



Microsoft Computer Vision and Process Automation

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Grazie per aver partecipato!

Per chi avesse partecipato al webinar, vi chiediamo di mandarci i **vostri feedback** per migliorare i contenuti delle sessioni.

Contattateci pure tramite mail!

Per chi volesse fare follow up, mandateci i **vostri use case (descrizione, quante immagini e degli esempi)** per confrontarci su possibili scenari di applicazione dei servizi trattati durante la sessione ☺

A presto!!!



Agenda

09:30 – 09:50 Microsoft Cognitive Services

09:50 – 10:15 Vision API and OCR

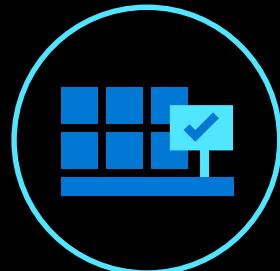
10:15 – 11:00 Form Recognizer

11:00 – 11:30 Custom Vision

Microsoft Cognitive Services

Azure AI

Our investment principles



Productive

Any language, any developer, any skill level



Built for enterprises

Optimized to work at any scale with existing systems & processes



Trusted

You own and control your data

Azure AI

Power Platform

Develop AI applications and automate workflows with a no-code experience



Power BI



Power Apps



Microsoft Flow

Knowledge Mining

Bring AI services together to unlock insights from your information



Azure Search



Form Recognizer

AI Apps & Agents

Simplify solution development with domain specific models



Vision



Speech



Language



Web search



Decision

Machine Learning

Empower data science and development teams with productive services and tools



Azure Machine Learning



Machine Learning VMs

Powerful infrastructure

To accelerate deep learning



CPU



GPU



FPGA



From the Intelligent Cloud to the Intelligent Edge



April 2019



Conversational QnA Human Parity

89.4%

Stanford CoQA
challenge

Aug 2018



Speech Synthesis Near Human Parity

98.64%

Neural TTS MOS similarity
to human recording

May 2018



Machine Translation Human parity

69.9%

MT research system

Jan 2018



Machine Reading Comprehension Human parity

88.5%

SQuAD reading
comprehension text

May 2017



Speech Recognition Human parity

5.1%

Switchboard speech
recognition test

May 2016



Object Recognition Human parity

96%

RESNET vision
test 152 layers



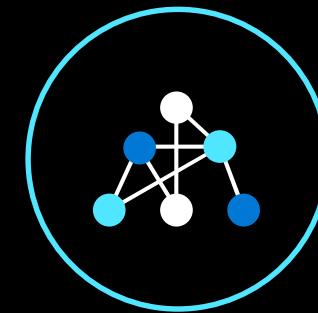
Azure AI



AI apps & agents



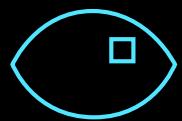
Knowledge mining



Machine learning

Azure Cognitive Services

The most comprehensive pre-trained AI



Vision



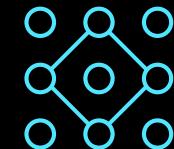
Speech



Search



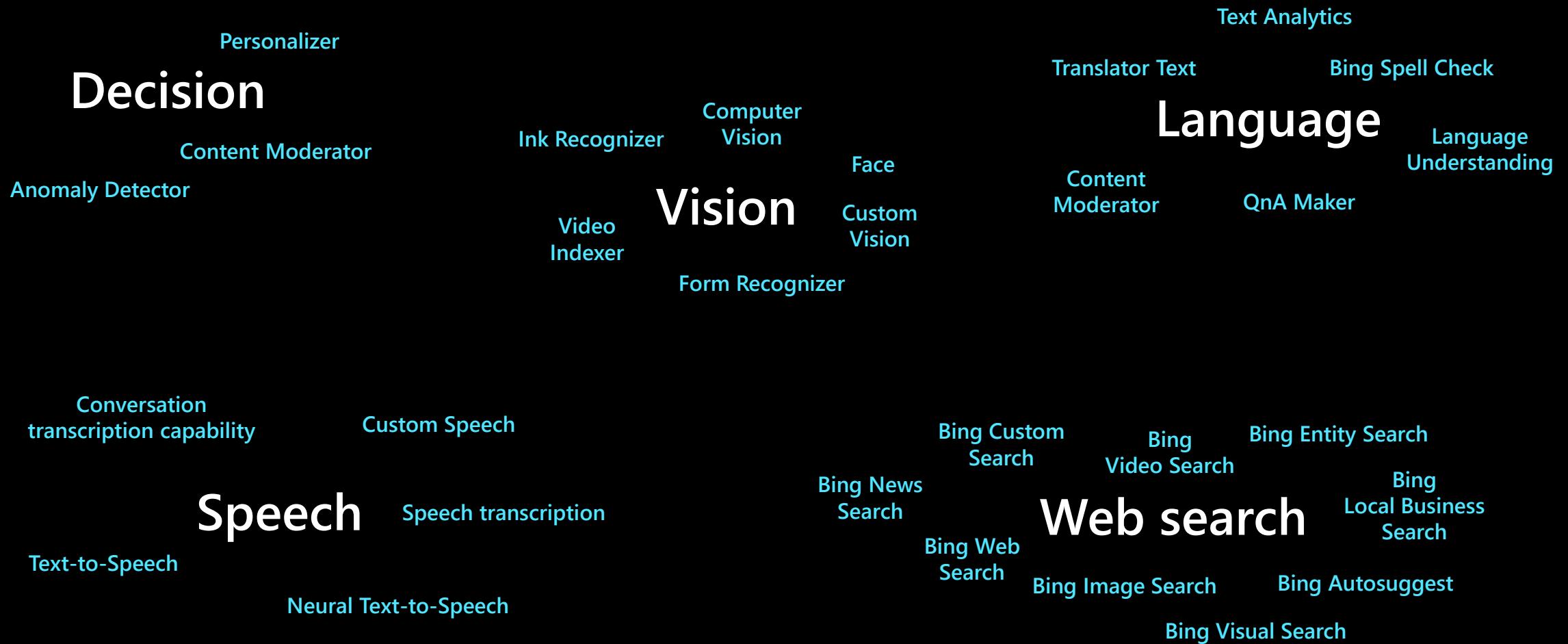
Language



Decision

Azure Cognitive Services

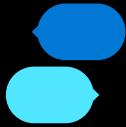
The most comprehensive pre-trained AI



AI apps & agents scenarios



Robotic process automation



Call center automation



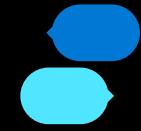
Customer engagement



Robotic process automation



<https://www.youtube.com/watch?v=wlvNZOlrGuo>

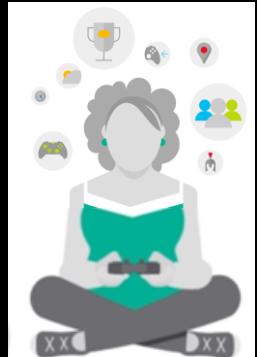


Call center automation



Personalizer

How It Works



Your Users

Customer engagement

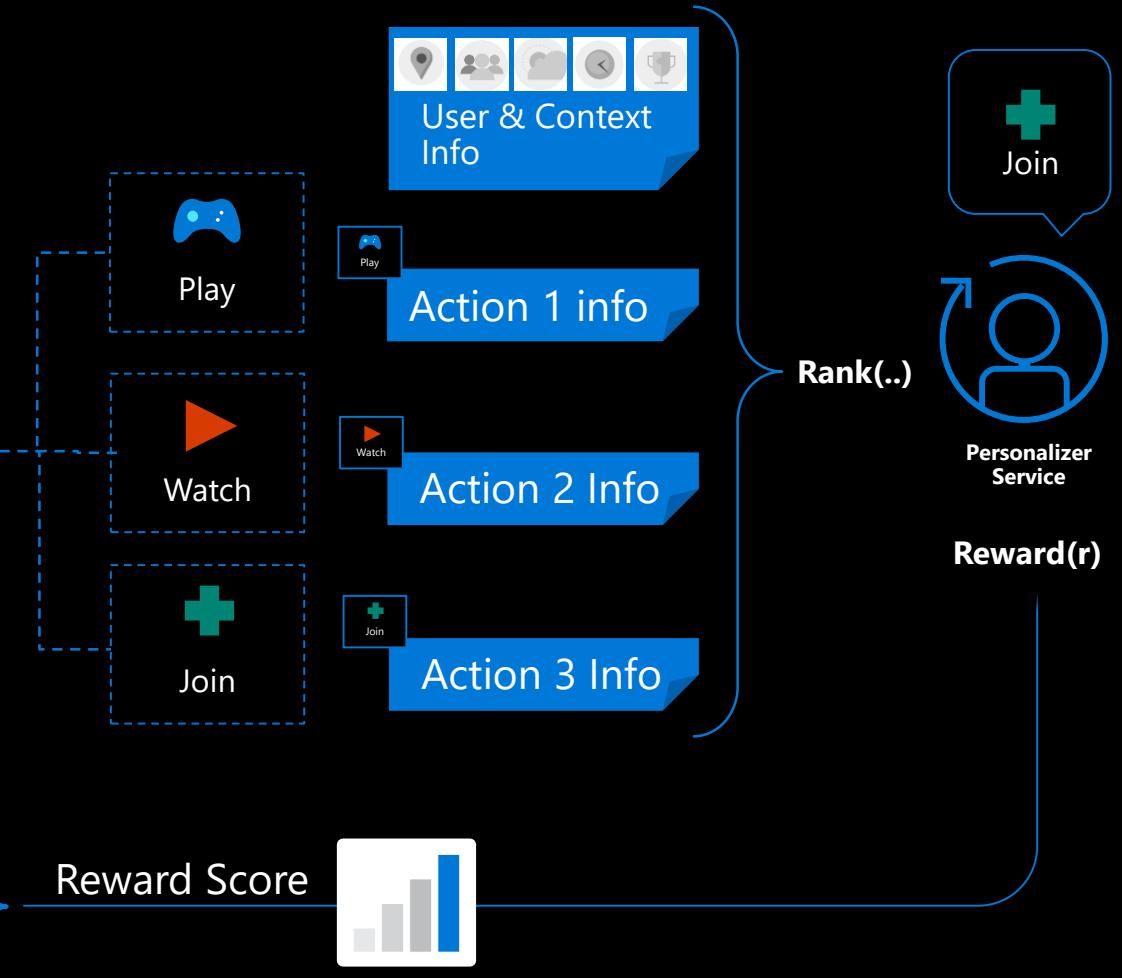
Have Fun!



