

Inteligência Artificial, Ciência de Dados e Estatística: trajetória, dicas e desafios

Gabriela de Queiroz

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slides: bit.ly/cimatech-2020

Gabriela de Queiroz

Sr. Engineering and Data Science Manager, IBM

- Fundadora do R-Ladies (rladies.org)
- Fundadora do AI Inclusive (ai-inclusive.org)



- Graduação em Estatística (UERJ)
- Mestrado em Epidemiologia (ENSP/Fiocruz)
- Mestrado em Estatística (CSUEB)

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



Fundada em outubro de 2012.
A ideia era retribuir à comunidade e criar um local onde as pessoas se sentissem confortáveis, seguras e bem-vindas.
Um lugar onde as pessoas pudessem fazer perguntas, aprender juntas e compartilhar.



31
OCT

Wednesday, October 31, 2012

Introduction to R (beginners and pre-beginners)



Hosted by
Gabriela de Queiroz

Details

Hello R-ladies!

The first meetup will take place on October 31st at the Google office in San Francisco.

For this first meetup, we'll do an introduction to R. We'll go over the following topics:

installing R setting up an R environment (RStudio) basic commands (open files, simple dataset manipulation, simple plots, etc) loading packages the help function and how to read its output

All you need is your laptop and charger.

We look forward to seeing you!

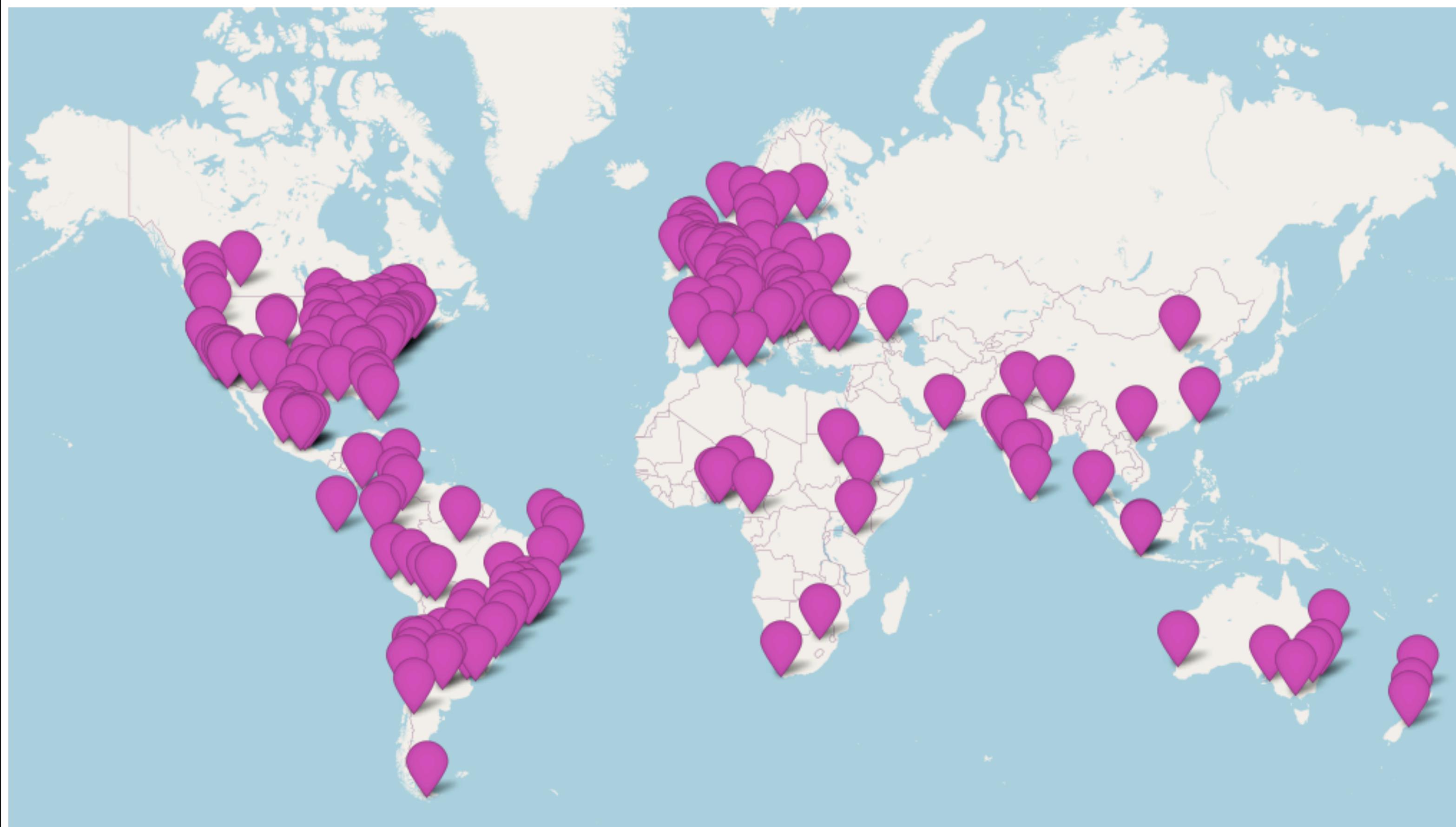
R-Ladies



54 
R-Ladies Countries

193 
R-Ladies Cities

71618 
R-Ladies members on meetup.com



	city	state	country	dt_created	members
41	São Paulo		BR	2018-02-10	1004
38	Belo Horizonte		BR	2018-04-20	800
34	Niterói		BR	2018-06-04	580
51	Rio de Janeiro		BR	2017-02-27	579
28	Florianópolis		BR	2019-04-07	441
43	Porto Alegre		BR	2017-10-30	346
7	Natal		BR	2020-06-07	241
32	Salvador		BR	2018-07-23	192
22	Recife		BR	2019-09-02	147
25	Goiania		BR	2019-05-06	146
18	Vitória		BR	2019-09-29	132
6	Fortaleza		BR	2020-06-09	69
26	Lavras		BR	2019-04-16	41
5	Curitiba		BR	2020-06-12	36
14	Ribeirão Preto		BR	2020-03-06	32
21	Manaus		BR	2019-09-11	29

52
R-Ladies groups in Latin America



AI Inclusive

Together, we are building a community to make **AI** more **inclusive** to everyone.

Missão: Aumentar a **representatividade** e **participação** de minorias em Inteligência Artificial

- Website: ai-inclusive.org
- Twitter: bit.ly/ai-inclusive-twitter
- Facebook: bit.ly/ai-inclusive-facebook
- Instagram: bit.ly/ai-inclusive-instagram
- Youtube: bit.ly/ai-inclusive-youtube

Capítulos no Rio de Janeiro, Salvador e em San Francisco (EUA)

Se tiver interesse em criar um capítulo, é só enviar um email: info@ai-inclusive.org

Siga a gente:

bit.ly/ai-inclusive-instagram



Materiais de Inteligência Artificial,
Ciência de Dados, Machine Learning
Eventos, Ingressos de graça e muito
mais!

Em breve:

Bolsas de estudo para cursos de R,
Python, Ciência de Dados, SQL, e
outros.



O que você faz na IBM?



What is Open Source?

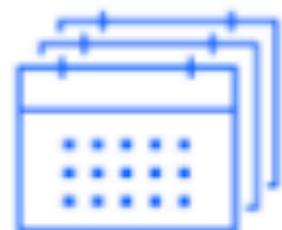
- The term **open source** refers to something people can modify and share because its design is publicly accessible
- Open source software (OSS) is software with source code that anyone can inspect, modify, and enhance user problems and help you achieve your business goals.

Open Source @ IBM

A strong history and commitment to open source

IBM open source by the numbers

At IBM, we take open source seriously. We train our employees in the best practices for engaging in open source communities and the importance of open governance, and we empower them to create open source projects that solve their business and personal problems.



25+

years in
open source



3,000+

IBMer active
in open source



15,000

commits per
month



1,900

hosted GitHub
repositories

Center for Open Source Data & AI Technologies (CODAIT)

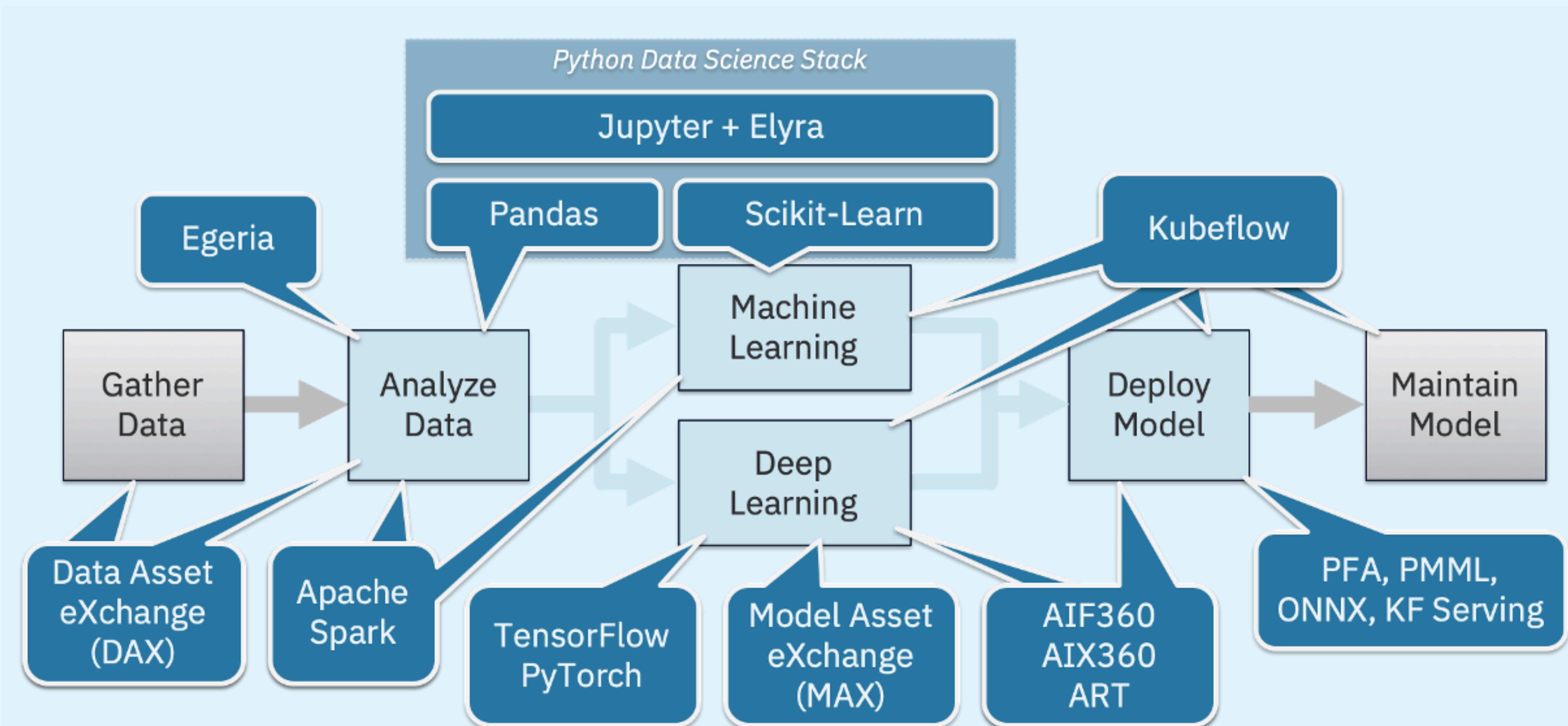
We build tools to make AI accessible and available to everybody

30+ Open Source Developers



We build tools to make AI accessible and available to everybody

(codait.org)



Model Asset eXchange

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 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 →

Data Asset eXchange

Data Asset eXchange

Explore useful and relevant data sets for enterprise data science

Learn More →
What's New →
Get Involved →

Dataset CSV NOAA Weather Data - JFK Airport June 30, 2020 →	Dataset IOB format Groningen Meaning Bank - Modified May 14, 2020 →	Dataset CSV Fashion-MNIST September 12, 2019 →
Dataset JPG, JSON PubLayNet October 25, 2019 →	Dataset WAV TensorFlow Speech Commands March 17, 2020 →	Dataset PNG, JSON PubTabNet July 20, 2020 →

ibm.biz/model-exchange

ibm.biz/data-exchange

Model Asset eXchange (MAX)

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

ibm.biz/model-exchange

Model Asset eXchange

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[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

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Sep 21, 2018

Model | Deployable, Trainable

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Image Caption Generator

Generate captions that describe the contents of images.

Sep 21, 2018

[View all models](#)

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Model | Deployable

Image Caption Generator

Generate captions that describe the contents of images.

