CDSM - ClyS
Tarapoto

"IV CONGRESO NACIONAL E INTERNACIONAL DEL CAPÍTULOS DE INDUSTRIALES Y SISTEMAS - IV CONIS "

"Ecosistemas Digitales en el Mundo"

Inteligencia Artificial en acción desde Microsoft

IV CONIS OCT 2021

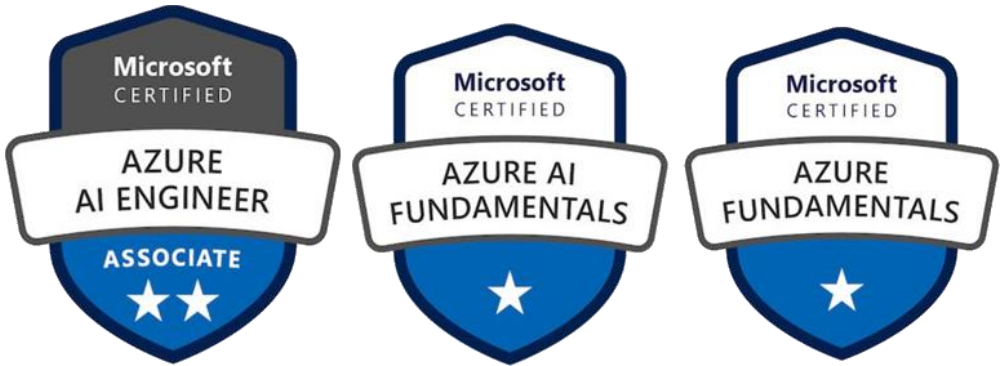
ECOSISTEMAS DIGITALES EN EL MUNDO

Pablo Angel Piovano

- Ingeniero en Computación, con más de 12 años de experiencia en el sector TI.
- Enfocado en desarrollar e implementar soluciones con tecnologías Microsoft
- Participo activamente como organizador en la comunidad **Microsoft Azure AI Latam South.**

@ppiova

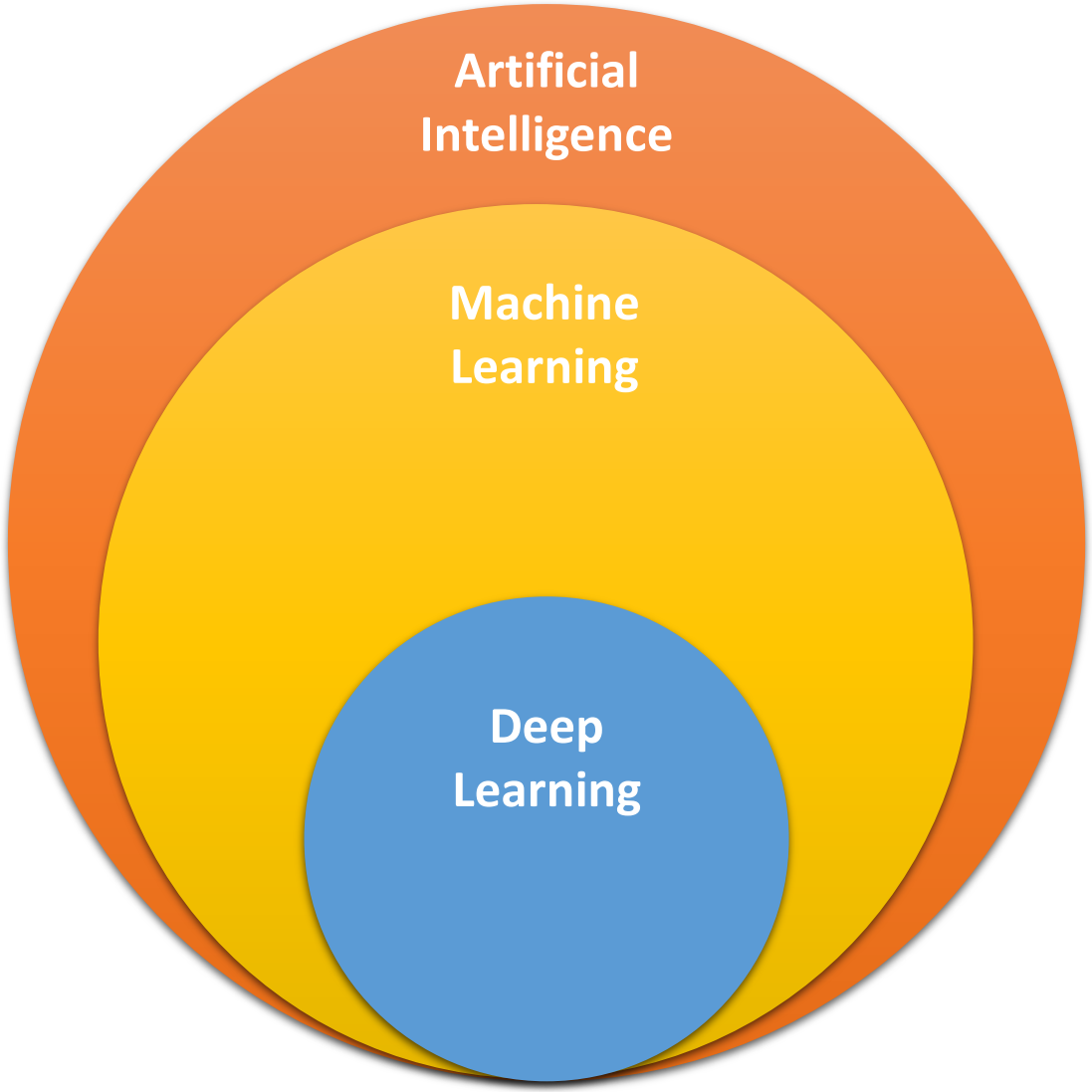
ppiova



Agenda

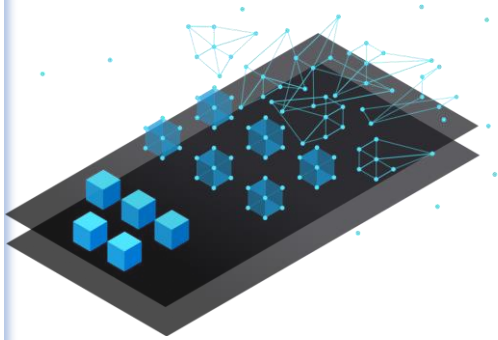
- Conceptos AI, ML y DL
- Cargas de trabajo comunes de la AI
- Tipos de Machine Learning
- Diferentes escenarios de ML
- Microsoft AI Ecosystem
- Microsoft Azure Cognitive Services
- ML.NET

