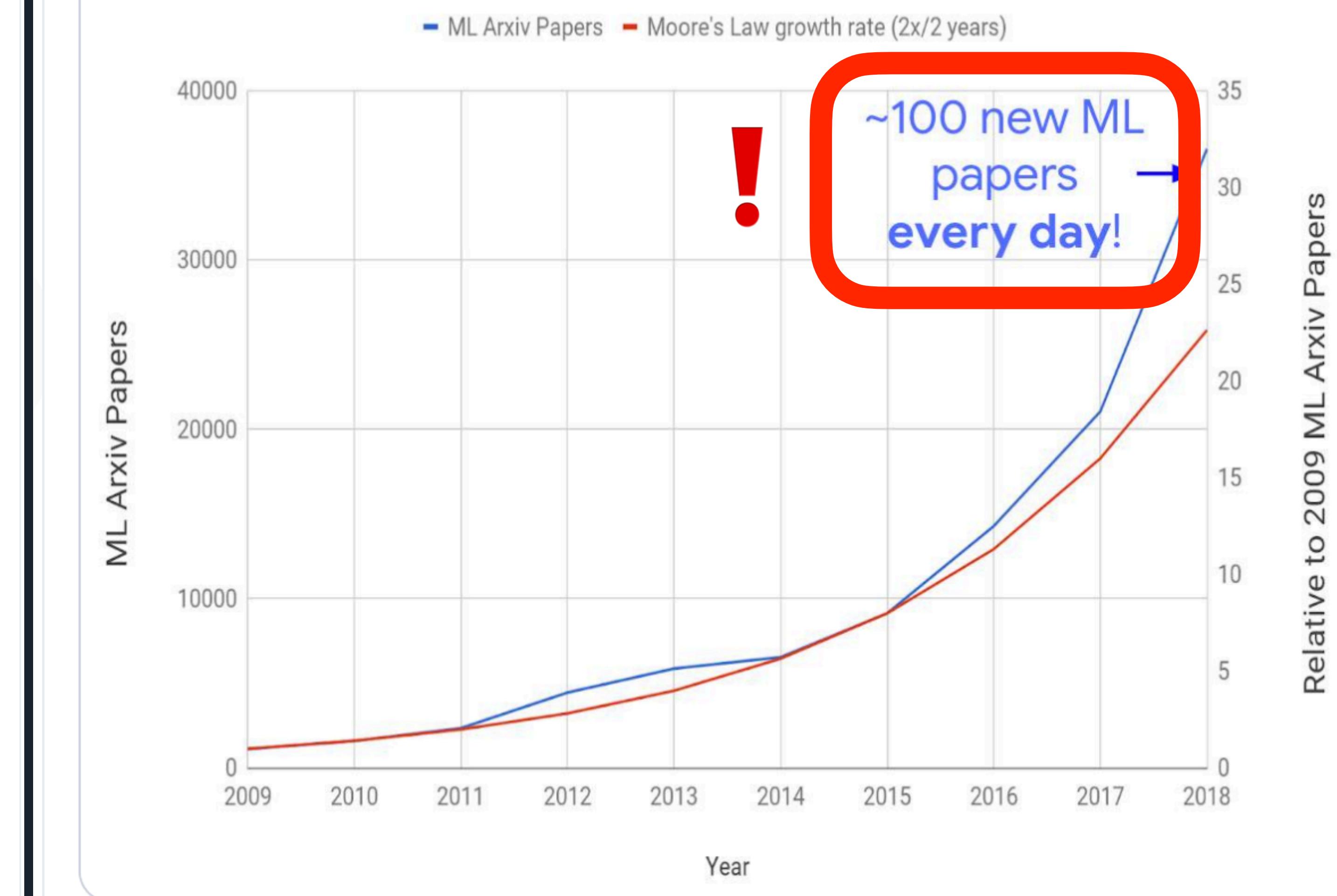
I have some bad news for you, [@deliprao](#). I collect data on the "ML subset" of [@arxiv_org](#) and its growth.

Absolute numbers are approx ~3000 new papers/month at end of 2018 (100/day!) & likely higher now, well past the bioRxiv 2500/month that you feared!

Machine Learning Arxiv Papers per Year



Machine Learning Arxiv Papers per Year



<https://twitter.com/JeffDean/status/1135114657344237568?s=20>



Articles

About 4,500,000 results (0.05 sec)

> 4 million results!

deep learning courses



All

News

Videos

Images

Shopping

More

Settings

Tools

About 183,000,000 results (0.73 seconds)

> 183 million results!



Help!

Model Asset eXchange

Place for developers/data scientists to find and use
free and **open source** deep learning models

ibm.biz/model-exchange

Model Asset eXchange

[Try the tutorial](#)



[Join the community](#)



Free, deployable, and trainable code. A place for developers to find and use free and open source deep learning models.

[Featured](#) [Deployable](#) [Trainable](#)

Model | Deployable

Toxic Comment Classifier

Detect 6 types of toxicity in user comments

Jun 04, 2019



Model | Deployable, Trainable

Text Sentiment Classifier

Detect the sentiment captured in short pieces of text

Mar 29, 2019



Model | Deployable, Trainable

Image Segmenter

Identify objects in an image, additionally assigning each pixel of the image to a particular object.

Sep 21, 2018



Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

Sep 21, 2018



Model | Deployable

Audio Classifier

Identify sounds in short audio clips.

Sep 21, 2018



Model | Deployable

Image Caption Generator

Generate captions that describe the contents of images.

Sep 21, 2018



[View all models](#)

Model Deployable, Trainable Question Answering Answer questions on a given corpus of text Sep 17, 2019 → Jul 09, 2019	Model Deployable Text Summarizer Generate a summarized description of a body of text Jun 04, 2019 → Jul 09, 2019	Model Deployable Toxic Comment Classifier Detect 6 types of toxicity in user comments Jun 04, 2019 →	Model Deployable Image Colorizer Adds color to black and white images. Sep 21, 2018 →	Model Deployable, Trainable Image Segmenter Identify objects in an image, additionally assigning each pixel of the image to a particular object. Sep 21, 2018 →	Model Deployable Image Classifier - Inception ResNet v2 Identify objects in images using a third-generation deep residual network. Sep 21, 2018 →
Model Deployable Chinese Phonetic Similarity Estimator Estimate the phonetic distance between Chinese words and get similar sounding candidate words. May 28, 2019 →	Model Deployable Image Resolution Enhancer Upscale an image by a factor of 4, while generating photo-realistic details. Mar 29, 2019 →	Model Deployable, Trainable Text Sentiment Classifier Detect the sentiment captured in short pieces of text Mar 29, 2019 →	Model Deployable News Text Generator Generate English-language text similar to the news articles in the One Billion Words data set. Sep 21, 2018 →	Model Deployable Object Detector Localize and identify multiple objects in a single image. Sep 21, 2018 →	Model Deployable, Trainable Image Classifier - ResNet50 Identify objects in images using a first-generation deep residual network. Sep 21, 2018 →
Model Deployable Nucleus Segmenter Identify nuclei in a microscopy image and assign each pixel of the image to a particular nucleus Mar 28, 2019 →	Model Deployable Speech to Text Converter Converts spoken words into text form. Mar 27, 2019 →	Model Deployable Human Pose Estimator Detect humans in an image and estimate the pose for each person. Dec 12, 2018 →	Model Deployable Review Text Generator Generate English-language text similar to the text in the Yelp® review data set. Sep 21, 2018 →	Model Deployable Scene Classifier Classify images according to the place/location labels in the Places365 data set. Sep 21, 2018 →	Model Deployable Sports Video Classifier Classify sporting activities in videos. Sep 21, 2018 →
Model Deployable, Trainable Named Entity Tagger Locate and tag named entities in text. Oct 31, 2018 →	Model Deployable Fast Neural Style Transfer Generate a new image that mixes the content of a source image with the style of another image. Sep 21, 2018 →	Model Deployable Image Caption Generator Generate captions that describe the contents of images. Sep 21, 2018 →	Model Deployable Weather Forecaster Predict hourly weather features given historical data for a specific location Sep 21, 2018 →	Model Trainable Word Embedding Generator Generates word embedding vectors from text files. Sep 21, 2018 →	Model Deployable Audio Classifier Identify sounds in short audio clips. Sep 21, 2018 →

30 ready to use deep learning models

Model Asset eXchange (MAX)

- Wide variety of domains (text, audio, image, etc)
- Multiple deep learning frameworks (TensorFlow, PyTorch, Keras)
- **Trainable** and **Deployable** versions

ibm.biz/model-exchange

Model Asset eXchange

Free, deployable, and trainable code. A place for developers to find and use free and open source deep learning models.

[Featured](#) [Deployable](#) [Trainable](#)

Model | Deployable

Toxic Comment Classifier

Detect 6 types of toxicity in user comments

Jun 04, 2019

Model | Deployable, Trainable

Text Sentiment Classifier

Detect the sentiment captured in short pieces of text

Mar 29, 2019

Model | Deployable, Trainable

Image Segmente

Identify objects in an image, additionally assigning each pixel of the image to a particular object.

Sep 21, 2018

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

Sep 21, 2018

Model | Deployable

Audio Classifier

Identify sounds in short audio clips.

Sep 21, 2018

Model | Deployable

Image Caption Generator

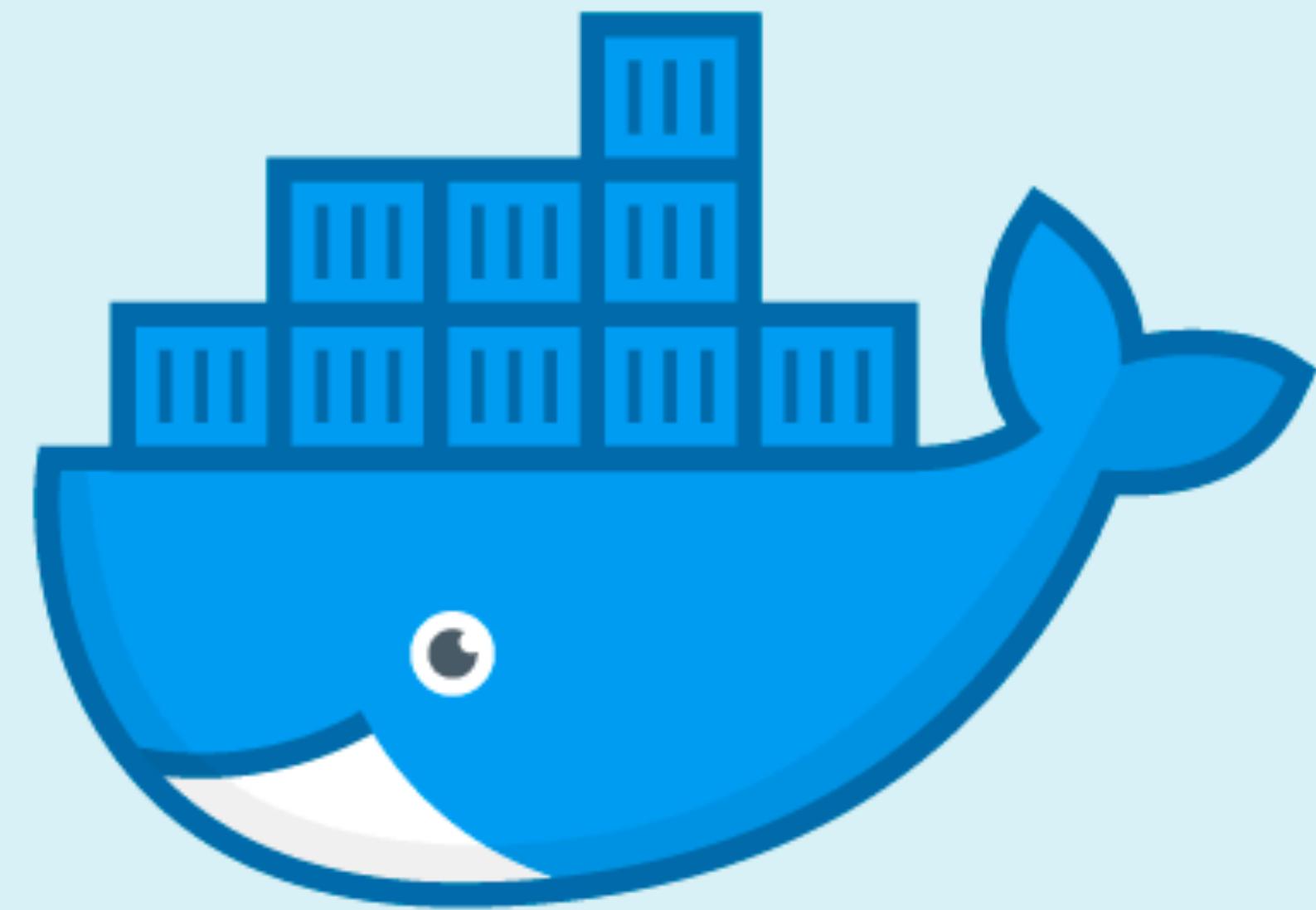
Generate captions that describe the contents of images.