Sep 21, 2018

[View all models](#)



MAX Object Detector

Upload an image

Choose File No file chosen

Submit

Use your webcam

Filter detected objects ⓘ

Probability Threshold: 50%

Labels Found ⓘ



MAX Image Caption Generator

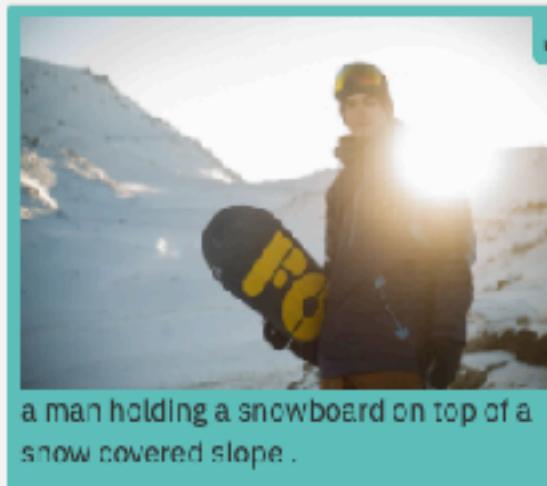
Upload A New Image ⓘ

Choose Files No file chosen

Submit

Deselect All

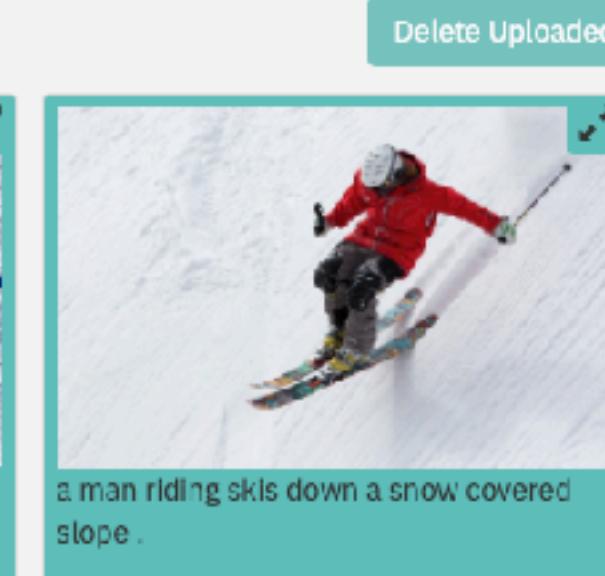
Select All



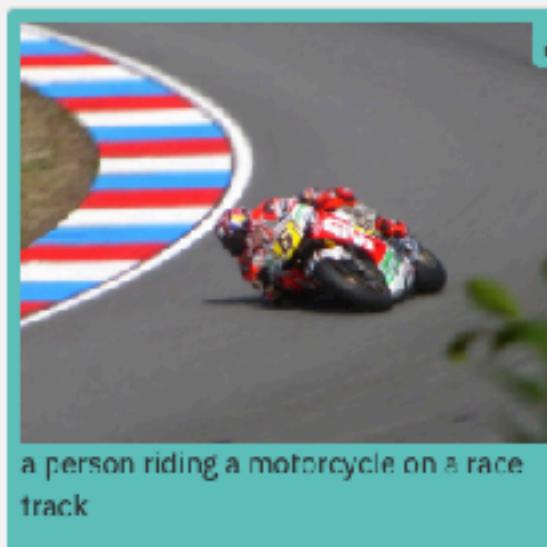
a man holding a snowboard on top of a snow covered slope .



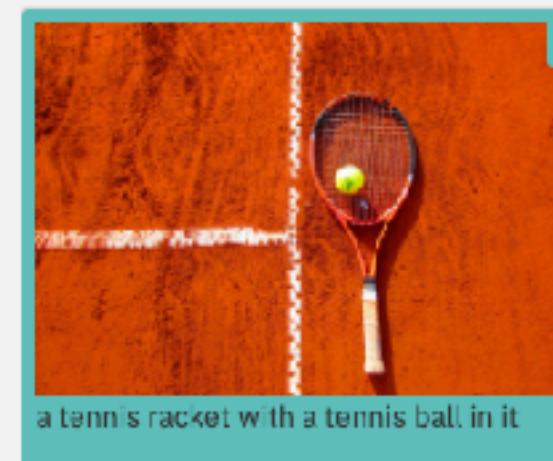
a person riding a snowboard down a snow covered slope .



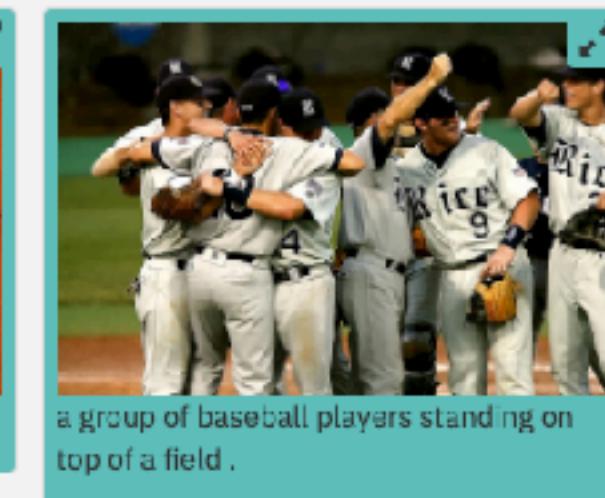
a man riding skis down a snow covered slope .



a person riding a motorcycle on a race track



a tennis racket w th a tennis ball in it



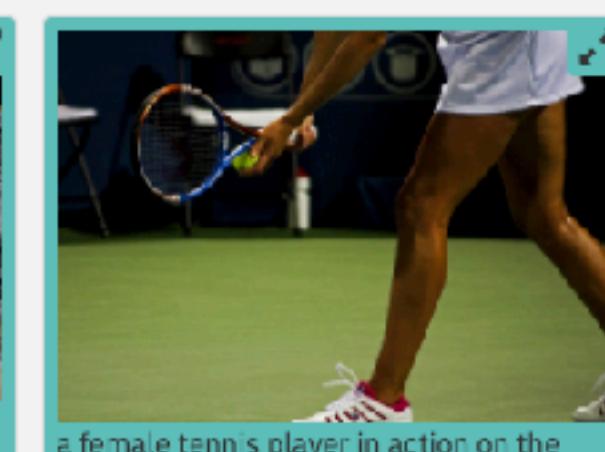
a group of baseball players standing on top of a field .



a crowd of people watching a tennis match .



a group of young men playing a game of basketball .



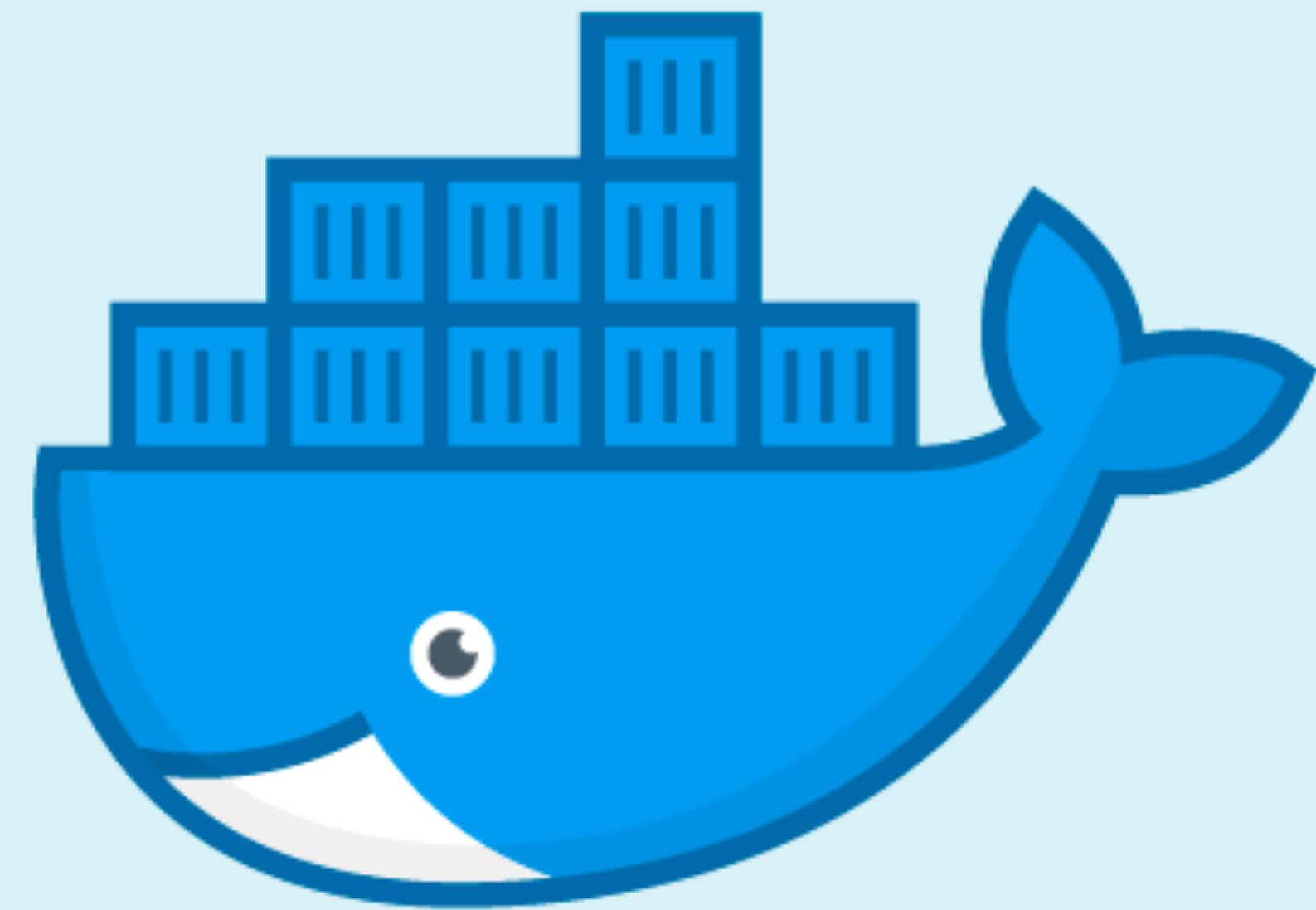
a female tennis player in action on the court .

surfboard
pitching
players
motorcycle
carrying
basketball
playing
track
ramp
close
man
player
tennis
people
watching
top
covered
holding
group
side
skis
wave
action
young
race
swinging
city
snowboard
fire
street
person
snowbaseball
crowd
bikes
slope
skateboard
beach
standing
racket
dirthydrant
racquet

What do I need to get started?

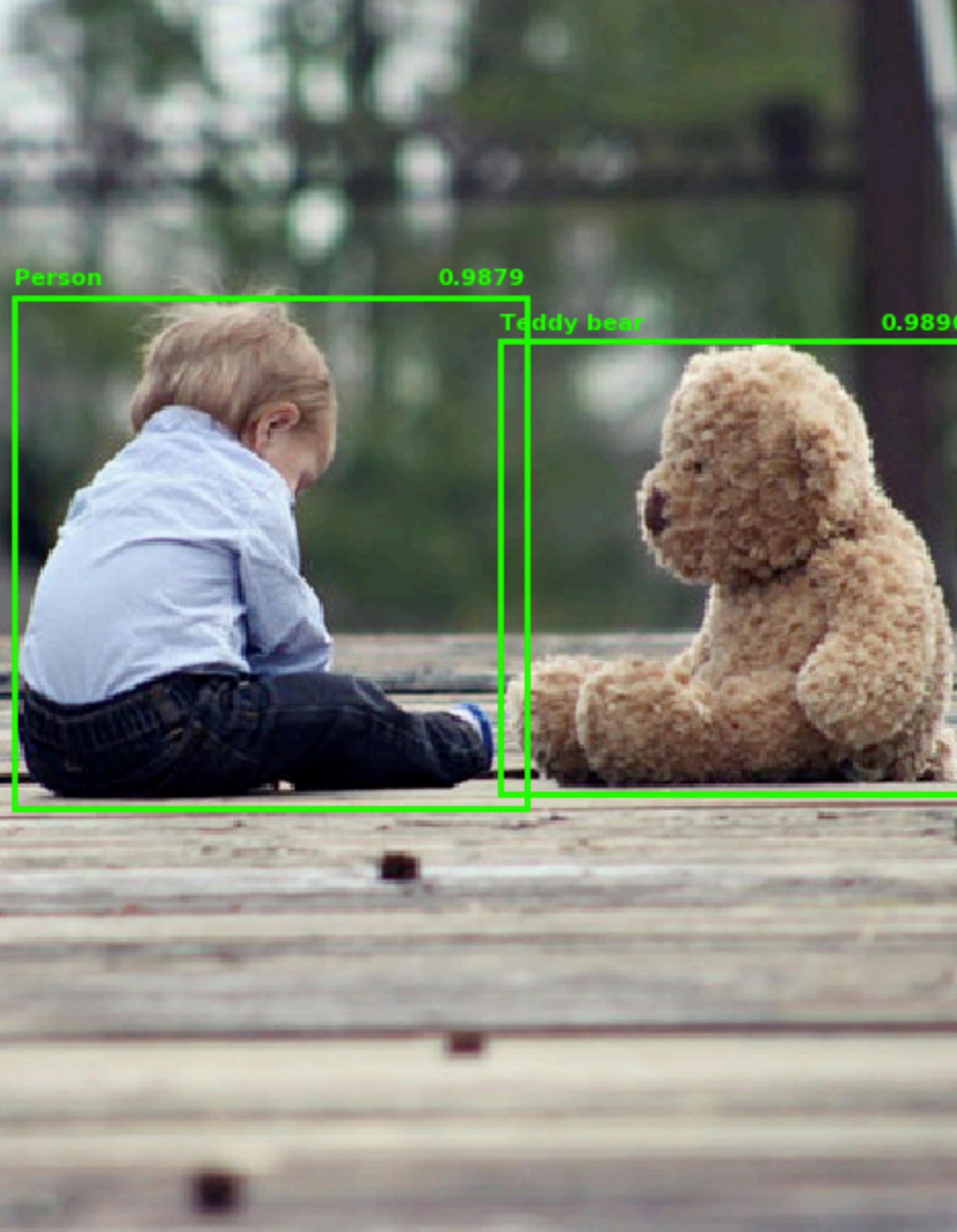


START
HERE.



docker

<https://www.docker.com>



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.