We think you'll like



Your business
logic observing &
evaluating user
behavior

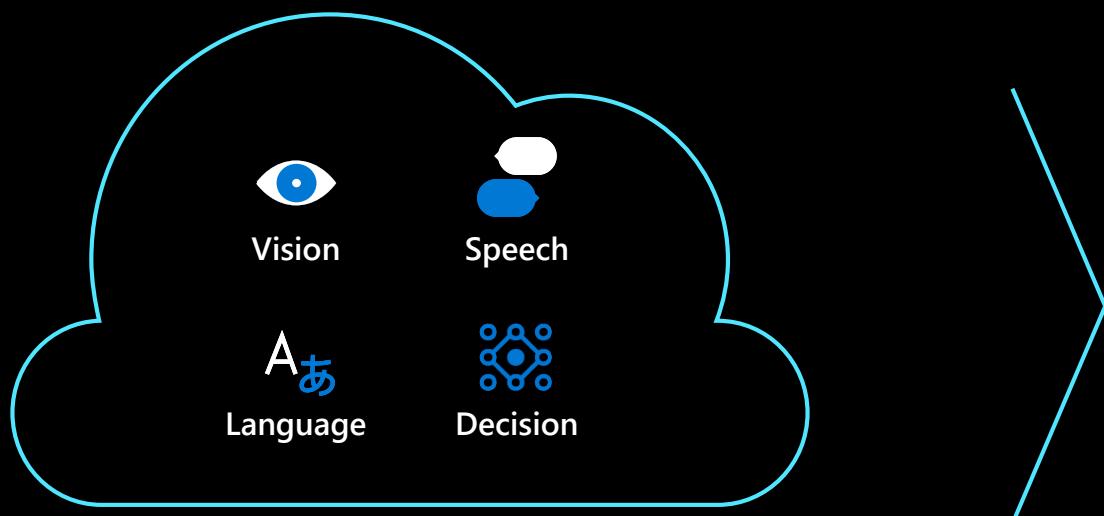


[Online Interactive Demo](#)

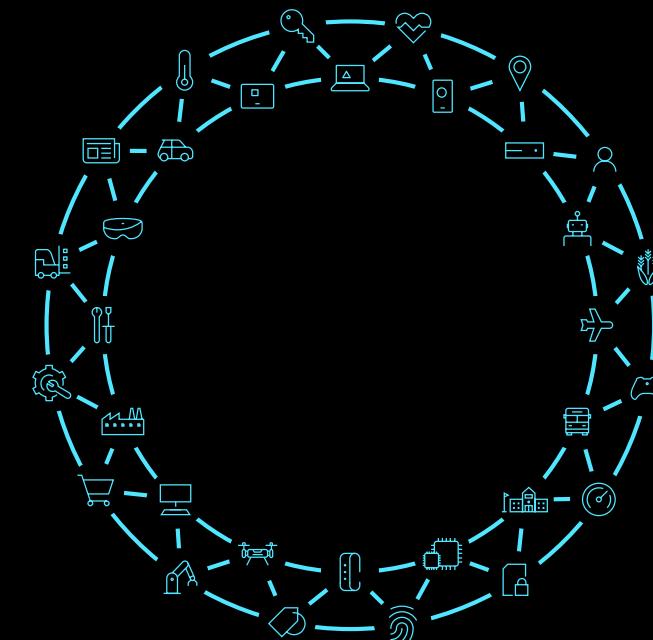
Azure Cognitive Services

Deploy anywhere using containers

Azure Cognitive Services



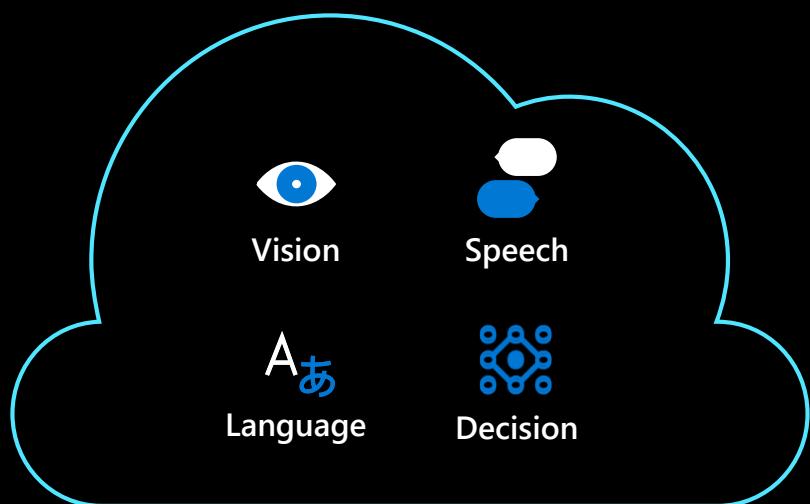
Wherever your data resides



Azure Cognitive Services

New container support for additional services

Azure Cognitive Services

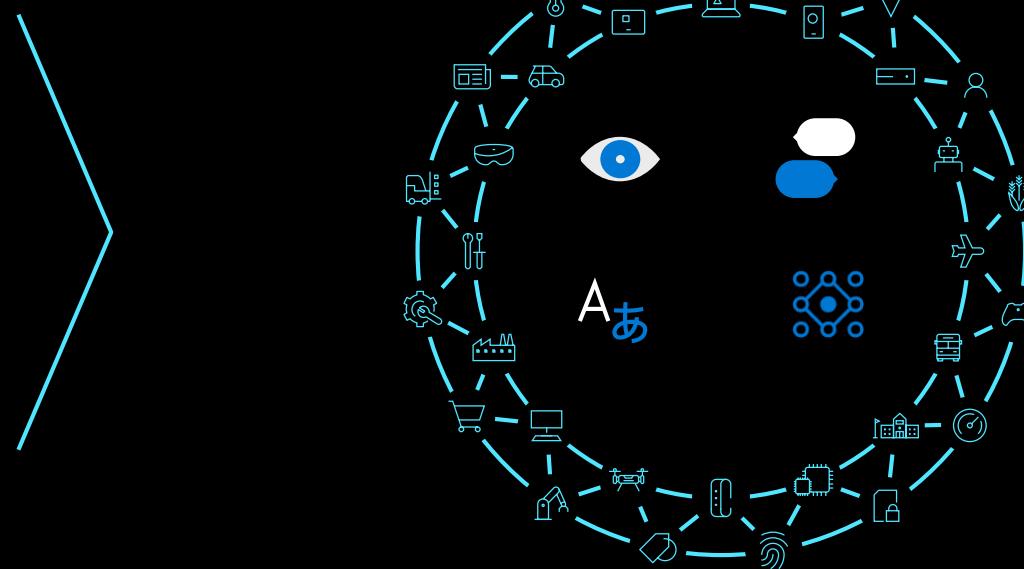


Anomaly Detector

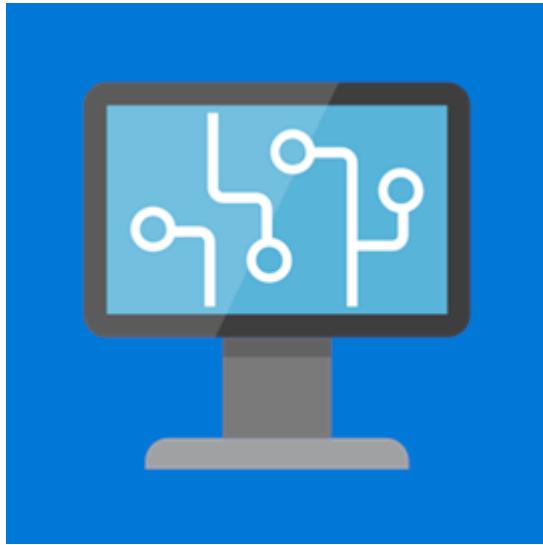
Speech-to-Text

Text-to-Speech

Wherever your data resides



INTELLIGENT KIOSK



- **Installation Instructions:**
<http://aka.ms/intelligentkiosk>
- **Direct download:** <http://aka.ms/kioskapp>
- **Kiosk sample on GitHub:**
<https://github.com/Microsoft/Cognitive-Samples-IntelligentKiosk/>
- **Azure AI Platform:**
<https://azure.microsoft.com/en-us/overview/ai-platform/>
- **Microsoft Cognitive Services:**
<https://azure.microsoft.com/en-us/services/cognitive-services/>

Get it now: <http://aka.ms/kioskapp>

* **Note on latest version:** Windows 10 version 1809 or higher is required. You can get it via Windows Update.