AI + ML + Deep learning

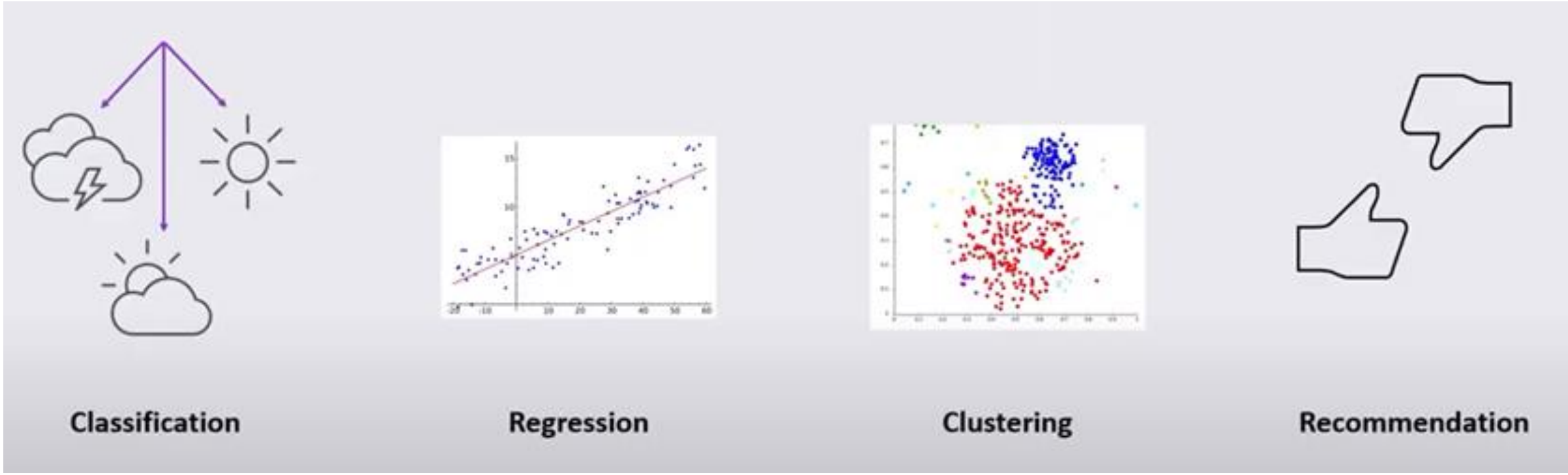


Cargas de trabajo comunes de la IA

Aprendizaje automático	Modelos predictivos basados en datos y estadísticas: la base de la IA
Detección de anomalías	Sistemas que detectan patrones o eventos inusuales, lo que permite una acción preventiva
Computer Vision	Aplicaciones que interpretan la entrada visual de cámaras, imágenes o vídeos.
Procesamiento del lenguaje natural	Aplicaciones que pueden interpretar el lenguaje escrito o hablado
IA conversacional	Agentes de IA (o *bots*) que pueden entablar diálogos con usuarios humanos



Diferentes escenarios de ML



SUPERVISADOS

NO SUPERVISADOS

Ecosistema de IA de Microsoft

Cognitive Services

AzureML

ML.NET

Administrado

Personalizado

Microsoft Cognitive Services

Fácil

REST APIs

Simple de añadir: solo unas cuantas líneas de código

Flexible

Se integra en el lenguaje y la plataforma de su elección.

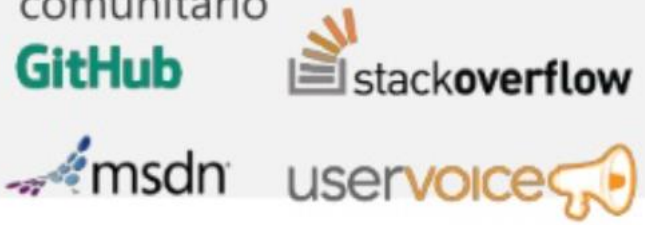
La amplitud de ofertas le ayuda a encontrar la API correcta para su aplicación

Traiga sus propios datos para su experiencia personalizada

Probado

Construido por expertos en su campo de Microsoft Research, Bing y Azure Machine Learning

Documentación de calidad, código de muestra y soporte comunitario



Link: Crear Recurso en Azure

Categorías

Visión

- **Computer Vision**
- **Custom Vision**
- **Face**
- Form Recognizer

Voz

- Speech to Text
- Text to Speech
- Speech Translation
- Speaker Recognition

Idioma

- LUIS
- QnA Maker
- Text Analytics
- Translator Text

Decisión

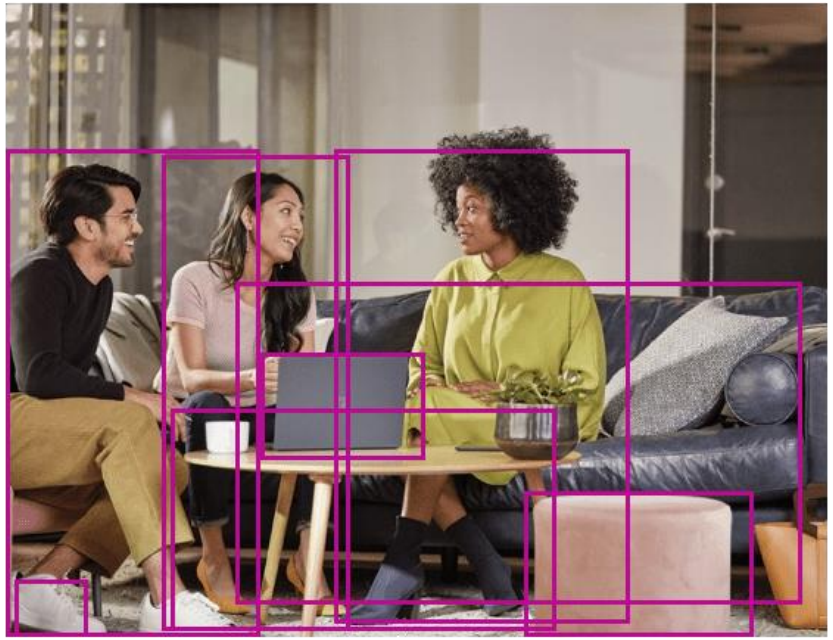
- Anomaly Detector
- Content Moderator
- Personalizer

Búsqueda

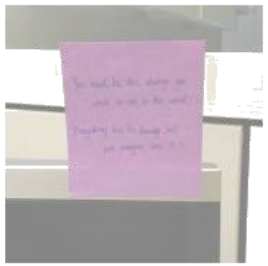
- Bing Web Search
- Bing Image Search
- Bing Entity Search
- Bing News Search
- Bing Video Search
- Bing Autosuggest
- Bing Spell Check
- Bing Local Business Search
- Bing Custom Search