Sep 21, 2018

[View all models](#)

What do I need to get started?

START
HERE.

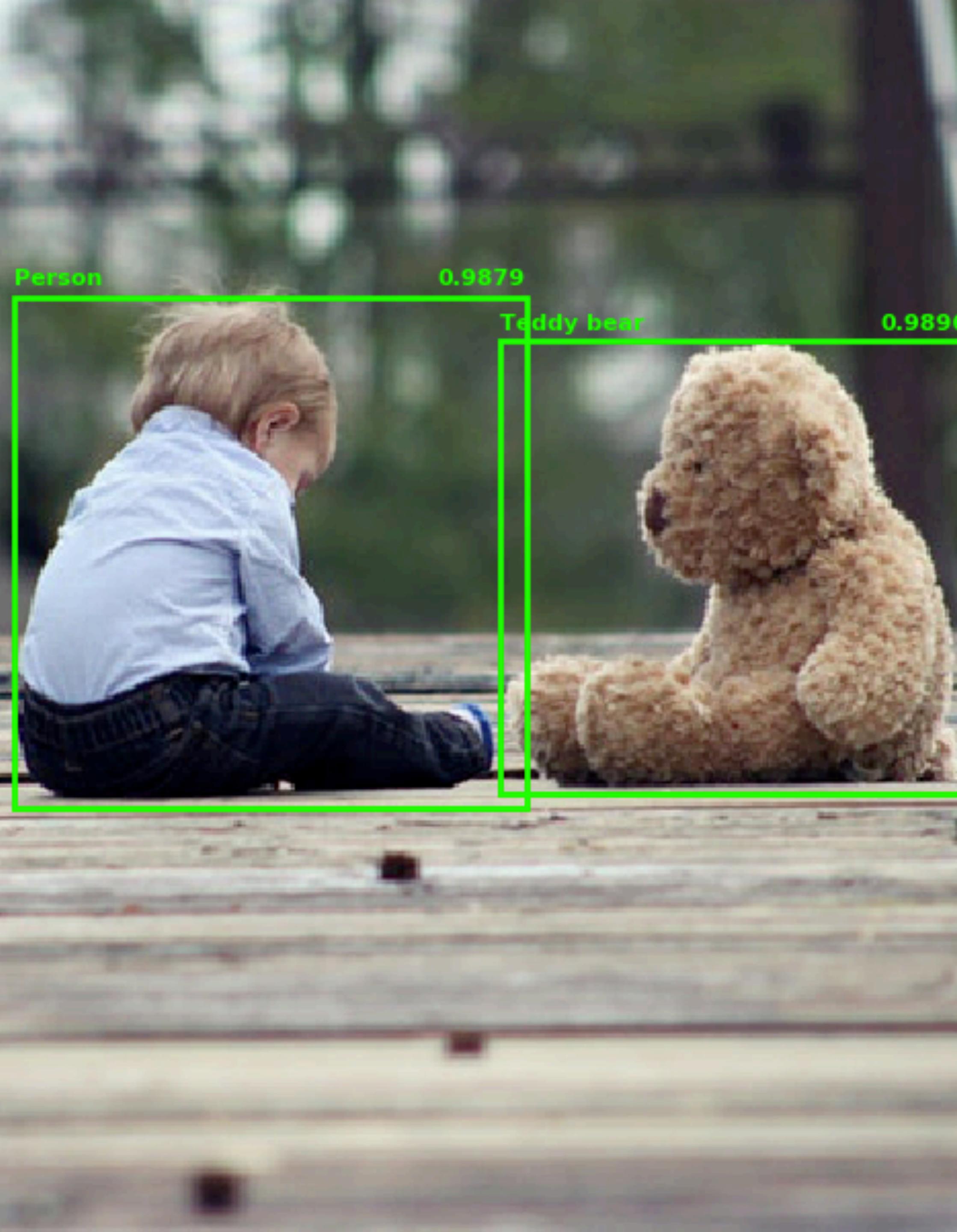


docker

<https://www.docker.com>

Ways of accessing the models





OBJECT DETECTOR

Localize and identify multiple objects in a single image

Model Asset eXchange

Free, deployable, and trainable code. A place for developers to find and use free and open source deep learning models.

Try the tutorial →
Join the community →

Featured Deployable Trainable

Model | Deployable
Toxic Comment Classifier
Detect 6 types of toxicity in user comments
Jun 04, 2019 →

Model | Deployable, Trainable
Text Sentiment Classifier
Detect the sentiment captured in short pieces of text
Mar 29, 2019 →

Model | Deployable, Trainable
Image Segmente
Identify objects in an image, additionally assigning each pixel of the image to a particular object.
Mar 29, 2019 →

Model | Deployable, Trainable
Object Detector
Localize and identify multiple objects in a single image.
Sep 21, 2018 →

Model | Deployable
Audio Classifier
Identify sounds in short audio clips.
Sep 21, 2018 →

Model | Deployable
Image Caption Generator
Generate captions that describe the contents of images.
Sep 21, 2018 →

ibm.biz/model-exchange

Model Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

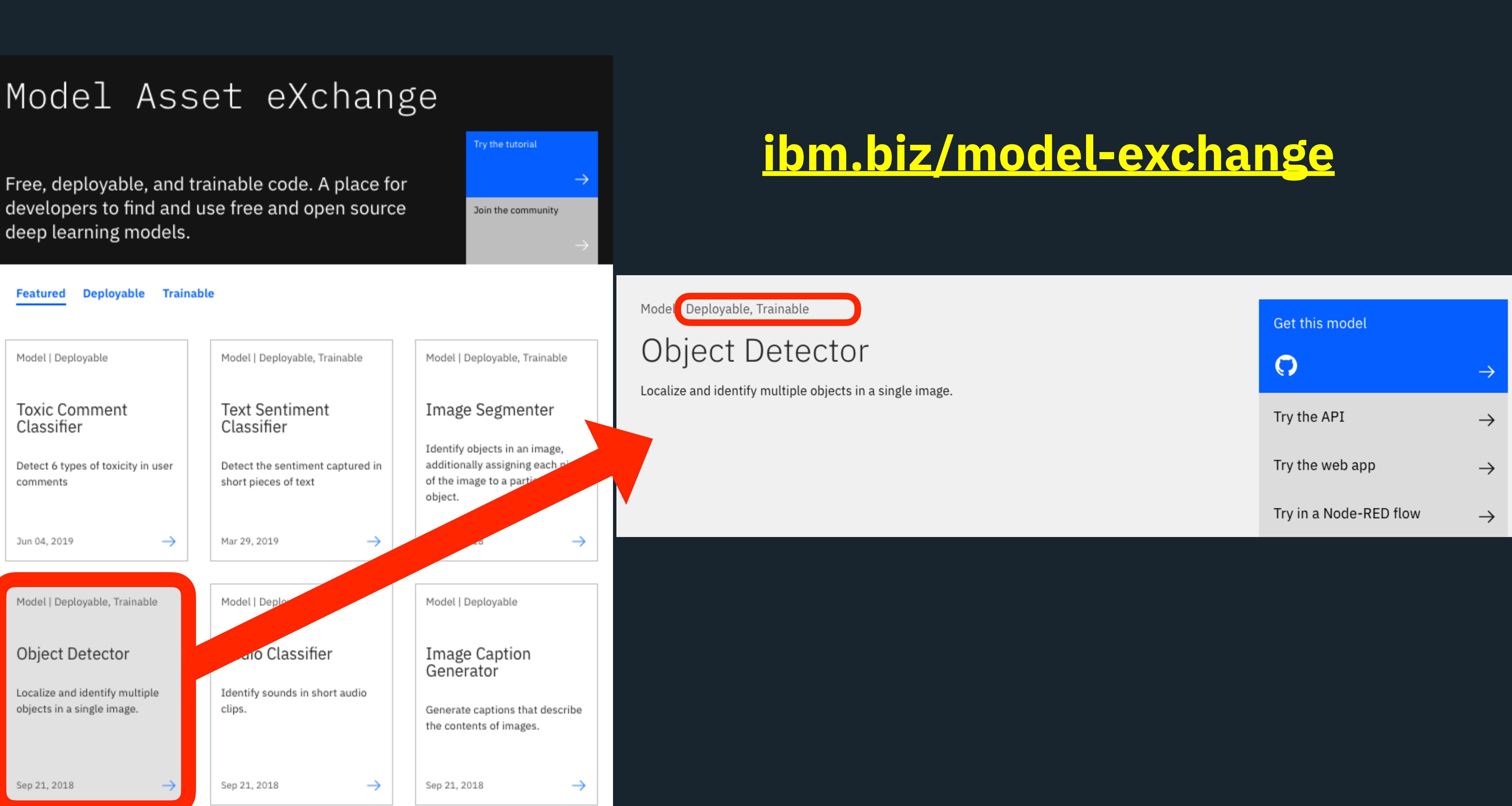
Get this model



Try the API →

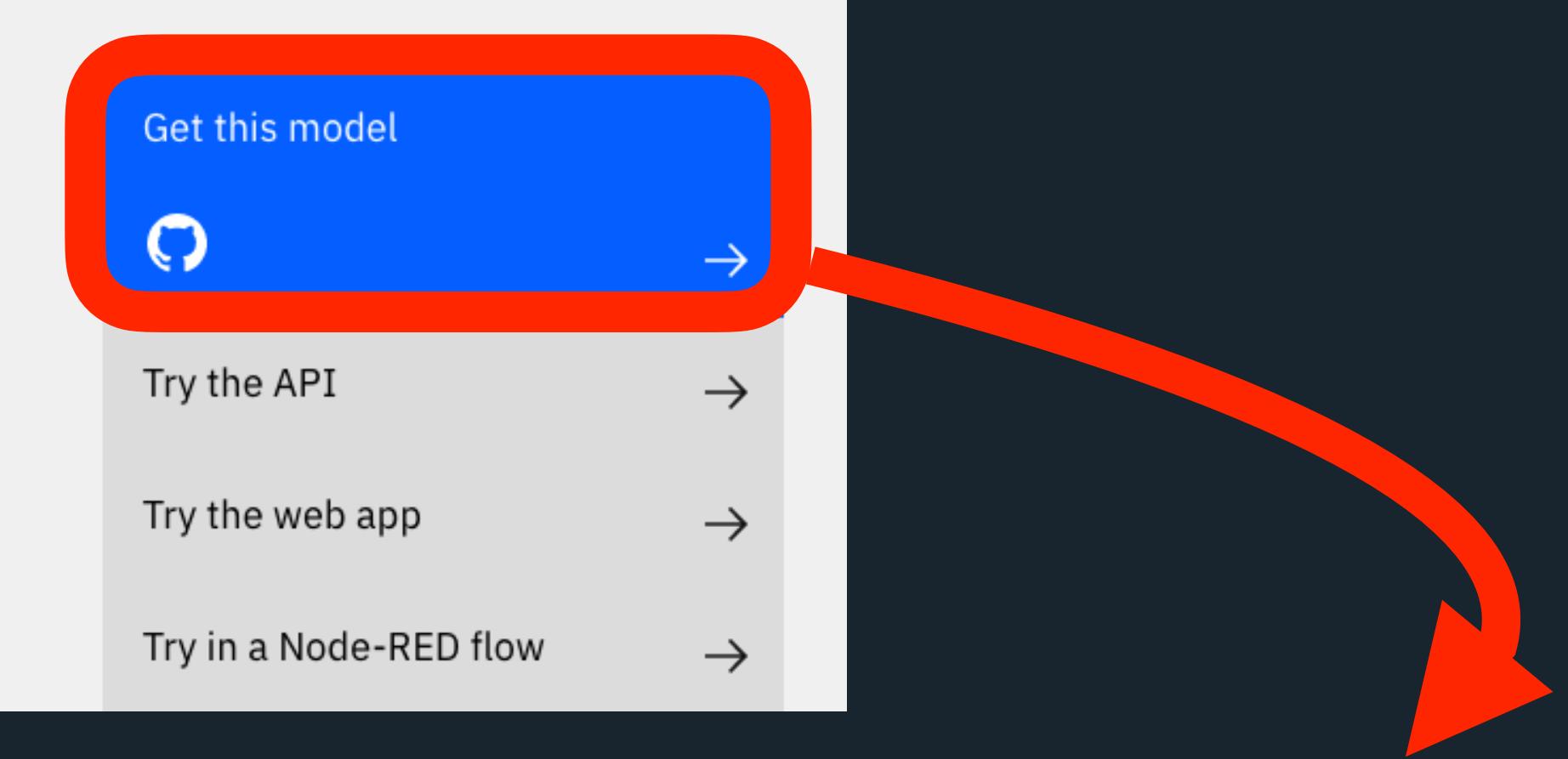
Try the web app →

Try in a Node-RED flow →



Object Detector

Localize and identify multiple objects in a single image.