Vision API and OCR

Azure Cognitive Services

From faces to feelings, allow your apps to understand images and video

Ink Recognizer

Computer Vision

Vision



Video Indexer

Face

Custom Vision

Form Recognizer



Computer Vision

Analyze an image

Understand content within an image

OCR

Detect and recognize words within an image

Generate thumbnail

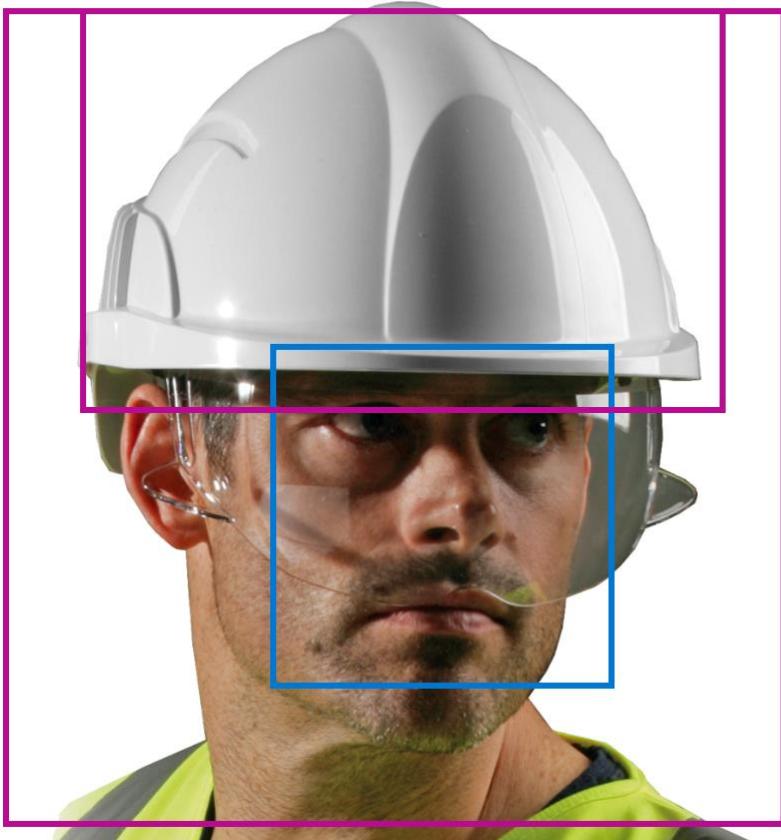
Scale and crop images, while retaining key content

Recognize celebrities

Thanks to domain-specific models, ability to recognize 200K celebrities from business, politics, sports, and entertainment around the world



Cognitive Services Computer Vision



FEATURE	VALUE
NAME:	
Objects	[{ "rectangle": { "x": 138, "y": 27, "w": 746, "h": 471 }, "object": "headwear", "confidence": 0.616 }, { "rectangle": { "x": 52, "y": 33, "w": 910, "h": 951 }, "object": "person", "confidence": 0.802 }]
Tags	[{ "name": "man", "confidence": 0.999212 }, { "name": "headdress", "confidence": 0.99731946 }, { "name": "person", "confidence": 0.995057464 }, { "name": "clothing", "confidence": 0.991814733 }, { "name": "wearing", "confidence": 0.9827137 }, { "name": "hat", "confidence": 0.9691986 }, { "name": "helmet", "confidence": 0.9227209 }, { "name": "headgear", "confidence": 0.840476155 }, { "name": "personal protective equipment", "confidence": 0.8358513 }, { "name": "looking", "confidence": 0.832229853 }, { "name": "hard hat", "confidence": 0.8004248 }, { "name": "human face", "confidence": 0.785058737 }, { "name": "green", "confidence": 0.7740400401 }]

Analyze image



Type of image

Clip Art Type	0 Non-clipart
Line Drawing Type	0 Non-Line Drawing
Black & White Image	False

Content of image

Categories	[{"name": "people_swimming", "score": 0.099609375}]
Adult Content	False
Adult Score	0.18533889949321747
Faces	[{"age": 27, "gender": "Male", "faceRectangle": {"left": 472, "top": 258, "width": 199, "height": 199}}]

Image colors

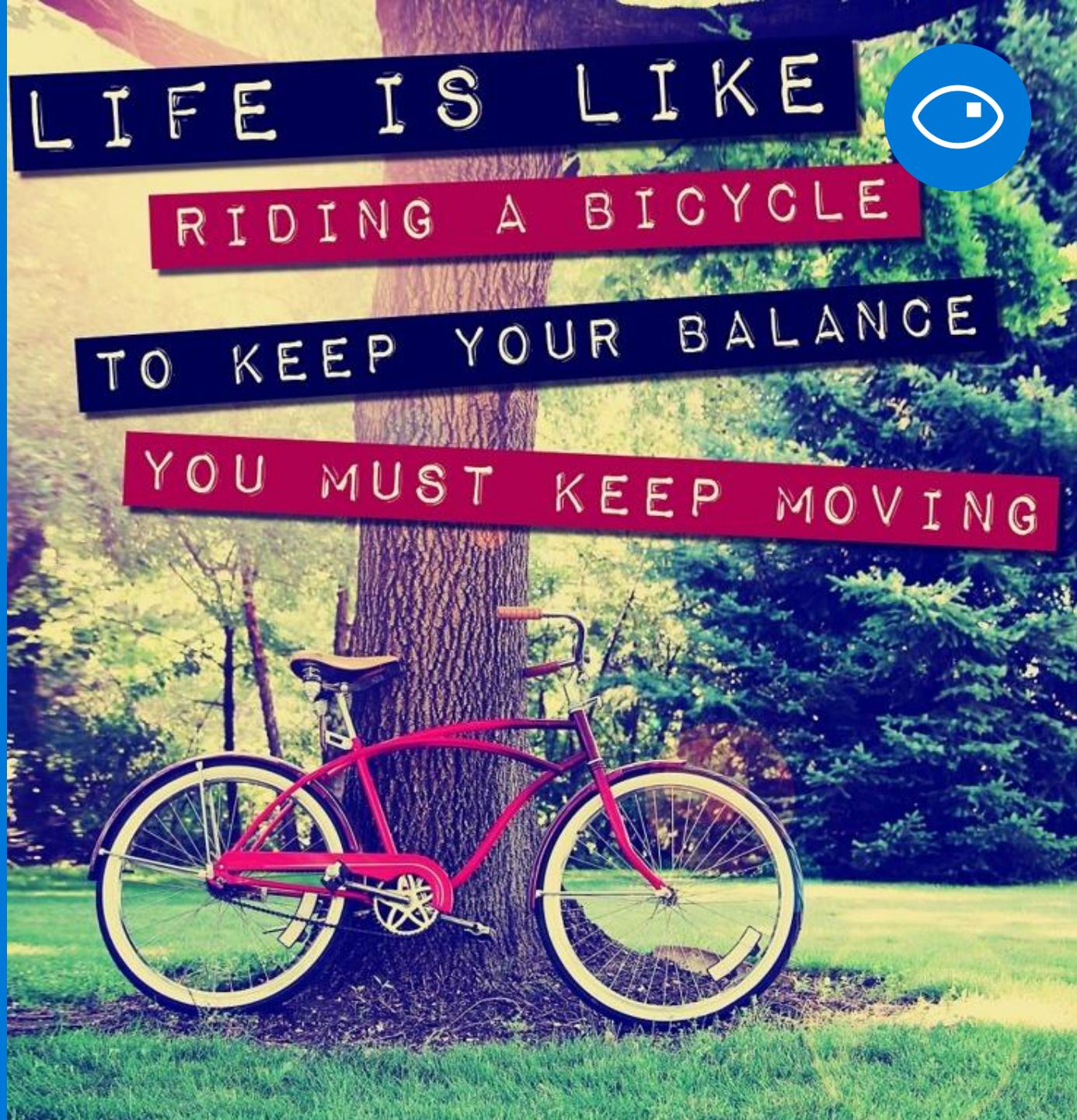
Dominant Color Background	White
Dominant Color Foreground	Grey
Dominant Colors	White
Accent Color	