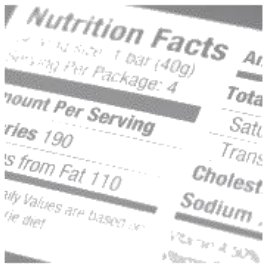
Computer Vision

Véala en acción



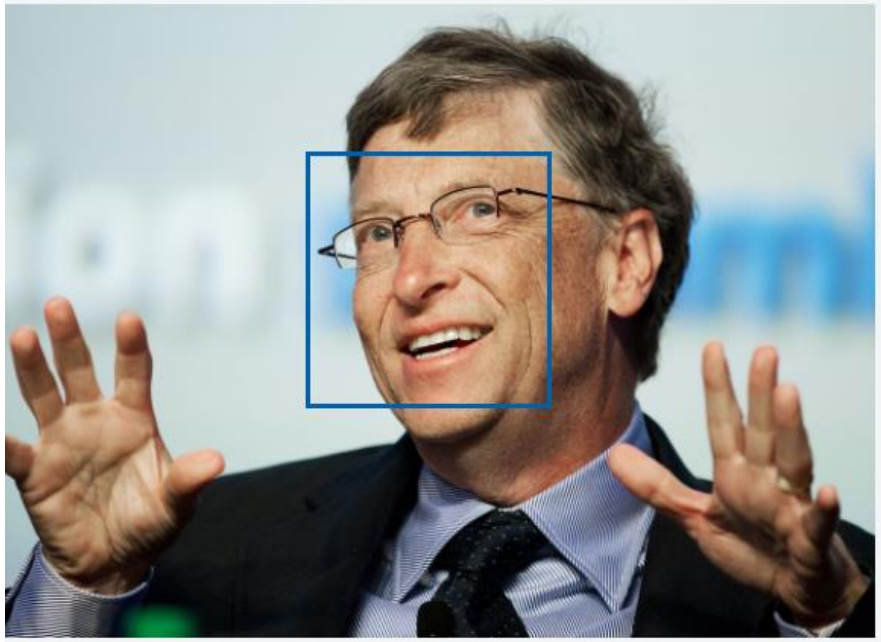
NOMBRE DE LA CARACTERÍSTICA:	VALOR
Objetos	[{ "rectangle": { "x": 6, "y": 390, "w": 48, "h": 40 }, "object": "footwear", "confidence": 0.513 }, { "rectangle": { "x": 104, "y": 104, "w": 127, "h": 323 }, "object": "person", "confidence": 0.763 }, { "rectangle": { "x": 174, "y": 236, "w": 113, "h": 74 }, "object": "Laptop", "parent": { "object": "computer", "confidence": 0.56 }, "confidence": 0.553 }, { "rectangle": { "x": 351, "y": 331, "w": 154, "h": 99 }, "object": "seating", "confidence": 0.525 }, { "rectangle": { "x": 0, "y": 101, "w": 174, "h": 329 }, "object": "person", "confidence": 0.855 }, { "rectangle": { "x": 223, "y": 99, "w": 199, "h": 322 }, "object": "person", "confidence": 0.725 }, { "rectangle": { "x": 154, "y": 191, "w": 387, "h": 218 }, "object": "seating", "confidence": 0.679 }, { "rectangle": { "x": 111, "y": 275, "w": 264, "h": 151 }, "object": "table", "confidence": 0.601 }]





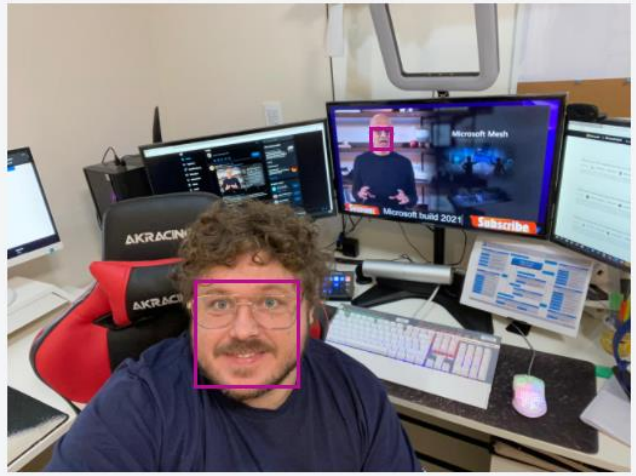
Link: Ejemplo Consola C#

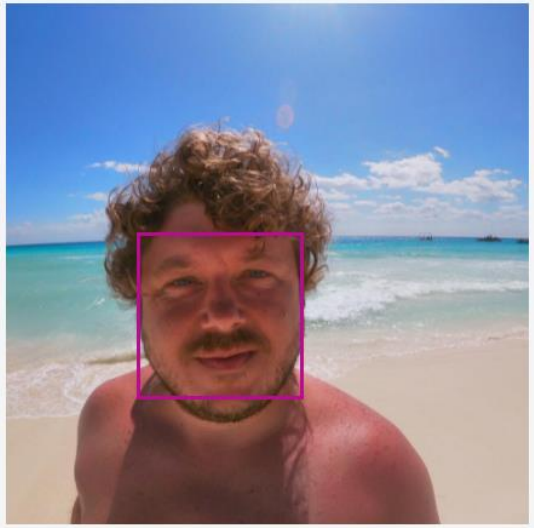
Face Api




```
Resultado de la detección:
1 caras detectadas

JSON:
[
  {
    "faceRectangle": {
      "top": 187,
      "left": 482,
      "width": 316,
      "height": 316
    },
    "faceAttributes": {
      "emotion": {
        "anger": 0.0,
        "contempt": 0.0,
        "disgust": 0.0,
        "fear": 0.0,
        "happiness": 1.0,
        "neutral": 0.0,
        "sadness": 0.0,
        "surprise": 0.0
      }
    }
  }
]
```



URL de la imagen | Enviar | Examinar

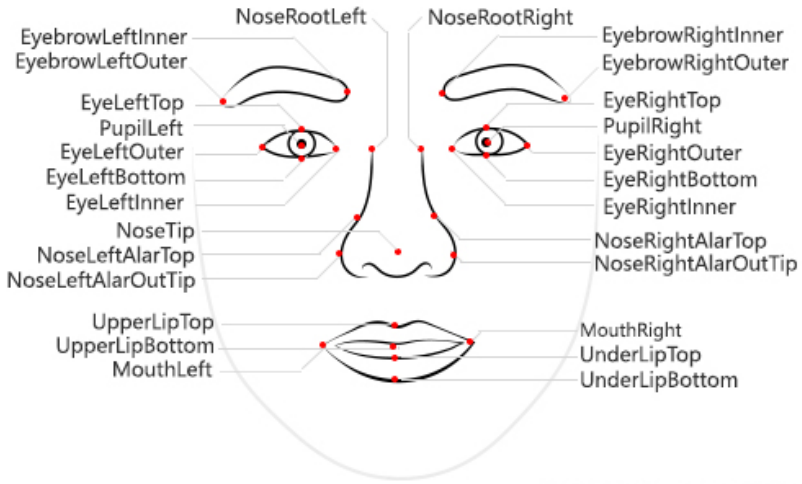
URL de la imagen | Enviar | Examinar

Resultado de la comprobación: las dos caras pertenecen a la misma persona. **La confianza es 0.91385.**

[Link: API's Documentation]

[Link: Crear Recurso Face Api en Azure]

[Link: Ejemplo para detectar Masks en las caras]



Microsoft Azure

Home > Resource groups > DemoAI > Create a resource >

Custom Vision

Microsoft

Custom Vision

Add to Favorites

Microsoft

4.3 (44 ratings)

Create

Prediction Resource

Select pricing and location for Prediction Resource

Prediction location * (US) East US

Prediction pricing tier (Learn More) *

Free F0 (2 Transactions per second, 10K Transactions per month)

Standard S0 (10 Transactions per second)

Microsoft Azure

Search resources, services, and docs (G+/)

Home > Resource groups > DemoAI > Create a resource > Custom Vision >

Create

Custom Vision All In One

optimize manufacturing processes, accelerate digital marketing campaigns -- and more. No machine learning expertise is required. Learn more

