

Hack AI – ML Microsoft

Septiembre 2018

Agenda

1. Plataforma Azure ~ 45 min

- Bots
- Machine Learning
- Data Science VM

2. State of the art Algoritmos ~ 45 min

- Caso particular: sistemas de recomendación

3. Bots ~ 90 min

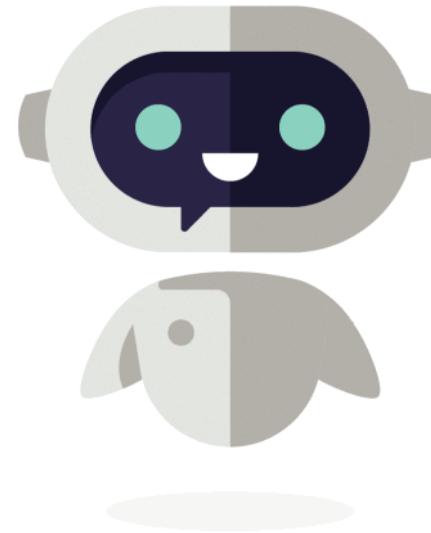
- Teoría
- Práctica
- Ejemplos

4. Laboratorio Azure ML ~ 90 min

- Extracción de datos
- Limpieza
- Configuración de algoritmos
- Validación
- Exportación de resultados

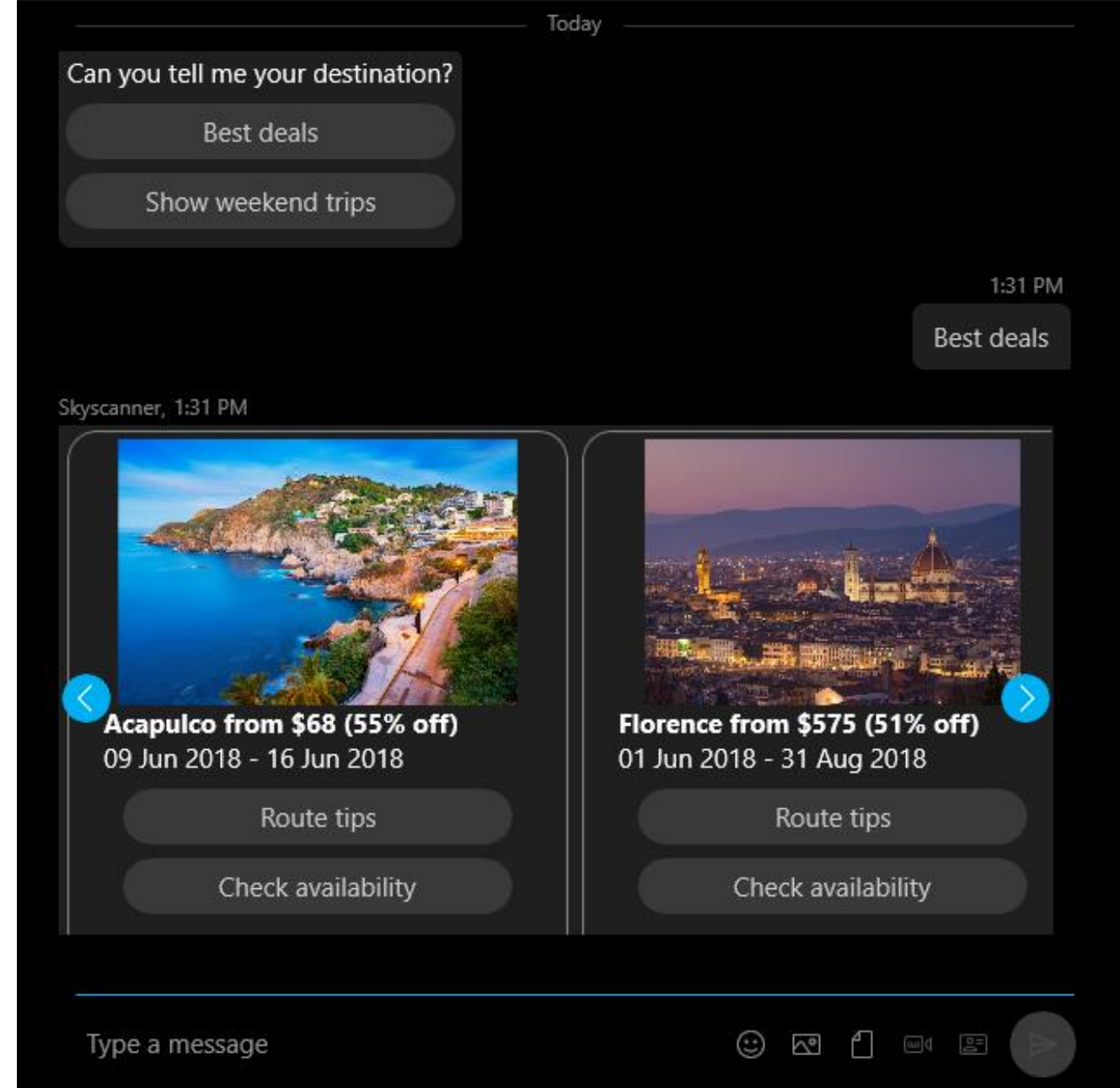
¿Qué son los ChatBots?

- Los Bots son chats que tienen funciones como:
 - Automatización (crear un recordatorio para la reunión de la tarde)
 - Control de información interna
 - Relación con el cliente
 - Agendar citas
 - Búsqueda de información
 - Solicitudes de ayuda y soporte