IBM / MAX-Object-Detector

Code Issues 6 Pull requests 0 Actions Projects 0 Security 0 Insights

Localize and identify multiple objects in a single image. <https://developer.ibm.com/exchanges/m...>

docker-image machine-learning machine-learning-models coco-dataset tensorflow-model

105 commits 4 branches 0 packages 6 releases 18 contributors Apache-2.0

Branch: master New pull request Find file Clone or download ▾

Commit	Description	Date
xuhdev and bdwyer2	Correct metadata output for alternative models (#143) ...	Latest commit 7782a10 4 days ago
api	Add license headers (#55)	11 months ago
core	code cleanup (#64)	10 months ago
docs	[ImgBot] Optimize images (#59)	11 months ago
protos	code cleanup (#64)	10 months ago
samples	Add training test sample image (#119)	3 months ago
tests	Correct metadata output for alternative models (#143)	4 days ago
training	Clarify that the training script only supports the `ssd_mobilenet_v1` ...	11 days ago
utils	code cleanup (#64)	10 months ago

Deployment options

- Deploy from Docker Hub
- Deploy on Red Hat OpenShift
- Deploy on Kubernetes
- Run Locally

Access the API via Swagger

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

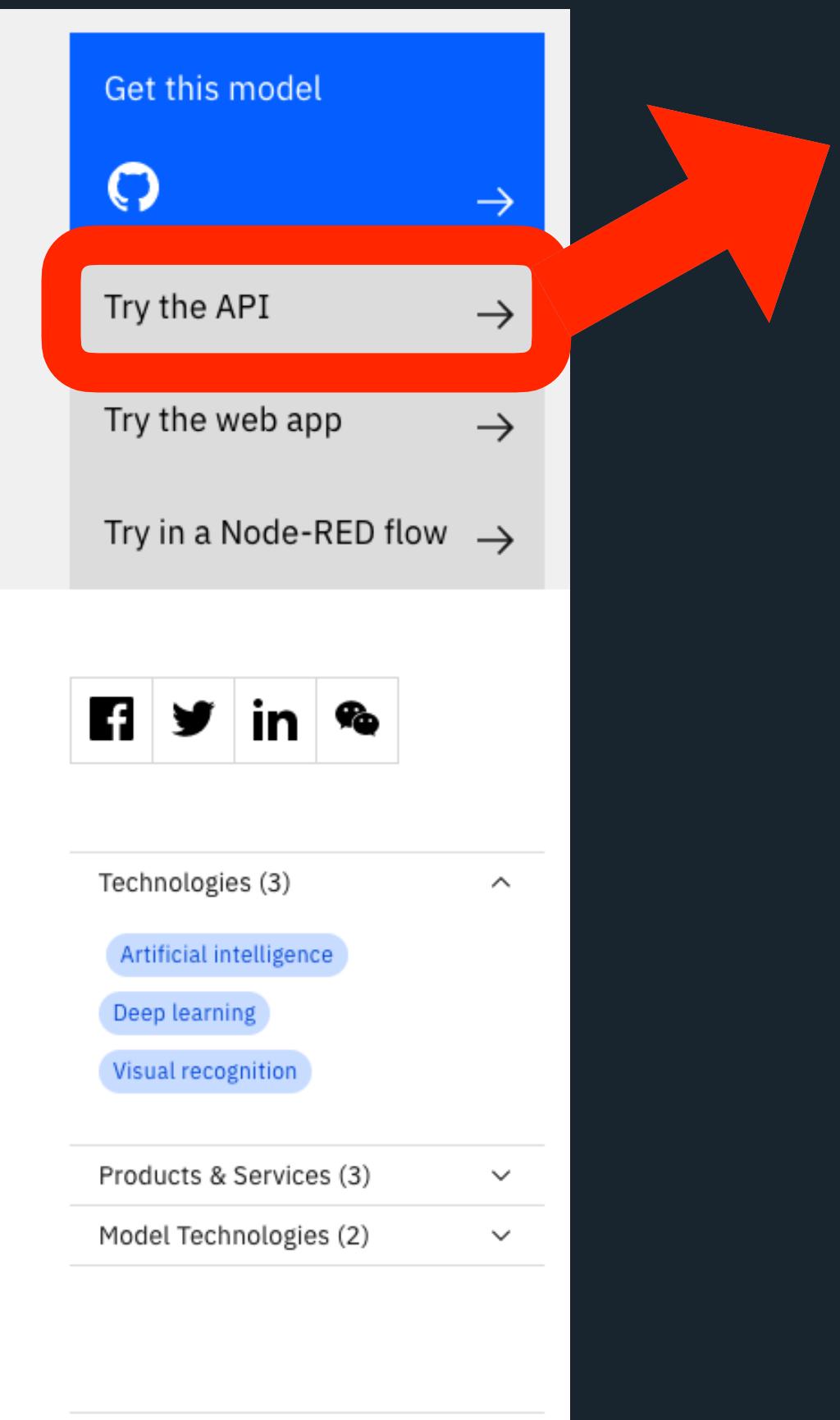
By IBM Developer Staff

Updated September 21, 2018 | Published March 20, 2018

Overview

This model recognizes the objects present in an image from the 80 different high-level classes of objects in the [COCO Dataset](#).

The model consists of a deep convolutional net base model for image feature extraction, together with additional convolutional layers specialized for the task of object detection, that was trained on the COCO data set. The input to the model is an image, and the output is a list of estimated class probabilities for the objects detected in the image. The model is based on the [SSD Mobilenet V1 object detection model for TensorFlow](#).



MAX Object Detector 1.4.0

[Base URL: /]
<http://max-object-detector.codait-prod-41208c73af8fca213512856c7a09db52-0000.us-east.containers.appdomain.cloud/swagger.json>

Localize and identify multiple objects in a single image.

model Model information and inference operations

GET /model/labels Return the list of labels that can be predicted by the model

GET /model/metadata Return the metadata associated with the model

POST /model/predict Make a prediction given input data

POST /model/predict Make a prediction given input data

Parameters

Name Description

image * required An image file (encoded as PNG or JPG/JPEG)
file
(formData)

threshold number (query) Probability threshold for including a detected object in the response in the range [0, 1] (default: 0.7). Lowering the threshold includes objects the model is less certain about.

Responses

Response content type application/json

Curl

```
curl -X POST "http://max-object-detector.max.us-south.containers.appdomain.cloud/model/predict?threshold=0.7" -H "accept: application/json" -H "Content-Type: multipart/form-data" -F "image=@kid-dog.jpeg;type=image/jpeg"
```

Request URL

```
http://max-object-detector.max.us-south.containers.appdomain.cloud/model/predict?threshold=0.7
```

Server response

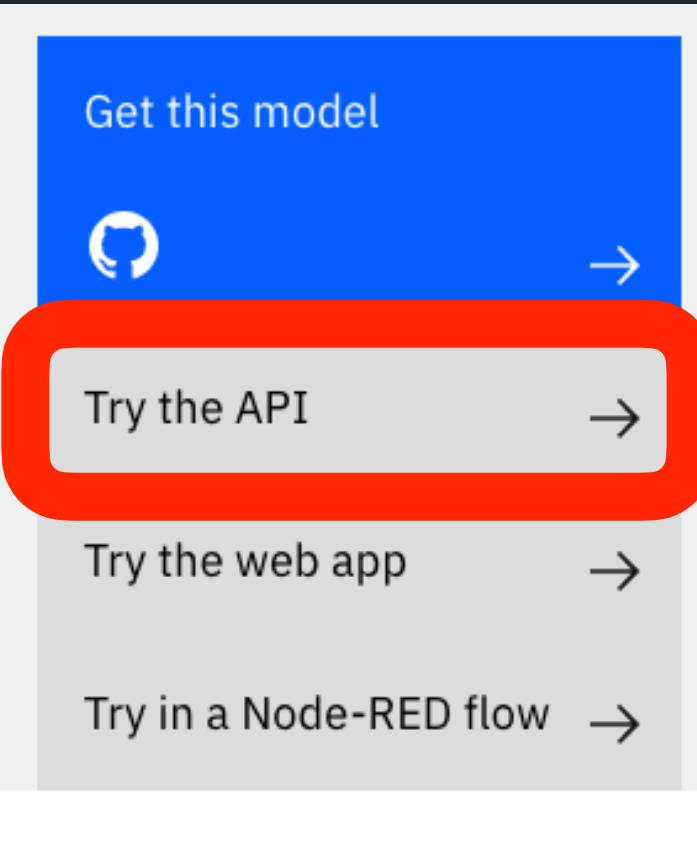
Code	Details
200	Response body
	{ "status": "ok", "predictions": [{ "label_id": "1", "label": "person", "probability": 0.8891462087631226, "detection_box": [0.04557418232421875, 0.07023271918296814, 0.8919000625610352, 0.6151688098907471] }, { "label_id": "18", "label": "dog", "probability": 0.8122376799583435, "detection_box": [0.27457526326179504, 0.5369986295700073, 0.9154078960418701, 0.7918230295181274] }] }

Access the API via Python

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.



```
: # Model
url = 'http://max-object-detector.codait-prod-41208c73af8fca213512856c7a09
db52-0000.us-east.containers.appdomain.cloud/'
model_endpoint = 'model/predict'
complete_url = url + model_endpoint

# Upload an image to the MAX model's rest API
path_to_input_image = 'baby-bear.jpg'

with open(path_to_input_image, 'rb') as file:
    file_form = {'image': (path_to_input_image, file, 'image/jpeg')}
    # Post the image to the rest API using the requests library
    r = requests.post(url=complete_url, files=file_form)
    # Return the JSON
    response = r.json()

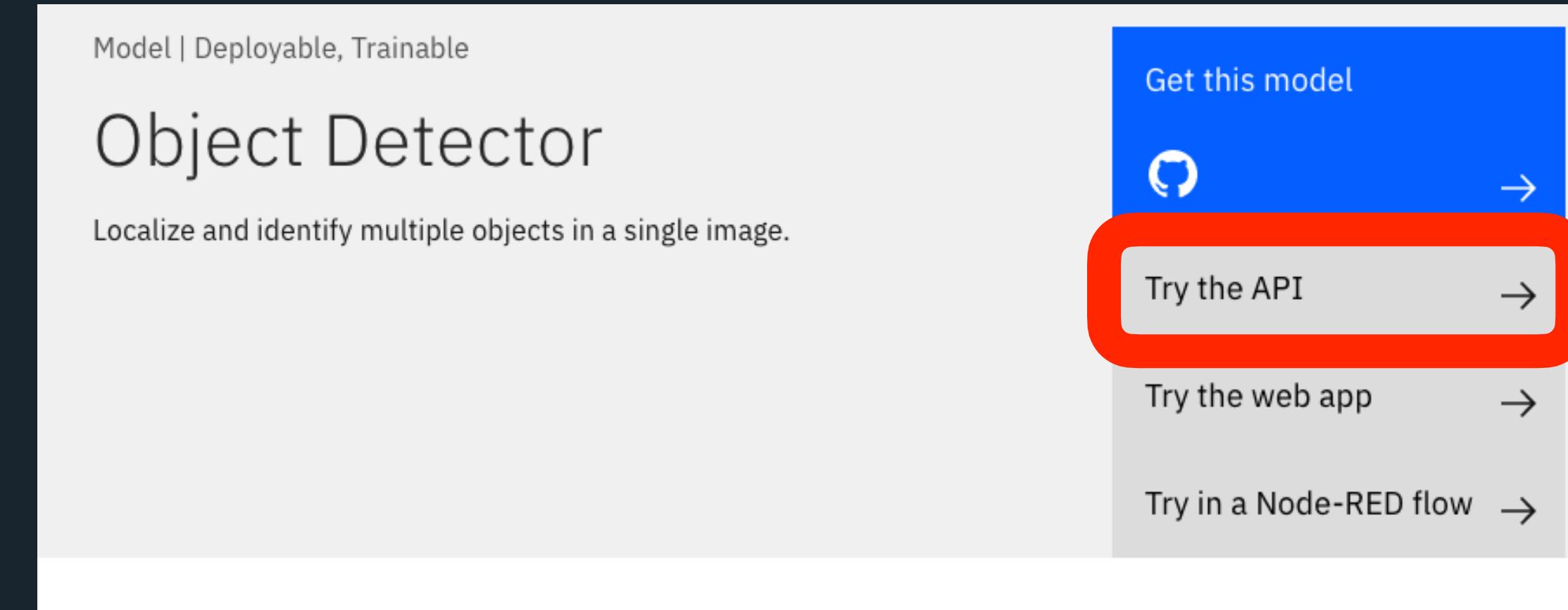
IPython.display.Image(path_to_input_image, width = 450)
```

response

```
{'status': 'ok',
'predictions': [{label_id': '88',
'label': 'teddy bear',
'probability': 0.9896332025527954,
'detection_box': [0.27832502126693726,
0.5611844062805176,
0.643224835395813,
0.8432191610336304]},
{'label_id': '1',
'label': 'person',
'probability': 0.9879012107849121,
'detection_box': [0.24251867830753326,
0.26926860213279724,
0.655893087387085,
0.5768759250640869]}]}
```