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Featured Deployable Trainable

Model | Deployable

Toxic Comment Classifier

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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 →

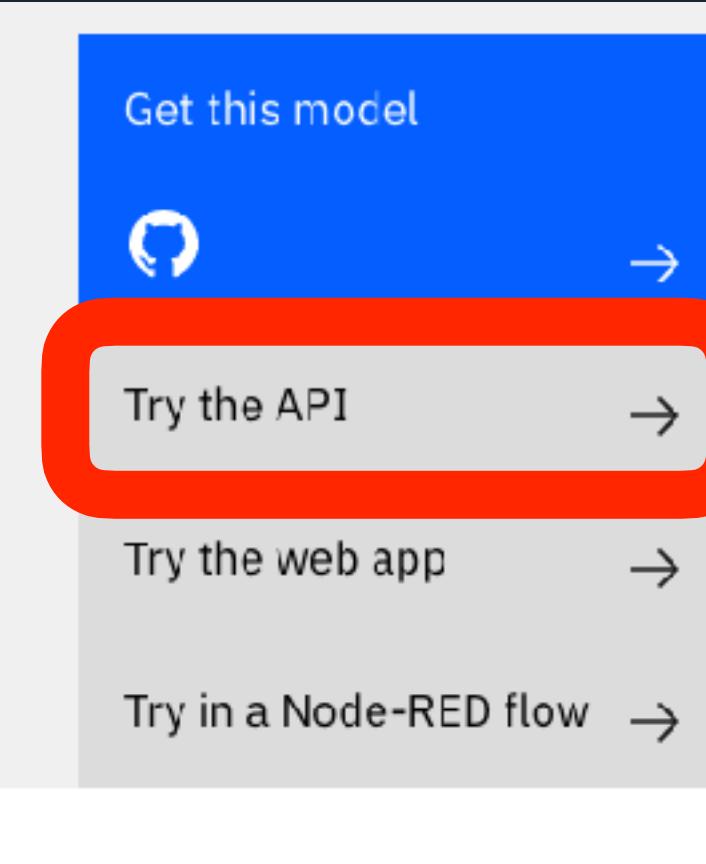
Try in a Node-RED flow →

Access the API via Python

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

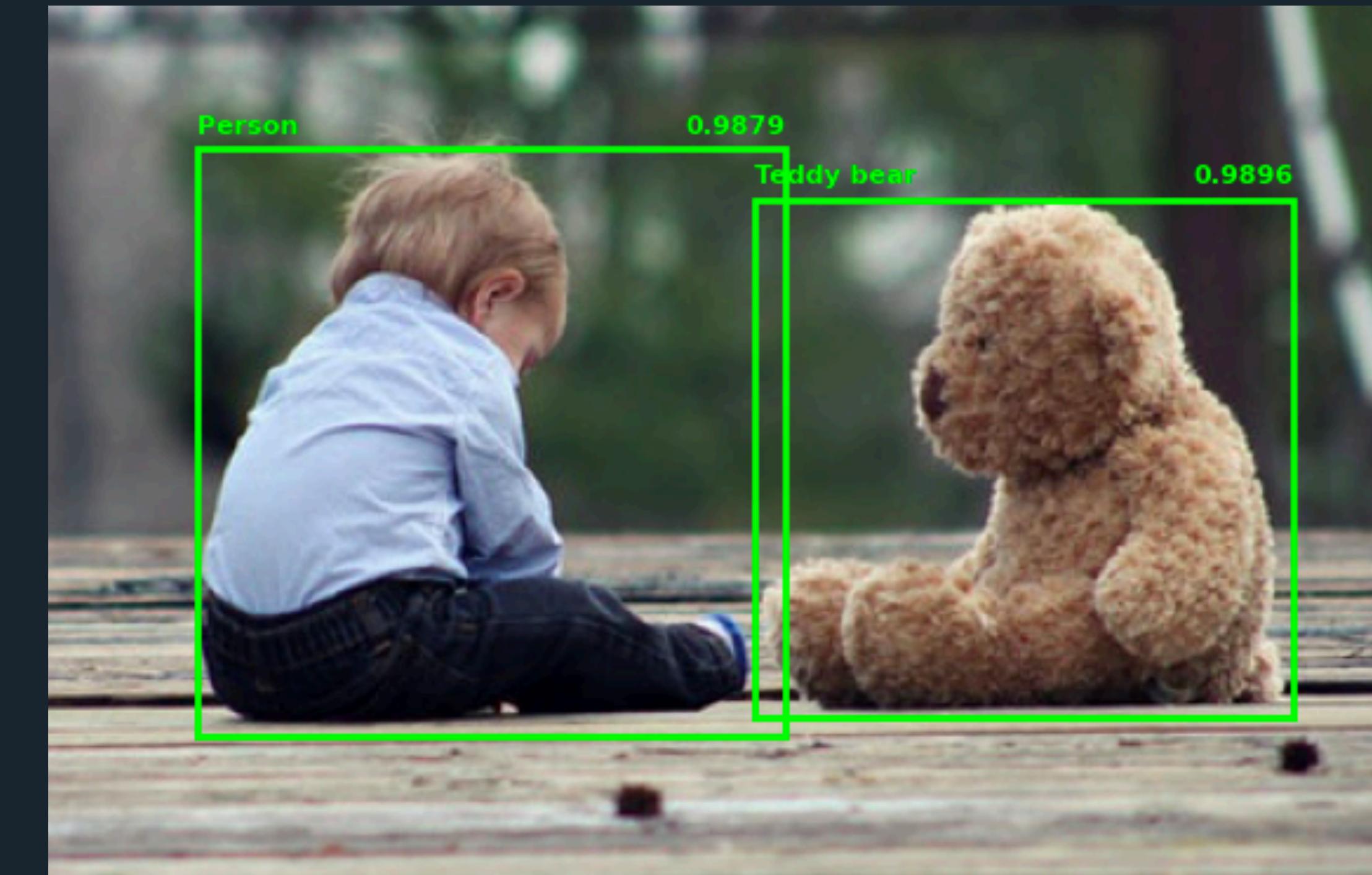


```
# Model
url = 'http://max-object-detector.codait-prod-41208c73af8fca213512856c7a09
db52-0000.us-east.containers.appdomain.cloud/'
model_endpoint = 'model/predict'
complete_url = url + model_endpoint

# 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)
```



Try yourself here:
ibm.biz/max-notebook

Sua vez ...

1) Clique aqui ibm.biz/Bdq5CG para criar uma conta

2) Login na sua conta e crie um projeto

The screenshot shows the Watson Studio Overview page. It has three main sections: 'Recent projects' (No recent projects), 'Recent catalogs' (No catalogs), and 'Notifications' (No notifications). Each section has a 'New [category]' button.

3) Crie um *empty project*

The screenshot shows a 'Create an empty project' dialog box. It features a circular icon with a flowchart and a plus sign, followed by the text 'Create an empty project'. Below it says 'Add the data you want to prepare, analyze, or model. Choose tools based on how you want to work: write code, create a flow on a graphical canvas, or automatically build models.' A 'NEW' badge indicates the AutoAI experiment tool. At the bottom, there's a link: 'AutoAI experiment tool: Fully automated approach to building a classification or reg...'

4) Vá no link ibm.biz/max-notebook e copie o projeto

The screenshot shows a project details page. It includes fields for 'Version author' (Gabriela de Queiroz), 'Language' (Python 3.6), and 'Jun 16, 2020, 9:03 AM'. A 'Copy to project' button is highlighted with a yellow box.

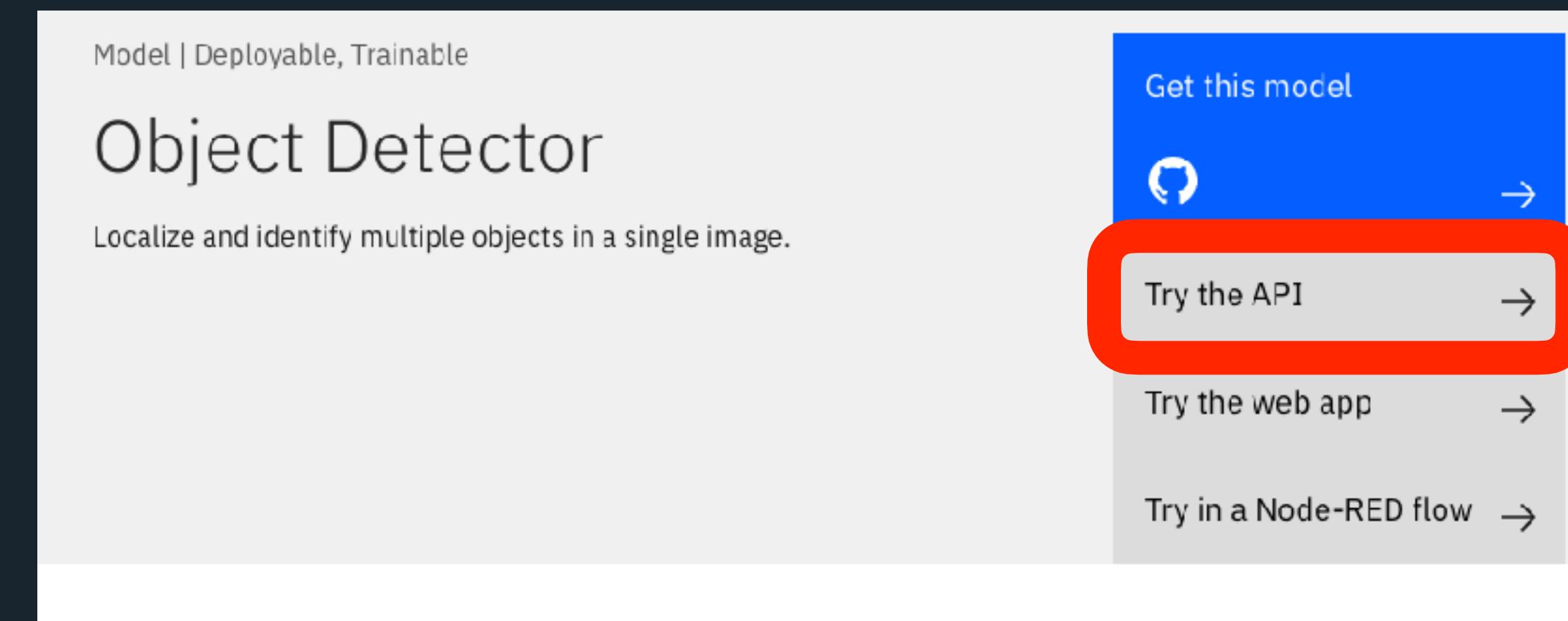
5) Selecione um *runtime*

The screenshot shows a 'Select runtime' dropdown menu. The first option, 'Default Python 3.7 XXS (1 vCPU 4 GB RAM)', is selected and highlighted with a blue border. Other options include: Default Python 3.7 XS + DO (2 vCPU 8 GB RAM), Default Python 3.6 XS + DO (2 vCPU 8 GB RAM), Default Python 3.7 XS (2 vCPU 8 GB RAM), Default Python 3.6 XS (2 vCPU 8 GB RAM), Default R 3.6 S (4 vCPU 16 GB RAM), Default Python 3.7 S (4 vCPU 16 GB RAM), Default Python 3.6 S (4 vCPU 16 GB RAM), Default Spark 3.0 & Scala 2.12 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM), Default Spark 3.0 & R 3.6 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM), Default Spark 3.0 & Python 3.7 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM), Default Spark 2.4 & Scala 2.11 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM), Default Spark 2.4 & R 3.6 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM), Default Spark 2.4 & Python 3.7 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM), and Default Spark 2.4 & Python 3.6 (Driver: 1 vCPU 4 GB RAM, 2 Executors: 1 vCPU 4 GB RAM).