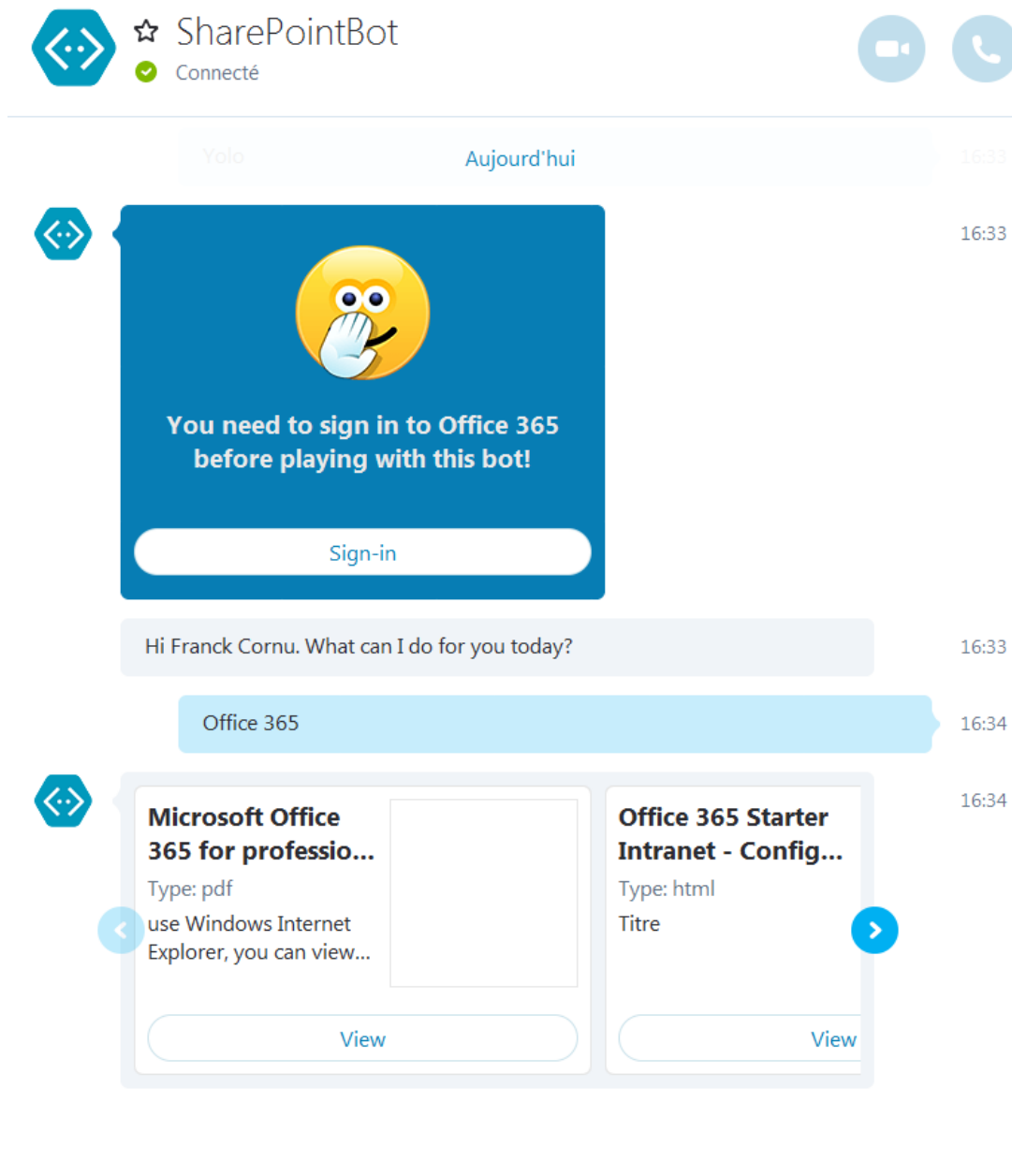
¿Qué son los ChatBots?

- Pueden recibir y enviar información sin lenguaje
 - Botones
 - Carruseles
 - Gráficas
 - Audio



¿Qué son los ChatBots?

- Aplicaciones con una nueva interfaz
 - Rápido acceso
 - Multiplataforma
 - Fácil de desarrollar y desplegar
 - Interacciones naturales



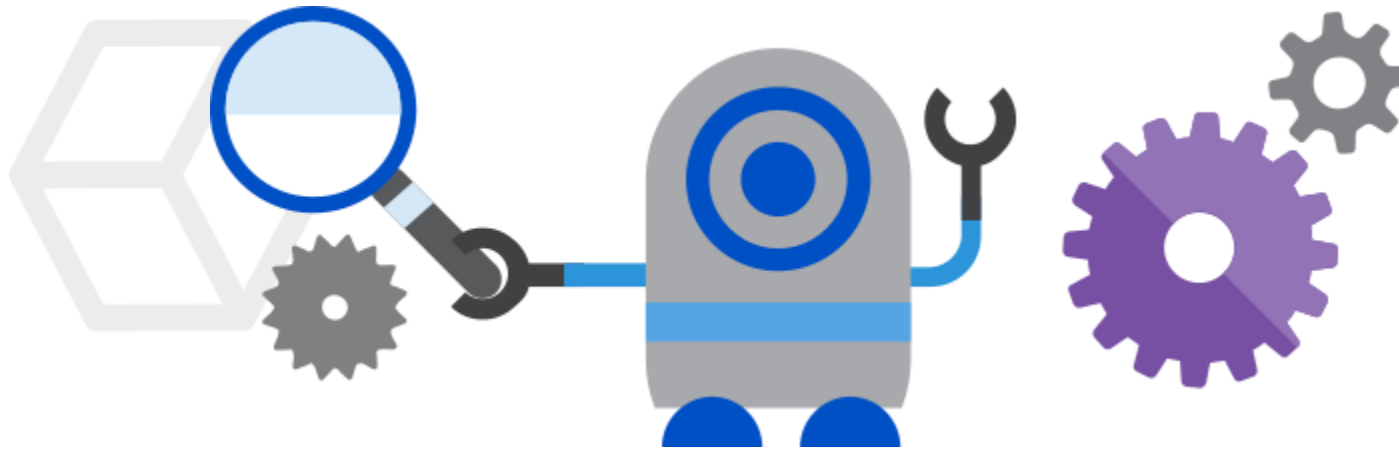
¿Qué son los ChatBots?

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Importancia de los ChatBots

- Integración de aplicaciones Convergencia de tecnologías
- Herramientas y servicios inteligentes permiten desarrollar ChatBots fácilmente
- Variedad de canales de comunicación.



Analítica de bots

Genera una base de conocimiento de las conversaciones del ChatBot con los usuarios para análisis y toma de decisiones.

GRAND TOTALS

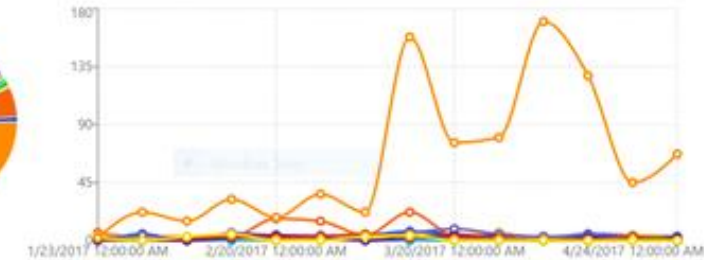
985 86k

Users Messages

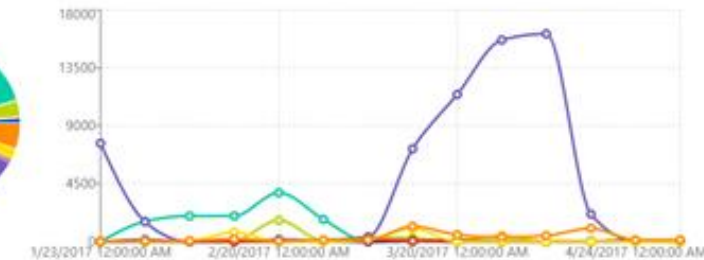
RETENTION - % USERS WHO MESSAGED AGAIN (LAST 10 DAYS)

