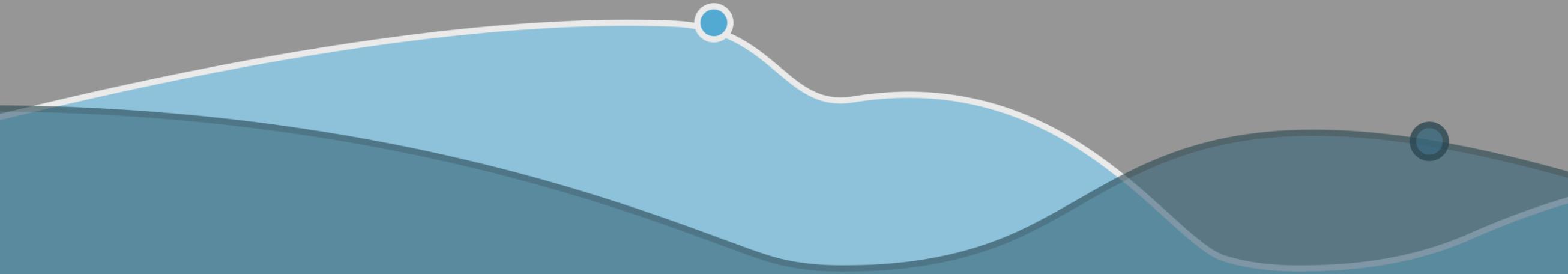




Cortana Analytics Workshop

Sept 10 – 11, 2015 • MSCC



Perceptual APIs

Elad Ziklik & Ryan Galgon



Cortana Analytics Suite

Transform data into intelligent action



Cortan Percep

TOO OLD
FOR THIS SHIT



The internet is insane - Azure is awesome!

- As of today
 - 80 million unique users
 - 557 million images
 - 10 million blog reads
- At peak
 - 1600 cores
 - 5.6 TB RAM
 - Over 2000 images per second



