Microsoft

# Microsoft Cognitive Services

## Amplifying human ingenuity

# Why Microsoft Cognitive Services?

## Easy

Roll your own with REST APIs

Simple to add: just a few lines of code required

Get a key, Build

## Flexible

Integrate into the language and platform of your choice

Breadth of offerings helps you find the right  for your app

Bring your own data for your custom experience

## Tested

Built by experts in their field from Microsoft Research, Bing, and Azure Machine Learning

Quality documentation, sample code, and community support

# A variety of real-world applications

## Vision

What is in the image or video?

**Intelligent Image insights**

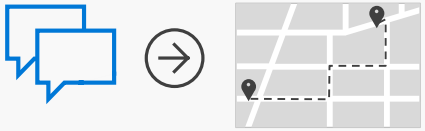
| | |
|---|---|
| Category | People; 5 faces |
| Adult/Racy? | False/False |
| Dominant colors | ■ ■ ■ ■ |
| Accent color | |

**Computer Vision**

## Speech

Give me directions to the nearest local branch

**Speech to text**



- Convert spoken audio to text
- Convert text to spoken audio
- Extract intent of user

**Speech Service**

## Language

Play today's customer call recording

**Natural Language Processing**

```
Intent: PlayCall
Content: Customer#
DateTime.date: today
```

Now Playing

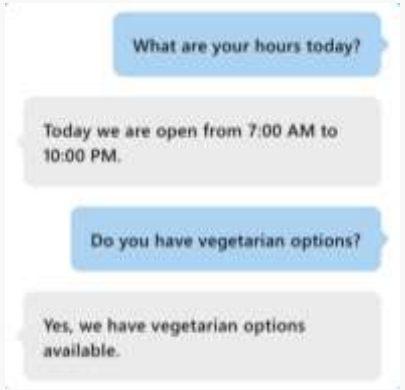
11/29/2016 Customer Call

**Language Understanding**

## Knowledge

QnA Pair of this site?

**Automatic extraction of questions and answers**




**QnA Maker**

## Search

Search for 'fraud prevention'

**Intelligent web search**

**Information Communications Media Market News**

It also investigates the top three expected **Fraud** Detection and **Prevention** programs, in terms of demand in key markets...

**The Big Question: In-House or Outsourced Fraud Protection?**

First, let's point out that there is not one absolute answer—there are "pros" and "cons" to each. Those who favor in-house...

**How to Protect Your Business from Online Fraud this Holiday Season**

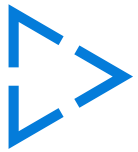
Michael heads fraud prevention tool. Online and mobile shopping are expected to continue growing apace...

**Bing News Search**

# Vision

## Computer Vision

Distill actionable information from images. Image Classification, scene and activity recognition, celebrity and landmark recognition, OCR, Handwriting recognition.



## Video Indexer

Process and extract smart insights from videos. Face detection in video. Object, scene, and activity detection in video. Metadata, audio, and keyframe extraction and analysis.

## Face

Detect, identify, analyze, organize, tag faces in photos, and even recognize emotions

## Content Moderator

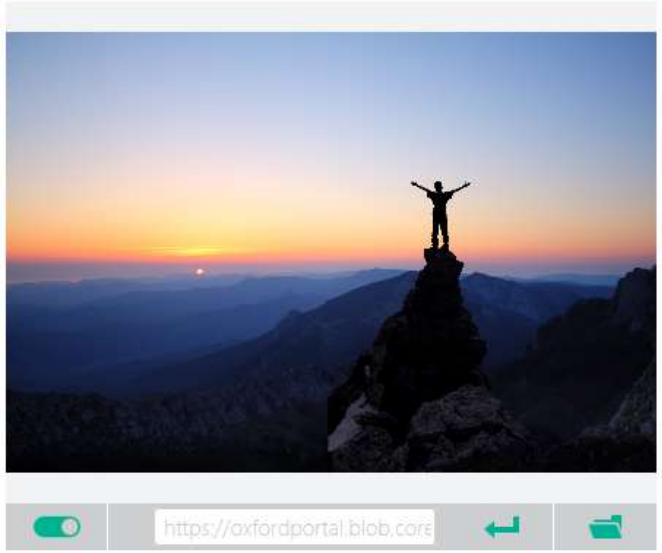
Machine-assisted moderation of text and images, augmented with human review tools