Date	Users	Days later									
		1	2	3	4	5	6	7	8	9	10
4/15/2017	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4/16/2017	8	13%	13%	13%	13%	13%	13%	0%	13%	13%	
4/17/2017	11	27%	9%	9%	18%	9%	0%	9%	9%		
4/18/2017	27	30%	7%	7%	4%	0%	19%	7%			
4/19/2017	14	14%	7%	7%	0%	43%	14%				
4/20/2017	13	8%	8%	0%	8%	8%					
4/21/2017	13	8%	0%	8%	8%						
4/22/2017	3	0%	67%	67%							
4/23/2017	0	0%	0%								
4/24/2017	13	31%									

USERS



MESSAGES



856	285	2.7k	273	11k	30	979	62k	358
skype	directline	facebook	groupme	kik	msteams	email	slack	telegram
409	1.9k	4.5k						
sms	wechat	wechat						

ERRORS

Create more personal
computing



Conversations as a platform



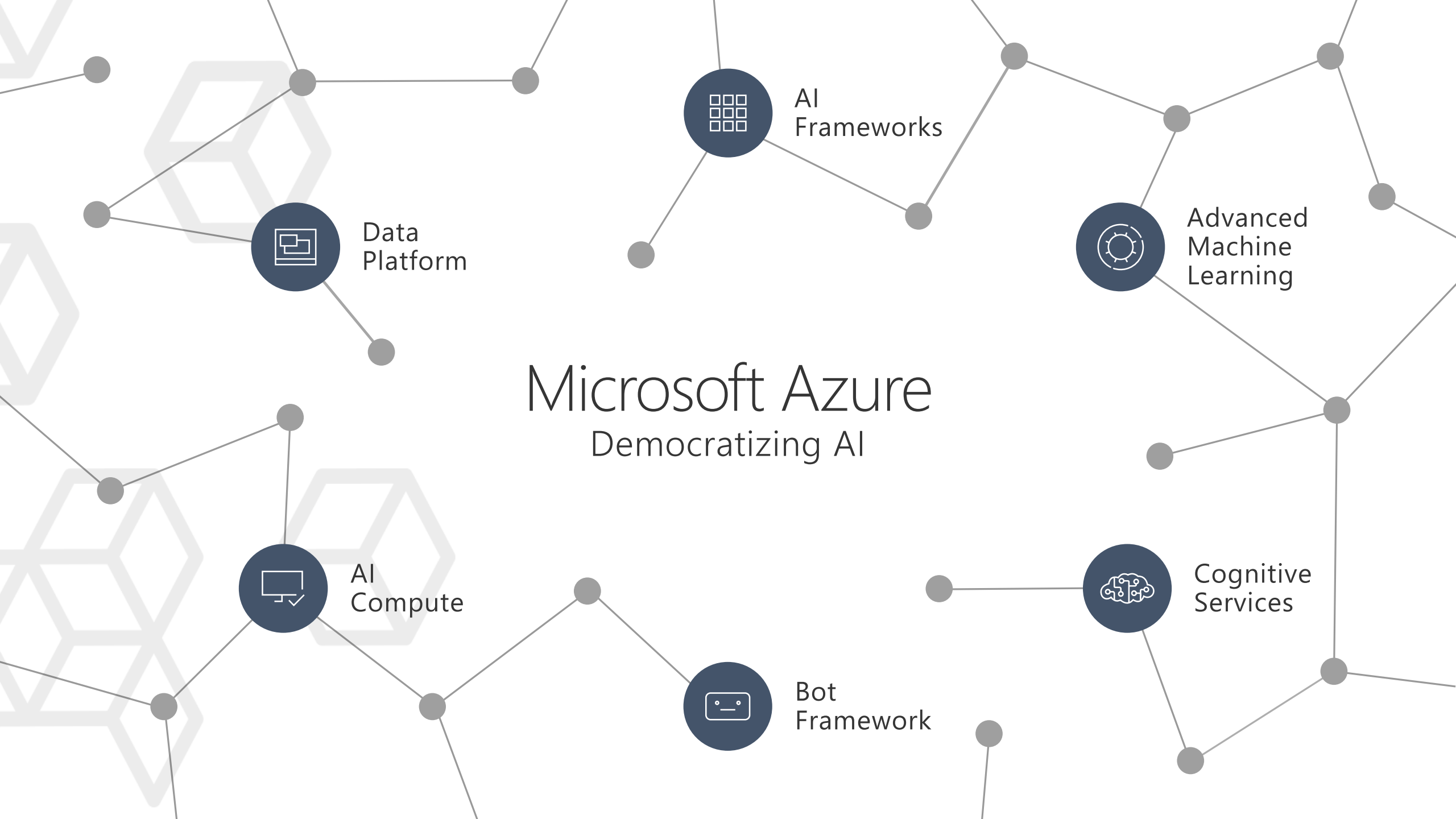
Build the intelligent
cloud platform



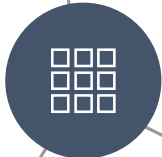
Reinvent productivity
& business processes

Más de 1,000 empresas utilizan Microsoft Bot Framework

Scenario	Retail	Finance	Insurance	Telecoms	Government	Automotive	Manufacturing	Healthcare	Media	Events
Customer service	✓	✓	✓	✓	✓	✓	✓	✓		✓
Customer retail	✓	✓	✓	✓				✓		
Audio/speech analysis	✓	✓	✓	✓	✓				✓	
Translation		✓	✓							
Surveillance		✓			✓					
Knowledge extraction		✓	✓	✓			✓			
Video/photo analysis		✓			✓				✓	
Product identification	✓						✓	✓		
Digital assistant						✓				
Footfall analysis	✓									✓
HD maps and object detection						✓				