1 developer, 3 weeks – 0 downtime

50 million users in perspective



A global phenomenon

- Used in almost every Country in the world

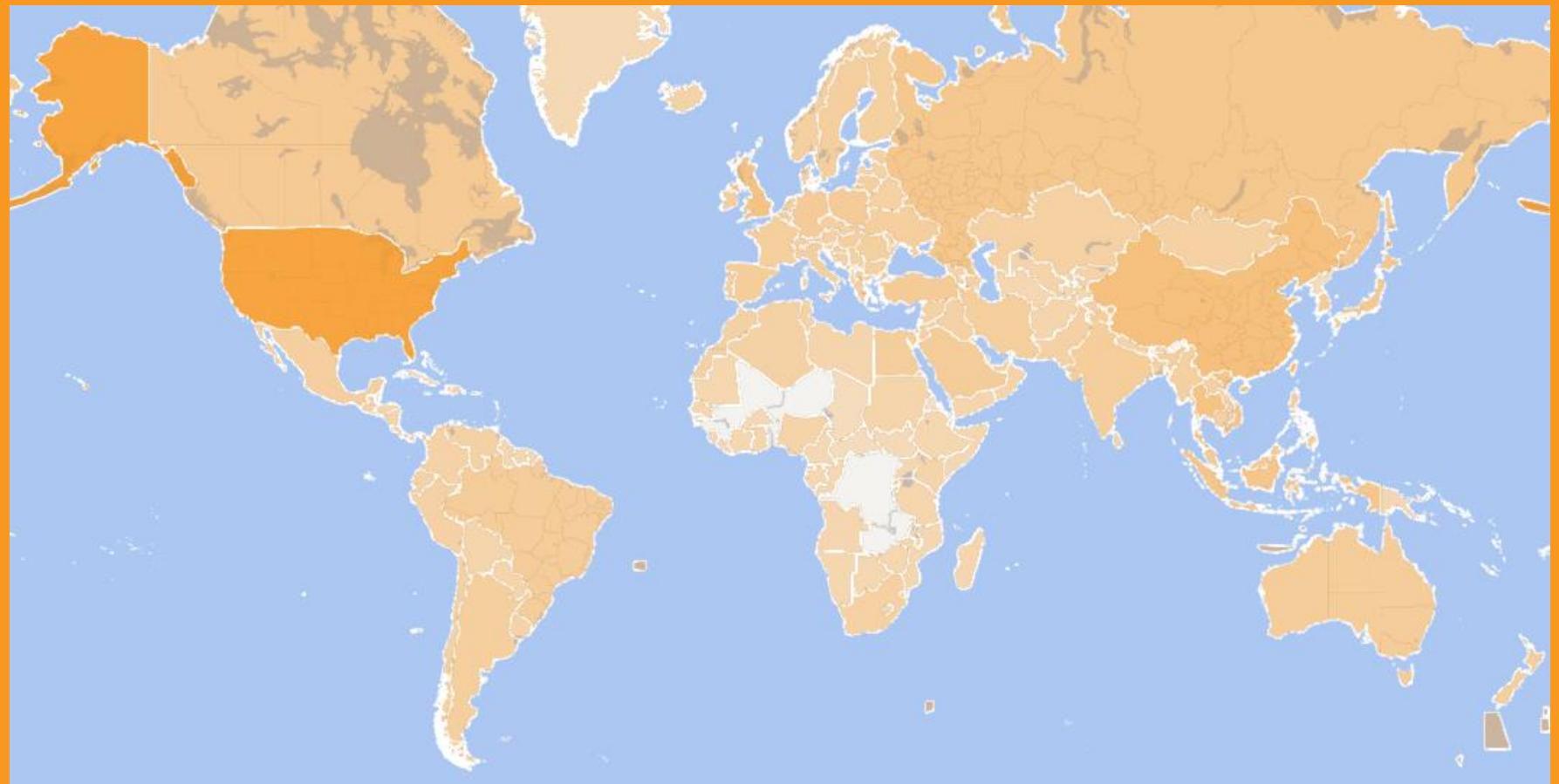
- US - 12 million

- Taiwan - 5 million

- China – 4 million

- Iran – 300k

- North Korea - 20

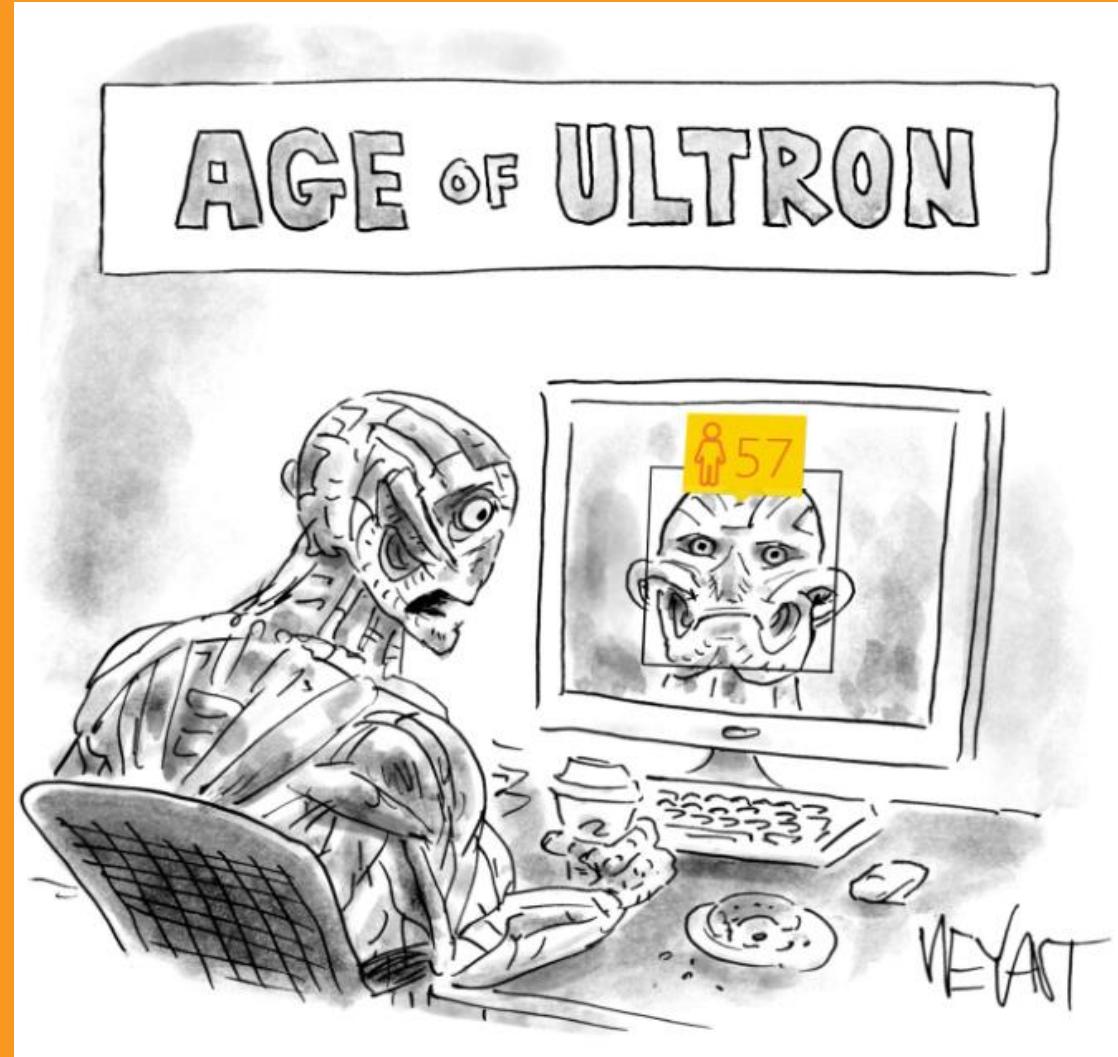


In the Media

Over 106K pages with links to the site



Daily comic for The New Yorker - 5/4



In the social sphere

As of Today

- 2.2 million Facebook posts
- 45K Instagram posts
- 142K tweets



Arianna Huffington @ariannahuff · May 2
It must be all that extra sleep! #Thrive #HowOldRobot

The image shows a screenshot of a tweet from Arianna Huffington (@ariannahuff) dated May 2. The tweet includes her profile picture and a link to the How-Old.net app. Below the tweet is a screenshot of the app showing a portrait of Arianna Huffington with a yellow speech bubble overlay containing the number '31'.