Try yourself here:
ibm.biz/max-notebook

Access the API via R



```
library(dplyr)
library(httr)

# Endpoint
endpoint <- 'http://max-object-detector.codait-prod-41208c73af8fca213512856c7a09db52-0000.us-east.containers.appdomain.cloud/'
# endpoint <- 'http://localhost:5000' # if running docker locally or docker hub

object_detector <- function(path_to_img, endpoint) {
  model_endpoint <- paste0(endpoint, 'model/predict') # Model endpoint
  # POST
  response <- httr::POST(url = model_endpoint,
                           body = list(image = upload_file(path_to_img,
                                                             type = "image/jpeg")),
                           encode = c("multipart"))
  ) %>% content()
  response$predictions
}

# Get the image file from GH
download.file(url = "http://github.com/IBM/MAX-Object-Detector/blob/master/samples/baby-bear.jpg?raw=true",
              'baby-bear.jpg', mode = 'wb')

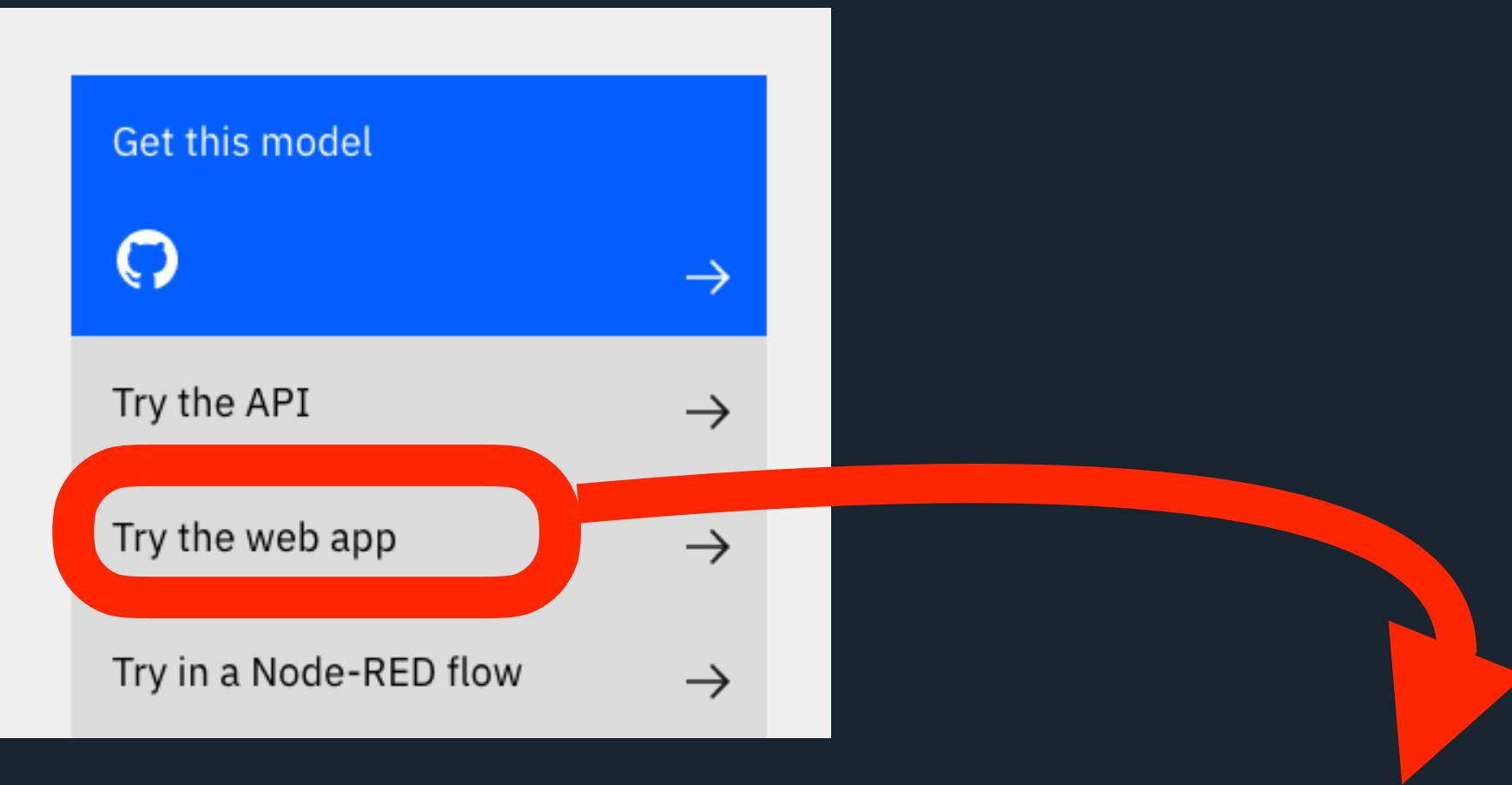
object_detector("baby-bear.jpg", endpoint)
```

Access the API via Web App

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

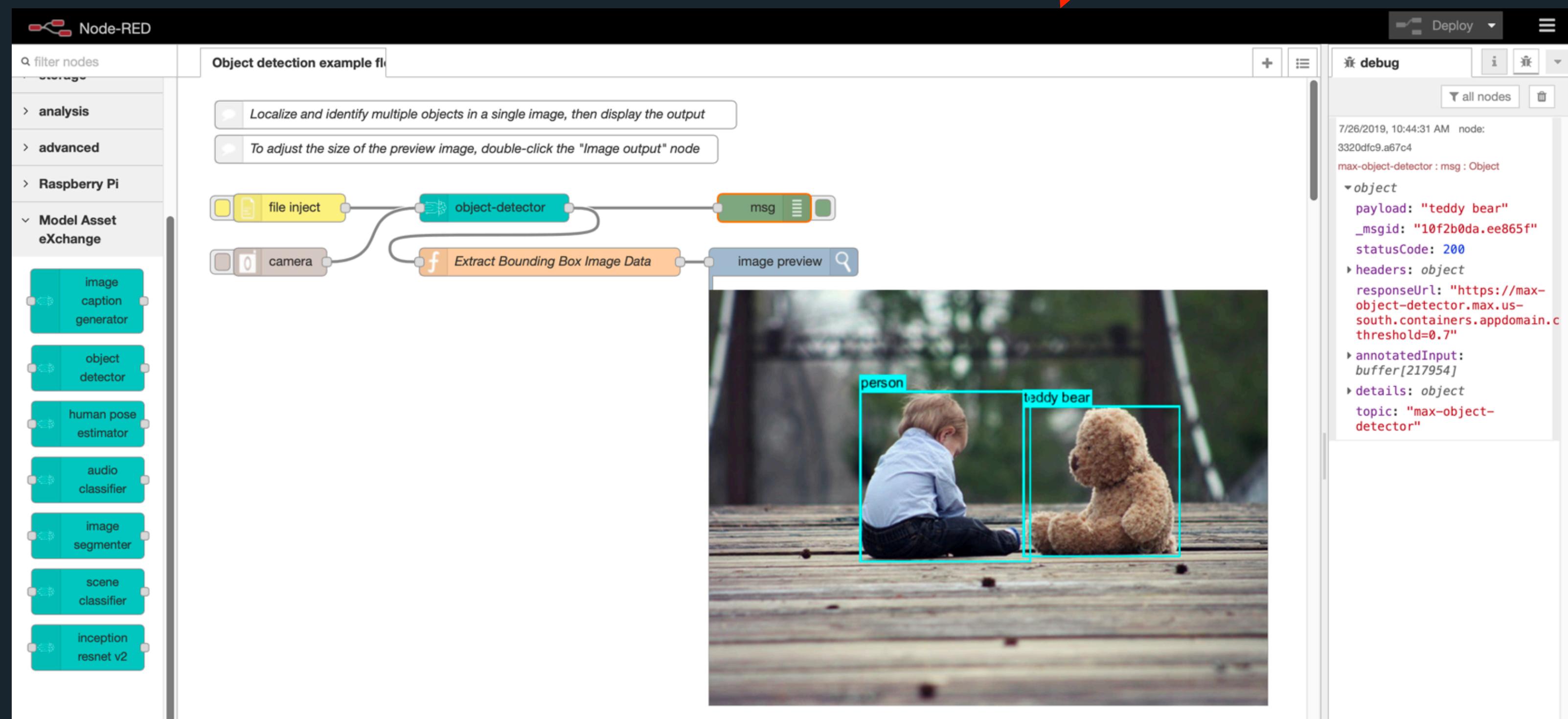
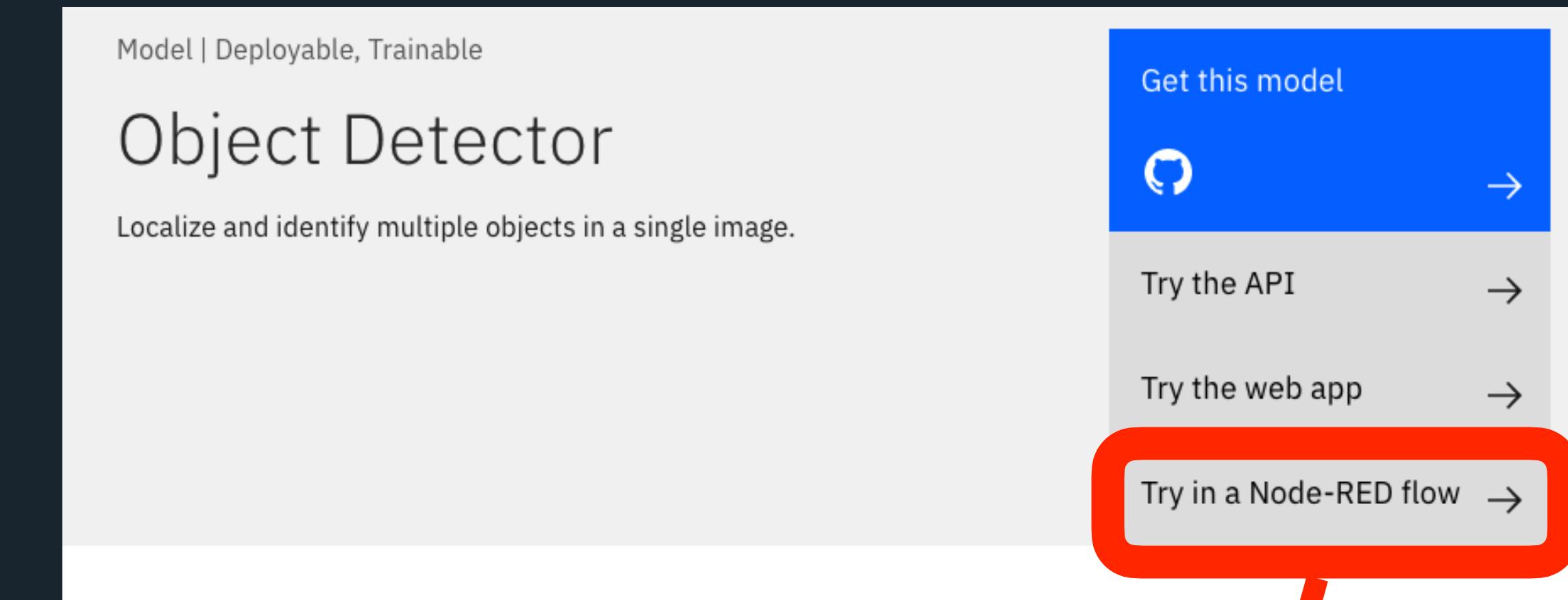


The screenshot displays the MAX Object Detector web application. At the top left is a logo featuring a brain and a bar chart. Next to it is the text "MAX Object Detector". To the right are three main sections: "Upload an image" with a "Choose File" input, a "Submit" button, and a "Use your webcam" button; "Filter detected objects" with a "Probability Threshold" slider set at 70%; and "Labels Found" which lists "person" and "dog". Below these sections is a photograph of a woman sitting on the grass with a dog. Green bounding boxes around the woman and dog are labeled "person : 88.9%" and "dog : 81.2%" respectively.