Create options: Both | Training | Prediction

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * Pay-As-You-Go

Resource group * DemoAI

Create new

Name * XamDemo

Training Resource

Select pricing and location for Training Resource

Training location * (US) East US

Training pricing tier (Learn More) *

Free F0 (2 Transactions per second, 2 Projects)

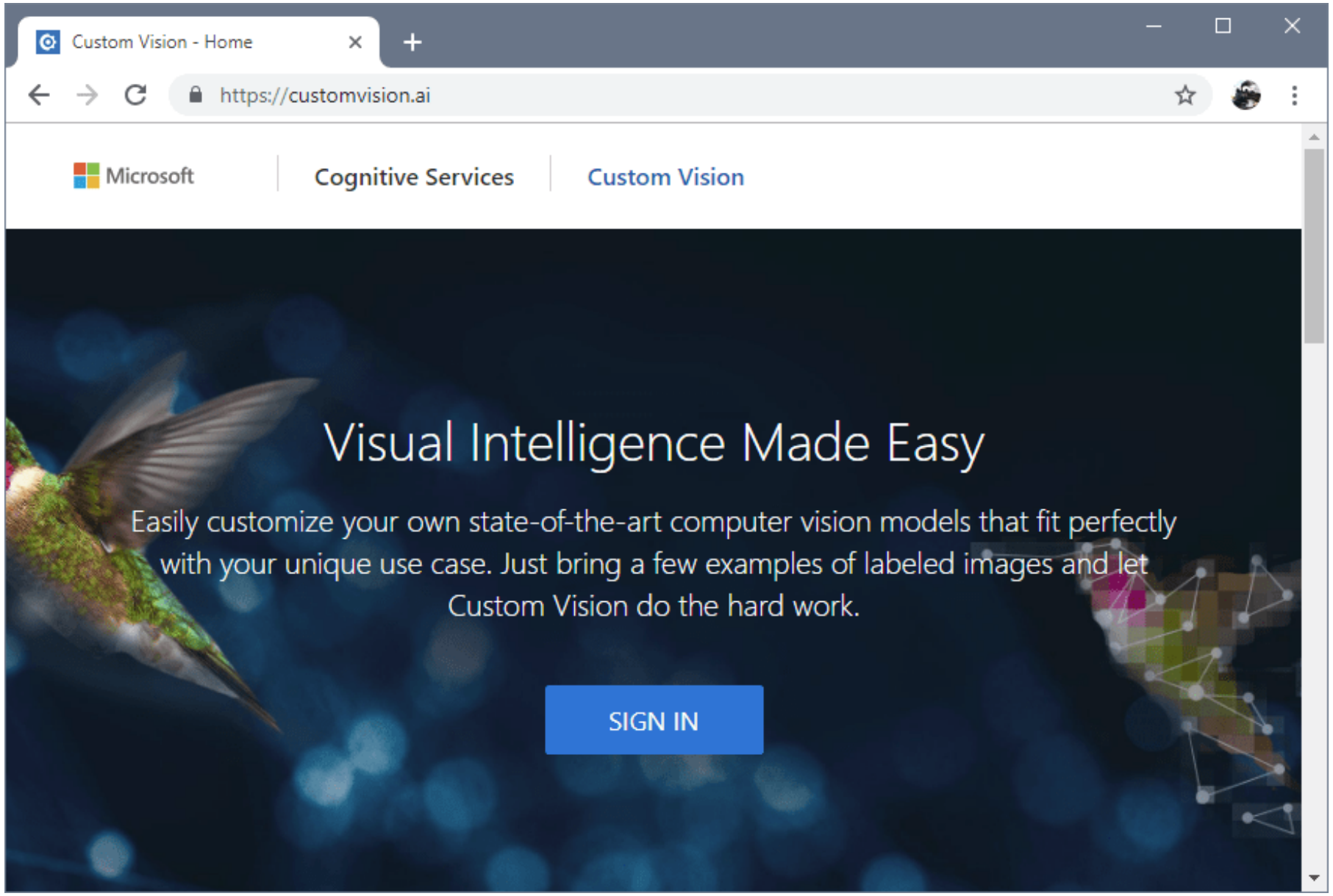
Standard S0 (10 Transactions per second)

Prediction Resource

Select pricing and location for Prediction Resource

Prediction location * (US) East US

Prediction pricing tier (Learn More) *


Custom Vision - Home
https://customvision.ai
Microsoft
Cognitive Services
Custom Vision
Visual Intelligence Made Easy
Easily customize your own state-of-the-art computer vision models that fit perfectly with your unique use case. Just bring a few examples of labeled images and let Custom Vision do the hard work.
SIGN IN

Create new project

Name*

Enter project name

Description

Enter project description

Resource create new

Manage Resource Permissions

Project Types

- (•) Classification
- ( ) Object Detection

Classification Types

- ( ) Multilabel (Multiple tags per image)
- (•) Multiclass (Single tag per image)

Domains:

- (•) General [A2]
- ( ) General [A1]
- ( ) General
- ( ) Food
- ( ) Landmarks
- ( ) Retail
- ( ) General (compact) [S1]
- ( ) General (compact)
- ( ) Food (compact)
- ( ) Landmarks (compact)
- ( ) Retail (compact)

Pick the domain closest to your scenario. Compact domains are lightweight models that can be exported to iOS/Android and other platforms. Learn More