Data Platform



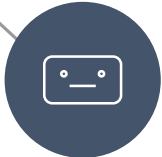
AI Frameworks



Advanced Machine Learning



AI Compute



Bot Framework



Cognitive Services

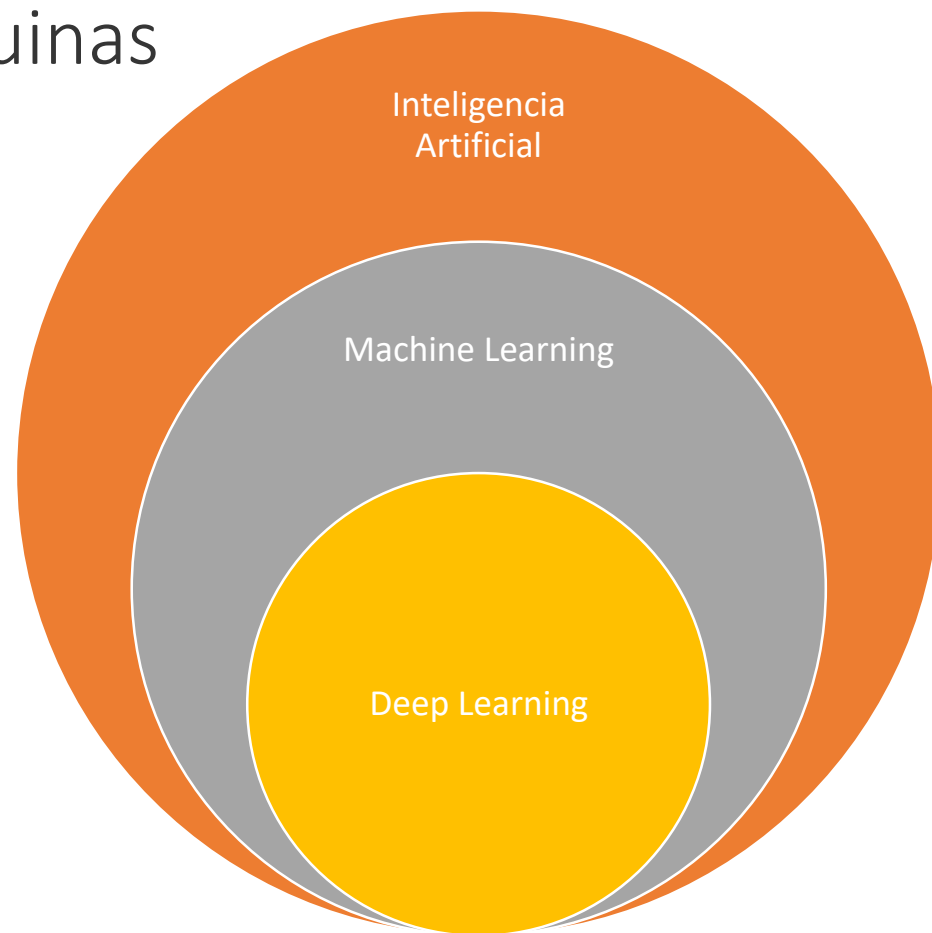
Microsoft Azure

Democratizing AI

¿Que es Inteligencia Artificial?

Inteligencia humana exhibida por las máquinas

- Aplicaciones:
 - Procesamiento natural del lenguaje
 - Computer Vision
 - Detección de objetos
 - Clasificación de imágenes
- Métodos:
 - Redes neuronales profundas (DNN)
 - Redes neuronales convolucionales (CNN)
 - Redes neuronales recurrentes (RNN)



The Microsoft AI platform: Azure & AI

Services



Infrastructure



Tools



Microsoft AI Platform

Azure AI Services

PRE-BUILT AI

Cognitive Services

CONVERSATIONAL AI

Bot Service



CUSTOM AI

Azure Machine Learning

Azure Infrastructure

AI ON DATA

Cosmos DB

SQL DB

SQL DW

Data Lake

Search

DSVM

Batch AI

ACS

IoT Edge

101010
010101
101010

CPU, FPGA, GPU

AI COMPUTE

CODING & MANAGEMENT TOOLS

VS Tools for AI

Azure ML Studio

Azure ML Workbench

Others (PyCharm, Jupyter Notebooks...)



DEEP LEARNING FRAMEWORKS

3rd Party

Cognitive Toolkit

TensorFlow

Caffe

Others (Scikit-learn, MXNet, Keras, Chainer, Gluon...)

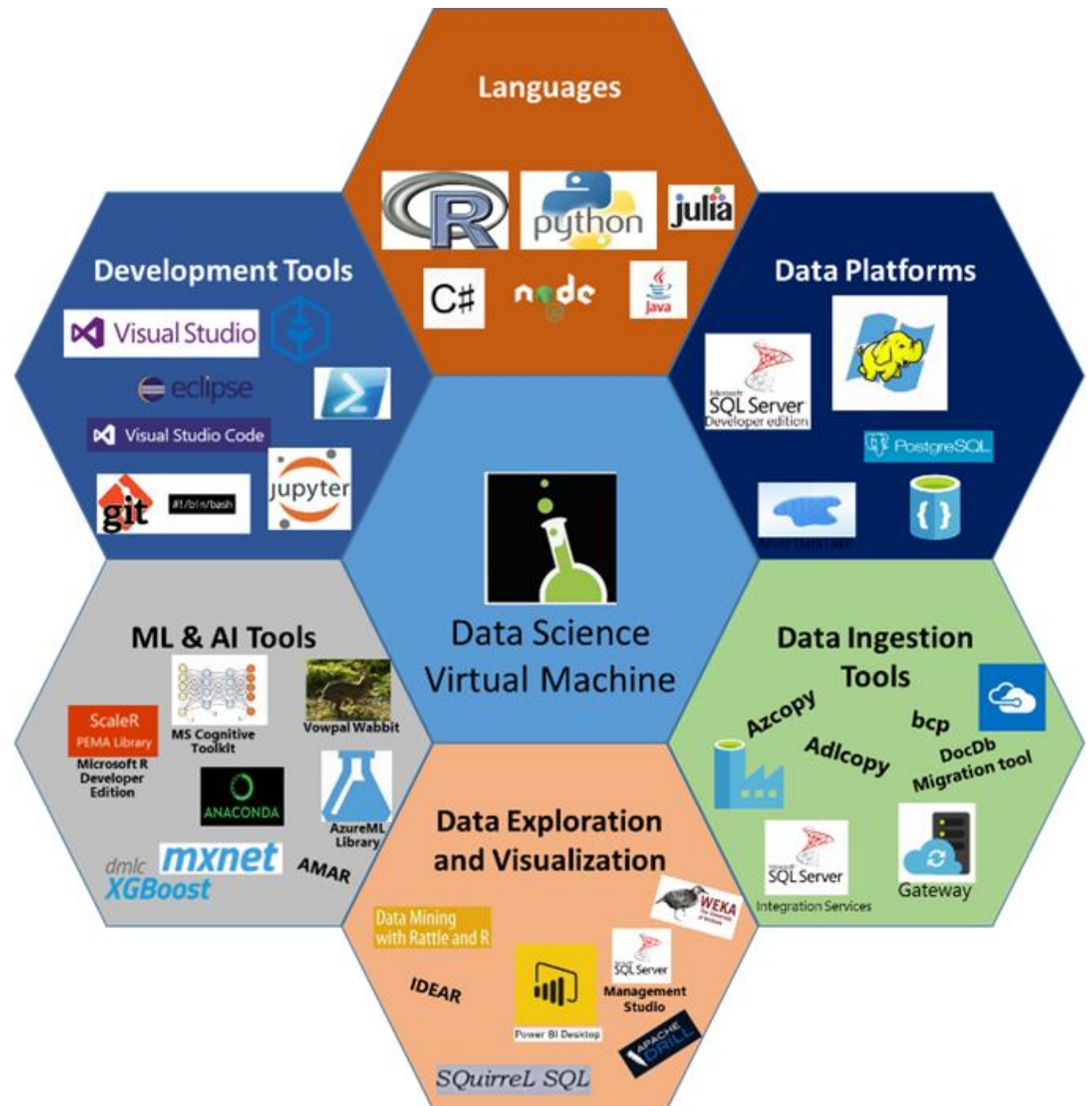


Data Science VM

by Microsoft

Create Virtual Machine >

- Cree máquinas Windows y Linux en minutos
- Amplia gama de configuraciones
- Escala a lo que necesitas
- Pague solo por lo que usa
- Precargado con un conjunto completo de herramientas y utilidades diseñadas específicamente para el científico de datos pro