Agora você pode rodar o 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 Swagger

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

Get this model →

Try the API → **Try the API** → (highlighted with a red box)

Try the web app →

Try in a Node-RED flow →

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)	<input type="button" value="Choose File"/> traffic.jpeg
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. 0.7

Execute **Clear**

Responses

Response content type **application/json**

Curl

```
curl -X POST "http://max-object-detector.codait-prod-41208c73af8fca213512856c7a09db52-0000.us-east.containers.appdomain.cloud/model/predict?threshold=0.7" -H "accept: application/json" -H "Content-Type: multipart/form-data" -F "image=@traffic.jpeg;type=image/jpeg"
```

Request URL

```
http://max-object-detector.codait-prod-41208c73af8fca213512856c7a09db52-0000.us-east.containers.appdomain.cloud/model/predict?threshold=0.7
```

Server response

Code **Details**

200 Response body

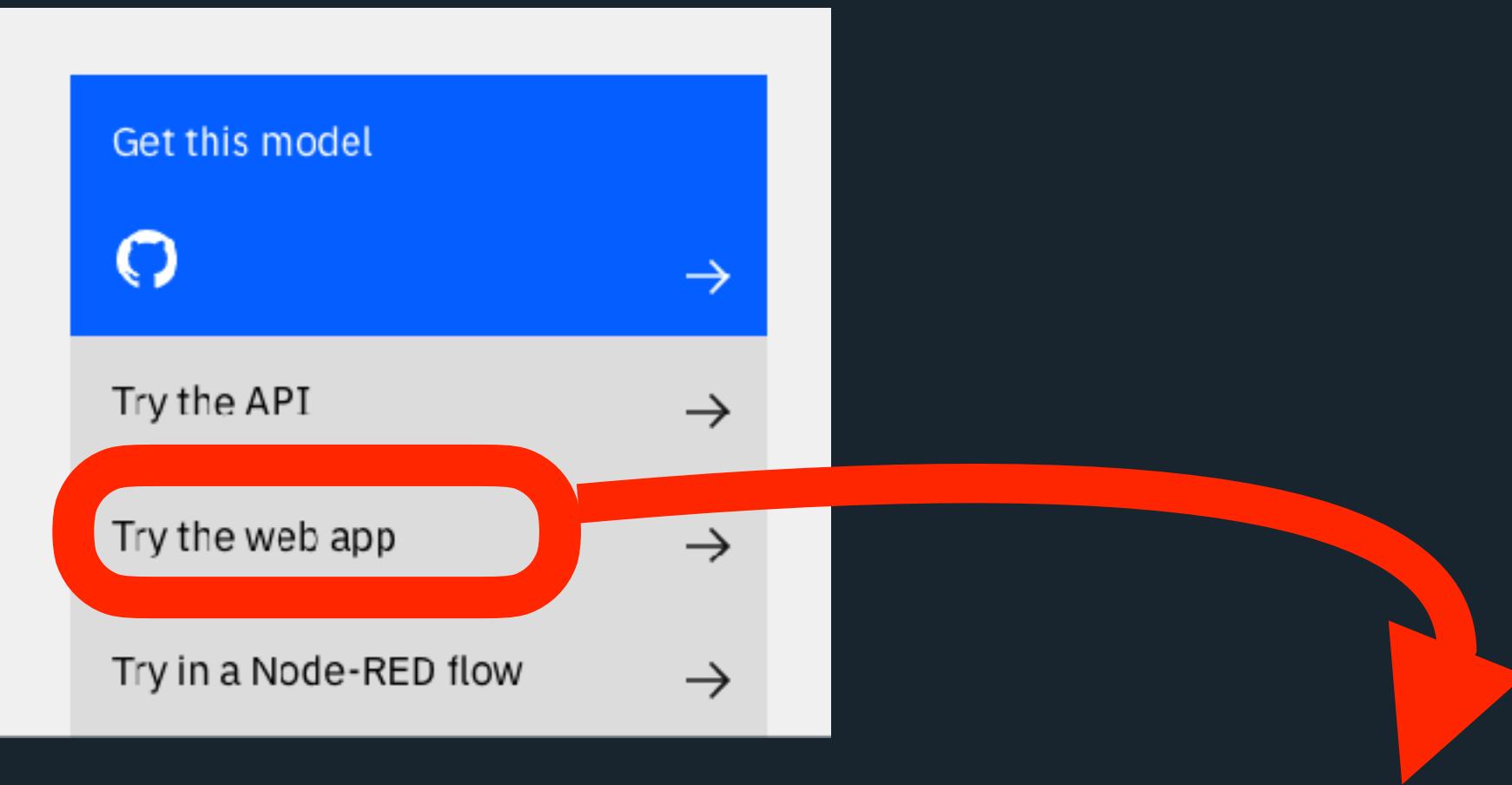
```
{
  "status": "ok",
  "predictions": [
    {
      "label_id": "3",
      "label": "car",
      "probability": 0.9741689627685517,
      "detection_box": [
        0.4575640559196472,
        0.4168500304222107,
        0.6725007891654968,
        0.9029390215873718
      ]
    },
    {
      "label_id": "1",
      "label": "person",
      "probability": 0.8824045658111572,
      "detection_box": [
        0.6231690645217896,
        0.30522748927934265,
        0.8462619781494141,
        0.4034259617328644
      ]
    },
    {
      "label_id": "4",
      "label": "motorcycle",
      "probability": 0.8141902685165405,
      "detection_box": [
        0.3583410978317261,
        0.11843161284923553,
        0.5388588117141724,
        0.37292349338531494
      ]
    }
  ]
}
```

Access the API via Web App

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.



The screenshot shows the MAX Object Detector web application. On the left is a logo featuring a stylized brain and a bar chart. Next to it is the text "MAX Object Detector". To the right is a form titled "Upload an image" with a "Choose File" button, a "No file chosen" message, a "Submit" button, and a "Use your webcam" button. Further right is a section titled "Filter detected objects ⓘ" with a "Probability Threshold: 70%" slider set to 70%. On the far right is a "Labels Found ⓘ" section showing icons for a person and a dog. Below these sections is a photograph of a woman sitting on the grass with a dog. Two green bounding boxes are drawn around them. The top-left box is labeled "person : 88.9%" and the bottom-right box is labeled "dog : 81.2%".

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



How do I get started?

ibm.biz/max-tutorial

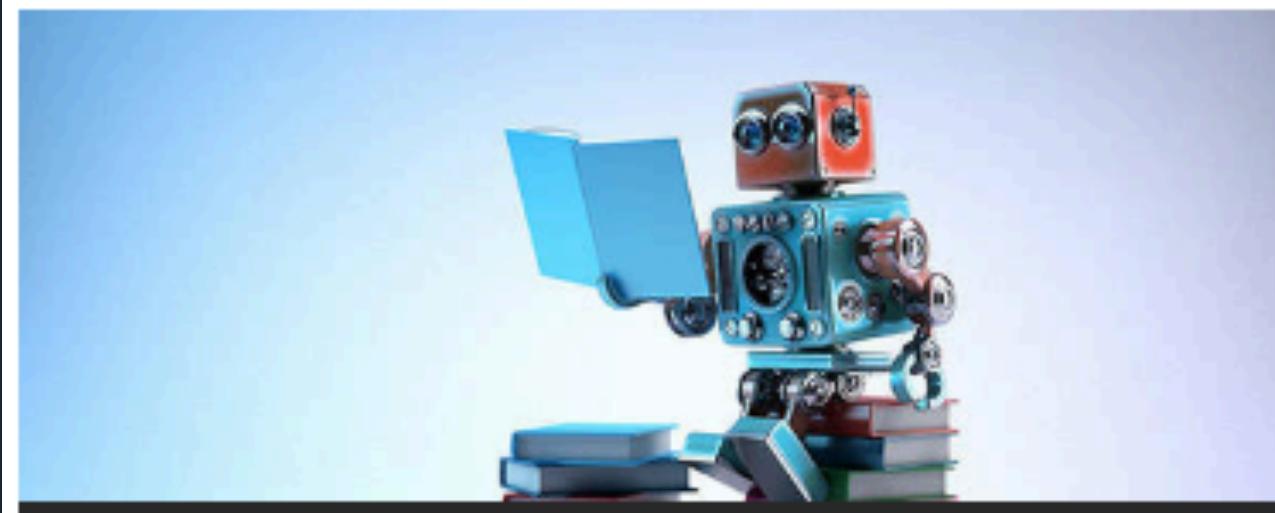
Series

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

Examples on how to easily consume MAX models

ibm.biz/max-code-patterns



Code Pattern
Create a machine learning powered web app to answer questions
Nov 05, 2019 →



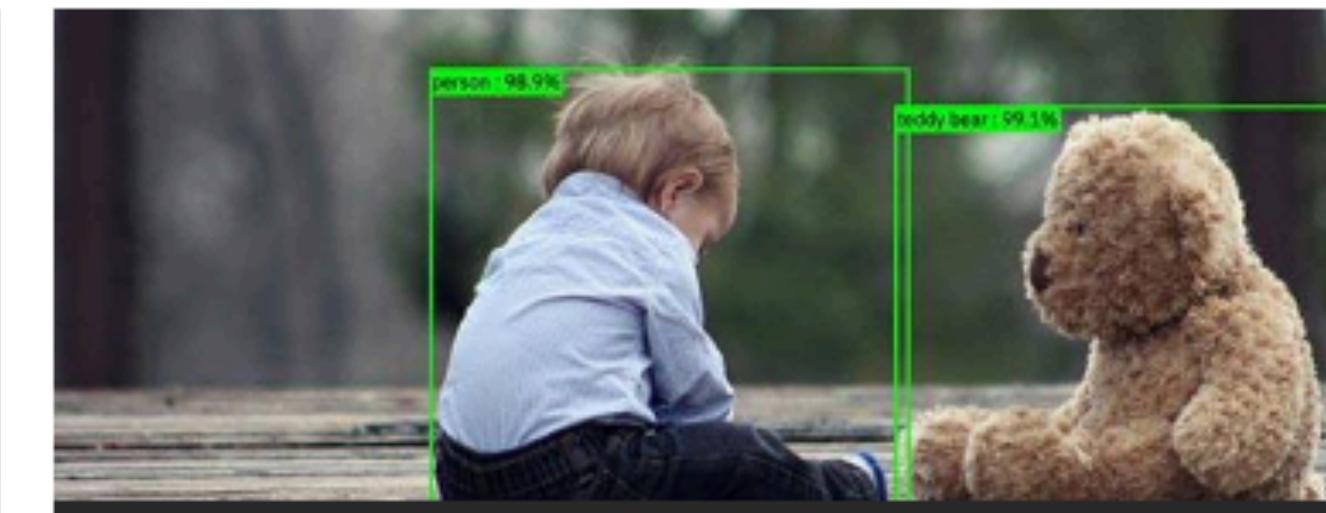
Code Pattern
Build a web app that recognizes yoga poses using a model from the Model Asset Exchange
Oct 03, 2019 →



Code Pattern
Use your arms to make music
Apr 22, 2019 →



Code Pattern
Create a web app to interact with machine learning generated image captions
Mar 28, 2019 →



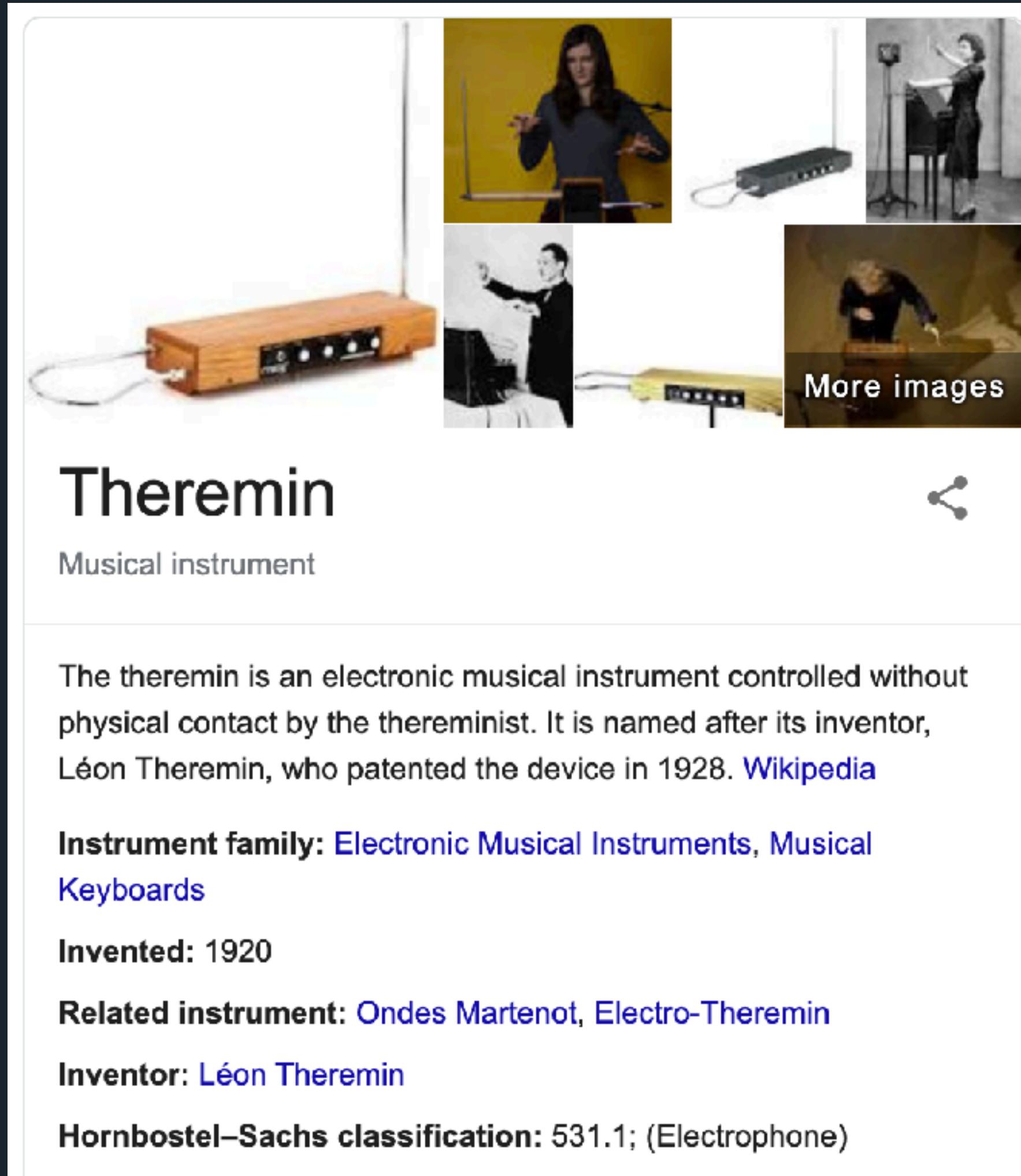
Code Pattern
Create a web app to visually interact with objects detected using machine learning
Mar 28, 2019 →



Code Pattern
Deploy a deep learning-powered 'Magic cropping tool'
Mar 28, 2019 →

Use your arms to make music

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



The screenshot shows a Wikipedia page for the Theremin. At the top left is a wooden theremin device with two metal antennae. To its right are several smaller images: a person playing, a close-up of the instrument, a person at a piano-like keyboard, and a historical black-and-white photo of a woman playing. Below these is a "More images" link. The main title "Theremin" is in large bold letters, followed by the subtitle "Musical instrument". A "Share" icon is to the right of the title. The text below describes the instrument as an electronic musical instrument controlled without physical contact, invented in 1920 by Léon Theremin, and includes links to its family, history, and related instruments.