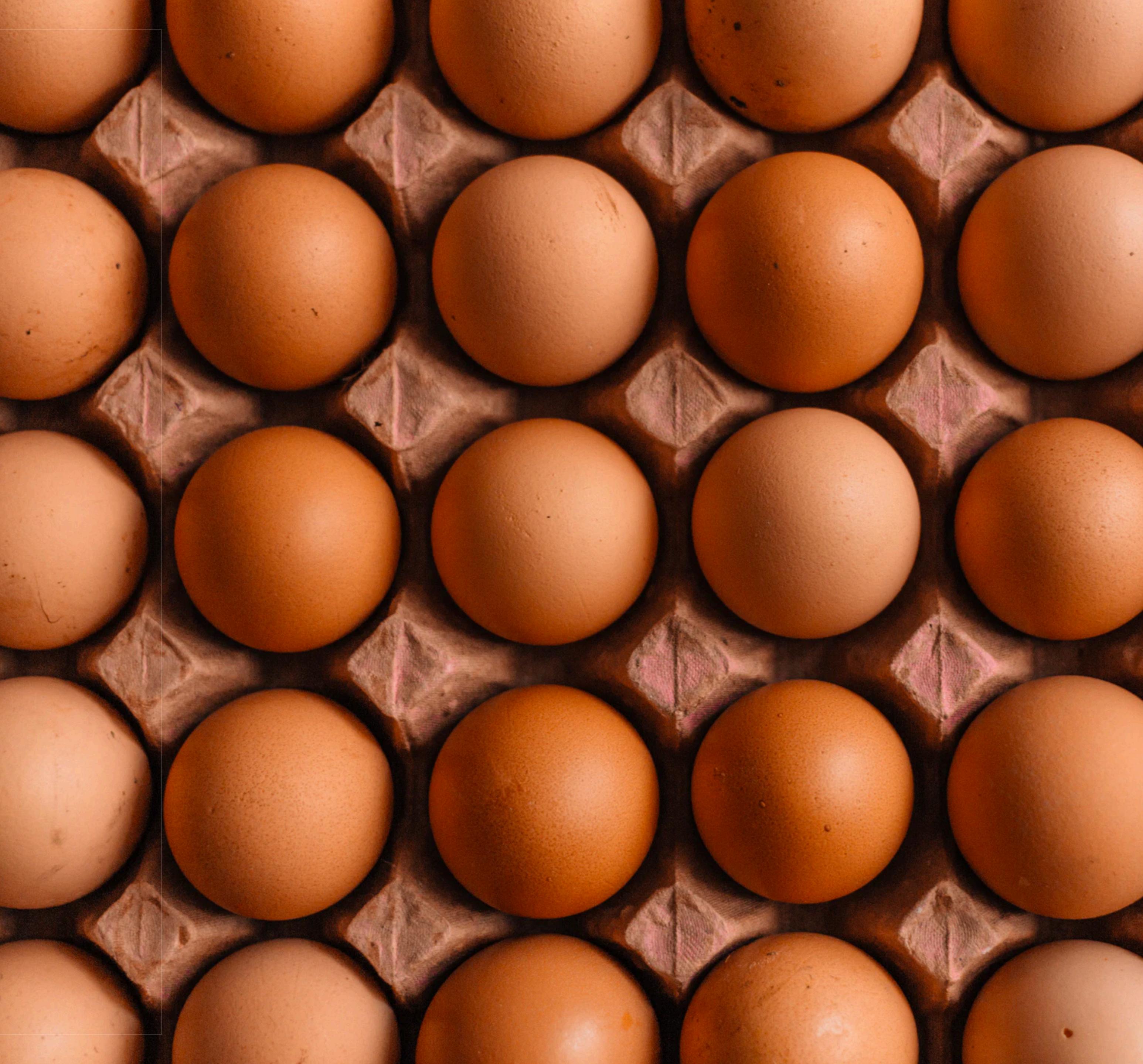
Try yourself here:
ibm.biz/object-detector-webapp

Other ways...

- using cURL
- Node-RED flow
- CodePen
- Serverless app



All this in a
standardized way



Overview

This model recognizes the objects present in an image from the 80 different high-level classes of objects in the [COCO Dataset](#). The model consists of a deep convolutional net base model for image feature extraction, together with additional convolutional layers specialized for the task of object detection, that was trained on the COCO data set. The input to the model is an image, and the output is a list of estimated class probabilities for the objects detected in the image.

The model is based on the [SSD Mobilenet V1 object detection model for TensorFlow](#).

Model Metadata

Domain	Application	Industry	Framework	Training Data	Input Data Format
Vision	Object Detection	General	TensorFlow	COCO Dataset	Image (RGB/HWC)

References

- *J. Huang, V. Rathod, C. Sun, M. Zhu, A. Korattikara, A. Fathi, I. Fischer, Z. Wojna, Y. Song, S. Guadarrama, K. Murphy, “Speed/accuracy trade-offs for modern convolutional object detectors”, CVPR 2017*
- *Tsung-Yi Lin, M. Maire, S. Belongie, L. Bourdev, R. Girshick, J. Hays, P. Perona, D. Ramanan, C. Lawrence Zitnick, P. Dollár, “Microsoft COCO: Common Objects in Context”, arXiv 2015*
- *W. Liu, D. Anguelov, D. Erhan, C. Szegedy, S. Reed, C. Fu, A. C. Berg, “SSD: Single Shot MultiBox Detector”, CoRR (abs/1512.02325), 2016*
- *A.G. Howard, M. Zhu, B. Chen, D. Kalenichenko, W. Wang, T. Weyand, M. Andreetto, H. Adam, “MobileNets: Efficient Convolutional Neural Networks for Mobile Vision Applications”, arXiv 2017*
- [TensorFlow Object Detection GitHub Repo](#)

Licenses

Component	License	Link
Model GitHub Repository	Apache 2.0	LICENSE
Model Weights	Apache 2.0	TensorFlow Models Repo
Model Code (3rd party)	Apache 2.0	TensorFlow Models Repo
Test Assets	CC0	Samples README

BEHIND THE SCENES

Find* a state-of-art open source deep learning model specific to domain

Validate license terms

Perform model health check & code clean up

Wrap models in MAX framework and provide REST API

Publish the deployable model as Docker images on Docker Hub

Use the MAX training framework to create an image for custom model training

Review and Continuous Integration

* or build from scratch

And if you are
feeling
adventurous...



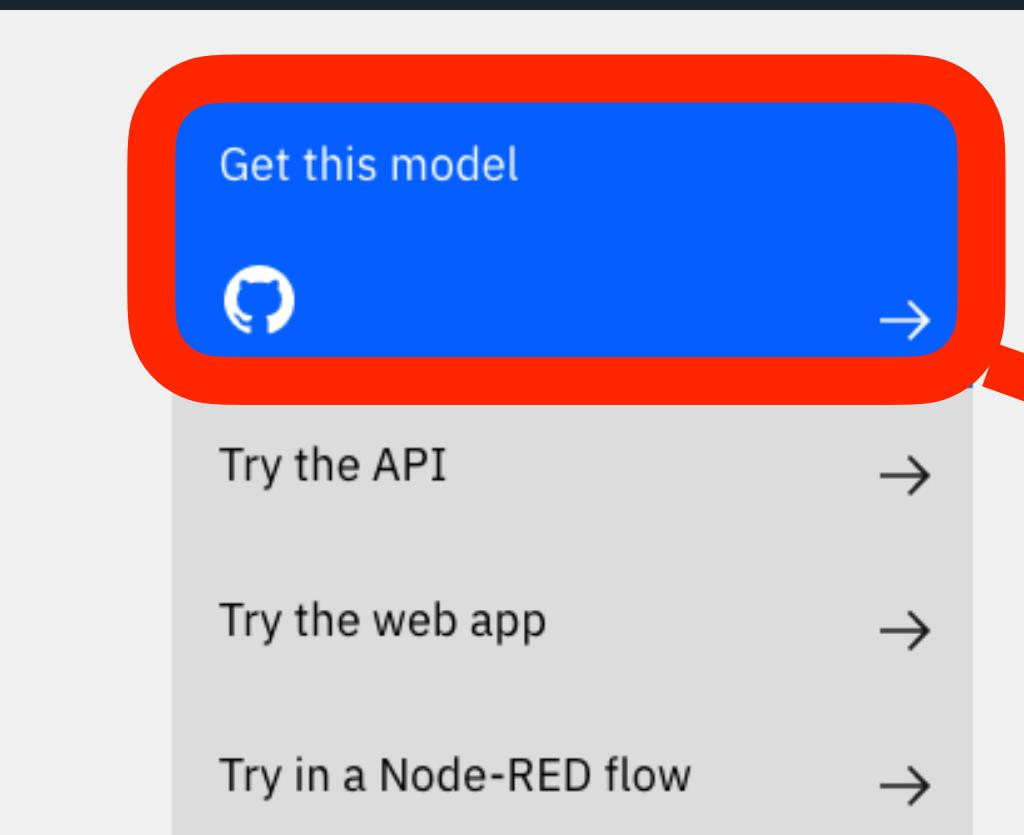
You can train your model using your own data



Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.



A screenshot of a GitHub repository page for 'IBM / MAX-Object-Detector'. The repository has 33 stars, 53 forks, and 33 issues. It includes tabs for Code, Issues (3), Pull requests (1), Actions, Projects (0), Wiki, Security, Insights, and Settings. The description reads: 'Localize and identify multiple objects in a single image. <https://github.com/IBM/MAX-Object-Detector>'.

The repository has 62 commits, 3 branches, 0 packages, 4 releases, 17 contributors, and is licensed under Apache-2.0. The commit history shows several contributions, with one commit by 'ptitzler' highlighted with a red box and another by 'api' highlighted with a red box. The latest commit was made 5 hours ago.

Author	Commit Message	Time Ago
ptitzler	use training framework package (#78)	Latest commit 0bb2727 5 hours ago
api	Add license headers (#55)	4 months ago
core	code cleanup (#64)	3 months ago
docs	[ImgBot] Optimize images (#59)	4 months ago
protos	code cleanup (#64)	3 months ago
samples	WML Training (#61)	2 months ago
tests	WML Training (#61)	2 months ago
training	use training framework package (#78)	5 hours ago
utils	code cleanup (#64)	3 months ago



How to Train Object Detector Model Using Your Own Data

- [Collect Data for Training](#)
- [Train the Model](#)
- [Rebuild the Model-Serving Microservice](#)

Collect Data for Training

Collect RGB images encoded as jpeg or png containing objects that need to be detected. Make sure the training images have large variations in angle, resolution, lighting and background so that they generalize well with the test data. Use a reasonably large number of images per class to provide better results.