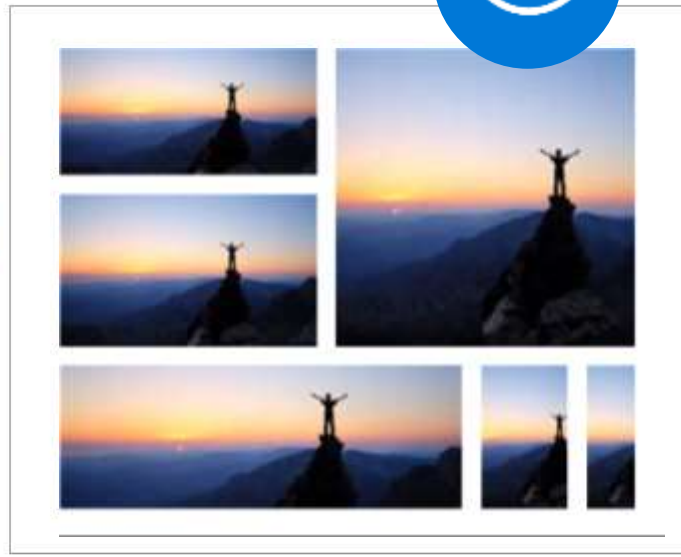
## Custom Vision

Customizable web service that learns to recognize specific content in imagery

# Smart thumbnail

## Smart cropping **off**



# Custom Vision

A customizable web service that learns to recognize specific content in imagery

## Upload images

Upload your own labeled images, or use Custom Vision Service to quickly tag any unlabeled images

## Train

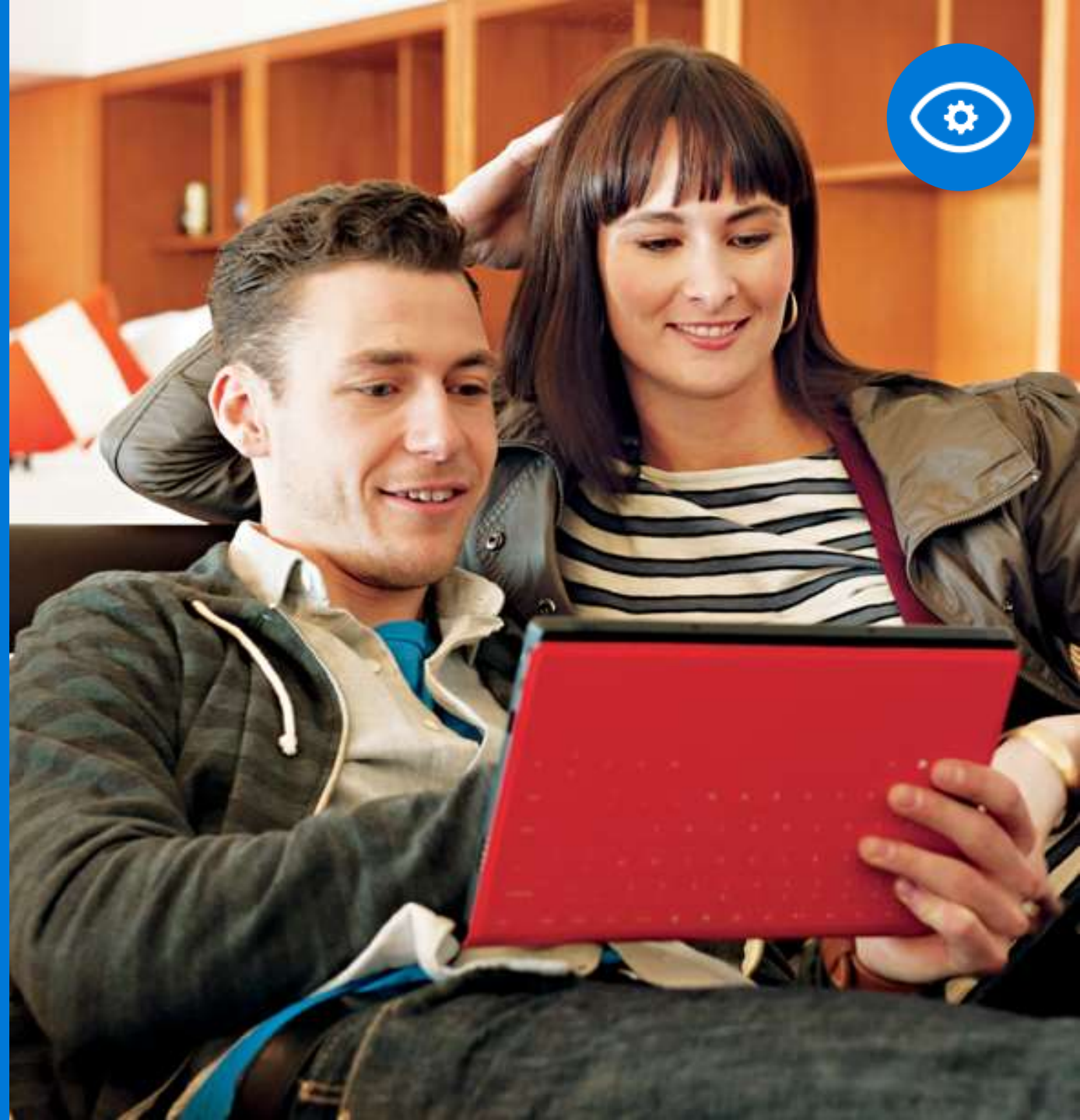
Use your labeled images to teach Custom Vision Service the concepts you want it to learn