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](#)

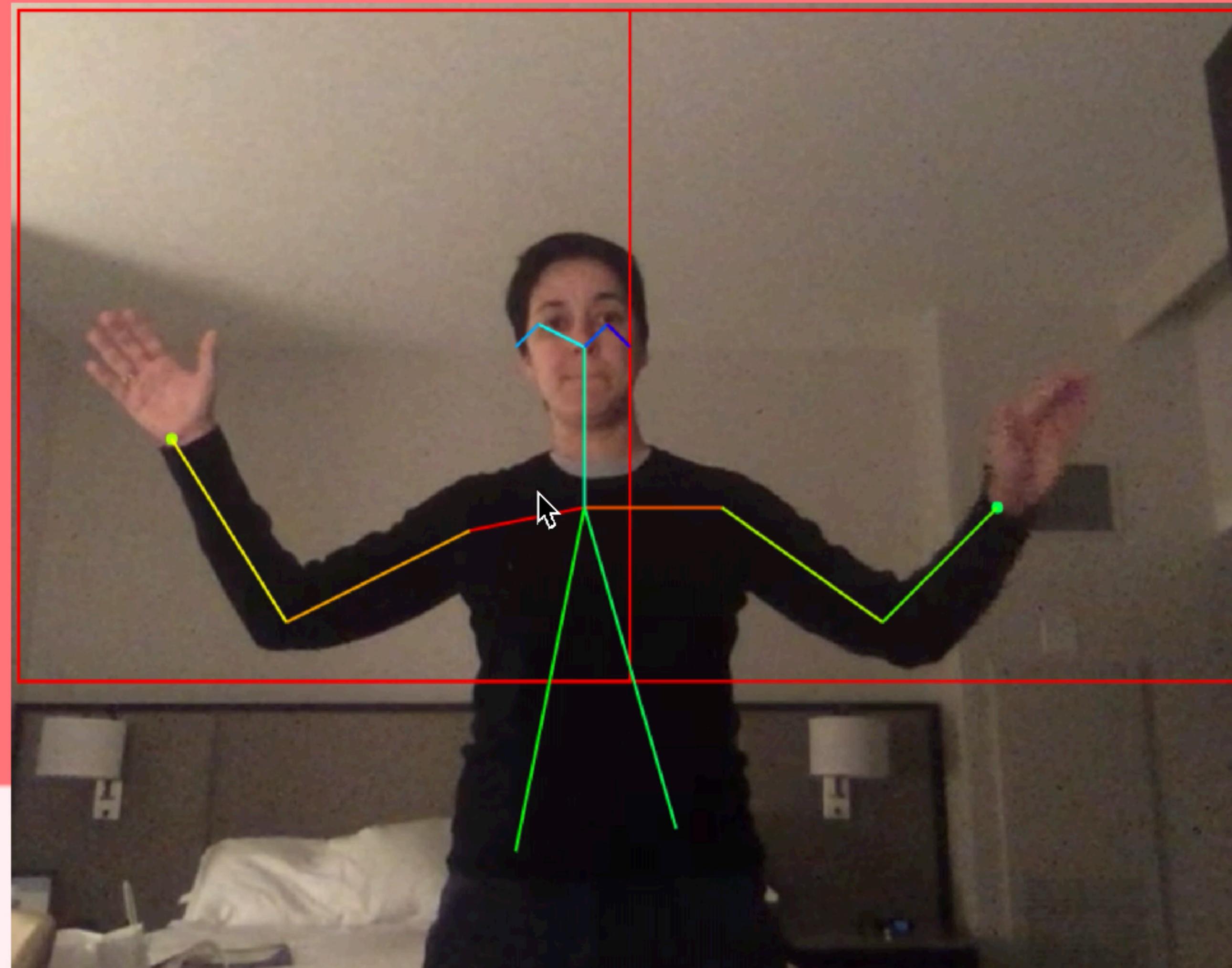
Inventor: [Léon Theremin](#)

Hornbostel-Sachs classification: 531.1; (Electrophone)



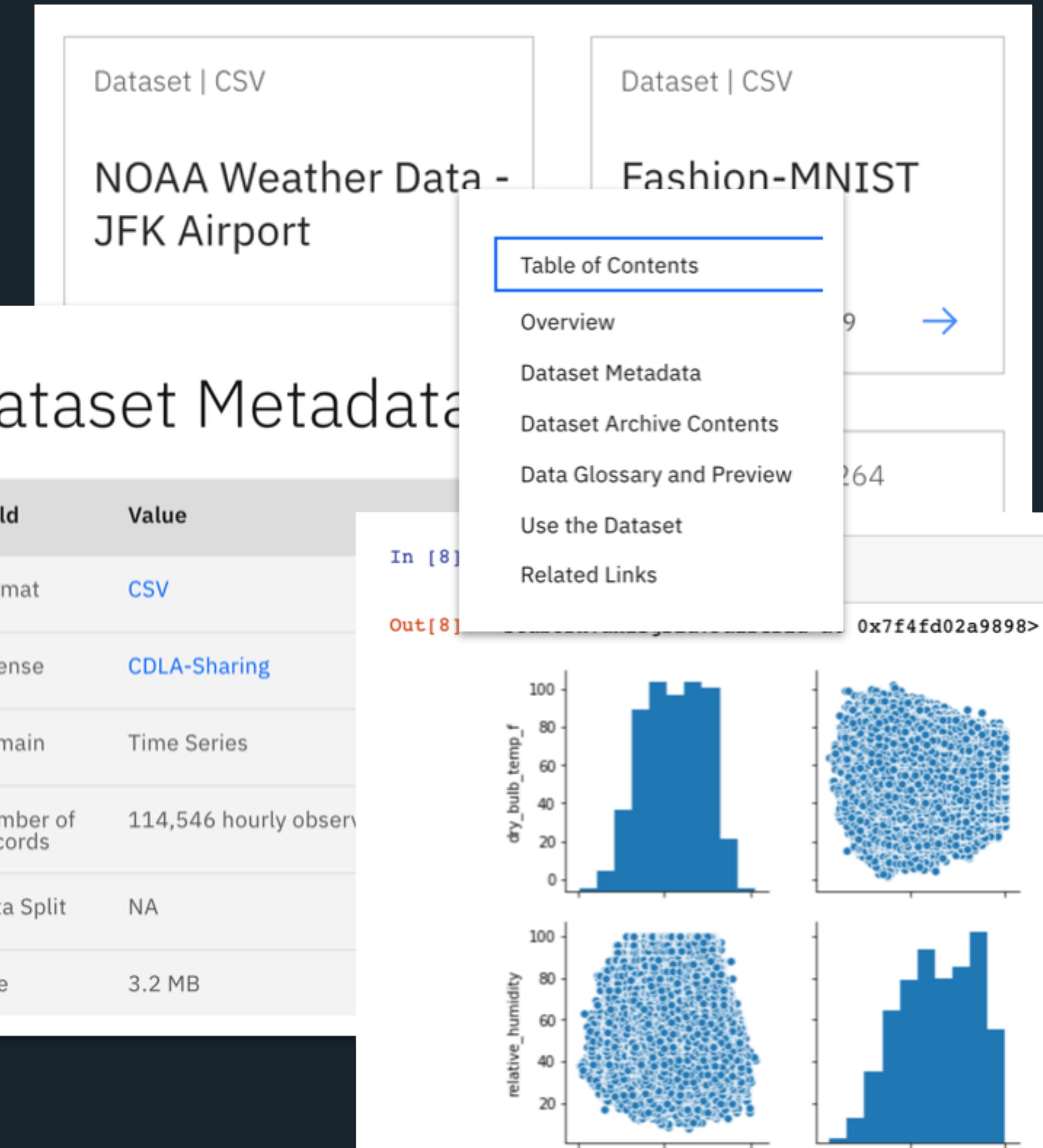
veremax

a video theremin using OpenPose



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

NOAA Weather Data – JFK Airport

Local climatological data originally collected at JFK airport.

Save Like

- Get this dataset →
- Run dataset notebooks →
- Preview the data & notebooks →

NOAA Weather Data – JFK Airport

Dataset Metadata | Dataset Preview | Dataset Glossary

Format	CSV
License	CDLA-Sharing
Domain	Time Series
Number of Records	114,546 hourly observations
Data Split	NA
Size	3.2 MB
Data Origin	National Oceanic and Atmospheric Administration (NOAA)
Dataset Version	Version 2 – September 12, 2019 Version 1 – July 16, 2019
Dataset Coverage	Location: New York City Dates: 2010-01-01 through 2018-07-27 Note: To download raw data from NOAA for a different region or date span, follow the steps outlined in the data archive's README.txt. <i>Agriculture</i> Detect unseasonal temperature change and alert farmers about potential damage to plants. Energy Regulate solar cell charging hours based on weather type condition and temperature. Regulate wind turbine operation based on wind speed and wind direction. Generate energy demand alerts based on temperature. Remotely adjust air conditioning configs to boost energy efficiency based on temperature shifts. <i>Retail</i> Estimate outdoor retail foot traffic based on weather condition and temperature predictions.
Business Use Case	

NOAA Weather Data – JFK Airport

Part 1 - Data Cleaning

Part 2 - Data Analysis

Part 3 - Time Series Forecasting

```
In [1]: # @hidden_cell
# The project token is an authorization token that is used to access project resources like data sources, connections, and used by platform APIs.
from project_lib import Project
project = Project(project_id='...', project_access_token='...')
```

Cleaning NOAA Weather Data of JFK Airport (New York)

This notebook relates to the NOAA Weather Dataset - JFK Airport (New York). The dataset contains 114,546 hourly observations of 12 local climatological variables (such as temperature and wind speed) collected at JFK airport. This dataset can be obtained for free from the IBM Developer [Data Asset Exchange](#).

In this notebook, we clean the raw dataset by:

- removing redundant columns and preserving only key numeric columns
- converting and cleaning data where required
- creating a fixed time interval between observations (this aids with later time-series analysis)
- filling missing values
- encoding certain weather features

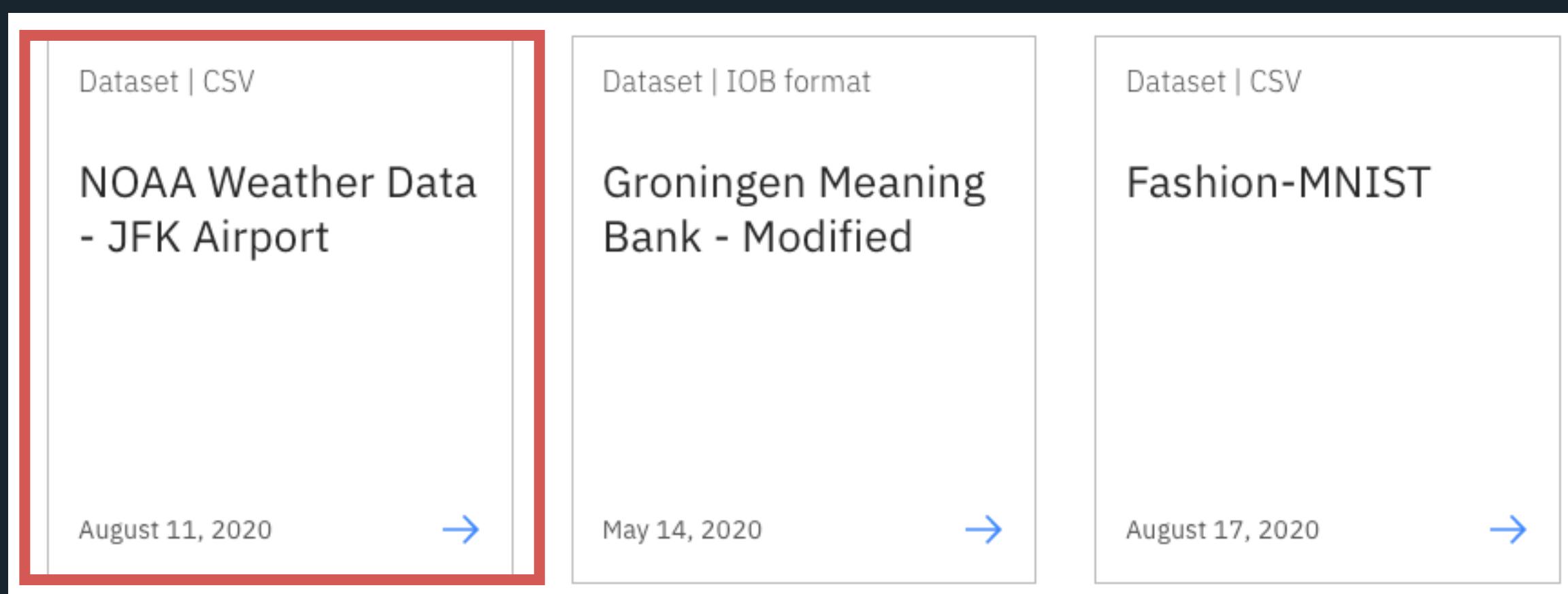
Table of Contents:

- [0. Prerequisites](#)
- [1. Read the Raw Data](#)
- [2. Clean the Data](#)
 - [2.1 Select data columns](#)
 - [2.2 Clean up precipitation column](#)
 - [2.3 Convert columns to numerical types](#)
 - [2.4 Reformat and process data](#)
 - [2.5 Create a fixed interval dataset](#)
 - [2.6 Feature encoding](#)
 - [2.7 Rename columns](#)

Sua vez

1) Clique aqui ibm.biz/Bdq5CG para criar uma conta

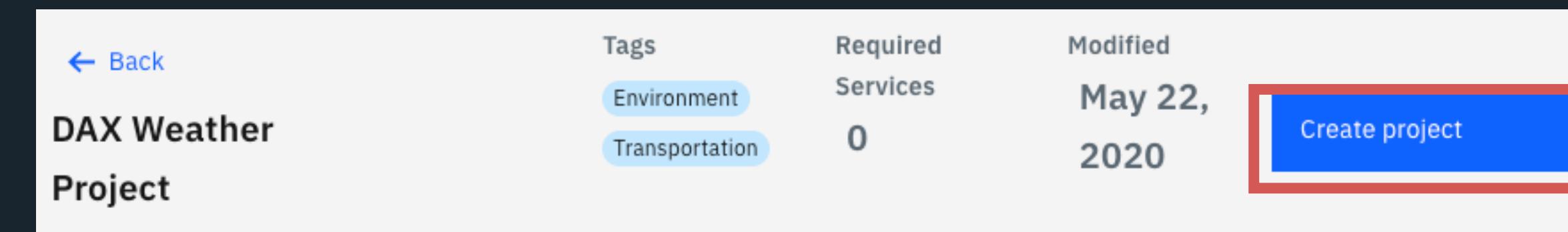
2) Vá até o Data Asset eXchange ibm.biz/data-exchange, escolha um banco de dados



3) Click em “Run dataset notebooks”



4) Click em “Create a Project”



5) Selecione um “Storage Service”

Create a project

Name
DAX Weather Project

Description
This project includes the NOAA Weather Dataset - JFK Airport (New York) from the Data Asset Exchange and supporting notebooks. The notebooks teach the user to extract, clean and analyze sample weather data and predict weather trends to help airports schedule better flight times. This sample project contains 3 notebooks and 1 CSV file. Please run the notebooks in sequential order.

Choose project options
 Restrict who can be a collaborator ⓘ

Project includes integration with [Cloud Object Storage](#) for storing project assets.

Define storage

① Select storage service
Add
Add an object storage instance, and then return to this page and click Refresh.
② Refresh

6) Clique em “Refresh”. Você deve ter algo assim:

Create a project

Name
DAX Weather Project

Storage
Cloud Object Storage-st

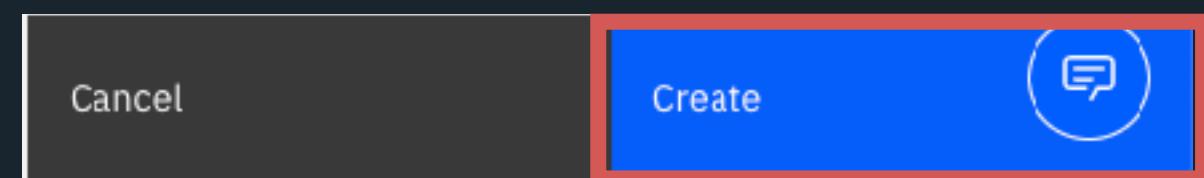
Description
This project includes the NOAA Weather Dataset - JFK Airport (New York) from the Data Asset Exchange and supporting notebooks. The notebooks teach the user to extract, clean and analyze sample weather data and predict weather trends to help airports schedule better flight times. This sample project contains 3 notebooks and 1 CSV file. Please run the notebooks in sequential order.

Choose project options
 Restrict who can be a collaborator ⓘ

Project includes integration with [Cloud Object Storage](#) for storing project assets.

Cancel Create

7) Clique em “Create”



✓ DAX Weather Project successfully created!

You can now access your new project and its assets.

[View import summary](#)

[View new project](#)

Agora você pode rodar os Notebooks!

Overview **Assets** Environments Jobs Access Control Settings

Q What assets are you looking for?

▼ Data assets
0 assets selected.

<input type="checkbox"/>	Name	Type	Created by	Last modified	↓
<input type="checkbox"/>	CSV jfk_weather.csv	Data Asset	G Q	Nov 18, 2020, 12:42 PM	

▼ Notebooks [New Notebook +](#)

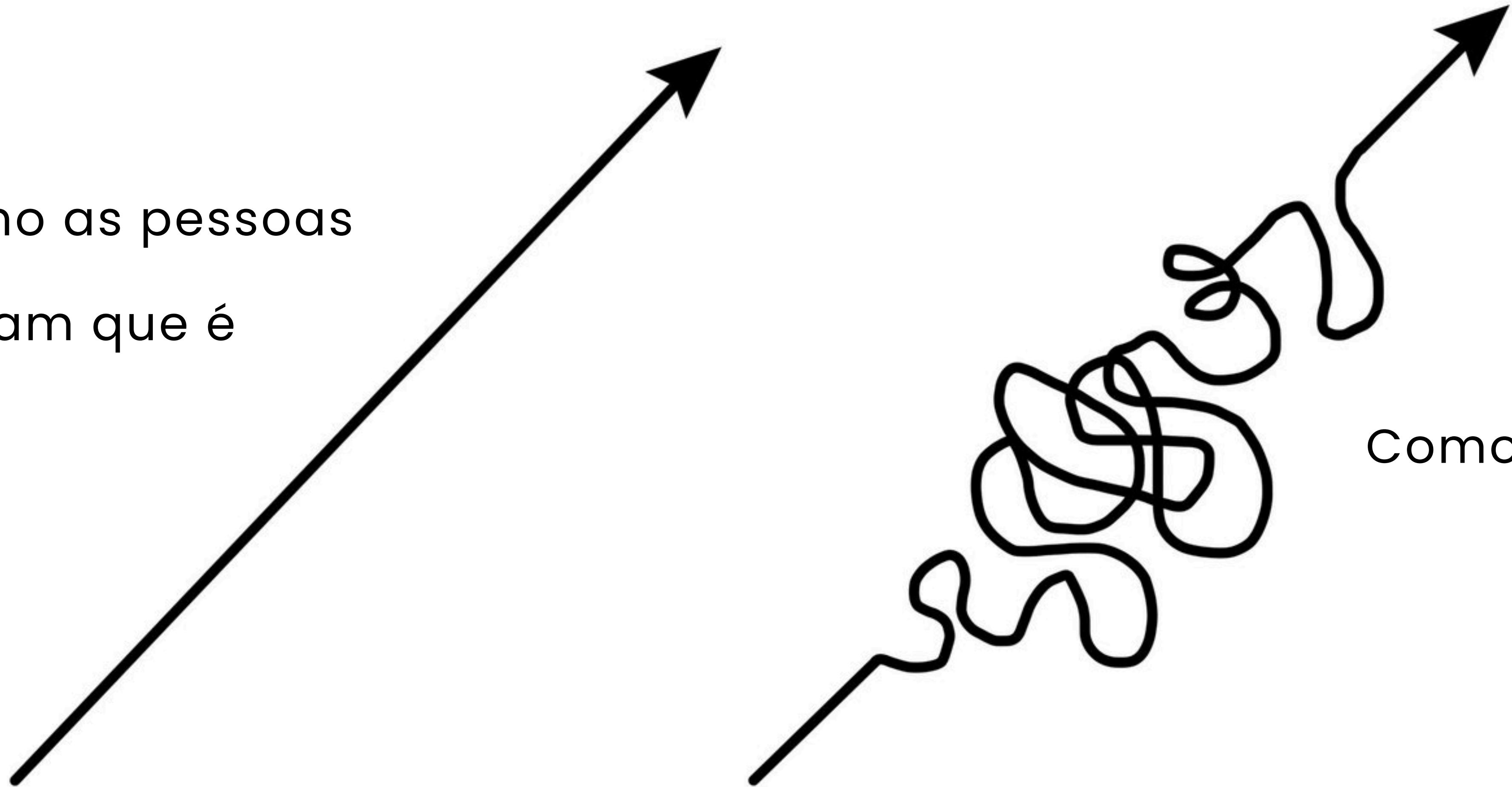
Name	Shared	Scheduled	Status	Language	Last editor	Last modified	
Part 1 - Data Cleaning				Python 3.6	G Q	Nov 18, 2020	Edit
Part 2 - Data Analysis				Python 3.6	G Q	Nov 18, 2020	Edit
Part 3 - Time Series Forecasting				Python 3.6	G Q	Nov 18, 2020	Edit

Trajetória

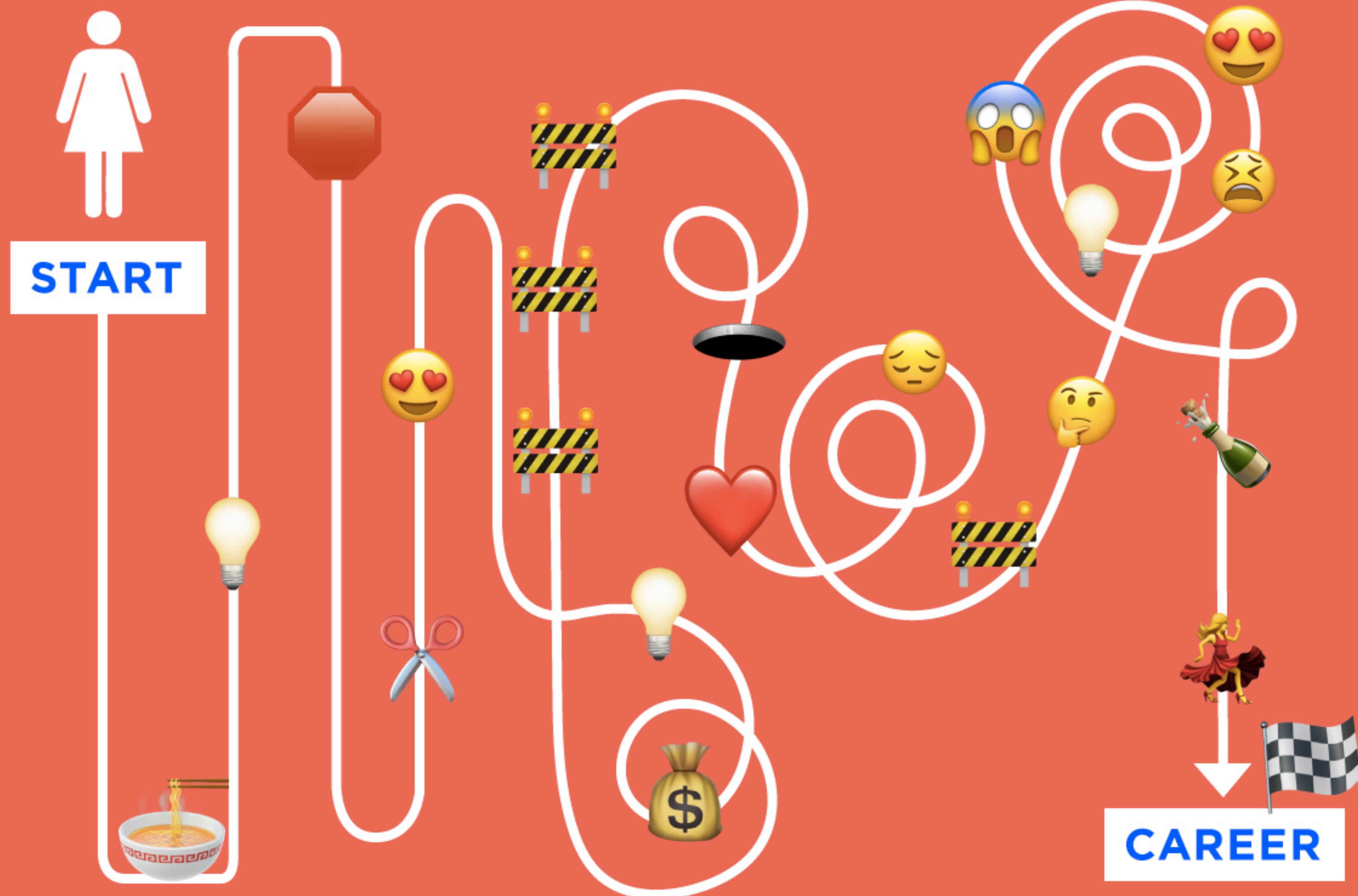
Tudo que você fez ou faz ao longo
da sua vida importa.