Train the Model

- [Install Local Prerequisites](#)
- [Run the Setup Script](#)
- [Prepare Data for Training](#)
- [Customize Training](#)
- [Train the Model Using Watson Machine Learning](#)



How do I get started?

ibm.biz/max-tutorial

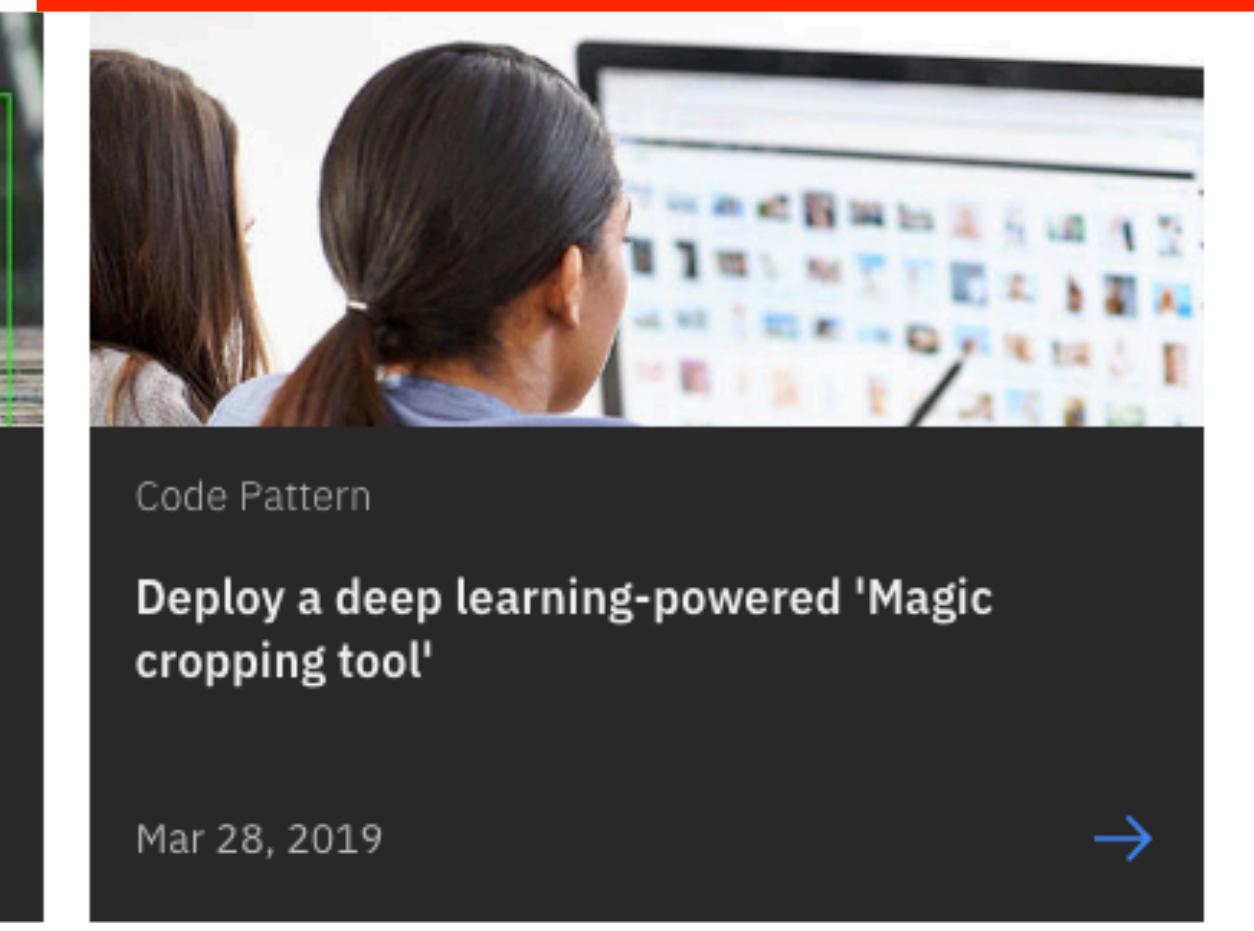
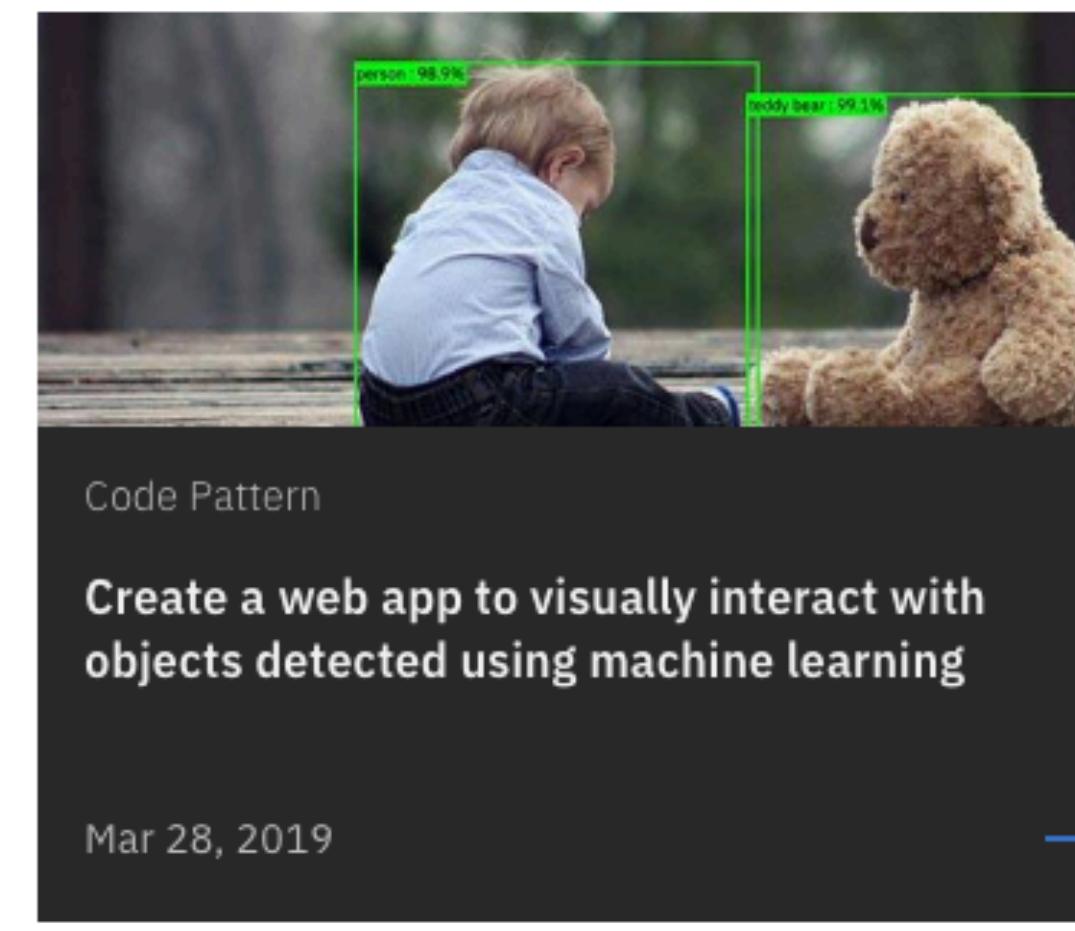
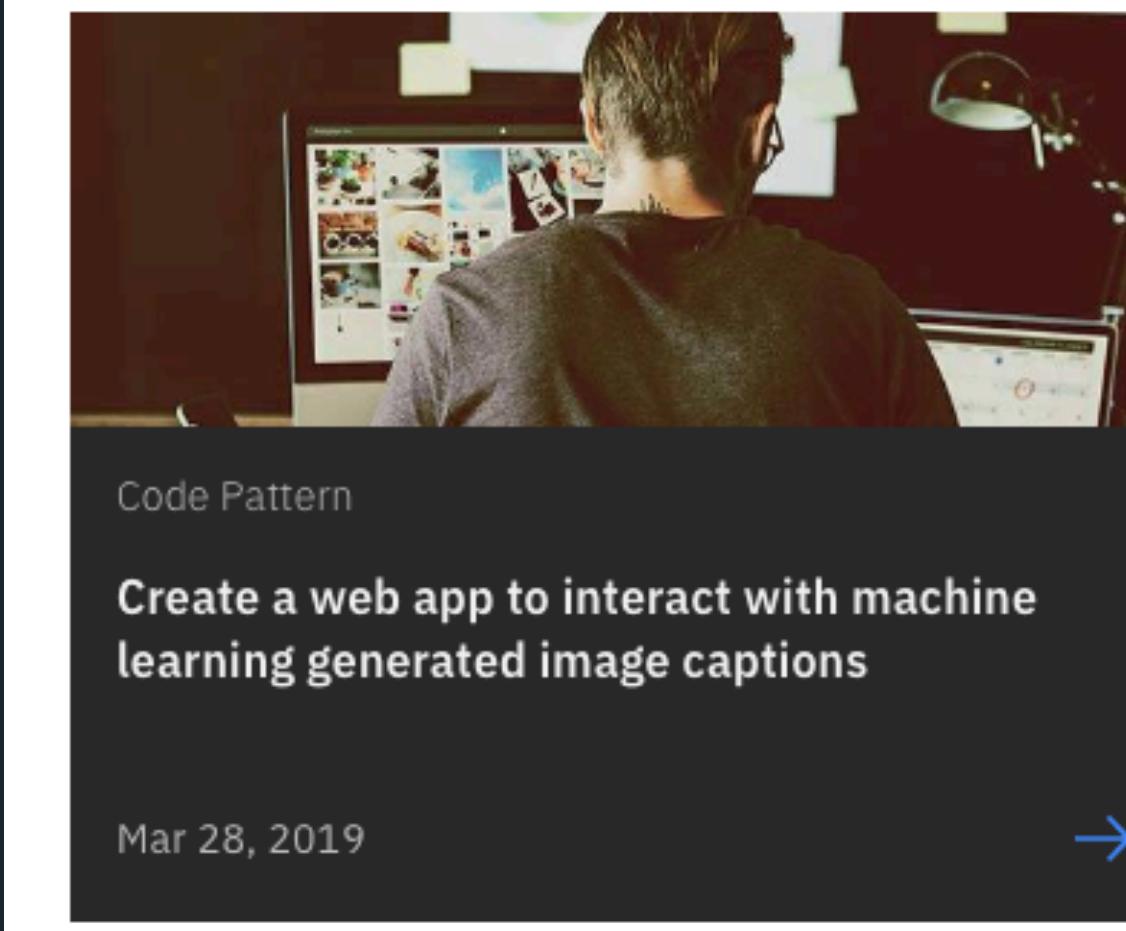
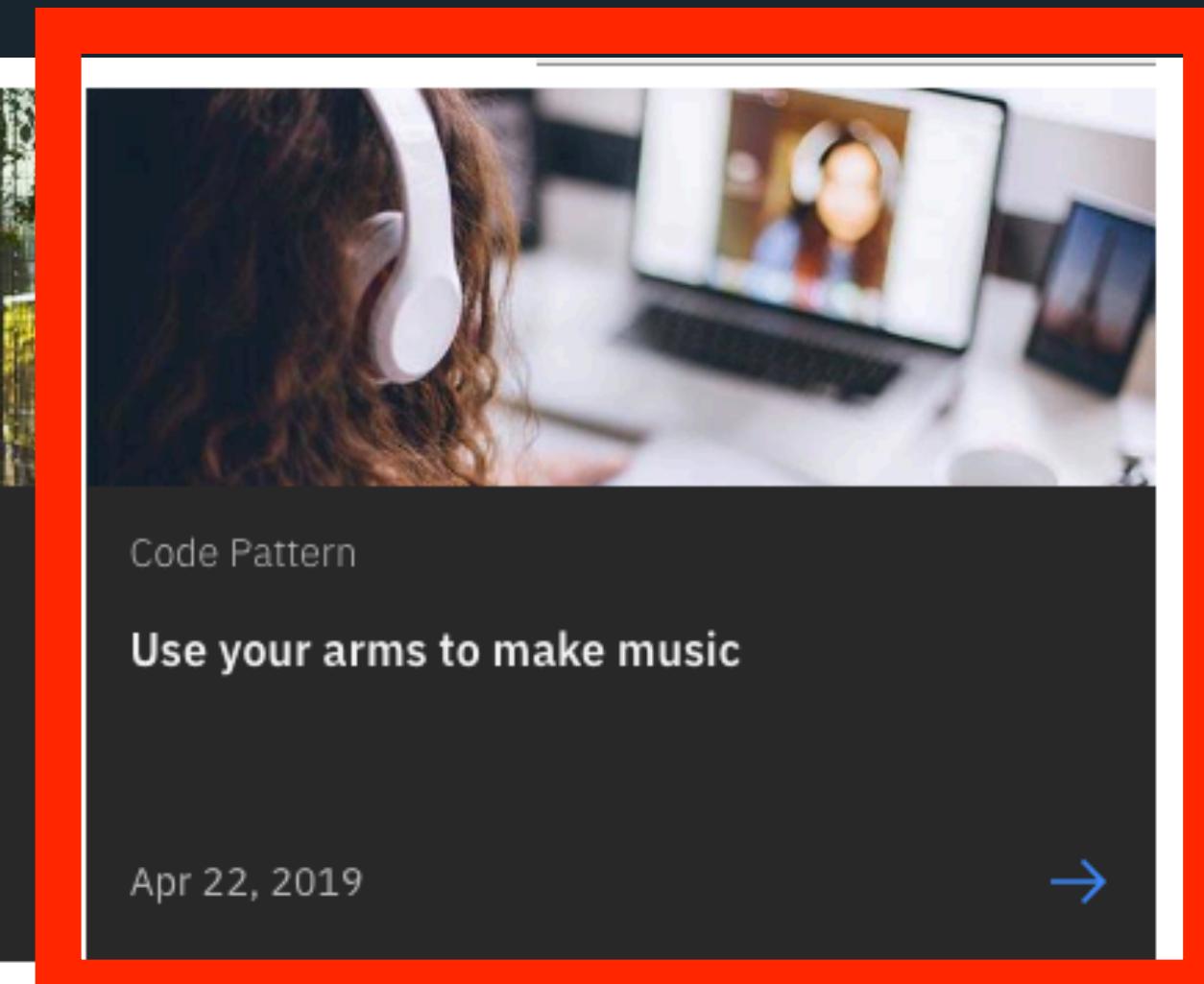
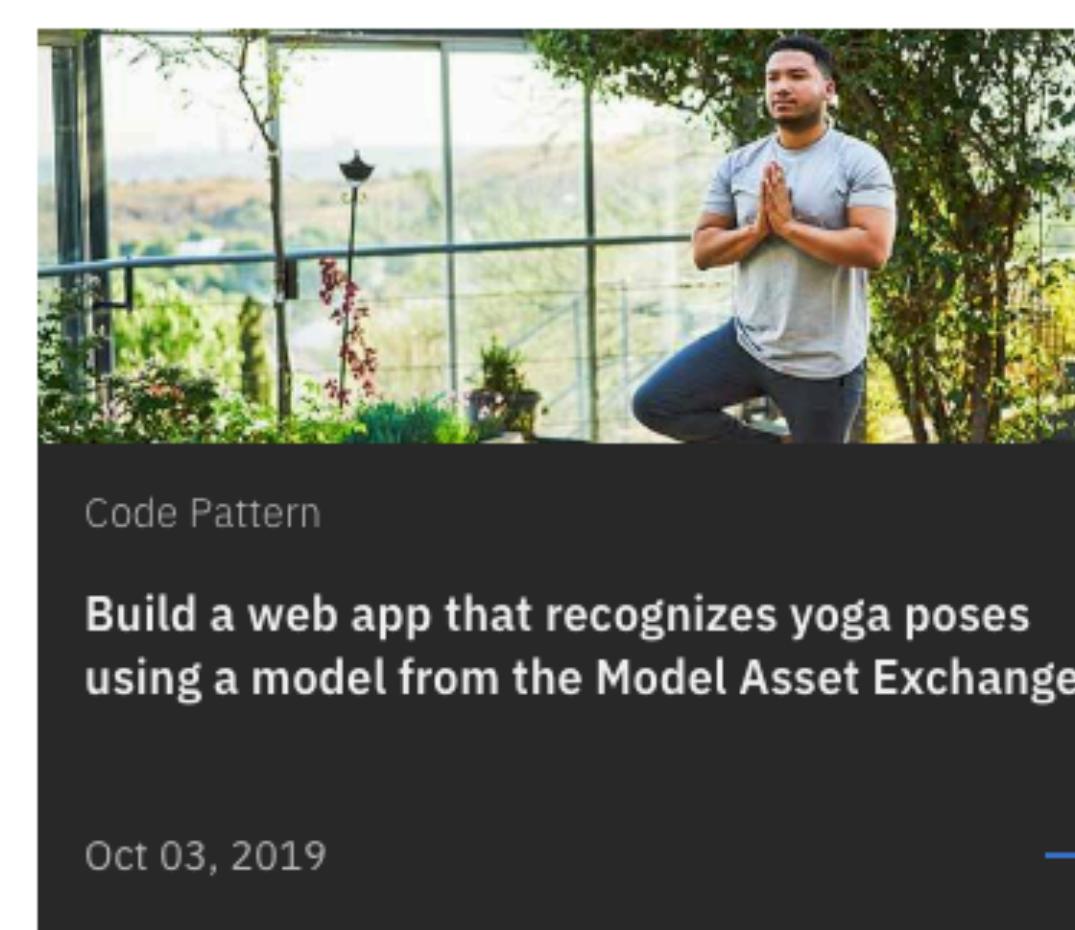
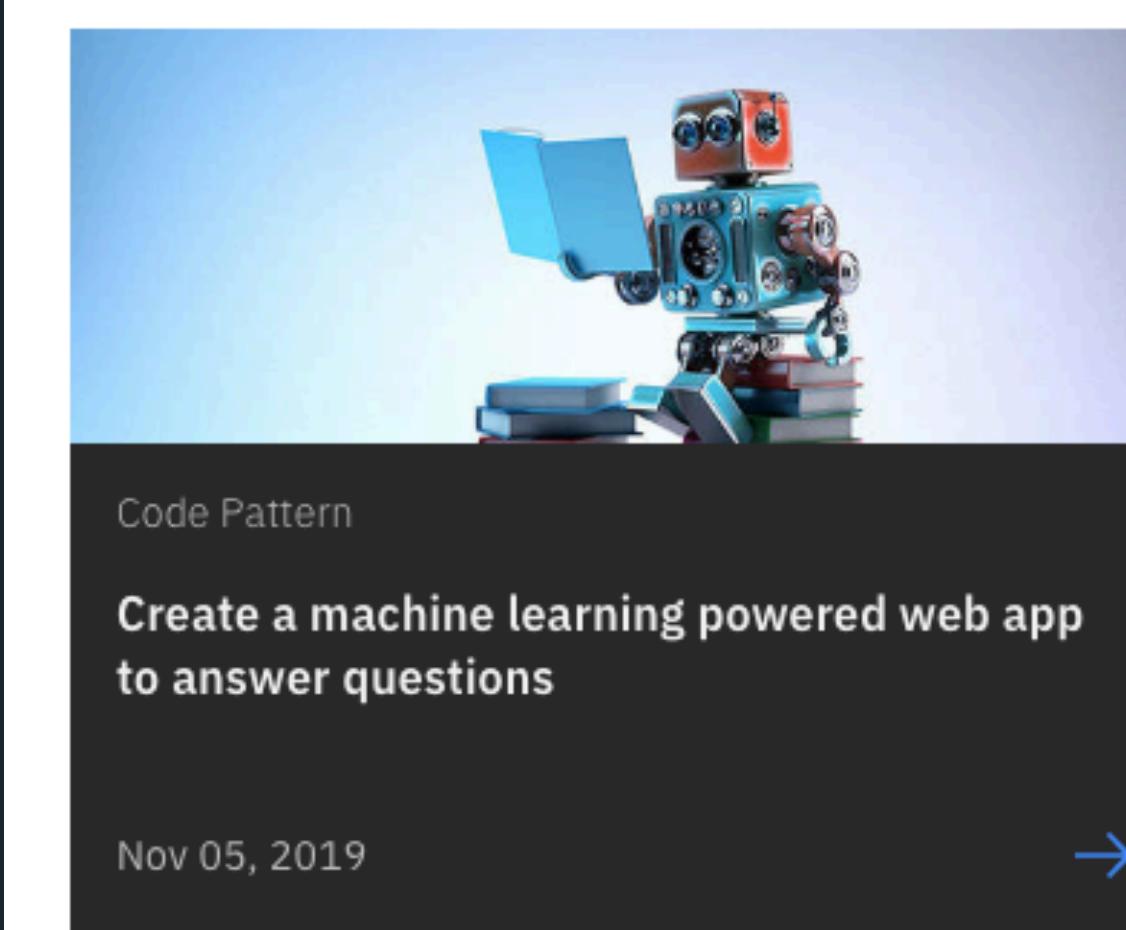
Series