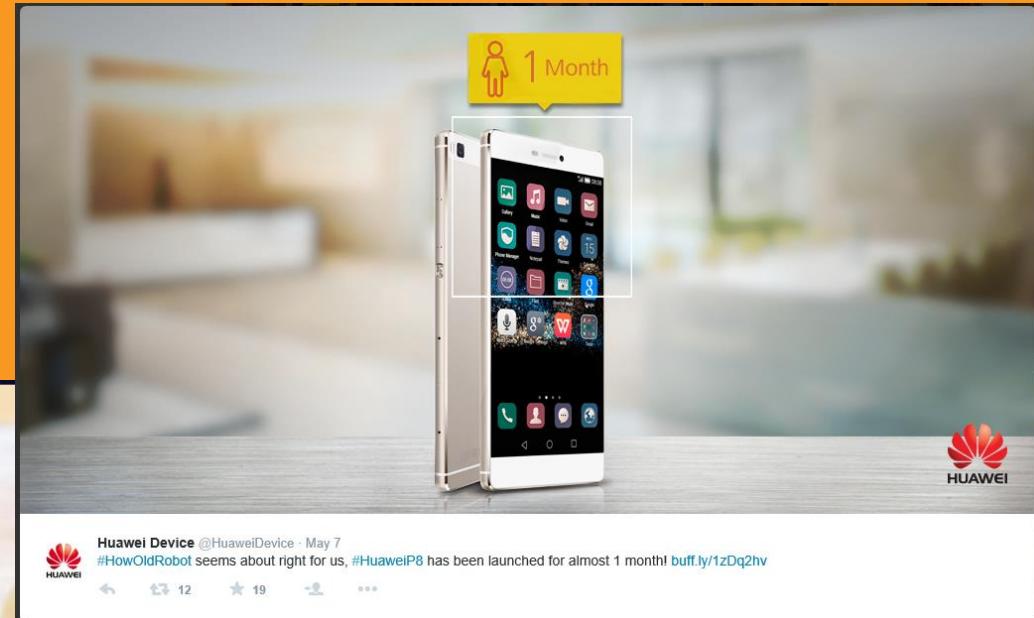
During //Build

- #1 trending topic on twitter
- 80% of the conversation about MS

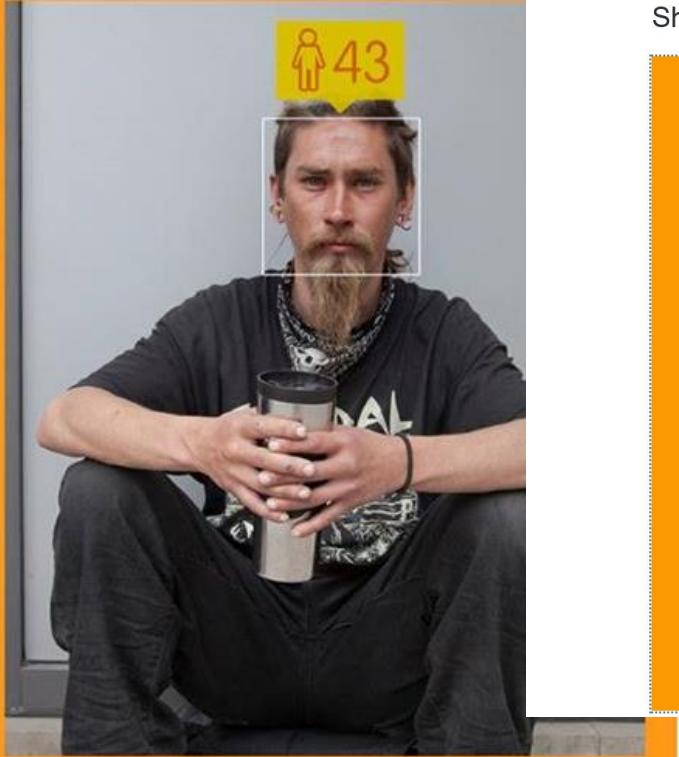
Amelia Talon @AmeliaTalon · May 9
I am laughing so hard right now. I guess gray hair shaves off quite a few years for me. #HowOldRobot

The image shows a screenshot of a tweet from Amelia Talon (@AmeliaTalon) dated May 9. The tweet includes her profile picture and a link to the How-Old.net app. Below the tweet is a screenshot of the app showing a portrait of a woman with grey hair, overlaid with a yellow speech bubble containing the number '11'. A large black diagonal banner across the bottom of the image reads 'CENSORED'. In the top right corner of the image frame, there is a small link 'View photo'.

Companies talked about their products



People talked about important issues



PETA @peta · May 1
Lolita was captured when she was approx. 4 years old.

She's been in captivity for 44 YEARS. #FreeLolita #HowOldRobot

NOTHING STEALS YOUTH LIKE THE STREET.

Cale is actually 22. "The past month I've been on the street. I want to be stable and help my friends out. I'm originally from Ottawa, but have been all over."

Covenant House Toronto helps thousands of homeless youth.
Cale was in this photo to raise awareness. Please share or donate.



How-Old.net
HOW OLD DO I LOOK? #HowOldRobot

Sorry if we didn't quite get the age and gender right – we are still improving this feature.



How-Old.net
HOW OLD DO I LOOK? #HowOldRobot

Couldn't detect any faces.