OCR

Life is like riding
a bicycle

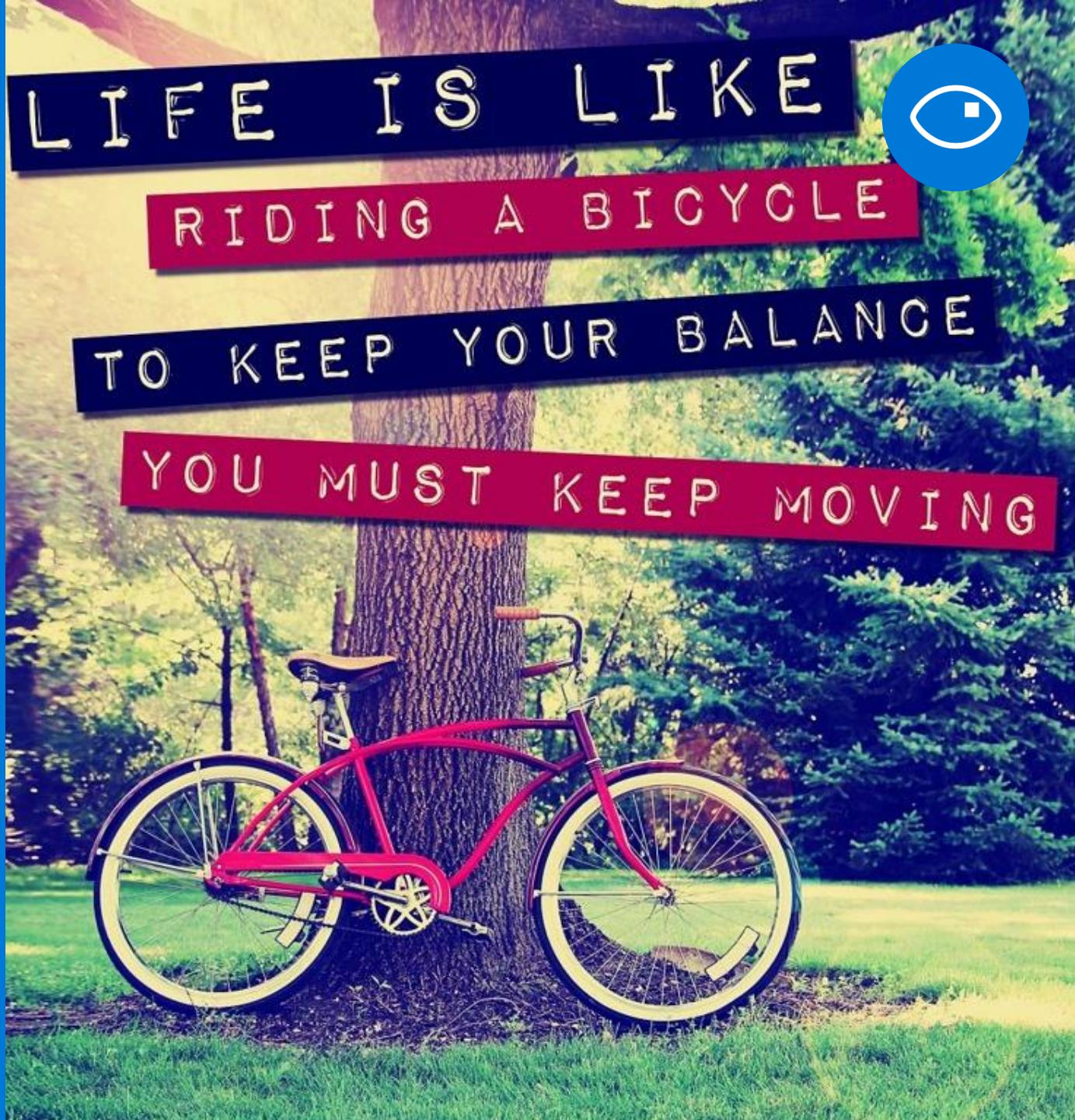
To keep your
balance you must
keep moving



OCR

JSON:

```
{  
  "language": "en",  
  "orientation": "Up",  
  "regions": [  
    {  
      "boundingBox": "41,77,918,440",  
      "lines": [  
        {  
          "boundingBox": "41,77,723,89",  
          "words": [  
            {  
              "boundingBox": "41,102,225,64",  
              "text": "LIFE"  
            },  
            {  
              "boundingBox": "356,89,94,62",  
              "text": "IS"  
            },  
            {  
              "boundingBox": "539,77,225,64",  
              "text": "LIKE"  
            }  
          ]  
        ]  
      ]  
    }  
  ]  
}
```



3 APIs to perform OCR

- **Read API**
 - Asynchronous
 - Support for English and Spanish (Italian forthcoming)
 - Support for PDF, JPEG, PNG, BMP, TIFF
 - Optimized for long documents
- **OCR API**
 - Synchronous
 - Support for Multiple languages
 - Support for JPEG, PNG, GIF, BPM
 - Not for long documents
- **Recognize API (deprecated)**
 - Asynchronous
 - JPEG, PNG, BMP

<https://docs.microsoft.com/en-us/azure/cognitive-services/computer-vision/concept-recognizing-text>

Form Recognizer

Lots of various types of forms

Contoso

Bill To:	Contoso, Ltd	Phone: 432-555-0189	Invoice #:	3-456-2	
		Fax: 432-555-0123	Invoice Date:	4/14/2019	
Email: contoso@example.com					
Invoice For: Project 2					
Item #	Description	Qty	Unit Price	Discount	Price
24567	Invoice 3-456-2 Data 1	39	\$ 5.00	\$ -	\$ 195.00
24568	Invoice 3-456-2 Data 2	40	4.00	5.00	155.00
24569	Invoice 3-456-2 Data 3	30	6.00	7.00	173.00
24570	Invoice 3-456-2 Data 4	40	7.00	-	280.00
24571	Invoice 3-456-2 Data 5	10	4.00	-	40.00
24572	Invoice 3-456-2 Data 6	5	8.00	-	40.00
24573	Invoice 3-456-2 Data 7	70	6.00	-	420.00
24574	Invoice 3-456-2 Data 8	25	7.00	-	100.00

Invoices & Receipts

Contoso, Ltd.
CREDIT APPLICATION

APPLICANT INFORMATION				
Name:	SSN:	Phone:		
Date of birth:				
Current address:				
City:	State:	ZIP Code:		
Own Rent (Please circle)	Monthly payment or rent:	How long?		
Previous address:				
City:	State:	ZIP Code:		
Owned Rented (Please circle)	Monthly payment or rent:	How long?		
EMPLOYMENT INFORMATION				
Current employer:				
Employer address:				
Phone:	E-mail:	How long?		
Position:				
Hourly	Salary	(Please circle)	Annual income:	
Previous employer:				
Address:				
Phone:	E-mail:	How long?		
Position:				
Hourly	Salary	(Please circle)	Annual income:	
Name of a relative not residing with you:				
Address:				

Application Forms

Form 1098 (Keep for your records) www.irs.gov/Form1098 Department of the Treasury - Internal Revenue Service

RECIPIENT/LENDER'S		PAYER/S/BORROWER'S		OMB No. 1545-0901
Contoso, 1020 Enterprise Way, Sunnyvale, CA, USA, 11111		124-568-7890 011-765-4221		2018
RECIPIENT/LENDER'S TIN		PAYER/S/BORROWER'S TIN		Form 1098
1 Mortgage interest \$ 13345.34		2 Outstanding mortgage \$ 764321.33		3 Mortgage origination date 10/08/2005
4 Refund of overpaid \$ 15.01		5 Mortgage insurance \$ 1222.05		6 Points paid on purchase of principal residence \$ 7567.55
Anderson Nancy		123 Main Street 2, apt 10		The information in boxes 1 through 6 is your tax information and is being furnished to the IRS. It is your responsibility to file a return, a regular or amended return, or other correction may be filed on your behalf by the IRS if you have underpayment of tax resulting from the deduction you overstated a deduction for this mortgage interest or if you understated it. If you reported the refund of interest box 4, or claimed a nondeductible item, report it on your tax return.
Street address (including apt. no.)		City or town, state or province, country, and ZIP or foreign postal code		7 Address 1025 El-Camino Real Street, CA
Redmond WA, USA, 22222		8 Number of properties securing the mortgage 2		9 Other
9 Account number (see instructions) 4456321				

Mortgage Interest Statement

Copy B For Payer/Borrower

Copy A For Recipient/Lender

NOTE: Caution: The amount shown may not be fully deductible by the taxpayer. Limitations apply to amount and the cost and value of the second property may apply.

Form 1098 (Keep for your records) www.irs.gov/Form1098 Department of the Treasury - Internal Revenue Service

Contoso
Supplier Finance

Finance Proposal Form

CUSTOMER DETAILS				
Company Name:	Ltd Reg No.			
Address:				
Postcode:	Nature of Business:			
Tel No:	Year established:			
Contact Name:	E-mail:			
Business Premises: <input type="checkbox"/> Freehold <input type="checkbox"/> Lease				
Home Address (Proprietors/partners) If less than 3 years please give previous address				
1:	Years at Address:	Home Owner:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2:	Years at Address:	Home Owner:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3:	Years at Address:	Home Owner:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
PARTNER / DIRECTOR DETAILS				
1. <input type="text"/>	DOB: <input type="text"/>	2. <input type="text"/>	DOB: <input type="text"/>	3. <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
LEASE DETAILS				
Term (Y): <input type="text"/>	Payment Profile (I.e. 3+33): <input type="text"/>	Total Sales Value: <input type="text"/>	Delivery Date: <input type="text"/>	
EQUIPMENT DETAILS				

Bank Forms

Health Progress Chart

Instructions: Replace the sample data in the first two columns, and in the height boxes to the right. The last four (gray) columns will be calculated by you using formulas. Then, see your progress by looking at the Measurements, Weight and BMI, and Weight and Body Fat Charts on the other worksheets. For more information on formulas or using data in charts, see Excel Help.