Fruit

Training Images | Performance | Predictions | Train | Quick Test

Filter

Add images | Delete | Tag images | Select all

Iteration

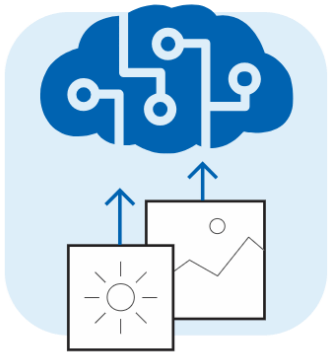
Workspace

Tags

Tagged | Untagged

Showing: all tagged images

Search for

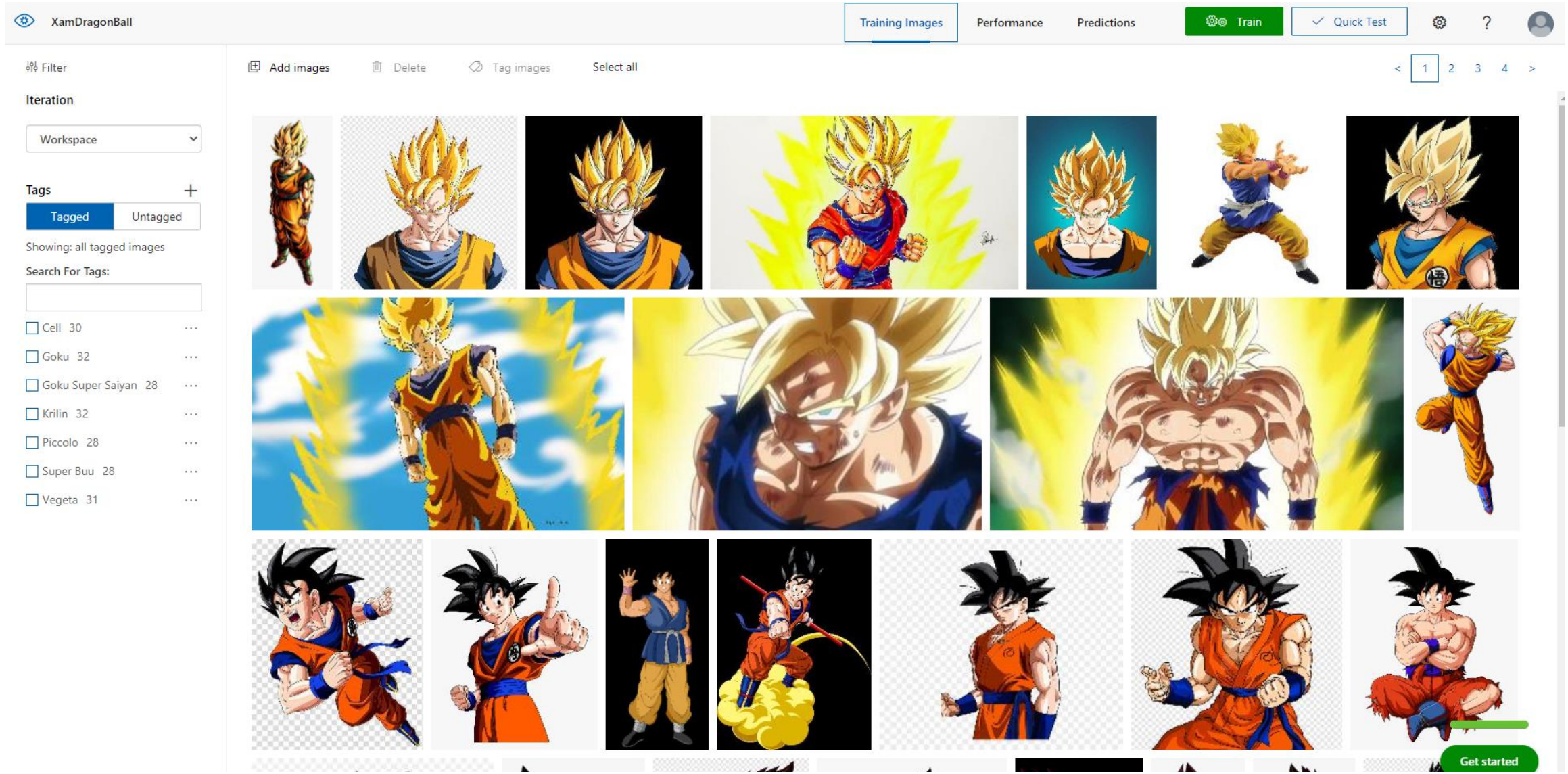


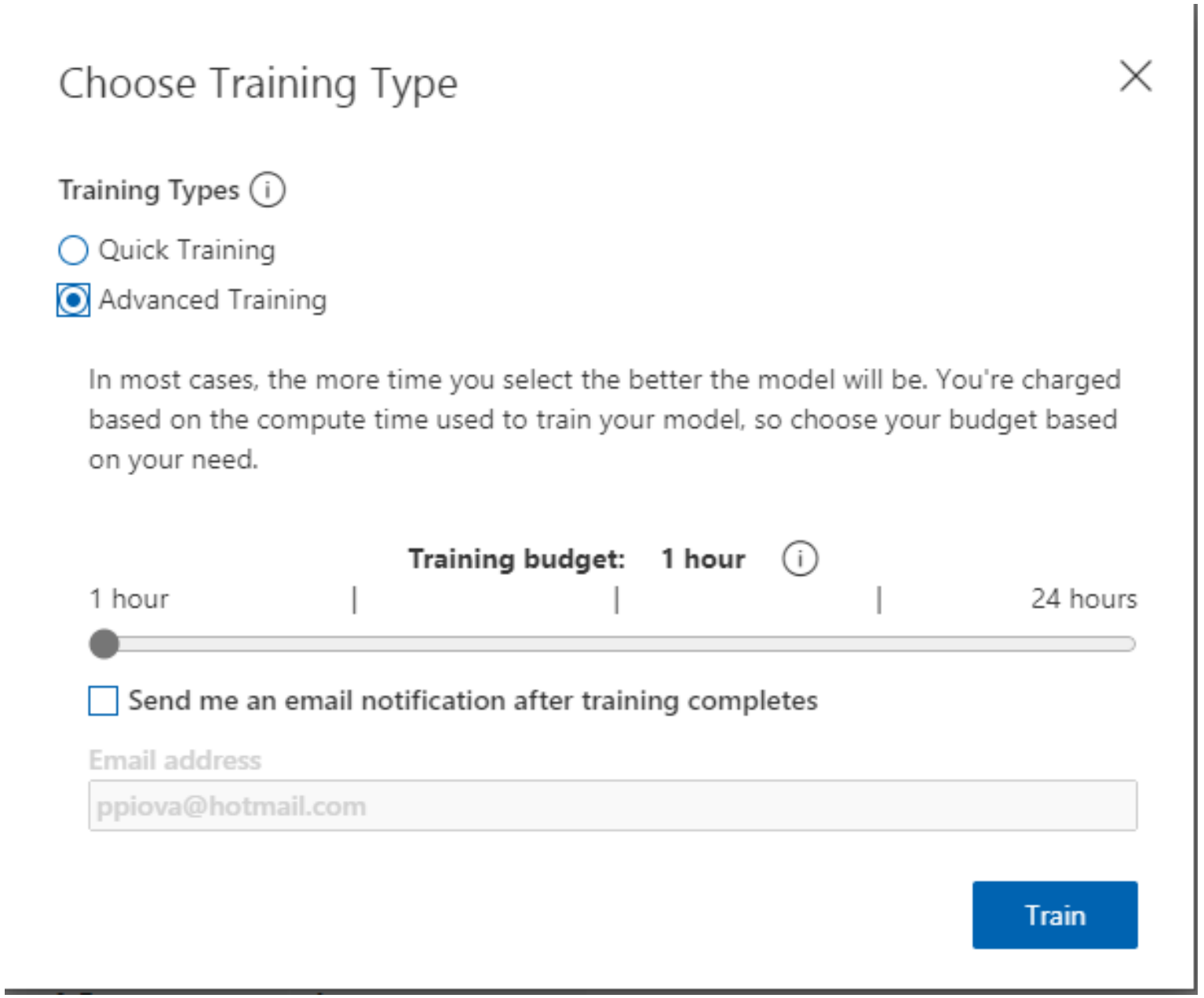
Looks like you don't have any images here!

Go ahead and browse for images to upload to your project, tag them, and they will be ready to be trained.