## Evaluate

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

## Active learning

Images evaluated through your custom vision model become part of a feedback loop you can use to keep improving your classifier

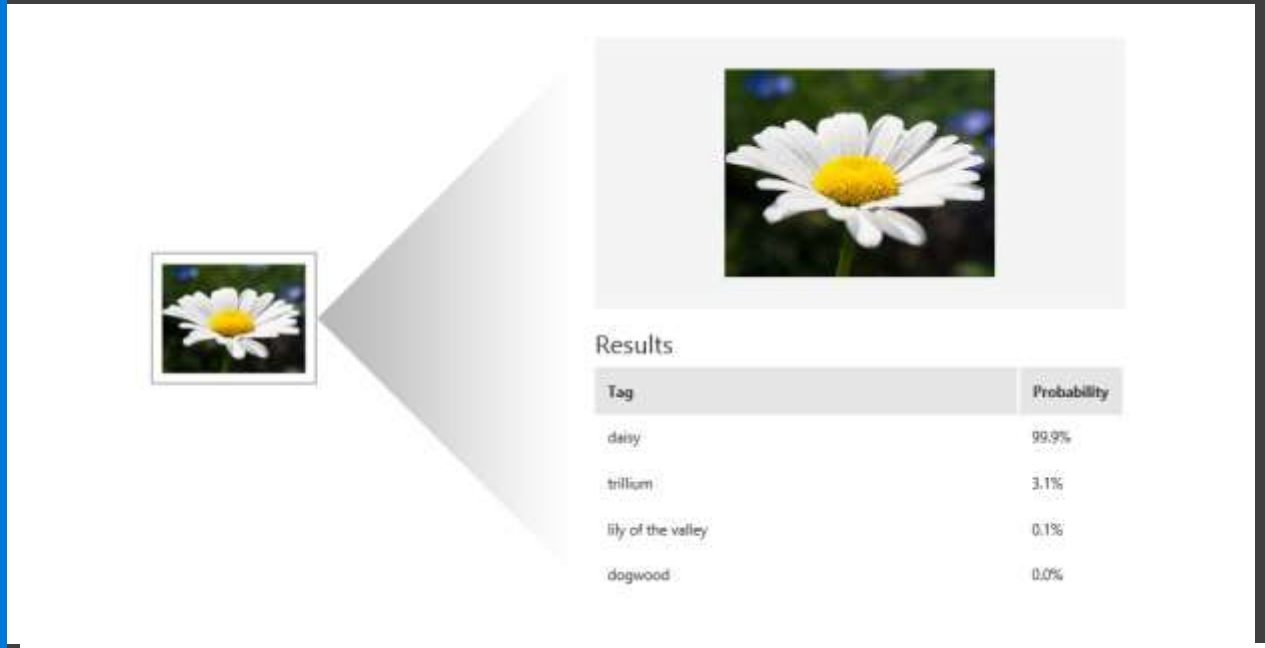


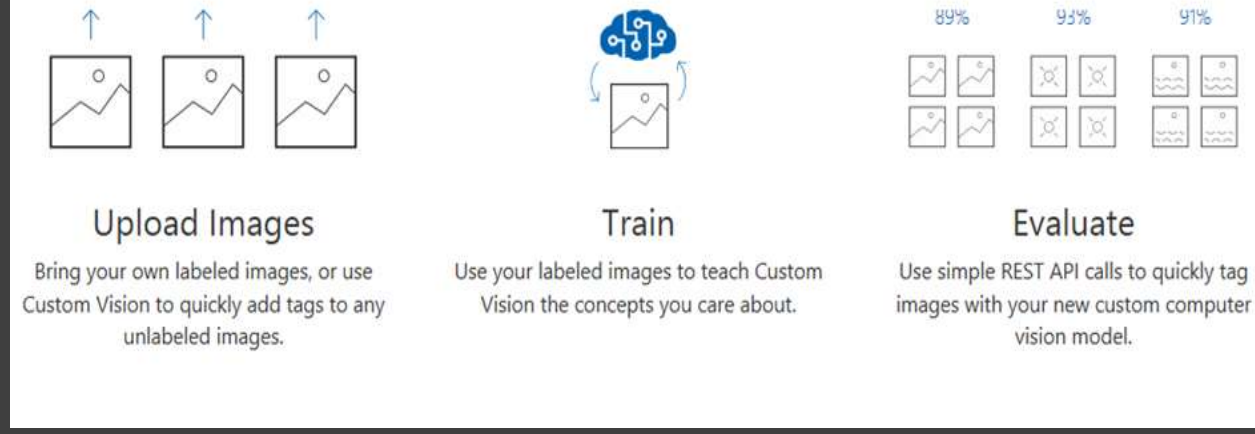
# Custom Vision

## Customize
Design your own state-of-the-art models for unique use cases

## Upload
Use labeled images to quickly train and update your models

## Export
Run models on a device or as a Docker container with just one click



# Speech

### Speech to Text

Convert speech to text to understand user intent. Customizable speech recognition and transcription. Customizable speech models for unique vocabularies or accents.

### Text to Speech

Convert text to speech make the voices of your apps nearly indistinguishable from recordings of people. Allows customizable voice fonts.

### Speaker Recognition

Use speech to identify and verify individual speakers.

### Speech Translation

Easily conduct real-time speech translation with a simple REST API call

# Language

## Text Analytics

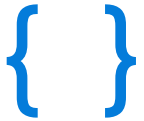
Detect sentiment, key phrases, language, and extract top entities from your text

## Bing Spell Check

Detect and correct spelling mistakes within your app

## Translator Text

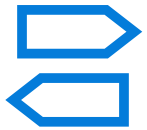
Easily perform speech and text translation



## Language Understanding

Teach your apps to understand commands from your users

# Knowledge



**Custom Decision (Preview)**

Create custom experiences with adaptive, contextual decision-making

**QnA Maker**

Distill information into conversational, easy-to-navigate answers

# QnA Maker

Build, train, and publish simple question and answer bots

## QnA extraction

Use existing content to respond to users naturally

## Expanded response

Integrate with other APIs to expand question interpretations

## Train and improve

Add and remove QnA pairs to improve your bot's knowledge

# Search

**Bing Search**

Web Search
Image Search
News Search
Video Search

**Bing Visual Search**

Get rich insights to help build compelling image applications on the device of your choice

**Bing Entity Search**

Enrich user experiences with contextual entity search results