Date	Weight (pounds)	Chest (inches)	Waist (inches)	Hips (inches)	Estimated Lean	Estimated Body Fat	Estimated Body Weight	Estimated Fat Percentage	BMI
6/10/2004	200	42	36	34	161.3/7	38.4/7	192.7/3	26.84	26.84
6/17/2004	200	42	36	34	161.3/7	38.4/7	192.7/3	26.84	26.84
6/24/2004	199	42	35.5	33.6	162.2/5	36.5/5	192.5/3	26.77	26.77
7/1/2004	199	42	35	33	161.1/2	34.1/2	191.7/3	26.71	26.71
7/8/2004	198	42.5	35	33	163.2/5	34.9/5	171.2/2	26.57	26.57
7/15/2004	197	42.5	35	33	162.1/3	34.2/3	173.5/3	26.44	26.44
7/22/2004	197	42.5	35	33	162.1/3	34.2/3	173.5/3	26.44	26.44
7/29/2004	196	42.5	34.5	33	163.1/3	32.2/3	142.3/3	26.30	26.30
8/5/2004	196	42.5	34.5	33	163.1/3	32.2/3	142.3/3	26.30	26.30
8/12/2004	195	42.5	34.5	33	162.1/4	32.3/4	146.4/5	26.17	26.17
8/19/2004	193	42.5	34.5	33	160	33	17	25.90	25.90
8/26/2004	191	42.5	34.5	33	158	30	17	25.63	25.63
9/2/2004	190	42	34	33	157.5/6	39.1/6	171.2/2	25.50	25.50
9/9/2004	190	42	34	33	156.5/6	39.1/6	171.2/2	25.50	25.50
9/16/2004	190	43	34.5	33	161	31	161.9/7	25.50	25.50
9/23/2004	189	43	34	32	157.4/5	31.1/5	161.2/2	25.37	25.37
9/30/2004	189	43	34	32	157.4/5	31.1/5	161.2/2	25.37	25.37
10/7/2004	190	43	34	33	158.5/7	31.1/9	153.8/2	25.50	25.50
10/14/2004	192	43	34	33	161	31	161.9/7	25.77	25.77
10/21/2004	191	43	34	32	160	31	161.4/4	25.63	25.63
10/28/2004	191	43	34	32	160	31	161.4/4	25.63	25.63
11/4/2004	192	43	34	33	161	31	161.9/7	25.77	25.77
11/11/2004	190	42	34	31	157.4/5	31.1/5	161.2/2	25.37	25.37

Medical Forms

CREDIT CARD AUTHORIZATION FORM

Hotel: <input type="text"/>			
Individual/Business/Group or Event Name: <input type="text"/>			
Reservation Confirmation Number: <input type="text"/>			
Arrival or Event Date(s): <input type="text"/>			
Credit Card Billing Address: <input type="text"/>			
City / State / Zip / Country: <input type="text"/>			
Contact Phone Number: <input type="text"/>	Contact Email Address: <input type="text"/>		
I hereby authorize the following charges to be applied to the following credit card. Check all that apply:			
<input type="checkbox"/> Room & Tax	<input type="checkbox"/> City Tax	<input type="checkbox"/> Gift Certificate	<input type="checkbox"/> All Stay Charges
<input type="checkbox"/> Food & Beverage	<input type="checkbox"/> Only Specific Incidentals	<input type="checkbox"/> All Banquet Charges	<input type="checkbox"/> Guest Amenities
<input type="checkbox"/> All Incidentals	<input type="checkbox"/> Resort Services Fee	<input type="checkbox"/> Parking	<input type="checkbox"/> Other - see comments
I hereby authorize the following amount to be applied to the credit card (applicable sales tax and service charges may apply): <input type="text"/>			

Authorization Forms

Construction Bid Form

Contoso

Owner Information		Contractor Information	
Name: <input type="text"/>	Company: <input type="text"/>	Name: <input type="text"/>	Address: <input type="text"/>
Address: <input type="text"/>	City, State ZIP: <input type="text"/>	Address: <input type="text"/>	City, State ZIP: <input type="text"/>
Phone: <input type="text"/>	Email: <input type="text"/>	Phone: <input type="text"/>	Email: <input type="text"/>
Project name: <input type="text"/>		Completion date: <input type="text"/>	
Scope of Work Project scope of work goes here. Type in all of the specifications you would like.			
Sample text: This is going to be a mock project of building a large set of stairs. We will use only 2x4 and 2x8 lumber, as well as joist brackets, to construct the frame. Stairs will be cut from the 2x8 material. No less than 2" screws will be used. Any nails will be no less than 10 penny. Design weight shall hold a minimum of 500 pounds per step. Steps will be level with that of the house. A running board will be fastened to the house. Contractor will take care of clean up.			

Construction Forms

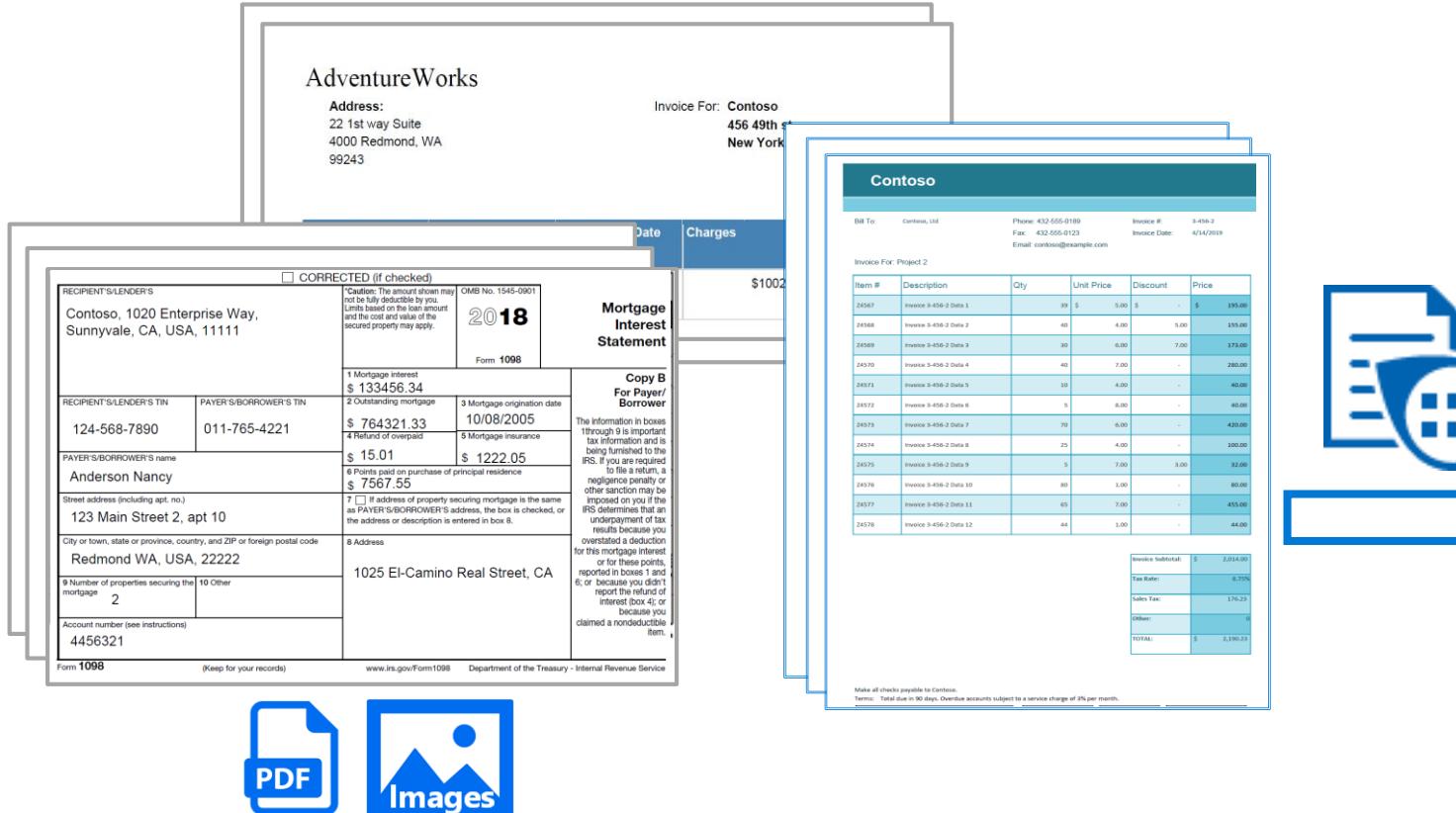


Different formats and data

Date	Employee ID	Name	Hourly Wage	Hours	Gross Pay	Federal Allow.	State Tax	Federal Income Tax	Comments									
1/2/2004	56	Kane, John	\$13.25	36.00	\$477.00	0	\$34.33	\$57.10										
1/2/2004	57	Kane, Lori	\$25.00	40.00	\$1,000.00	2	\$74.86	\$146.54										
1/2/2004	58	Kastner, Steven H.	\$31.00	39.00	\$1,209.00	1	\$96.49	\$213.70										
1/2/2004	Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1/2/2004	Rig Up	Drill Actual	Reaming	Coring	Cond Mud & Circ	Trips	Rig Service	Repair Rig	Cut Off Drilg Line	Dev Survey	Wireline Logs	Run Csg & Cement	Wait On Cement	Nipple BOP	Test BOP	Drillstem Test	Plug Back	Squeeze Cement
1/9/2004	0.25	1.75			1.00	0.50	1.00	0.50										
1/9/2004					1.75	0.50							4.75					
1/9/2004																		
1/9/2004																		
1/16/2004	TOTAL	0.25	1.75		2.75	1.00	1.00	0.50					4.75					
1/16/2004	TOUR	1	SIGNATURE OF DRILLER															
1/16/2004	BITS	DRILLING ASSEMBLY			MUD RECORD			DEVIATION SURVEYS			TIME LOG							
1/23/2004	Bit Number	1			No	Component	OD	ID	Length	Mud Type:	Water <input checked="" type="checkbox"/> Oil <input type="checkbox"/>	Time	Depth	Deviation	Direction	Type	From	To
1/23/2004	Size	311			1 Bit	311	0		0.39	Other		00:00	7.90	0.00	0		0:00	1:30
1/23/2004	IADC Code				1 Mud Motor	272	219		10.33	Time		00:15	68.61	0.30	233.26		1:30	3:45
1/23/2004	Manufacturer				1 Float Sub	195	82		0.84	Density		00:30	95.88	0.39	223.46		3:45	4:45
1/30/2004	Type	T806F			1 NMDC	196	82		2.97	Funnel Viscosity		00:30	123.21	0.47	228.47		4:45	5:15
1/30/2004	Serial No	8			1 Velocity 825	207	81		5.34	Fluid Loss		00:45	150.51	0.59	225.26		5:15	5:30
1/30/2004	Jets	11.9 11.9 11.9 11.9			1 8" DC	202	83		9.22	pH		01:00	177.80	0.56	135.82		5:30	5:45
1/30/2004	Depth Out (m)	622.00			1 Bell Sub	203	83		1.14	Location Of Sample		SOLIDS CONTROL					5:45	6:45
2/6/2004	Depth In (m)	0.00			3 6 3/4 DC	171	70		28.41	Depth		Equipment Name	Hours Run	Intake Density	Over Flow Density	Under Flow Density	6:45	7:00
2/6/2004	Total Drilled (m)	622.00			1 X/O	181	75		0.56	PVT						7:00	7:15	
2/6/2004										Circulation						7:15	7:30	
2/6/2004										Pump #	Type	Liner Size	SPM	Pressure	Hrs Run			
2/6/2004										1	165	110	17000	7.00				
2/6/2004										MUD MATERIALS ADDED								