Sorry if we didn't quite get the age and gender right – we are still improving this feature.

Basima Faysal @BasimaFaysal · Apr 30
#HowOldRobot: Total rubbish.

Nearly 50 people and it couldn't recognise a single face.

And not so important issues



KONAMI UK @KonamiUK · May 1
#HowOldRobot has declared Old Snake to be... not too old at all, at 46! And our winner is: @JamilAlio. Well done!

A photograph of Old Snake from the Metal Gear Solid video game series. A white rectangular box highlights his forehead and eyes. A yellow speech bubble with a red diamond icon containing the number '46' is positioned above the box.



How-Old.net
HOW OLD DO I LOOK? #HowOldRobot

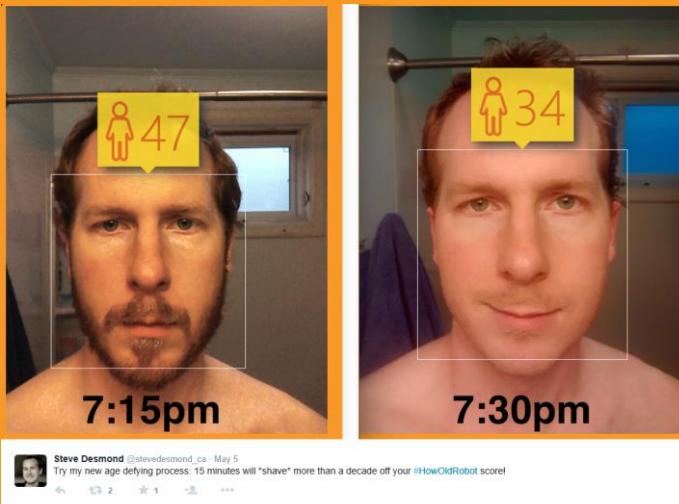
Couldn't detect any faces.

A placeholder image for the How-Old.net service, showing a man's body in a suit and tie with a large, stylized red and orange striped head.