**Bing Autosuggest**

Give your app intelligent autosuggest options for searches

**Bing Custom Search**

Create a highly-customized web search experience

**Cognitive Search: Content understanding powered by Azure Search (not Bing Search) with built-in Cognitive Services.**

# JFK Demo: Cognitive Search

# Developer resources

## Pricing

https://azure.microsoft.com/en-us/pricing/details/cognitive-services/

## Documentation

https://docs.microsoft.com/en-us/azure/#pivot=products&panel=cognitive

## Client SDKs and REST APIs

https://azure.microsoft.com/en-us/resources/samples/?sort=0&term=cognitive+services
https://github.com/southwood/project-oxford-python

## Example Code

https://github.com/jsturtevant/happy-image-tester-django
https://github.com/Microsoft/Cognitive-Face-Android
https://github.com/Microsoft/Cognitive-Samples-IntelligentKiosk

## Join Our Community

https://stackoverflow.com/questions/tagged/microsoft-cognitive
https://cognitive.uservoice.com/

# Cognitive Services Development

SDK

- Language specific
- Search documentation for each API. .Net, Python Java SDKs
- Ex. Custom Vision Python SDK: https://docs.microsoft.com/en-us/azure/cognitive-services/custom-vision-service/python-tutorial

REST API

- Language agnostic
- Search documentation for API reference
- Ex. Text Analytics REST API: https://westus.dev.cognitive.microsoft.com/docs/services/TextAnalytics.V2.0/operations/56f30ceeeda5650db055a3c7

# Container Support

In preview for a subset of Azure Cognitive Services

Benefits

- Control over data
- Control over model updates
- Portable architecture
- High throughput / low latency

https://docs.microsoft.com/en-us/azure/cognitive-services/cognitive-services-container-support

# Lab: Custom Vision Python SDK to Classify Images

https://docs.microsoft.com/en-us/azure/cognitive-services/custom-vision-service/python-tutorial

Digital transformation

# Lab: Detect Language via Text Analytics API

*Use the API Testing Console in the Documentation to test the REST API*
https://docs.microsoft.com/en-us/azure/cognitive-services/Text-Analytics/how-tos/text-analytics-how-to-language-detection

API documentation page:
https://westus.dev.cognitive.microsoft.com/docs/services/TextAnalytics.V2.0/operations/56f30ceeeda5650db055a3c7

Digital transformation