Add images

.JPG, .PNG, .BMP format, up to 6 MB per image


XamDragonBall
Training Images
Performance
Predictions
Train
Quick Test
Filter
Add images
Delete
Tag images
Select all
1
2
3
4
Iteration
Workspace
Tags
Tagged
Untagged
Showing: all tagged images
Search For Tags:
Cell 30
Goku 32
Goku Super Saiyan 28
Krilin 32
Piccolo 28
Super Buu 28
Vegeta 31
Get started


Choose Training Type
Training Types
Quick Training
Advanced Training
In most cases, the more time you select the better the model will be. You're charged based on the compute time used to train your model, so choose your budget based on your need.
Training budget: 1 hour
1 hour
24 hours
Send me an email notification after training completes
Email address
ppiova@hotmail.com
Train

Iterations

Probability Threshold: 50%

Iteration 4 PUBLISHED
Advanced Trained : 21 hours ago with General (compact) domain, Training Budget: 2 hours

Iteration 3
Trained : 23 hours ago with General (compact) domain

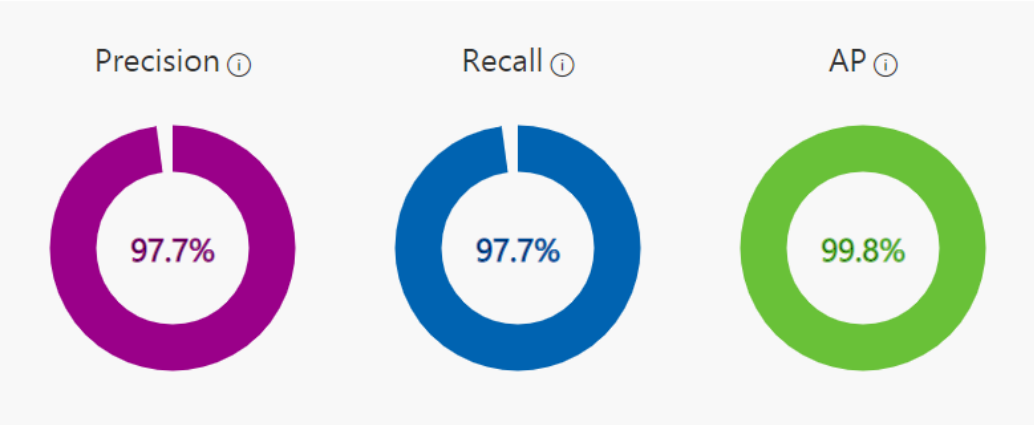
Iteration 2
Trained : 23 hours ago with General (compact) domain

Iteration 1
Trained : 1 days ago with General (compact) domain

Unpublish | Prediction URL | Delete | Export

Iteration 4

Finished training on **6/1/2021, 8:57:42 PM** using **General (compact)** domain
Iteration id: **29086a4a-2a31-45c2-a097-bcf1bc9cd9a3**
Classification type: **Multiclass (Single tag per image)**
Published as: **Iteration4**



Performance Per Tag

Tag	Precision	Recall	A.P.	Image count
Vegeta	100.0%	100.0%	100.0%	31
Super Buu	100.0%	100.0%	100.0%	28
Piccolo	100.0%	100.0%	100.0%	28
Goku Super Saiyan	100.0%	83.3%	100.0%	28

Get started

Iterations

Probability Threshold: 50%

Iteration 4 PUBLISHED

Advanced Trained : 21 hours ago with General (compact) domain, Training Budget: 2 hours

Iteration 3

Trained : 23 hours ago with General (compact) domain

Iteration 2

Trained : 23 hours ago with General (compact) domain

Iteration 1

Trained : 1 days ago with General (compact) domain

Training Images | Performance | Predictions | Train | Quick Test

Performance Per Tag

Tag	Precision	Recall	A.P.	Image count
Vegeta	100.0%	100.0%	100.0%	31
Super Buu	100.0%	100.0%	100.0%	28
Piccolo	100.0%	100.0%	100.0%	28
Goku Super Saiyan	100.0%	83.3%	100.0%	28
Goku	100.0%	100.0%	100.0%	32
Cell	100.0%	100.0%	100.0%	30
Krilin	87.5%	100.0%	98.2%	32

Quick Test

Image URL

Enter Image URL

or

Browse local files

File formats accepted: jpg, png, bmp
File size should not exceed: 4mb

Using model trained in

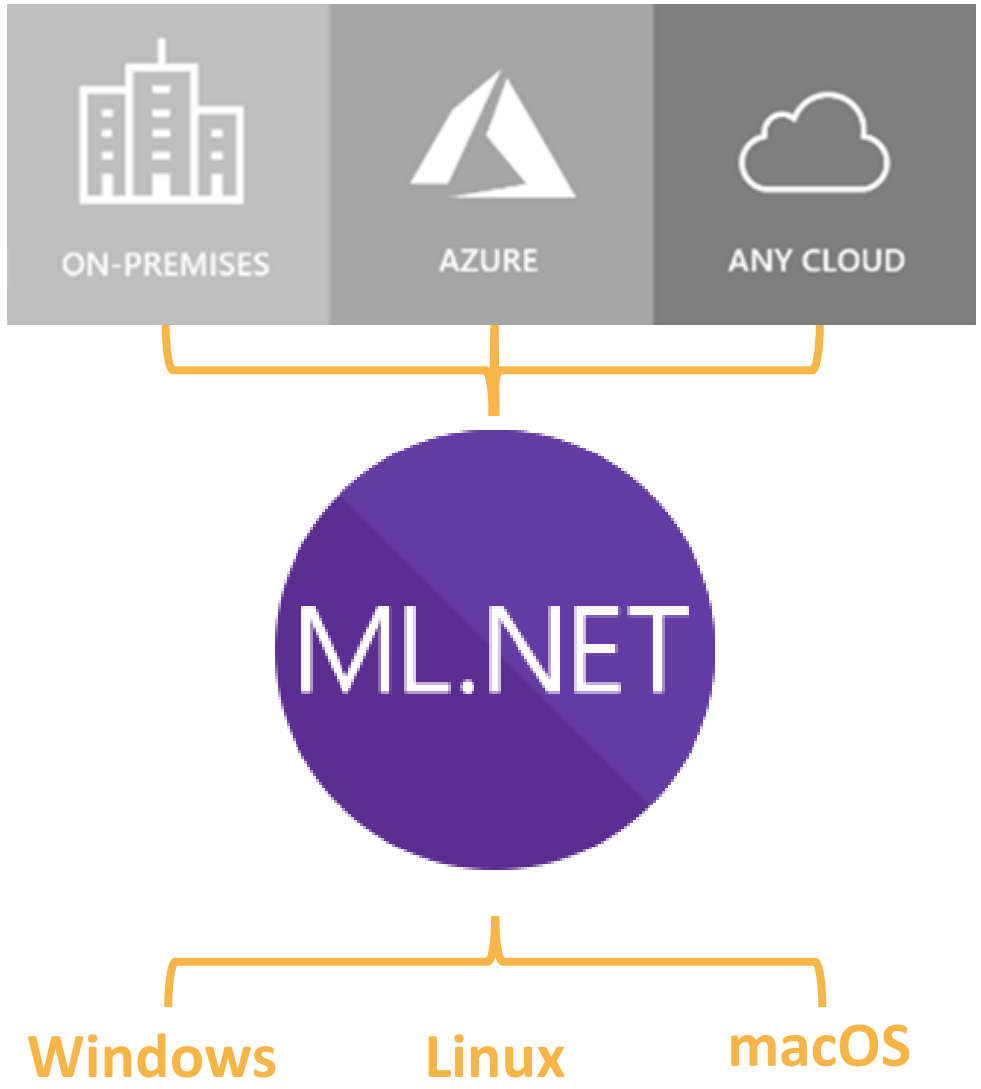
Iteration

Iteration 4

Predictions

Tag	Probability
Piccolo	100%
Cell	0%
Goku Super Saiyan	0%
Super Buu	0%
Goku	0%

ML.NET



Model Builder

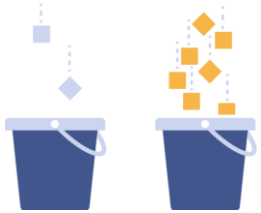
ML.NET CLI

AutoML.NET API
(Microsoft.ML.AutoML)