Sucesso

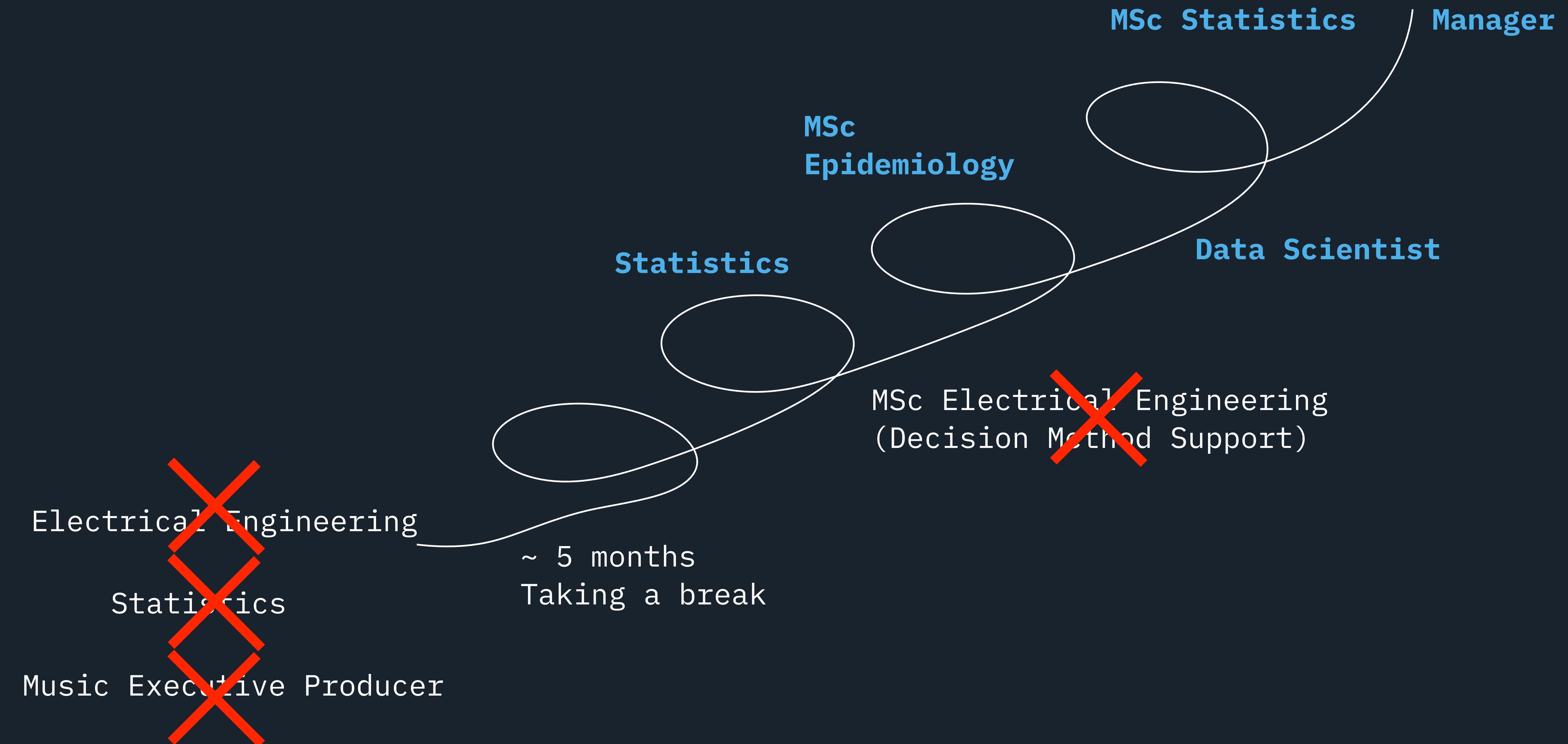
Como as pessoas
acham que é



Como é na verdade



Trajetória



5

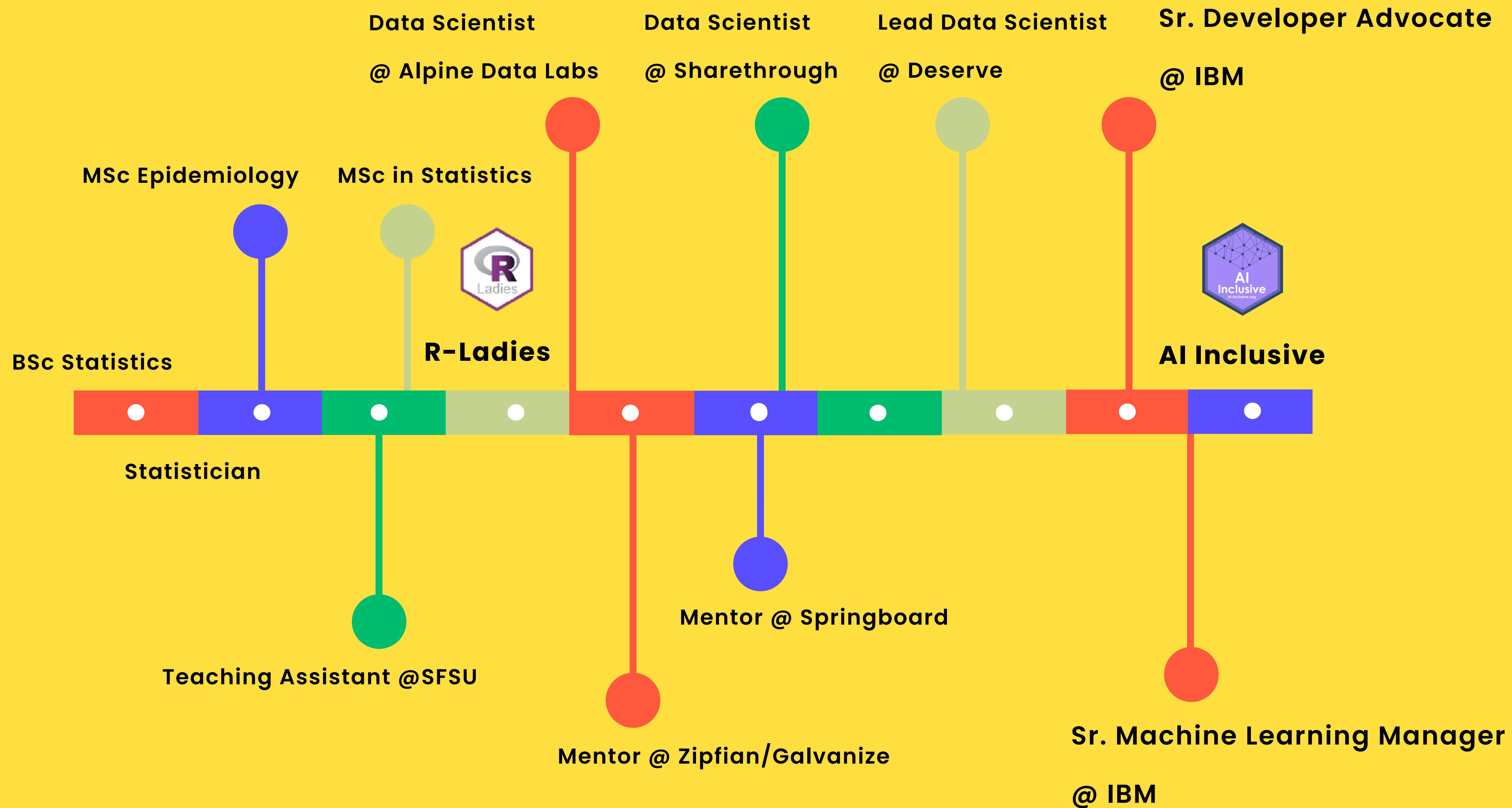
Success is not a straight line, it's much more of a dance and being open to possibilities.

O sucesso não é uma linha reta, é muito mais uma dança e estar aberto a possibilidades.