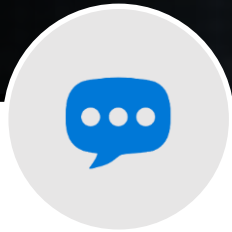
Microsoft Cognitive Services

Give your apps a human side



Vision

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



Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent



Language

Process text and learn how to recognize what users want



Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data



Search

Access billions of web pages, images, videos, and news with the power of Bing APIs



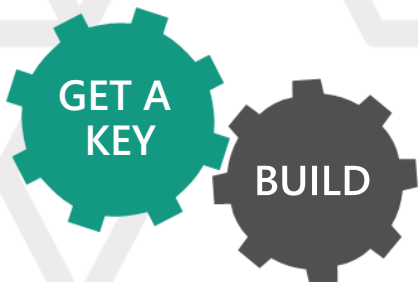
Labs

An early look at emerging Cognitive Services technologies: discover, try & give feedback on new technologies before general availability

Why Microsoft Cognitive Services?

Easy

Roll your own with REST APIs
Simple to add: just a few lines of code required



Flexible

Integrate into the language and platform of your choice
Breadth of offerings helps you find the right API for your app



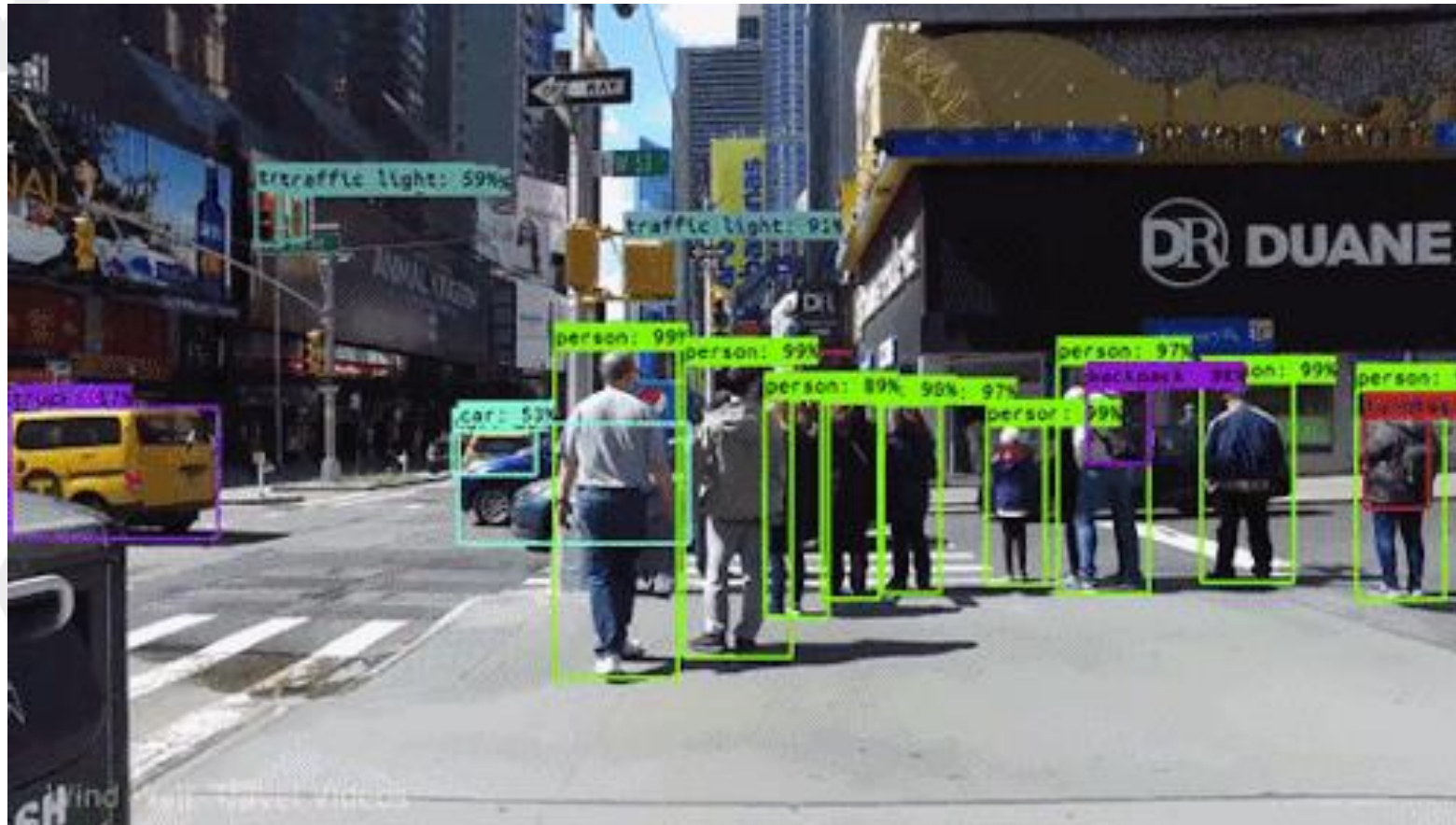
Tested

Built by experts in their field from Microsoft Research, Bing, and Azure Machine Learning
Quality documentation, sample code, and community support

GitHub



Casos de uso



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

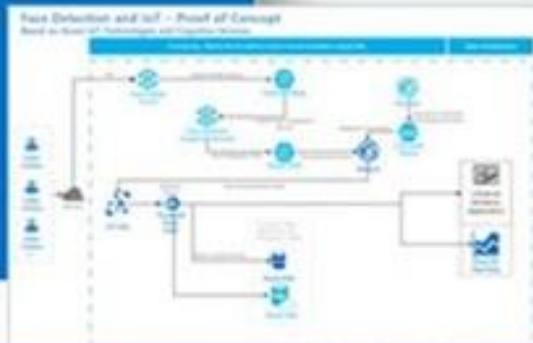
Dominant Color Background	White
Dominant Color Foreground	Grey
Dominant Colors	White
Accent Color	