ML.NET API
(Microsoft.ML)

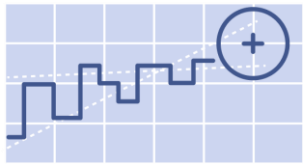
Tareas de ML.NET Soportadas

Clasificación

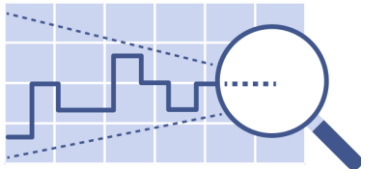


Regresión

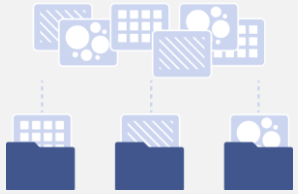
Predicción



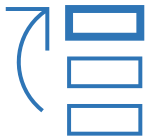
Detección de anomalías



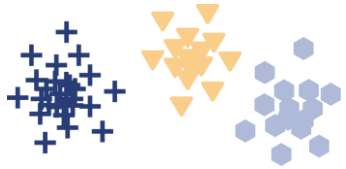
Clasificación de imágenes



Ranking



Clustering

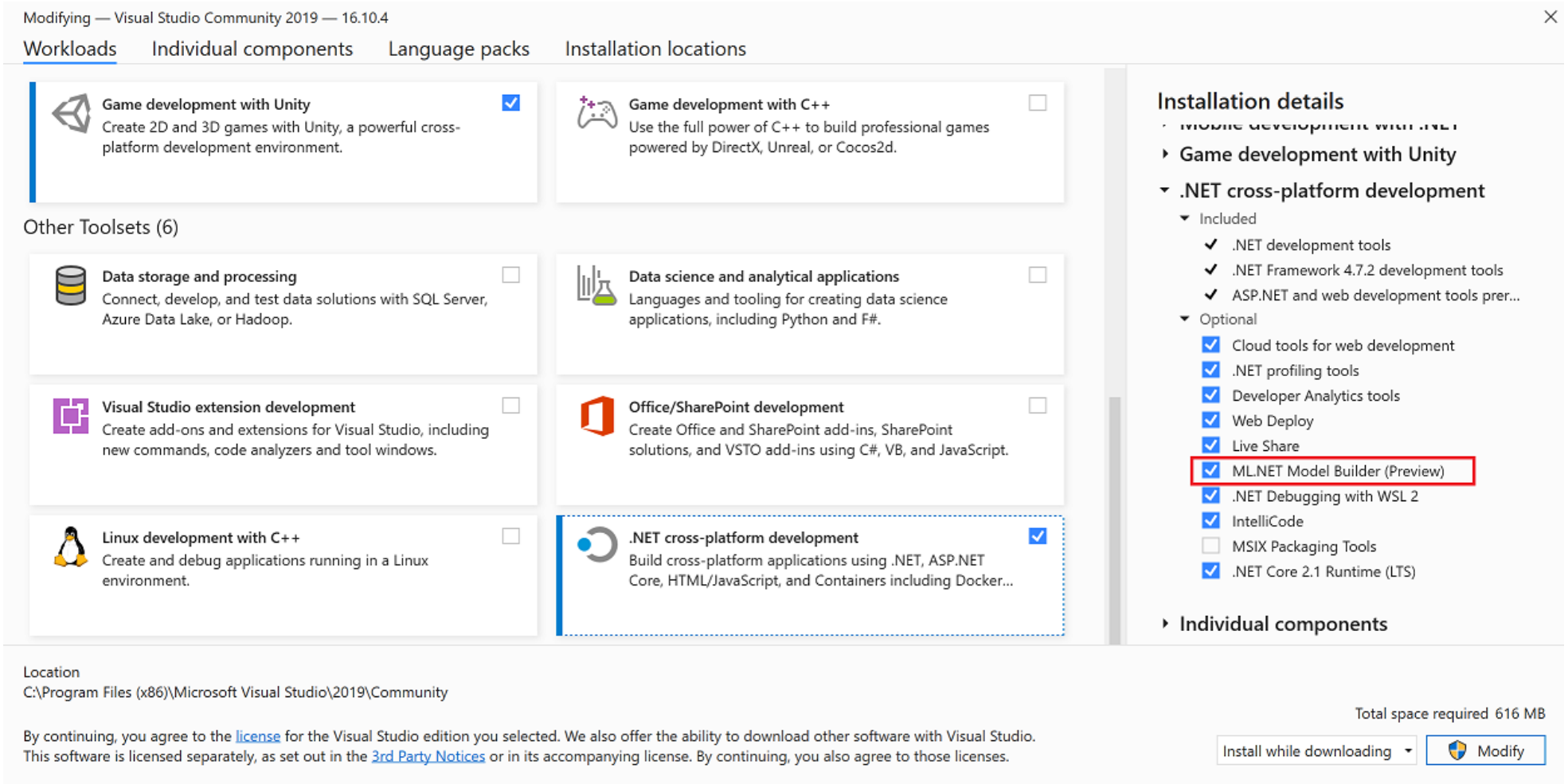


Recomendaciones

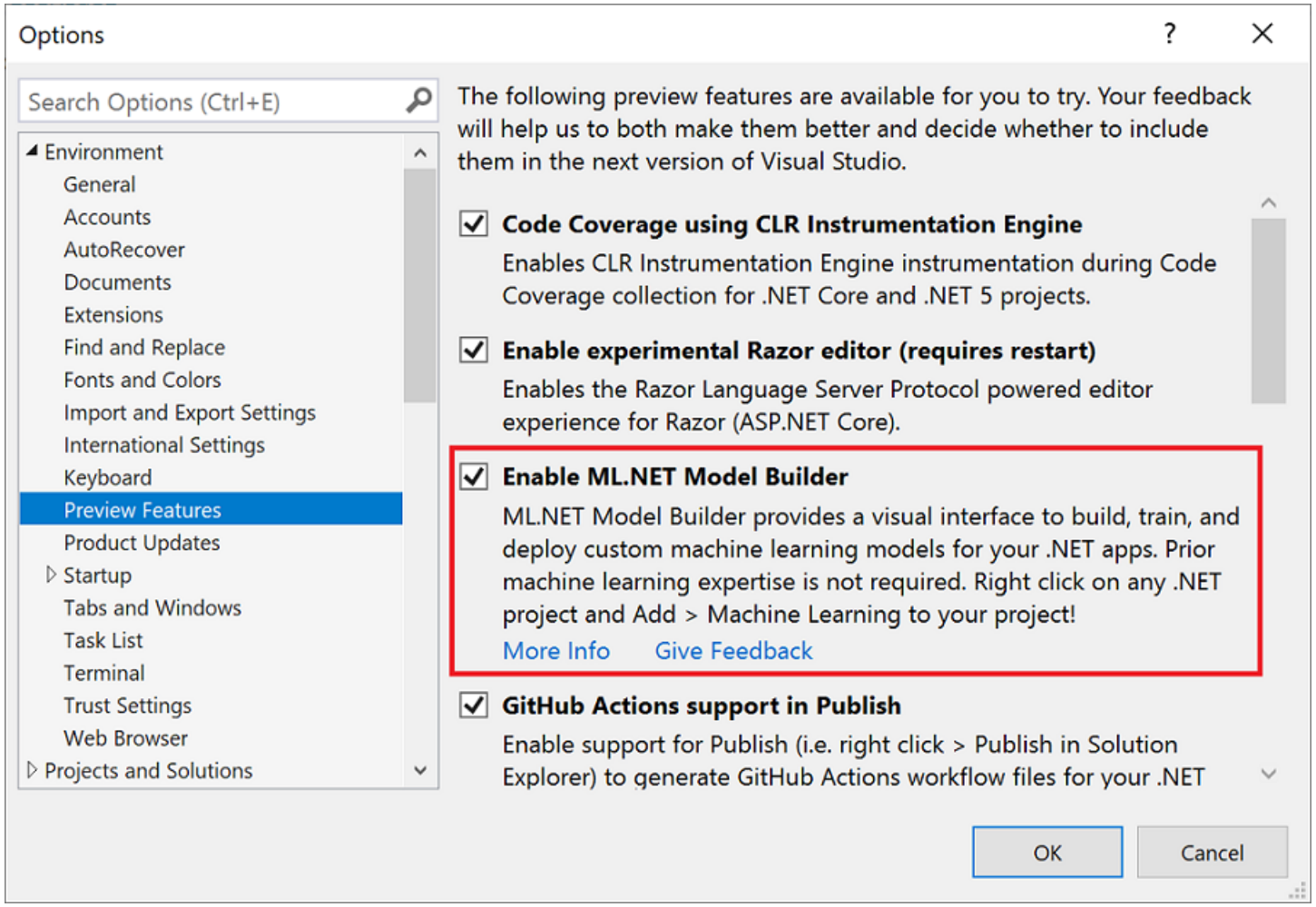