Arianna Huffington

AUTHOR, CO-FOUNDER OF THE HUFFINGTON POST, FOUNDER AND CEO OF THRIVE GLOBAL



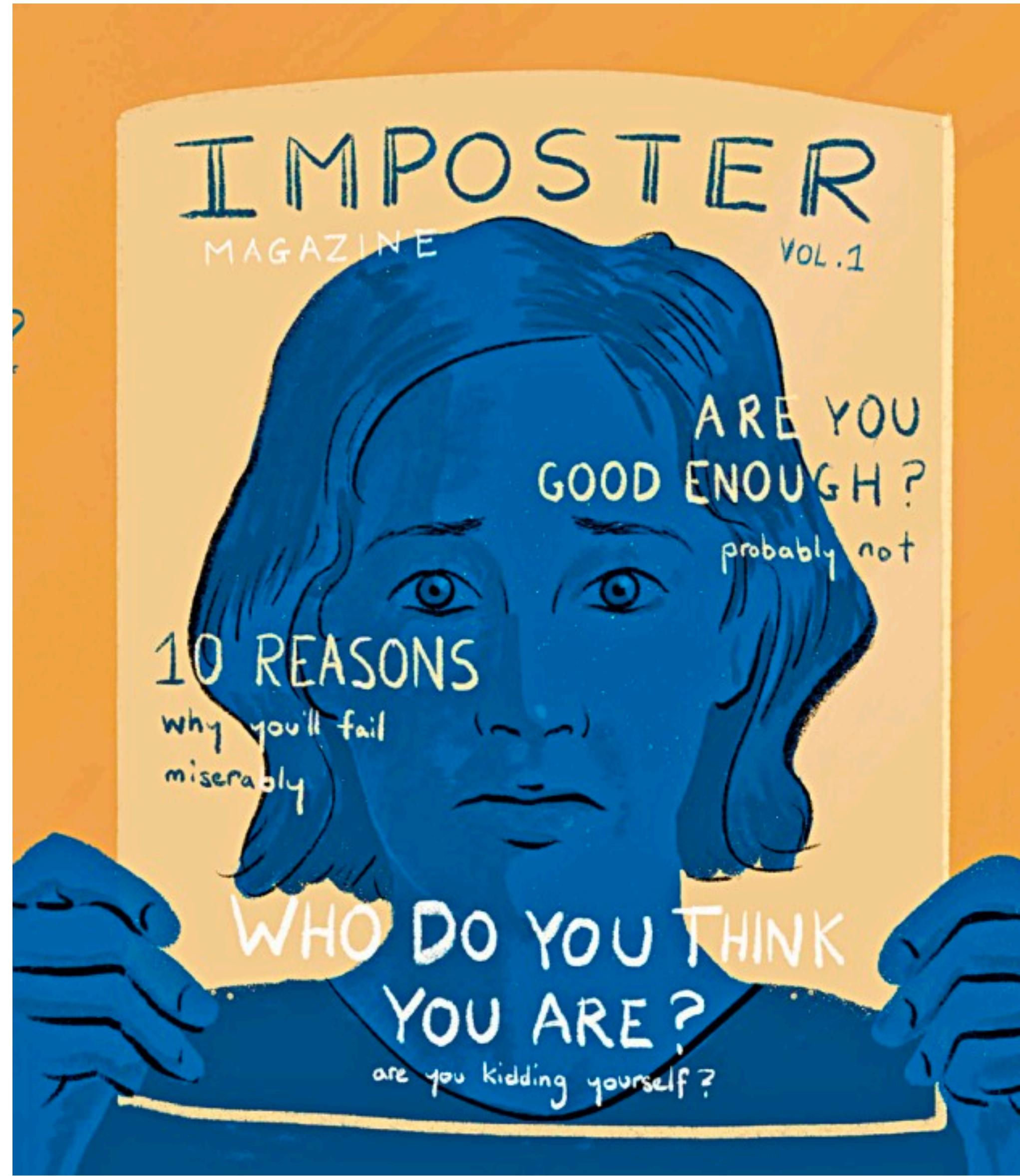


Desafios



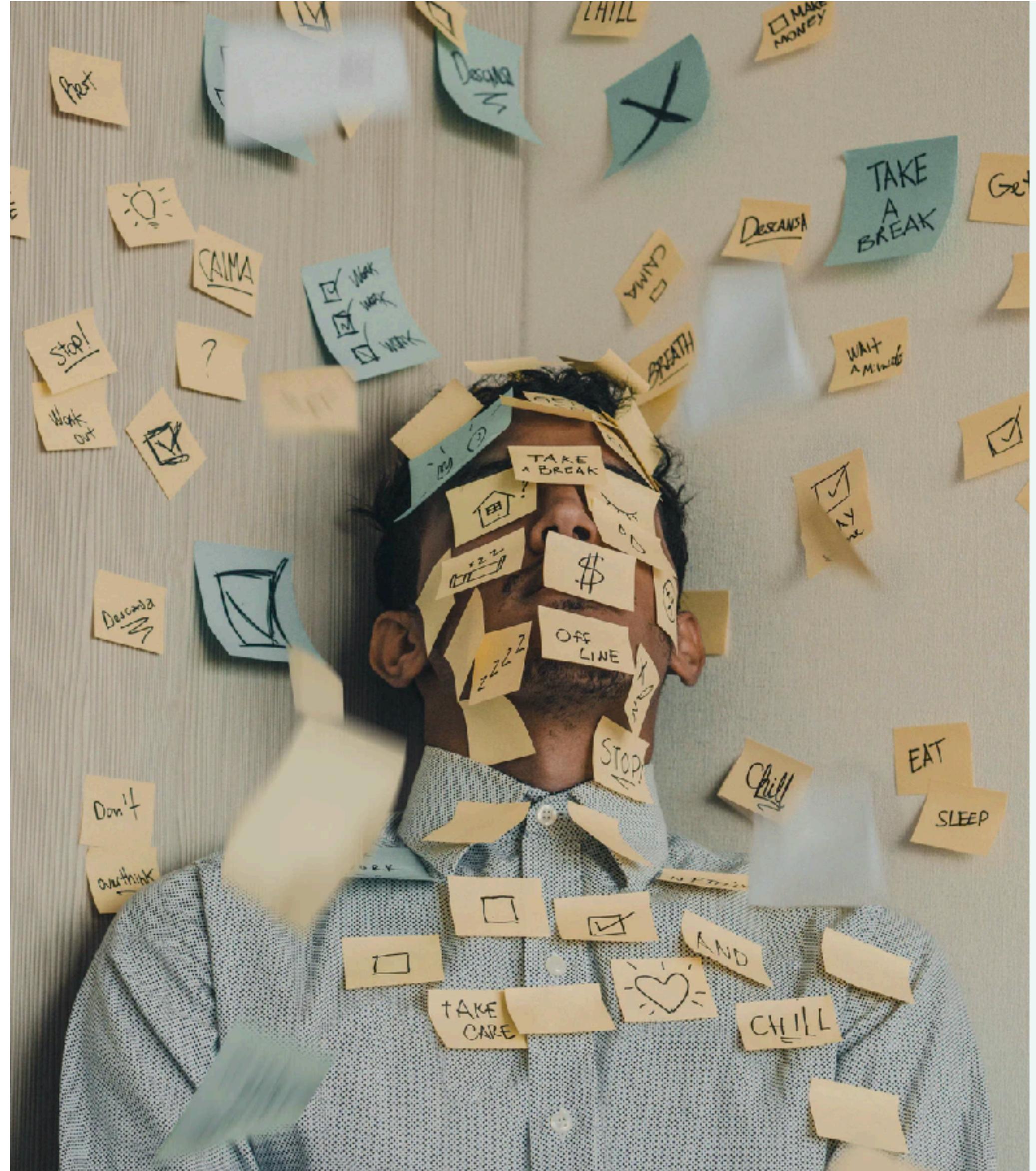
P | O | S | S | I | B | L | E

There is no failure, only feedback



Síndrome do Impostor

É muito mais comum do que imaginamos.



Muito o que aprender

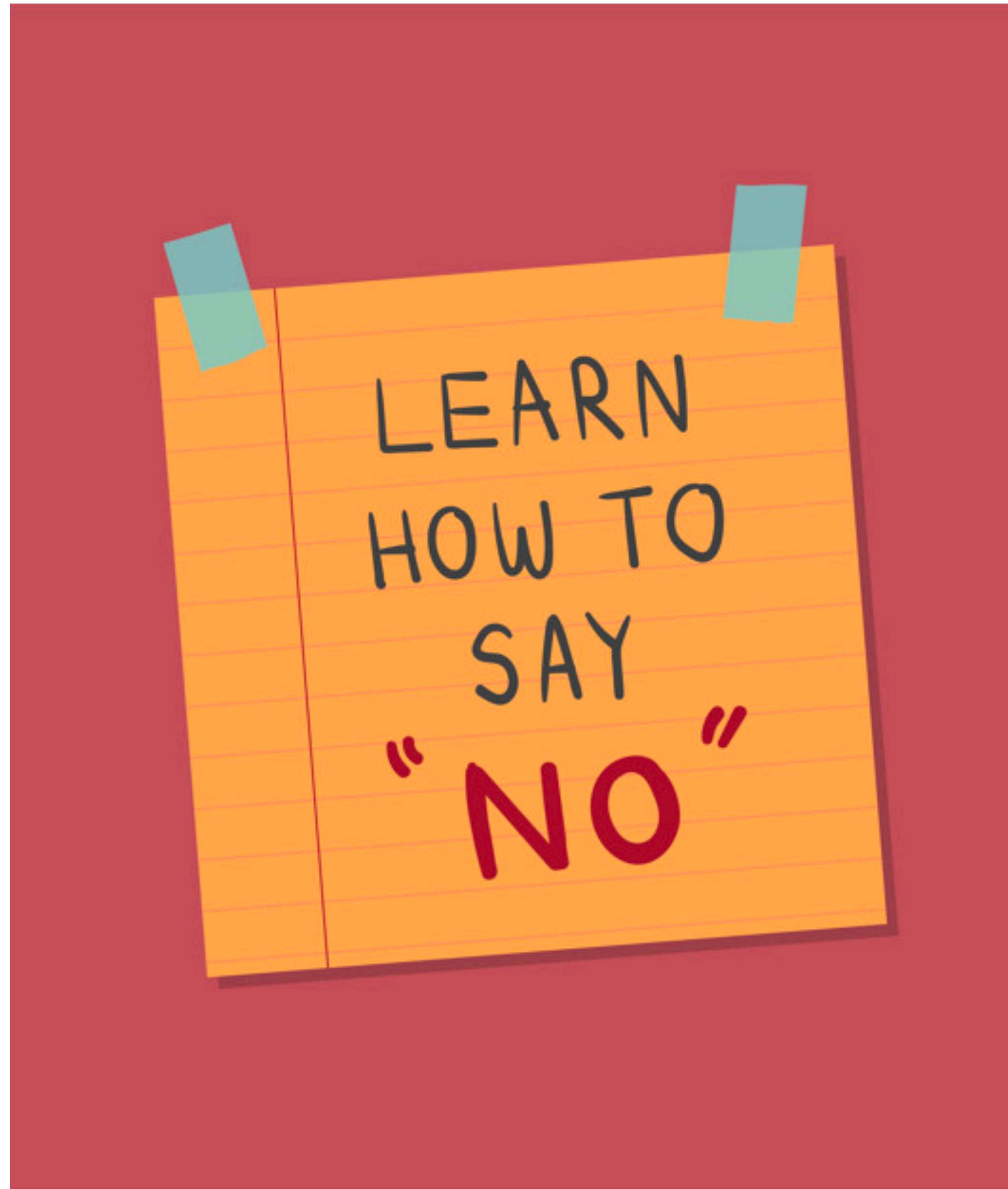
Como se manter por dentro de tudo que acontece?

THE MORE WE LEARN, THE LESS WE KNOW



Emprego

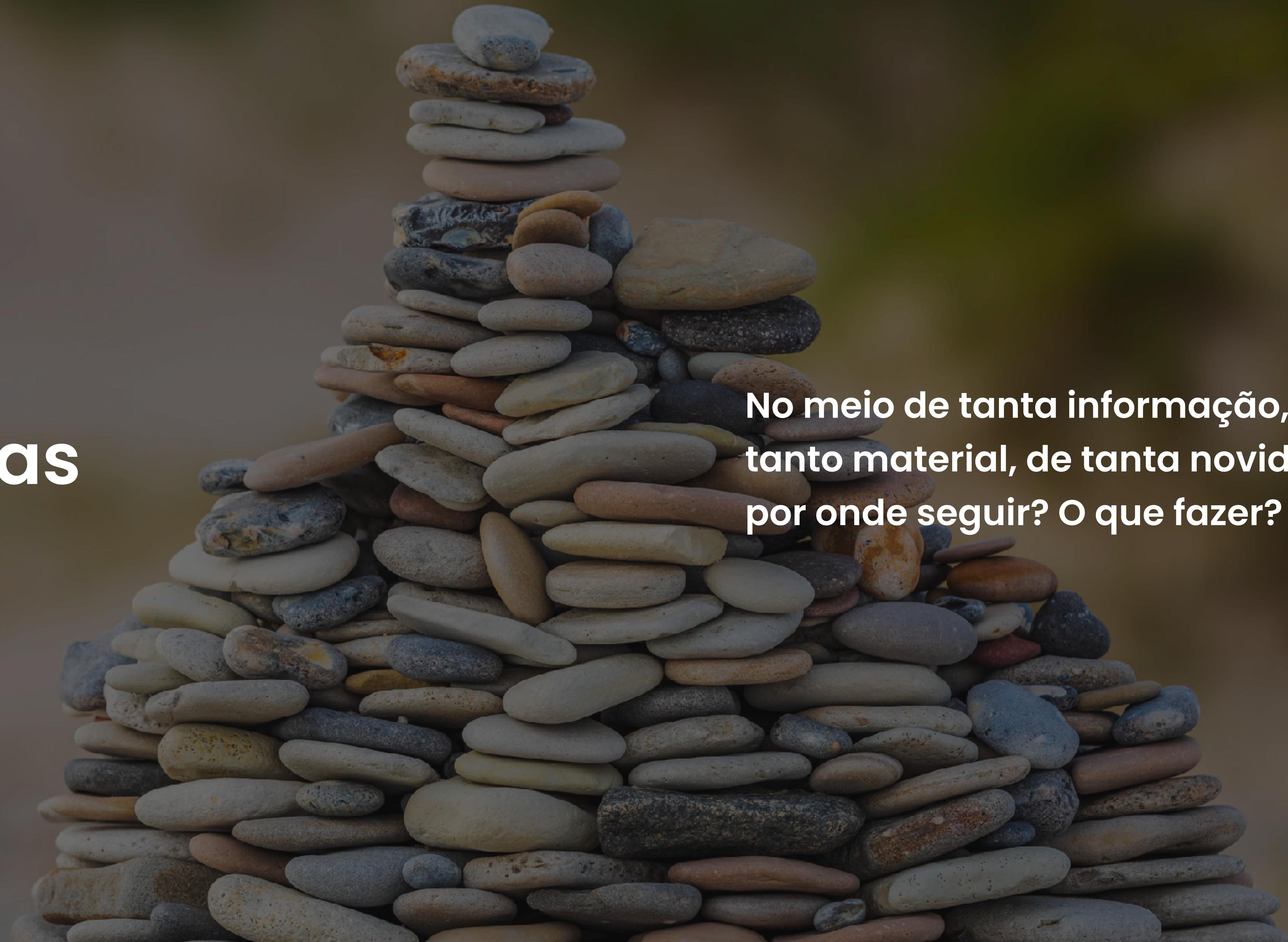
Você vai ser rejeitado, você vai receber muitos não's, vão te dizer que você não é o suficiente.



Dizer NÃO

Não significa que você vai perder oportunidade ou fechar portas, significa que você vai focar no que é importante para você e naquele momento.

Dicas



No meio de tanta informação, de tanto material, de tanta novidade, por onde seguir? O que fazer?

MACHINE LEARNING



MACHINE LEARNING

ESTATÍSTICA

“**Statistics** is a **science**,
not a branch of mathematics,
but uses mathematical models
as essential tools.”

—John Tukey

A dark-themed screenshot of a computer screen displaying a large amount of white code text on a black background. The code appears to be PHP, showing various functions, variables, and conditional statements.

PROGRAMAÇÃO

Comunicar



Flexibilidade



Curiosidade



Pensamento Crítico



Faça parte de grupos, comunidades e organizações



AFRØPYTHON

pyladies

AI Girls

girls
support
girls

pro
gra
{m}a
ria

MINAS
PROGRAMAM



A logo featuring a stylized profile of a person's head in black and white, set against a background of colored squares. To the right, the text "MENINAS DIGITAIS" is written in large, bold, black capital letters.

Mentores, Role Models, Sponsors, Advocates

DIVERSITY





Seja quem você é

Siga a gente:

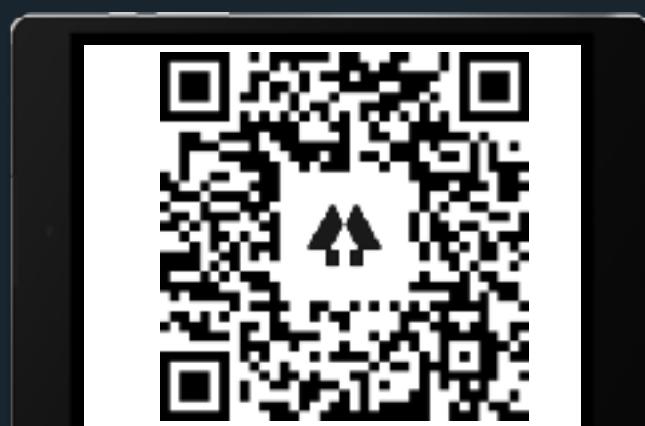
bit.ly/ai-inclusive-instagram



Materiais de Inteligência Artificial,
Ciência de Dados, Machine Learning
Eventos, Ingressos de graça e muito
mais!

Em breve:

Bolsas de estudo para cursos de R,
Python, Ciência de Dados, SQL, e
outros.



Obrigada!

slides e material: bit.ly/cimatech-2020



Salve o nosso repositório com estrela



ai-inclusive.org