Experiencias – Casos de Uso

Identificación de Faltantes en Góndolas

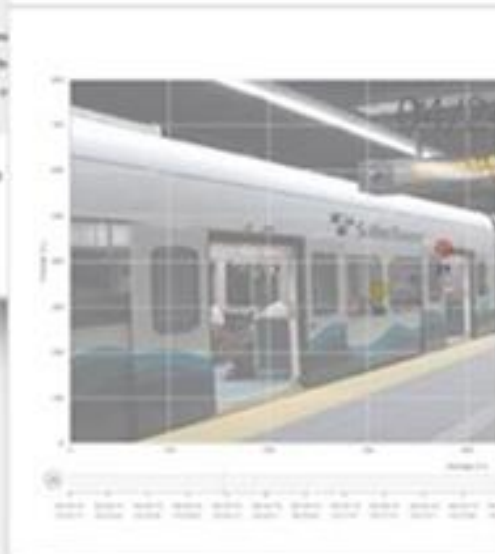
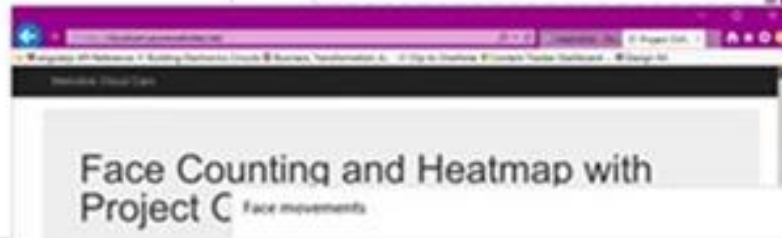


IoT



Prepared for
Modern Apps CSE
20 March 18
Version 1.0 Final

Prepared by
Tony Feltz
IBM
Consultant



Face



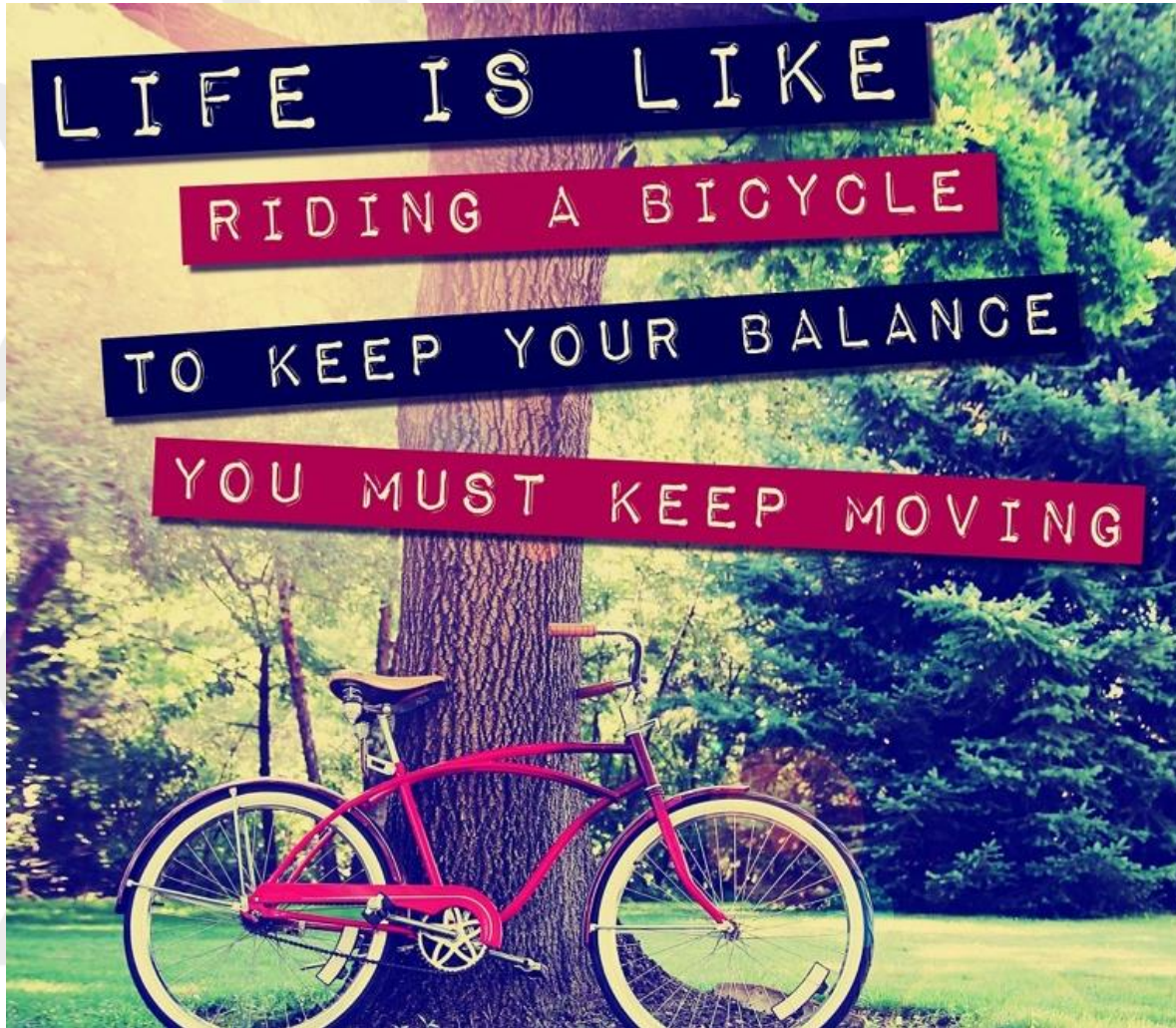
Power BI

Video Camera for Visitor Counting & Tracking





OCR



Good at

Scanned documents

Photos with text

Fine grained location information,

LIFE

RI

TO

YO

```
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"
            }
          ]
        }
      ]
    }
  ]
}
```


Stabilization

The Stabilization API provides automatic video stabilization and smoothing for shaky videos

This API uses many of the same technologies found in Microsoft Hyperlapse

Best For:

Small camera motions, with or without rolling shutter effects
(e.g., holding a static camera, walking with a slow speed)



Face detection and tracking

High precision face location detection and tracking

Can detect up to 64 human faces in a video (no smaller than 24x24 pixels)

Detected and tracked faces are returned with coordinates and a Face ID to track throughout the video



Time (sec)	Face ID	x, y	Width, height
0	0	0.59, 0.23	0.09, 0.16
0	1	0.38, 0.15	0.07, 0.12
1	0	0.54, 0.25	0.09, 0.15
1	1	0.23, 0.18	0.07, 0.12

Experiencias – Casos de Uso

LA CENTRAL DE ESCOBAR



El proyecto ganó el segundo puesto entre 125 trabajos de 18 países de América Latina y el Caribe en una convocatoria de trabajos de investigación sobre Datos Abiertos y Big Data.

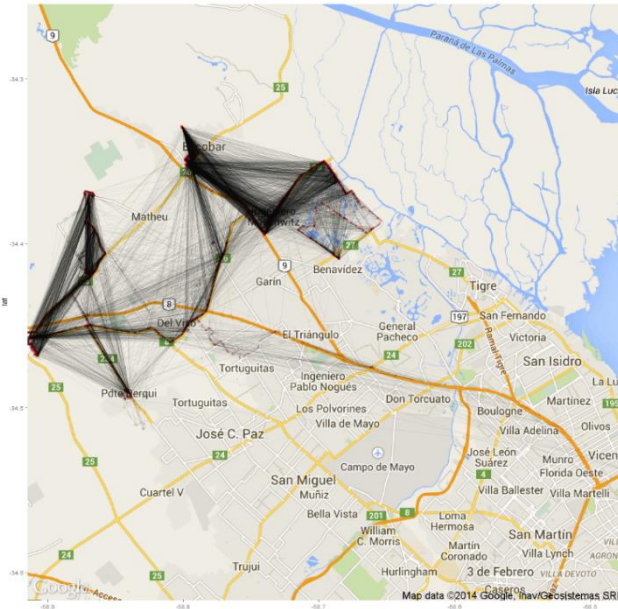
El innovador proyecto presentó la utilización de técnicas de Big Data para que los servicios públicos de transporte puedan conocer cambios en los patrones de movilidad urbana, lo que posibilita dar una respuesta inmediata a los problemas de transporte, como reducir los tiempos de viaje y rediseñar rutas.