Form Recognizer Service

Data extraction in any business process that intakes forms and outputs structured data



INPUT: Forms

Train your custom model with 5 sample forms

```
"status": "succeeded",
"lastUpdatedDateTime": "2019-10-29T19:52:21+00:00",
"analyzeResult": {
  "readResults": [
    {
      "page": 1,
      "width": 8.45833333333334,
      "height": 11.65277777777779,
      "angle": 270.24,
      "unit": "inch"
    }
  ],
  "pageResults": [
    {
      "page": 1,
      "clusterId": 0,
      "keyValuePairs": [
        {
          "key": {
            "text": "Invoice #",
            "boundingBox": [
              2.1222,
              0.5528,
              3.6083,
              0.5528,
              3.6083,
              0.6736,
              2.1222,
              0.6736
            ]
          },
          "value": {
            "text": "30455465",
            "boundingBox": [
              2.1222,
              0.6736,
              3.6528,
              0.6736,
              3.6528,
              0.8125,
              2.1222,
              0.8125
            ]
          },
          "confidence": 1.0
        }
      ]
    }
  ]
}
```

OUTPUT: Structured Data
Key Pair Values and Tables

Form Recognizer comprised of

Contoso		Fontrus, Inc.	
		CREDIT APPLICATION	
APPLICANT INFORMATION			
Bill To:	Cemco, Ltd		
Phone: 432-555-0199 Fax: 432-555-0192 Email: cemco@contoso.com		Name: _____ Date of Birth: _____ <i>Contact Address:</i> _____	
Invoice For: Project 2		□ CONNECTED (if checked)	
Item #	Description	Qty	Unit Price
20567	Insure x 450-2 Data 1		
20568	Insure x 450-2 Data 2		
20569	Insure x 450-2 Data 3		
20570	Insure x 450-2 Data 4		
20571	Insure x 450-2 Data 5		
<hr/>			
Health Progress Chart			
Instructions: Please enter the date for the first column, and the next three to the right will automatically be filled in. If you do not know the date, leave it blank. Click the Calculate button to calculate the dates for you.			
20572	Date	Weight (pounds)	Days
20573	2010-05-01	200	00
20574	2010-05-01	200	01
20575	2010-05-01	200	02
20576	2010-05-01	200	03
20577	2010-05-01	200	04
20578	2010-05-01	200	05
20579	2010-05-01	200	06
20580	2010-05-01	200	07
20581	2010-05-01	200	08
20582	2010-05-01	200	09
20583	2010-05-01	200	10
20584	2010-05-01	200	11
20585	2010-05-01	200	12
20586	2010-05-01	200	13
20587	2010-05-01	200	14
20588	2010-05-01	200	15
20589	2010-05-01	200	16
20590	2010-05-01	200	17
20591	2010-05-01	200	18
20592	2010-05-01	200	19
20593	2010-05-01	200	20
20594	2010-05-01	200	21
20595	2010-05-01	200	22
20596	2010-05-01	200	23
20597	2010-05-01	200	24
20598	2010-05-01	200	25
20599	2010-05-01	200	26
20600	2010-05-01	200	27
20601	2010-05-01	200	28
20602	2010-05-01	200	29
20603	2010-05-01	200	30
20604	2010-05-01	200	31
20605	2010-05-01	200	32
20606	2010-05-01	200	33
20607	2010-05-01	200	34
20608	2010-05-01	200	35
20609	2010-05-01	200	36
20610	2010-05-01	200	37
20611	2010-05-01	200	38
20612	2010-05-01	200	39
20613	2010-05-01	200	40
20614	2010-05-01	200	41
20615	2010-05-01	200	42
20616	2010-05-01	200	43
20617	2010-05-01	200	44
20618	2010-05-01	200	45
20619	2010-05-01	200	46
20620	2010-05-01	200	47
20621	2010-05-01	200	48
20622	2010-05-01	200	49
20623	2010-05-01	200	50
20624	2010-05-01	200	51
20625	2010-05-01	200	52
20626	2010-05-01	200	53
20627	2010-05-01	200	54
20628	2010-05-01	200	55
20629	2010-05-01	200	56
20630	2010-05-01	200	57
20631	2010-05-01	200	58
20632	2010-05-01	200	59
20633	2010-05-01	200	60
20634	2010-05-01	200	61
20635	2010-05-01	200	62
20636	2010-05-01	200	63
20637	2010-05-01	200	64
20638	2010-05-01	200	65
20639	2010-05-01	200	66
20640	2010-05-01	200	67
20641	2010-05-01	200	68
20642	2010-05-01	200	69
20643	2010-05-01	200	70
20644	2010-05-01	200	71
20645	2010-05-01	200	72
20646	2010-05-01	200	73
20647	2010-05-01	200	74
20648	2010-05-01	200	75
20649	2010-05-01	200	76
20650	2010-05-01	200	77
20651	2010-05-01	200	78
20652	2010-05-01	200	79
20653	2010-05-01	200	80
20654	2010-05-01	200	81
20655	2010-05-01	200	82
20656	2010-05-01	200	83
20657	2010-05-01	200	84
20658	2010-05-01	200	85
20659	2010-05-01	200	86
20660	2010-05-01	200	87
20661	2010-05-01	200	88
20662	2010-05-01	200	89
20663	2010-05-01	200	90
20664	2010-05-01	200	91
20665	2010-05-01	200	92
20666	2010-05-01	200	93
20667	2010-05-01	200	94
20668	2010-05-01	200	95
20669	2010-05-01	200	96
20670	2010-05-01	200	97
20671	2010-05-01	200	98
20672	2010-05-01	200	99
20673	2010-05-01	200	100
<hr/>			
CREDIT CARD AUTHORIZATION			
<input type="checkbox"/> I authorize the following charges to be applied to the credit card listed below. Credit Type: <input type="radio"/> Check <input type="radio"/> Cash Card Type: <input type="radio"/> Food & Beverage <input type="radio"/> Only Specific Industries All Bar <input type="radio"/> All Gasoline <input type="radio"/> All Hotels & Motels All Personal <input type="radio"/> All Petrol <input type="radio"/> All Restaurants I hereby authorize the following amount to be applied to my credit card (subjectable to service and usage charges) for each month:			
*Quantity: _____ *Card Number: _____ *Expiry Date: _____ *Cardholder Name: _____ *Comments: _____ The credit card listed below may be used for the estimated charges. If all other credit cards have been applied, I shall advise and apply to the			
Credit Card Number: _____ Expiry Date: _____ Cardholder Name: _____ Signature of Card Holder: _____			
Customer Details Qty Description (Make & Model) New or Used			
Name: _____ SSN: _____ Phone: _____ Mortgage Interest Statement			
 Supplier Finance			
Finance Proposal Form			
CUSTOMER DETAILS Company Name: _____ Job Ref No.: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Fax: _____ Contact Name: _____			
Notes: Address (Proprietor v. partner) From 2 years previous to present address Years at Address: _____ Home Owner: <input type="checkbox"/> Yes <input type="checkbox"/> No Years at Address: _____ Work Address: _____ Home Owner: <input type="checkbox"/> Yes <input type="checkbox"/> No Years at Address: _____ Work Address: _____ Home Owner: <input type="checkbox"/> Yes <input type="checkbox"/> No Years at Address: _____ Work Address: _____ Home Owner: <input type="checkbox"/> Yes <input type="checkbox"/> No			
PATRON / DIRECTOR DETAILS DOB: _____ DOB: _____ DOB: _____ DOB: _____ DOB: _____ DOB: _____ DOB: _____ DOB: _____			
LEASE DETAILS Payment Profile: <input type="checkbox"/> 30 Day <input type="checkbox"/> 60 Day <input type="checkbox"/> 90 Day <input type="checkbox"/> Instant Value: _____ Delivery Date: _____			
QUOTE DETAILS			

