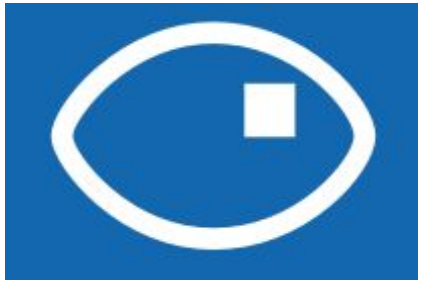


Azure Computer Vision

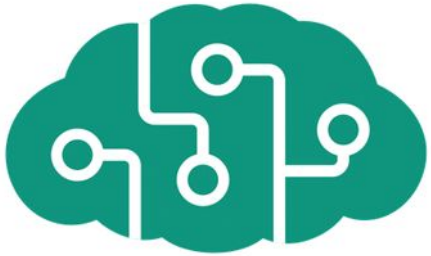
Azure Custom Vision

Marta Domagalski
MEDIAn - Bertelsmann Data Science Program

AI Expert Group
Bielefeld, 9.10.2019

Cognitive Services

Infuse your apps, websites and bots with intelligent algorithms to see, hear, speak, understand and interpret your user needs through natural methods of communication. Transform your business with AI today.



Microsoft
Cognitive Services

Use AI to solve business problems

Decision

Build apps that surface recommendations for informed and efficient decision-making.

Vision

Recognize, identify, caption, index, and moderate your pictures, videos, and digital ink content.

Speech

Convert speech into text and text into natural-sounding speech. Translate from one language to another and enable speaker verification and recognition.

Search

Add Bing Search APIs to your apps and harness the ability to comb billions of webpages, images, videos, and news with a single API call.

Language

Allow your apps to process natural language with pre-built scripts, evaluate sentiment and learn how to recognize what users want.

Comparison of Cloud APIs for CV

	Google	Azure	Rekognition	clarifai	IBM	KAIROS
FACE DETECTION	✓	✓	✓	✓	✓	✓
FACE RECOGNITION	✗	✓	✓	✗	✗	✓
FACIAL LANDMARKS	✓	✓	✓	✗	✗	✓
FEATURE DETECTION	✓	✓	✓	✓	✗	✓
SIMILAR FACES	✗	✓	✓	✗	✗	✓
EMOTION	✓	✓	✓	✗	✗	✓
LABEL DETECTION	✓	✓	✓	✓	✓	✗
LANDMARKS	✓	✓	✗	✗	✓	✗
CELEBRITIES	✗	✓	✓	✓	✗	✗
LOGO DETECTION	✓	✗	✗	✓	✗	✗
OCR	✓	✓	✓	✗	✓	✗
NSFW	✓	✓	✓	✓	✓	✗
IMAGE ANALYSIS	✓	✓	✓	✓	✓	✗
VIDEO ANALYSIS	✓	✓	✓	✗	✗	✓ for faces
CUSTOM MODEL CREATION	✗	✓	✗	✓	✓	✗

Created by ActiveWizards

Screenshot

https://medium.com/activewizards-machine-learning-company/comparison-of-top-6-cloud-apis-for-computer-vision-ebf2d299be73

Computer Vision API - v2.0

The Computer Vision API provides state-of-the-art algorithms to process images and return information:

- determine if an image contains mature content,
- find all the faces in an image,
- estimate dominant and accent colors,
- categorize the content of images,
- describe an image with complete English sentences,
- intelligently generate images thumbnails for displaying large images.

ALL FEATURES:

Tag visual features

Detect objects

Detect brands

Categorize an image

Describe an image

Detect faces

Detect image types

Detect domain-specific content

Detect the color scheme

Generate a thumbnail

Get the area of interest

OCR

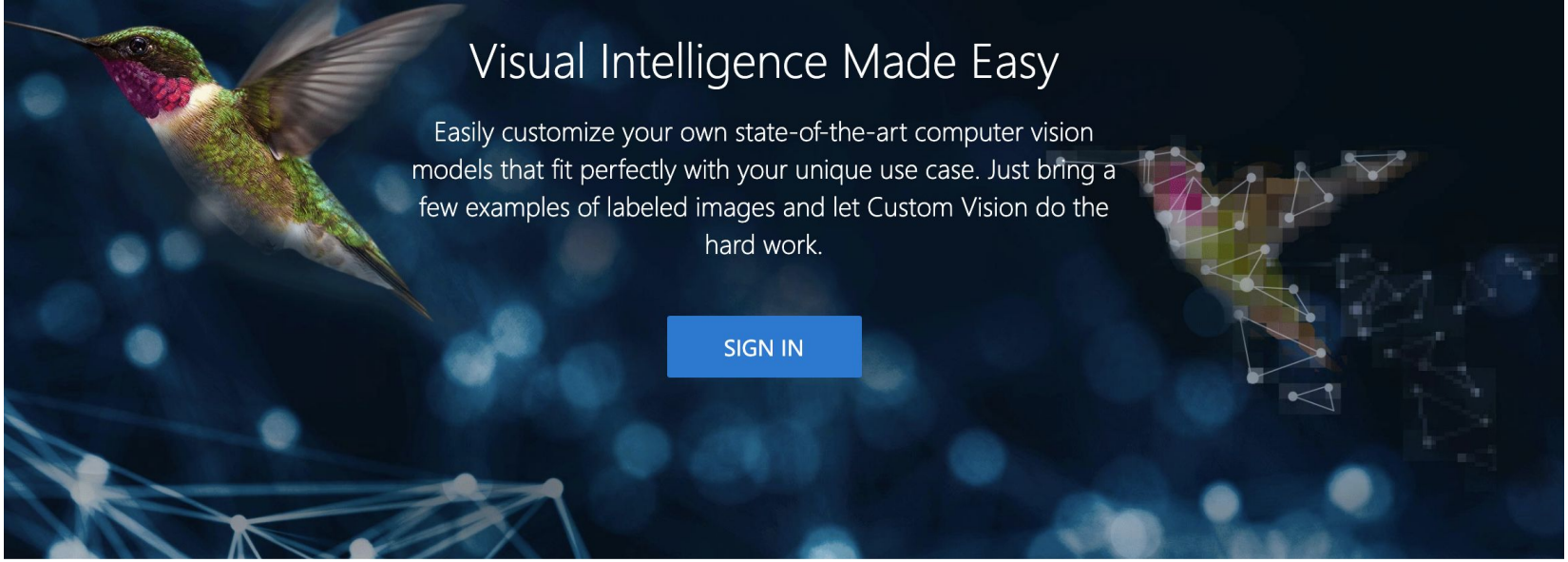
Computer Vision API - v2.0

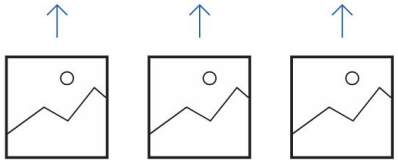
Request URL

https://{endpoint}/vision/v2.0/analyze[?visualFeatures][&details][&language]

Request parameters

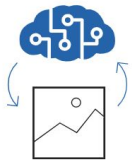
visualFeatures (optional)	string	A string indicating what visual feature types to return. Multiple values should be comma-separated. Valid visual feature types include: • **Adult** - detects if the image is pornographic in nature (depicts nudity or a sex act). Sexually suggestive content is also detected. • **Brands** - detects various brands within an image, including the approximate location. The Brands argument is only available in English. • **Categories** - categorizes image content according to a taxonomy defined in documentation. • **Color** - determines the accent color, dominant color, and whether an image is black&white. • **Description** - describes the image content with a complete sentence in supported languages. • **Faces** - detects if faces are present. If present, generate coordinates, gender and age. • **ImageType** - detects if image is clipart or a line drawing. • **Objects** - detects various objects within an image, including the approximate location. The Objects argument is only available in English. • **Tags** - tags the image with a detailed list of words related to the image content.
details (optional)	string	A string indicating which domain-specific details to return. Multiple values should be comma-separated. Valid visual feature types include: • **Celebrities** - identifies celebrities if detected in the image. • **Landmarks** - identifies landmarks if detected in the image.





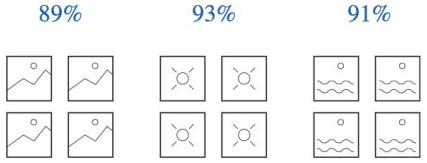
Upload Images

Bring your own labeled images, or use Custom Vision to quickly add tags to any unlabeled images.



Train

Use your labeled images to teach Custom Vision the concepts you care about.



Evaluate

Use simple REST API calls to quickly tag images with your new custom computer vision model.

Custom Vision

The Custom Vision enables to **develop** **domain-specific image-classification models** and use it to analyze image content (e.g. identifying a dog's breed from a picture of the dog, analyzing images for adult content, and identifying defective parts produced by manufacturing processes).

FEATURES:

Image classification applies one or more labels to an image.

Object detection is similar, but it also returns the coordinates in the image where the applied label(s) can be found.

Images can be uploaded and trained via:

- web interface https://customvision.ai
- REST API (Training and Testing) - SDK for Python, .NET, Java, Go

Create new project

Name*

Enter project name

Description

Enter project description

Resource Group* create new

Project Types

- (•) Classification
- ( ) Object Detection (preview)

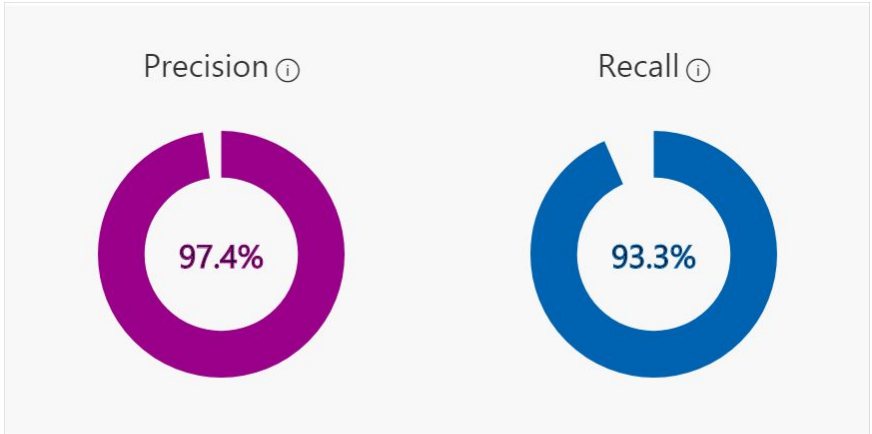
Classification Types

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

Domains

- (•) General
- ( ) Food
- ( ) Landmarks
- ( ) Retail
- ( ) Adult
- ( ) General (compact)
- ( ) Landmarks (compact)
- ( ) Retail (compact)

Cancel | Create project



Performance Per Tag

Tag	Precision	Recall
strawberry	99.2%	99.2%
Banana	99.1%	97.2%
Pineapple	98.9%	95.2%
Apple	98.4%	89.5%
Orange	98.3%	94.1%
Passionfruit	96.8%	85.1%
Coconut	91.1%	92.0%

DEMOS:

https://github.com/martdo/CompCustVis

https://github.com/martdo/CompCustVis/blob/master/MS_Computer_Vision.ipynb

https://github.com/martdo/CompCustVis/blob/master/MS_Custom_Vision.ipynb