Para obtener mayor información:
contacto@pragmaconsultores.com

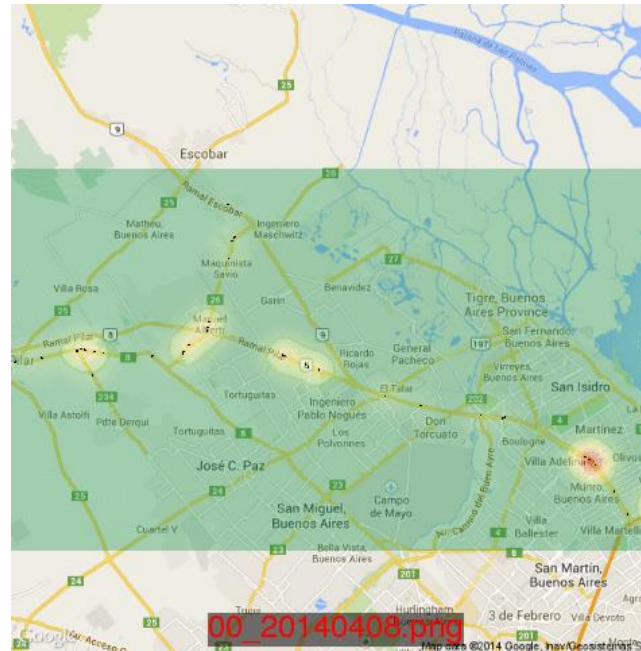
Experiencias – Casos de Uso

LA CENTRAL DE ESCOBAR

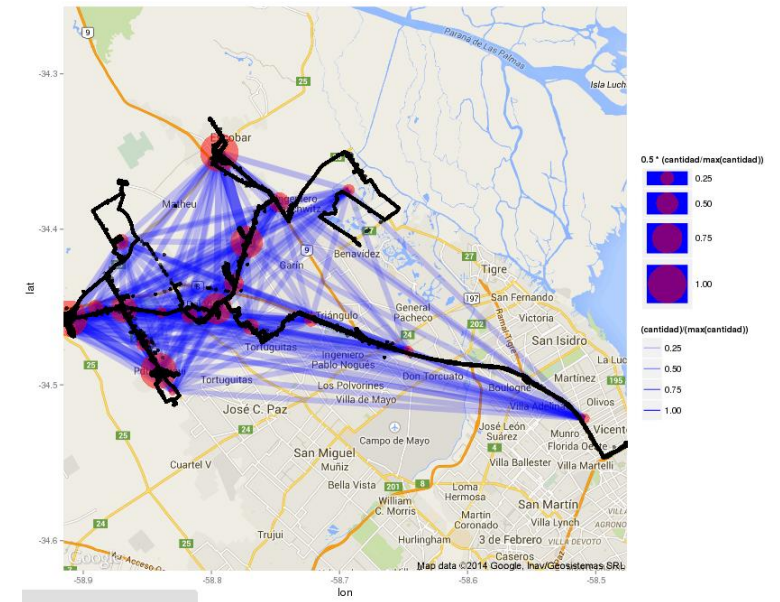
Identificación lugar de descenso



Visualización - Storytelling



Clusterización de trayectos

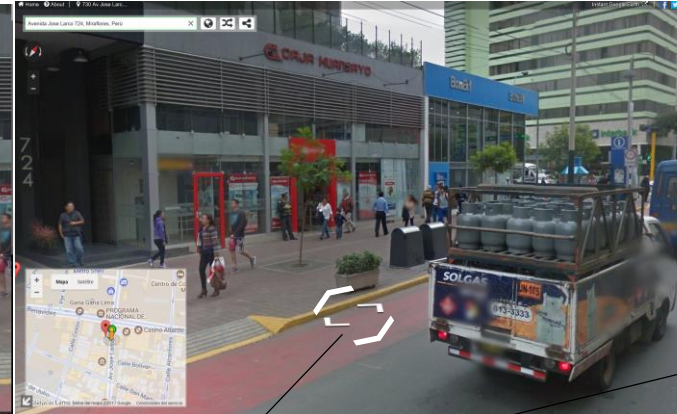
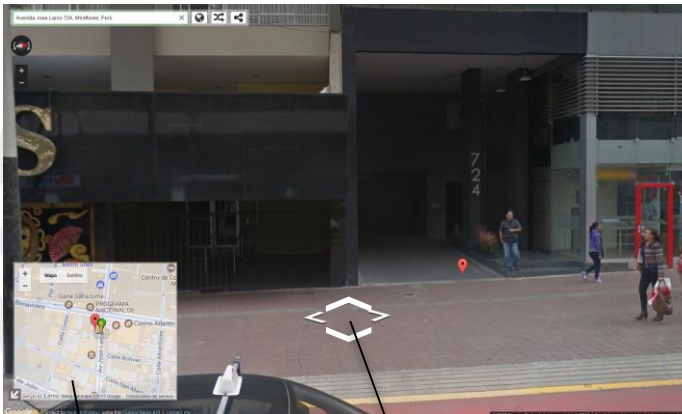


Visualizador de Locaciones con Identificación de Objetos



Avenida Jose Larco 724, Miraflores, Perú

Búsqueda por Nombre de la Celda
Contenido Georreferenciado



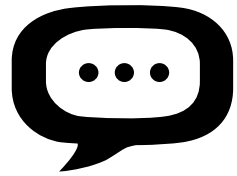
Avance NS o EO

MiniMap

Giro en 360

A long time ago in a galaxy far,
far away....