Train with labels



Train without labels



Pre-Built models

Credit Application					
Your Company Your Street					
Contact Information					
Contact Name _____					
Company Name _____					
Address _____					
Phone _____					
Fax _____					
E-mail _____					
Billing Information					
AP-Contact Name _____					
Company Name _____					
Address _____					
General Company Information					
Federal Tax ID number _____	Principal Officer _____				
Duns & Bradstreet number _____	Title _____				
Legal Structure (check all that apply)					
<input type="checkbox"/> Corporation	<input type="checkbox"/> LLC	<input type="checkbox"/> Sole Proprietor			
<input type="checkbox"/> Partnership	<input type="checkbox"/> LLP	<input type="checkbox"/> Non-Profit			
In Business Since _____	Business Type _____				
Bank References					
Bank Name (#1) _____	Bank Acct#Type _____				
Bank Address _____	Bank City/State/Zip _____				
Bank Contact _____	Bank Phone _____				
Bank Name (#2) _____	Bank Acct#Type _____				
Bank Address _____	Bank City/State/Zip _____				
Bank Contact _____	Bank Phone _____				
Trade References					
Company _____	Contact _____	Street _____	City _____	State _____	Phone _____
1. _____					
2. _____					
3. _____					
4. _____					
Signature & Authorization					
<p>The signature below represents and warrants that (a) the party signing below is an authorized representative of the company, and (b) that the information provided herein is a complete and accurate representation of the company's financial situation as of the date hereof. Any representations or statements made in this application or otherwise provided to the bank for the purpose of this application are true and accurate.</p> <p>By signing this form I expressly authorize [Your Company Name] to contact the above references to determine creditworthiness.</p>					
Signature _____	Date _____				
Print Name _____	Position _____				

Layout

Train with labels

Step 1 - Label
Step 2 – Train
Step 3 - Analyze



- Provide human inputs to extract the values you care about
- Only a handful of sample documents needed to train a model, get started with just 5 forms
- Ability to create continuous feedback loop add label additional data to improve your model over time

<https://docs.microsoft.com/en-us/azure/cognitive-services/form-recognizer/quickstarts/label-tool>

Train without labels

Step 1 – Train
Step 2 - Analyze

The form contains the following data:

Name	Gavin Bennett
Address	6793 Bonifacio St.
City	Woodland Hills
State	California
Postal Code	91364
Country	United States
Tailwind Traders	
Company	Sayoucvos
Company Address	9089 Bonsai Court
Company City	Billeray
Company State	England
Company Postal Code	CM11
Company Country	United Kingdom

Invoice No. 129235 Order Date 12 November 2018 Email gbennett@sayoucvos.com

Invoice

Item	Qty	Description	Price	Discount	(Pct)	Tax	LineTotal
49	3	Screwdriver	\$110.00	\$0.00	0%	\$23.10	\$353.10
43	1	Big Metal Shelving	\$99.00	\$0.00	0%	\$6.93	\$105.93

Subtotal \$429.00
Total Discount \$0.00
Tax Rate 7%
Total Tax \$30.03
Total \$459.03

- No human labeling required
- Especially useful if you have a significant amount of form types
- Only a handful of sample documents needed to train a model, get started with just 5 forms

<https://docs.microsoft.com/en-us/azure/cognitive-services/form-recognizer/quickstarts/python-train-extract>

Pre-Built Receipts

1 Step - Analyze

- Off the shelf model (no training required)
- Available as a managed service
- Extracts key information on sales receipts (e.g. merchant, time, date, taxes, totals and more)

<https://docs.microsoft.com/en-us/azure/cognitive-services/form-recognizer/quickstarts/python-receipts>

Layout

1 Step - Analyze

- Off the shelf model (no training required)
- Available as a managed service
- Extracts text and tables from documents

<https://docs.microsoft.com/en-us/azure/cognitive-services/form-recognizer/quickstarts/python-layout>

Form Recognizer for the business user – AI Builder Form Processing



Form processing

Extract information, store and process your Forms

AI builder



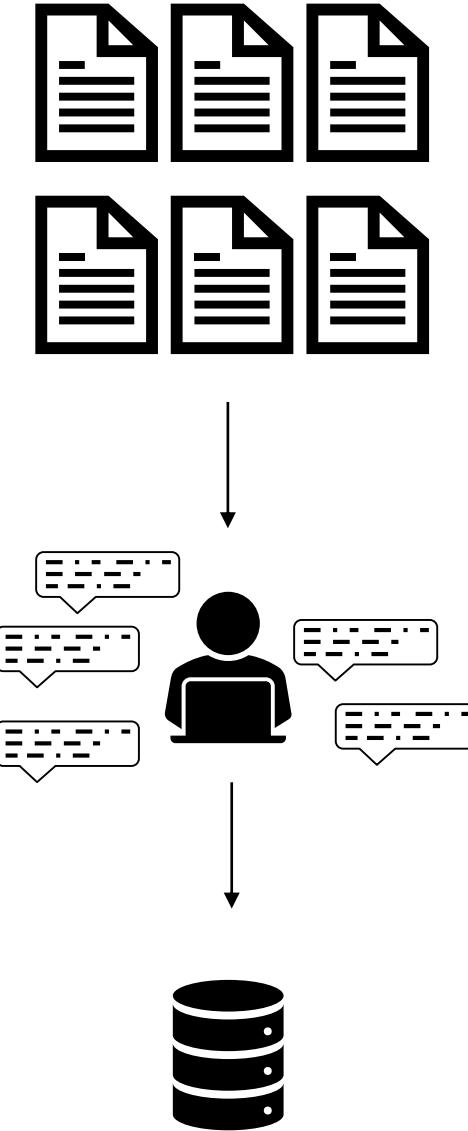
< 1 hour



Point & Click



Process
Automation



Custom Vision

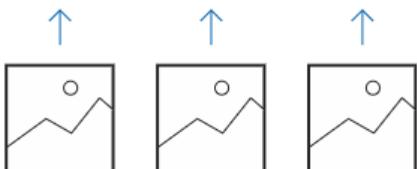
Microsoft Cognitive Services

Custom Vision



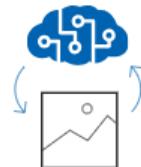
Visual Intelligence Made Easy

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.



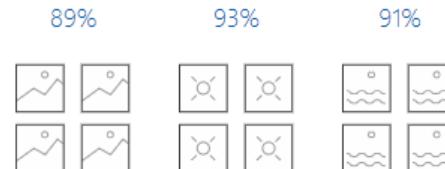
Upload Images

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

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

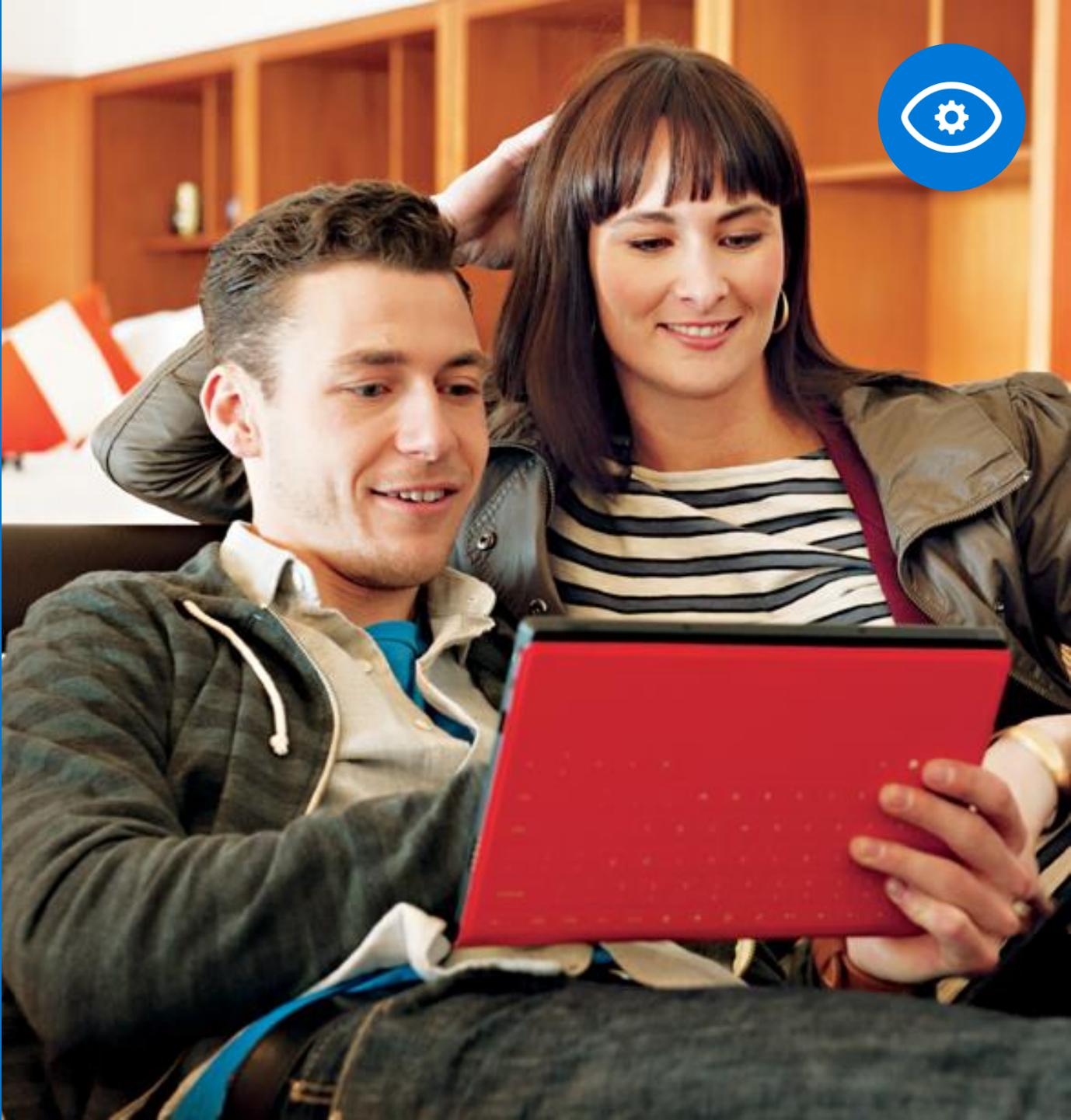
Use your labeled images to teach Custom Vision Service the concepts you want it to learn