Detección de objetos

[How to choose an ML.NET algorithm - ML.NET | Microsoft Docs]

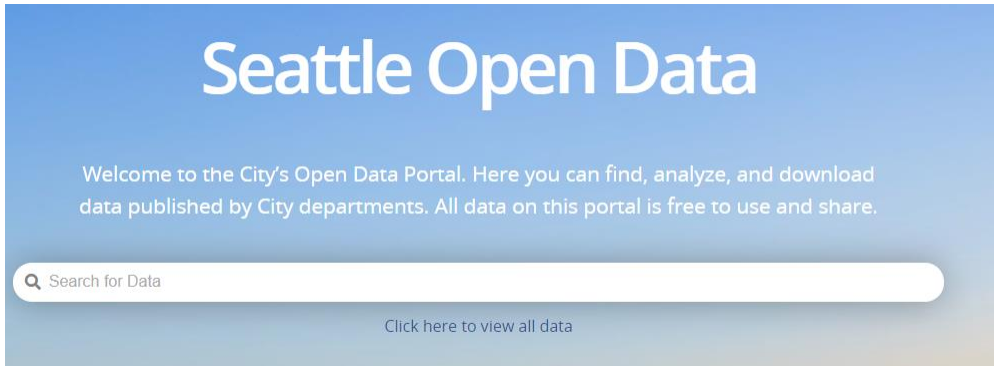
Instalación ML.NET



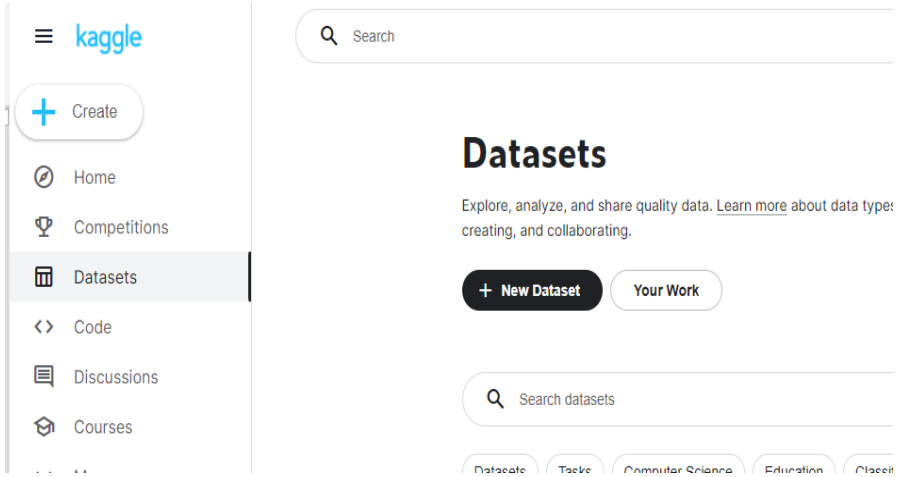
Habilitar ML.NET en Visual Studio



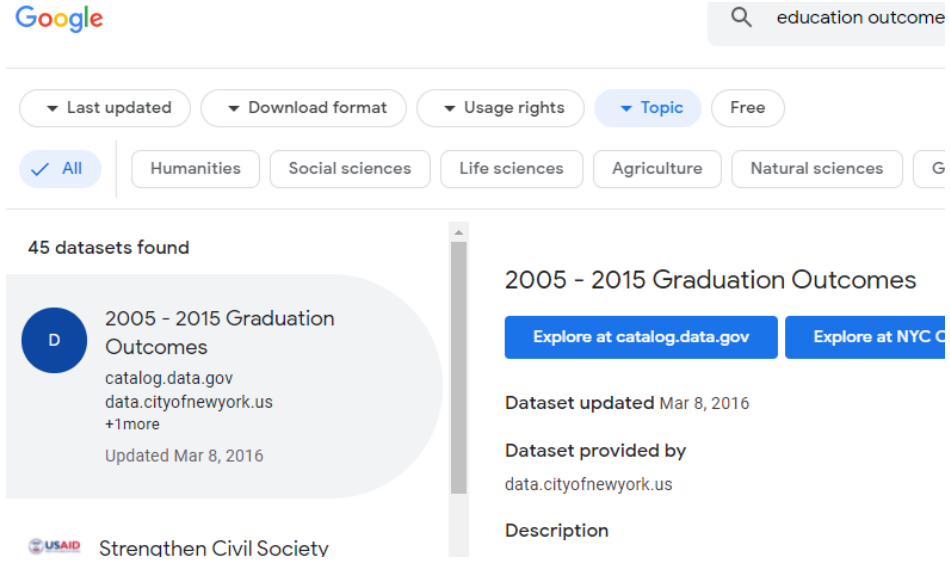
https://msropendata.com/



https://data.seattle.gov/



https://www.kaggle.com/datasets



https://datasetsearch.research.google.com/

Listado: https://gist.github.com/ppiova