Learning Path: An introduction to the Model Asset Exchange

Learn how to use state-of-the-art deep learning models in your applications or services

Code Patterns

How to easily consume MAX models



Use your arms to make music

Create music with your arms using the **Model Asset eXchange (MAX) human pose estimator** model and **TensorFlow**



Theremin

Musical instrument

The theremin is an electronic musical instrument controlled without physical contact by the thereminist. It is named after its inventor, Léon Theremin, who patented the device in 1928. [Wikipedia](#)

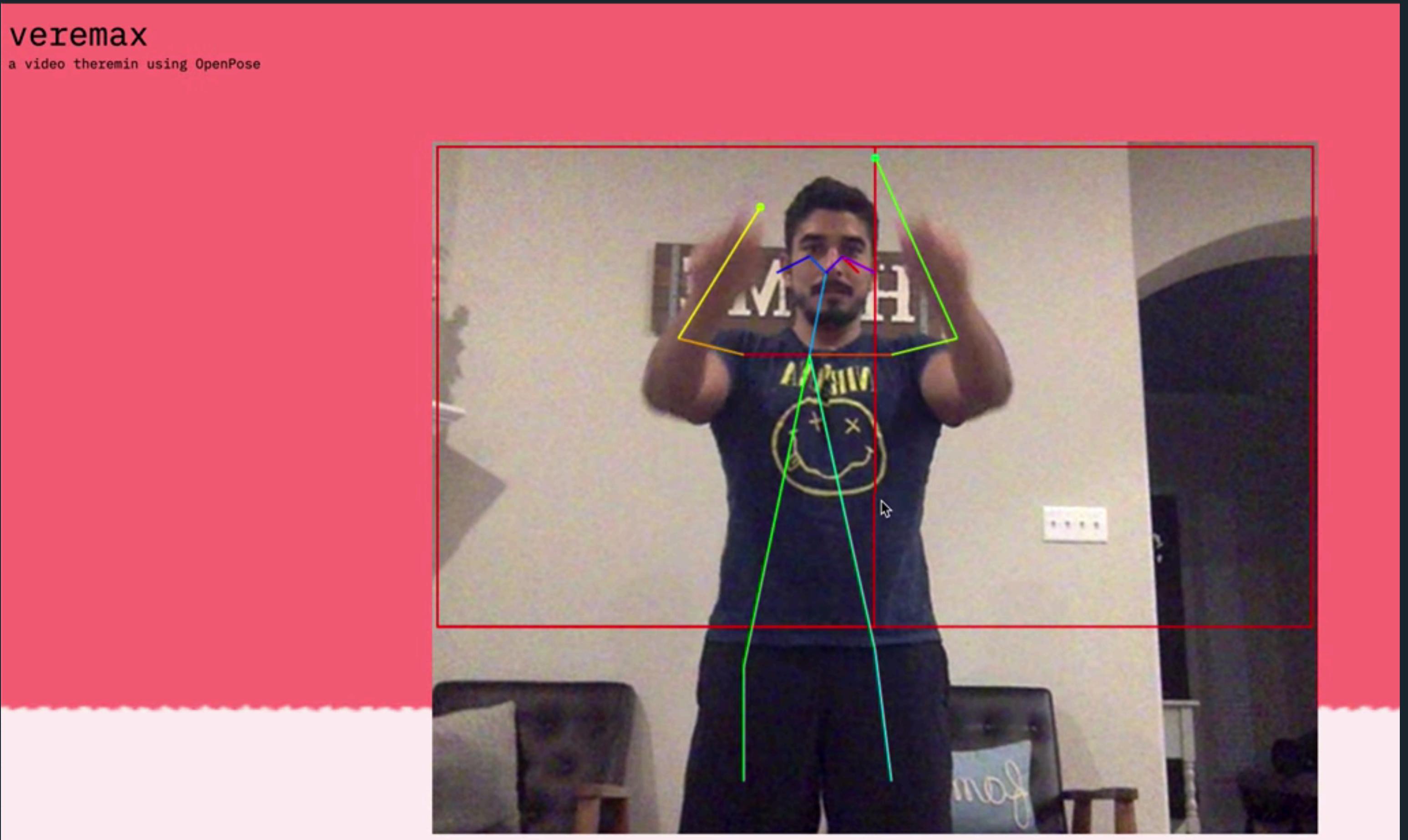
Instrument family: [Electronic Musical Instruments](#), [Musical Keyboards](#)

Invented: 1920

Related instrument: [Ondes Martenot](#), [Electro-Theremin](#)

Inventor: [Léon Theremin](#)