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

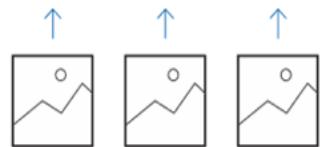
Export

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



Results

Tag	Probability
daisy	99.9%
trillium	3.1%
lily of the valley	0.1%
dogwood	0.0%



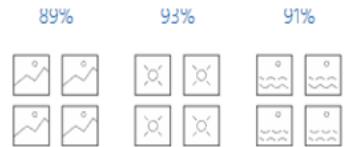
Upload Images

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



Train

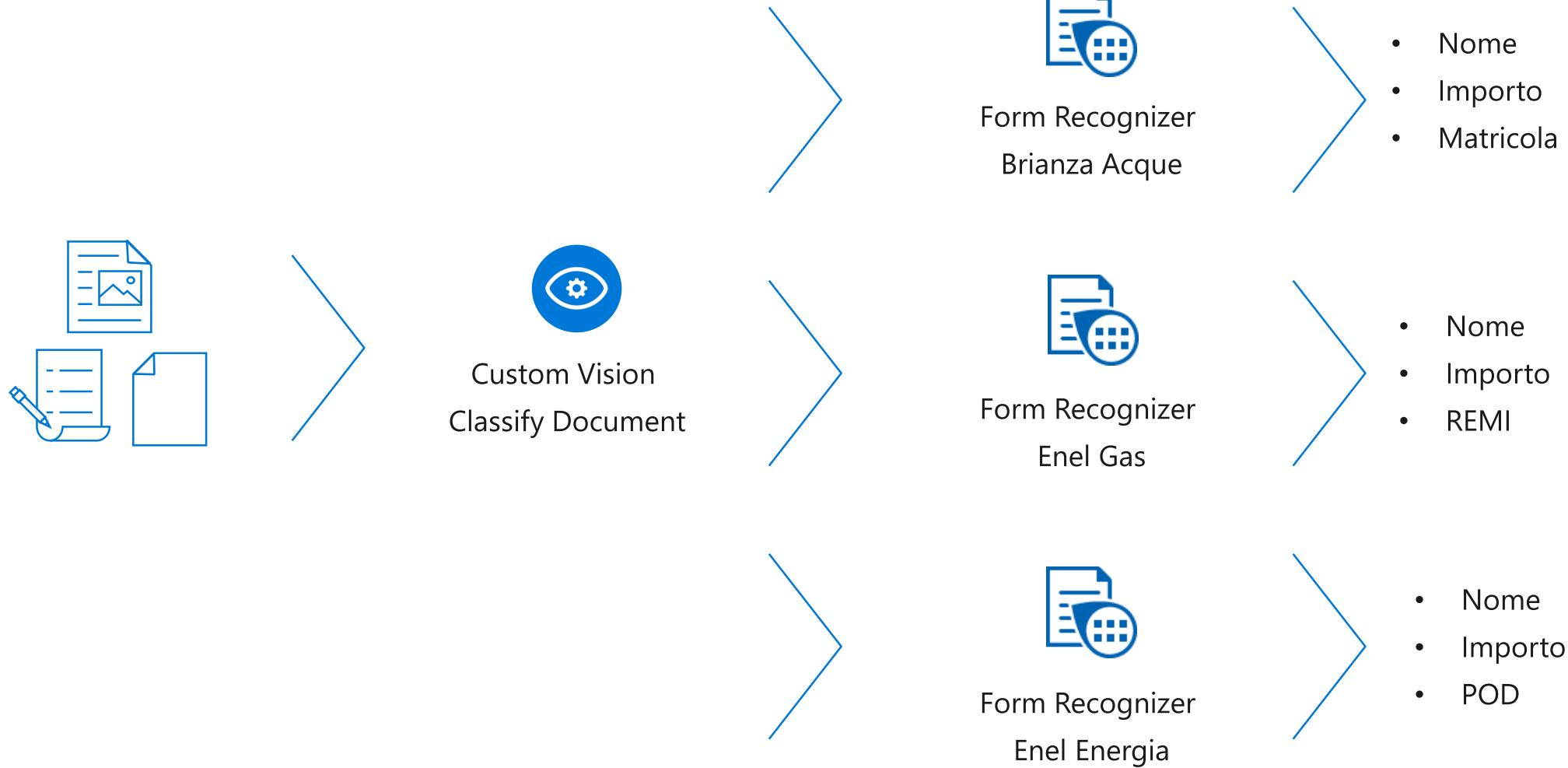
Use your labeled images to teach Custom Vision the concepts you care about.



Evaluate

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

An End to End Pipeline



Bring Your Own Form - Resources

- Setup
 - [Create Form Recognizer Resource](#)
 - [Create Custom Vision Resource](#)
 - Deploy UI (container)
- [Train Your Own Form Recognizer Model](#)
- [Train Custom Vision Model](#)



/Docs alert

Explore overviews, tutorials,
samples, and more.

aka.ms/cs-docs

The screenshot shows the Microsoft Azure Cognitive Services documentation page. At the top, there's a navigation bar with links for Overview, Solutions, Products, Documentation (which is underlined), Pricing, Training, Marketplace, Partners, Support, Blog, More, and a Free account button. Below the navigation is a breadcrumb trail showing the user is at Azure / Cognitive Services. On the right side of the header are icons for Contact Sales, Search, and Portal. The main title is "Azure Cognitive Services documentation". A subtext below it says, "Learn how to build intelligent and supported algorithms into apps, websites, and bots to see, hear, speak, understand, and interpret your user needs." The page features six cards arranged in two rows of three. Each card has an icon, a category, and a title. The first row includes: "OVERVIEW What are Cognitive Services?", "CONCEPT Cognitive Services and machine learning", and "HOW TO GUIDE Create a Cognitive Services resource". The second row includes: "REFERENCE Language support in Cognitive Services", "CONCEPT Using Cognitive Services in Containers", and "HOW TO GUIDE Authenticate a request".

Category	Title
OVERVIEW	What are Cognitive Services?
CONCEPT	Cognitive Services and machine learning
HOW TO GUIDE	Create a Cognitive Services resource
REFERENCE	Language support in Cognitive Services
CONCEPT	Using Cognitive Services in Containers
HOW TO GUIDE	Authenticate a request



/MS Learn alert

Complete interactive learning exercises, watch videos, and practice and apply your new skills.

The screenshot shows the Microsoft Azure website's 'Learn' section. At the top, there's a navigation bar with links like 'Overview', 'Solutions', 'Products', 'Documentation', 'Pricing', 'Training', 'Marketplace', 'Partners', 'Support', 'Blog', 'More', and a 'Free account' button. Below the navigation is a breadcrumb trail: 'Docs / Learn / Browse / Process and classify images with the Azure Cognitive Vision Services'. To the right of the breadcrumb trail are 'Sign in' and a '3500 XP' badge. The main content area features a blue hexagonal icon with a red robot head and white icons representing various services. The title 'Process and classify images with the Azure Cognitive Vision Services' is displayed in bold black text. Below the title, it says '2 hr 45 min • Learning Path • 4 Modules' and lists categories: 'Beginner', 'AI Engineer', 'Azure', 'Azure Portal', and 'Cognitive Services'. A detailed description follows: 'Microsoft Cognitive Services offers pre-built functionality to enable computer vision functionality in your applications. Learn how to use the Cognitive Vision Services to detect faces, tag and classify images, and identify objects.' Underneath, there's a 'Prerequisites' section with the link 'Azure Fundamentals'.

<https://docs.microsoft.com/en-us/learn/patterns/classify-images-with-vision-services/>

References and Documentation (Form Recognizer API)

Form recognizer documentation:

<https://docs.microsoft.com/en-us/azure/cognitive-services/form-recognizer/>

API reference: <https://westus2.dev.cognitive.microsoft.com/docs/services/form-recognizer-api-v2-preview/operations/AnalyzeWithCustomForm>

DEMO MATERIAL:

<https://github.com/frvigano/PublicEvents/tree/master/ComputerVisionAndProcessesAutomation>

References and Documentation (Form Recognizer SDK)

<https://docs.microsoft.com/en-us/dotnet/api/overview/azure/cognitiveservices/client/formrecognizer?view=azure-dotnet-preview>

<https://docs.microsoft.com/bs-latn-ba/azure/cognitive-services/form-recognizer/quickstarts/dotnet-sdk>

References and Documentation (Computer Vision API)

OCR documentation:

<https://docs.microsoft.com/en-us/azure/cognitive-services/computer-vision/concept-recognizing-text>

Notebooks:

<https://github.com/microsoft/cognitive-services-notebooks>

<https://github.com/microsoft/Cognitive-Vision-Python/tree/master/Jupyter%20Notebook>

DEMO MATERIAL:

<https://github.com/frvigano/PublicEvents/tree/master/ComputerVisionAndProcessesAutomation>

References and Documentation (Computer Vision SDK)

<https://docs.microsoft.com/en-us/azure/cognitive-services/computer-vision/quickstarts-sdk/python-sdk#read-printed-and-handwritten-text>

<https://github.com/Azure-Samples/cognitive-services-quickstart-code/blob/master/python/ComputerVision/ComputerVisionQuickstart.py>