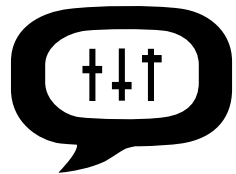


Bing Speech API

Voice recognition (speech to text)
Converts spoken audio to text

Voice output (text to speech)
Synthesize audio from text

Speech intent recognition
Convert spoken audio to intent



Custom Recognition

Customize both language
and acoustic models

Tailor speech recognition to your app and environment

Speaker recognition APIs

Enrollment

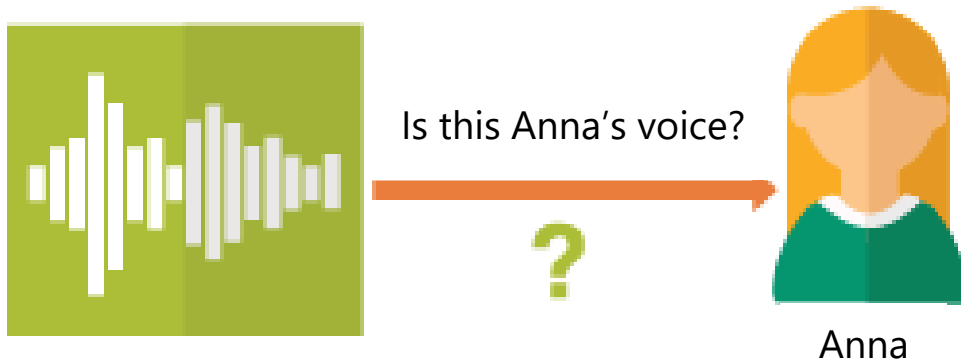
Create a unique voiceprint for a profile

Recognition

After enrolling one or more voices, identify who is speaking from an audio clip

Verification

Confirm if a voice belongs to a previously enrolled profile



Language understanding models



"News about
flight delays"

```
{
  "entities": [
    {
      "entity": "flight_delays",
      "type": "Topic"
    }
  ],
  "intents": [
    {
      "intent": "FindNews",
      "score": 0.99853384
    },
    {
      "intent": "None",
      "score": 0.07289317
    },
    {
      "intent": "ReadNews",
      "score": 0.0167122427
    },
    {
      "intent": "ShareNews",
      "score": 1.0919299E-06
    }
  ]
}
```

ExerciseTracker

New utterances

Search

Suggest

Review labels

Performance analysis

 Publish

Intents



None

StartActivity

StopActivity

SetHeartRateTarget

Entities



ActivityType

Pre-built Entities



number

Regex Features



No patterns added

Phrase List Features



ActivityWords



Suggest utterances that will improve:

Intent: StartActivity



Select highlight to add another entity or click to clear

begin a jog now

StartActivity(0.96)



Submit

begin bike ride

StartActivity(0.94)



Submit

start tracking a bike ride

StartActivity(0.94)



Submit

Intents



StartActivity

11 utterances: 11 correctly predicted



StopActivity

5 utterances: 5 correctly predicted



SetHeartRateTarget

5 utterances: 5 correctly predicted

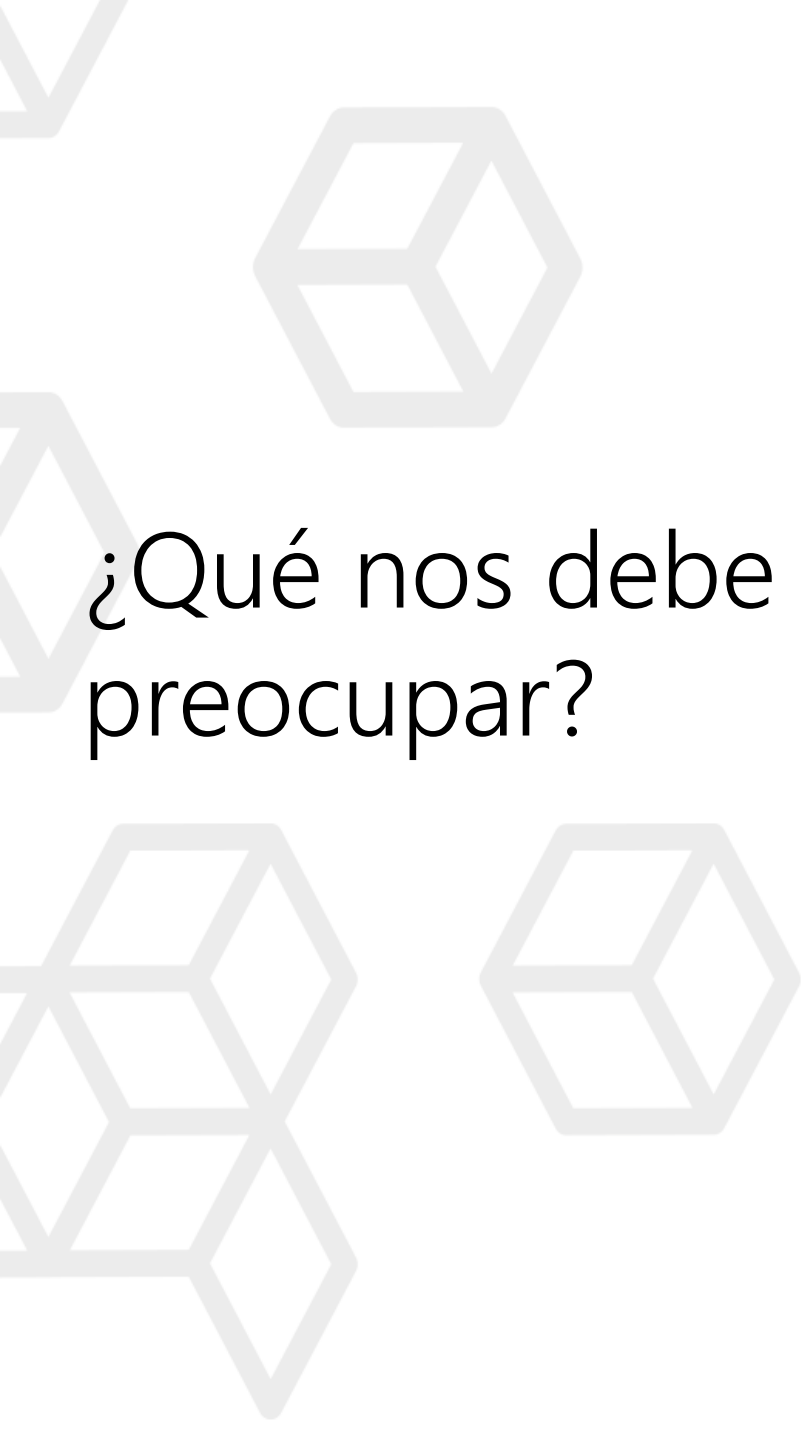


None

17 utterances: 17 correctly predicted

 Correctly predicted Error (predicted as other intent)

Train Last train completed: 8/21/2015 2:04:09 PM



¿Qué nos debe preocupar?

Que alguien piense que porque es una máquina, es objetiva.

Que la máquina decida sobre el hombre (lo que ya pasa hoy): cuando el auto no te permita arrancar porque diga que no estás en condiciones.

La máquina ya hoy decide si te llevan al cuartito en migraciones, si te dan o no el crédito, si eres un potencial terrorista, si hay que calentar la oficina, qué contenido mostrarte...

Que la máquina "se enoje" porque miraste feo al vecino.

The background is a solid light purple color. It features a repeating pattern of faint, stylized hexagons and molecular-like structures. Some hexagons are solid outlines, while others are filled with a lighter shade. Molecular structures consist of small circles connected by lines, resembling a network or a chemical structure.

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Septiembre 2018