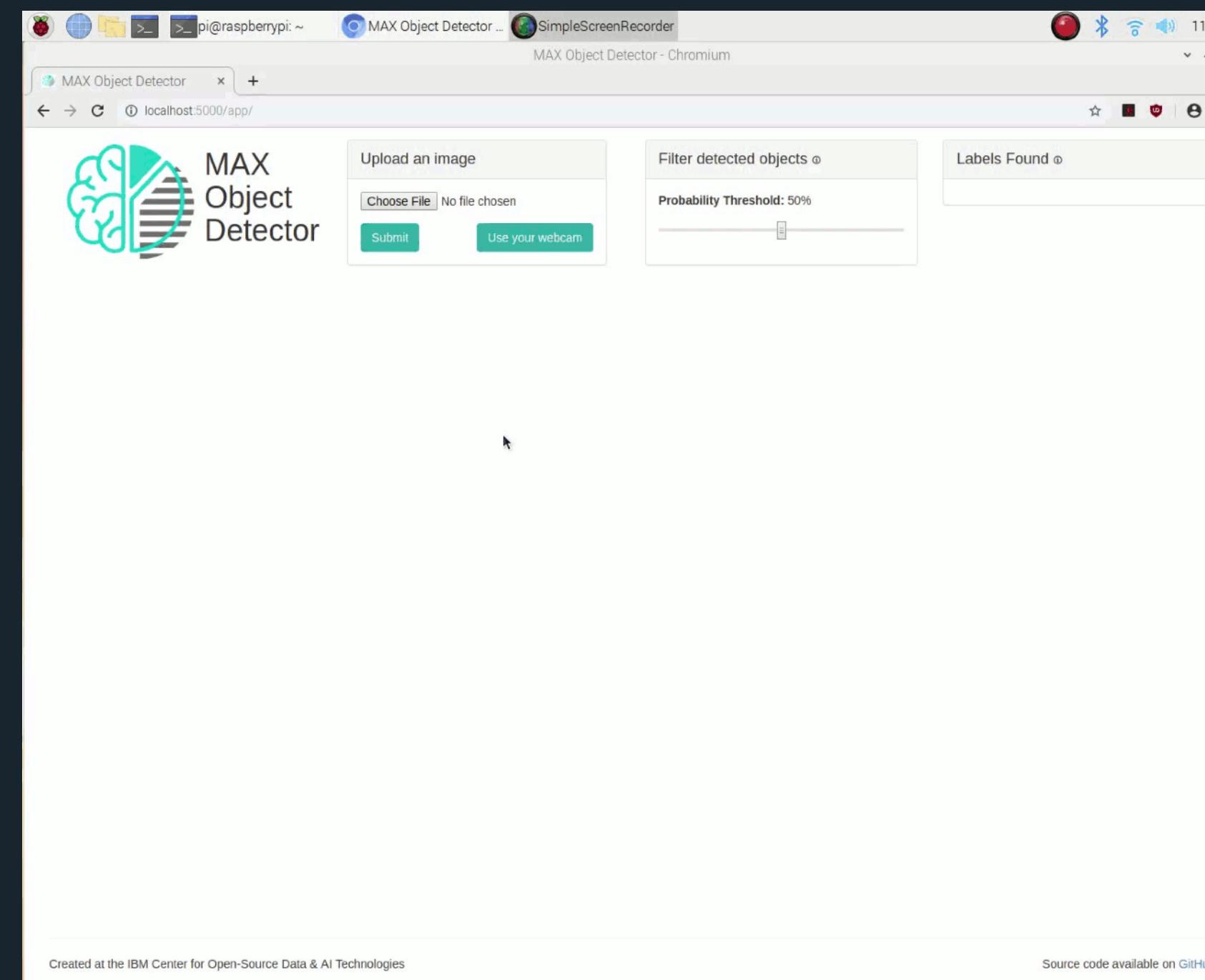
Hornbostel-Sachs classification: 531.1; (Electrophone)



Blog Post

Running MAX deep learning models on Raspberry Pi

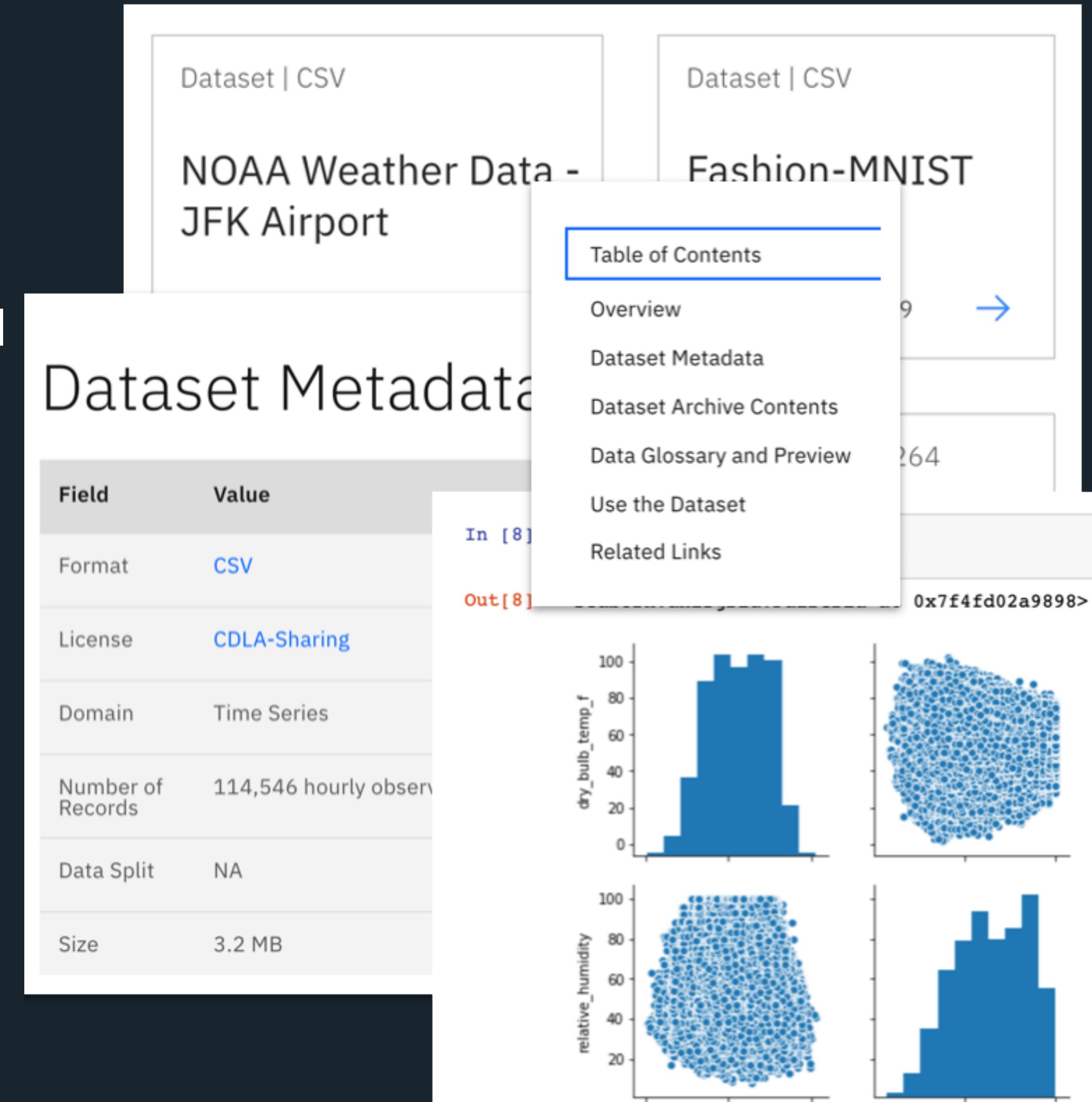
Explore some problems with deep learning applications, then see how deep learning on a Raspberry Pi can solve them.



Data Asset eXchange (DAX)

- Curated repository for **open** datasets from IBM Research and third-parties
- Published under data friendly licenses
- Standardized dataset formats and metadata
- Many data sets include starter notebooks (cleansing, data exploration, analysis)

ibm.biz/data-exchange



Data Asset eXchange (DAX)

CDLA – Permissive | PNG, JSON

PubTabNet

PubTabNet is a large dataset for image-based table recognition, containing 568k+ images of tabular data annotated with the corresponding HTML representation of the tables.

By Xu Zhong, Elaheh ShafieiBavani, Antonio Jimeno Yepes

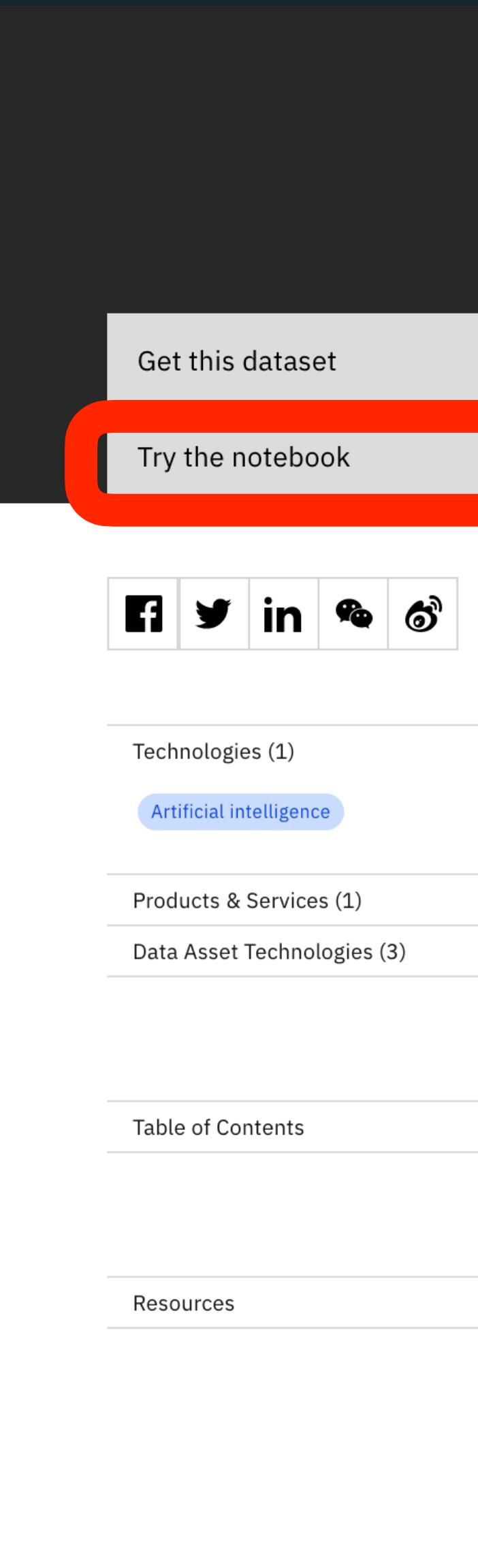
Published November 11, 2019

Overview

PubTabNet contains heterogeneous tables in both image and HTML format. PubTabNet can be used to train and evaluate image-based table recognition models. The model needs to recognize both the structure and the content of the tables, and be able to reconstruct the HTML representation of the tables solely relying on the table images. The HTML representation encodes both the structure of the tables and the content in each table cell. The source of the tables is PubMed Central Open Access Subset (commercial use collection). The tables (in both image and HTML format) are automatically extracted by matching the PDF format and the XML format of the articles in the PubMed Central Open Access Subset.

Dataset Metadata

Format	License	Domain	Number of Records	Size	Originally Published
PNG JSON	CDLA – Permissive	Computer Vision	568k+ images	30GB	2019-11-01



ibm.biz/data-exchange

PubTabNet Dataset

PubTabNet is a large dataset for image-based table recognition, containing 568k+ images of tabular data annotated with the corresponding HTML representation of the tables.

The dataset is open sourced by IBM Research Australia and is [available to download freely](#) on the IBM Developer [Data Asset Exchange](#).

This notebook can be found on [GitHub](#) and [Watson Studio](#).

```
In [1]: # importing prerequisites
import sys
import requests
import tarfile
import json
import numpy as np
from os import path
from PIL import Image
from PIL import ImageFont, ImageDraw
from glob import glob
from matplotlib import pyplot as plt
%matplotlib inline
```

[**ibm.biz/dax-tutorial**](http://ibm.biz/dax-tutorial)

Tutorial

Get started with the Data Asset eXchange

DAX offers a trusted source for open data sets for AI that are ready to use in enterprise AI applications

IBM continues momentum in AI and trust leadership

The AI Fairness 360 toolkit is becoming even more accessible for a wider range of developers

<http://aif360.mybluemix.net/>

R package: ibm.biz/aif360r

slides: bit.ly/dsse-dl

Adding new functionalities to AI Fairness 360

Now, IBM is adding two new ways in which AIF360 is becoming even more accessible for a wider range of developers, as well as increased functionality: compatibility with scikit-learn and R.

R users can now use the AI Fairness 360 toolkit

AI fairness is an important topic as machine learning models are increasingly used for high-stakes decisions. Machine learning discovers and generalizes patterns in the data and therefore, could replicate systematic advantages of privileged groups. To ensure fairness, we must analyze and address any cognitive bias that might be present in our training data or models.

We are pleased to announce the release of the AI Fairness 360 R package, an open source library containing techniques to help detect and mitigate bias in data sets and machine learning models throughout the AI application lifecycle. Read "[The AIF360 fairness toolkit is now available for R users](#)" for details.

AI Fairness 360 now has compatibility with scikit-learn

The scikit-learn data science library is enormously useful for training established machine learning algorithms, computing basic metrics, and building model pipelines. In fact, many example notebooks in AI Fairness 360 already use scikit-learn classifiers with pre-processing or post-processing workflows. However, switching between the AI Fairness 360 toolkit algorithms and scikit-learn algorithms breaks the workflow and forces you to convert data structures back and forth. You're also unable to use some of the powerful meta-programming tools from scikit-learn like pipelines and cross validation.

Thank you!



K-ROZ.COM

 @GDEQUEIROZ

CONTACTKROZ@GMAIL.COM



AI-INCLUSIVE.ORG



INFO@AI-INCLUSIVE.ORG