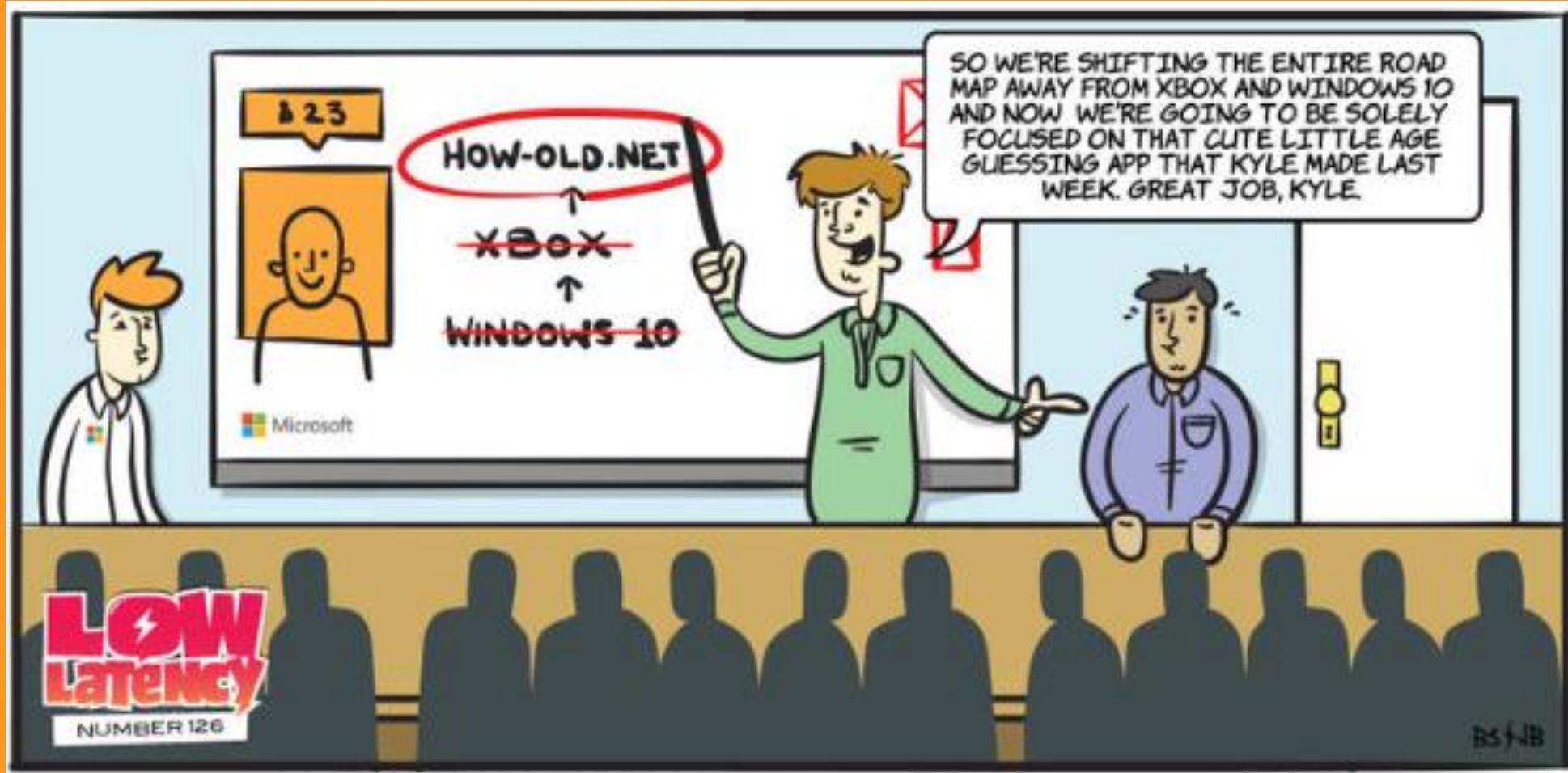
Bacon 4 President @Bacon4Pres · May 2
I'm immortal, apparently. #HowOldRobot #FAIL

4 1 1 1 ...

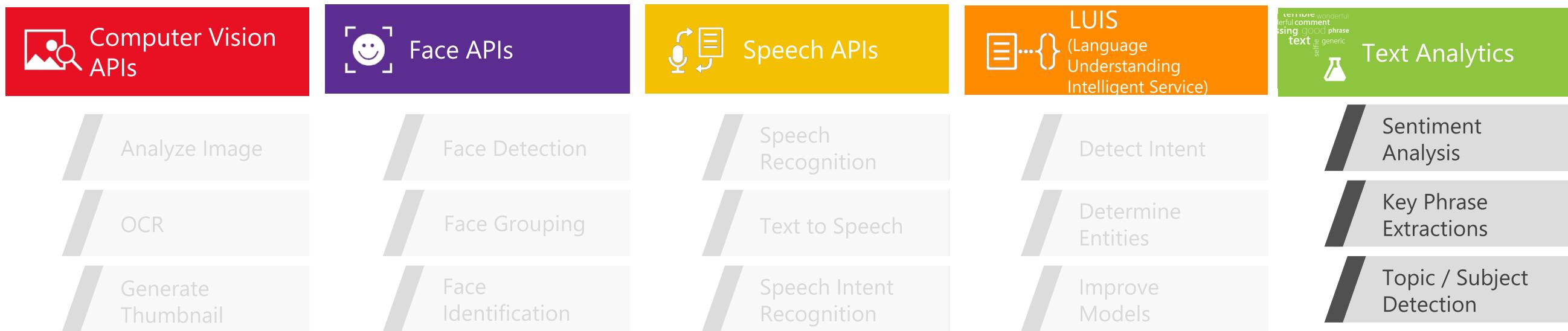
We also made the world a less hairy place



Demo



Perceptual Intelligence APIs





Computer Vision APIs

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



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:

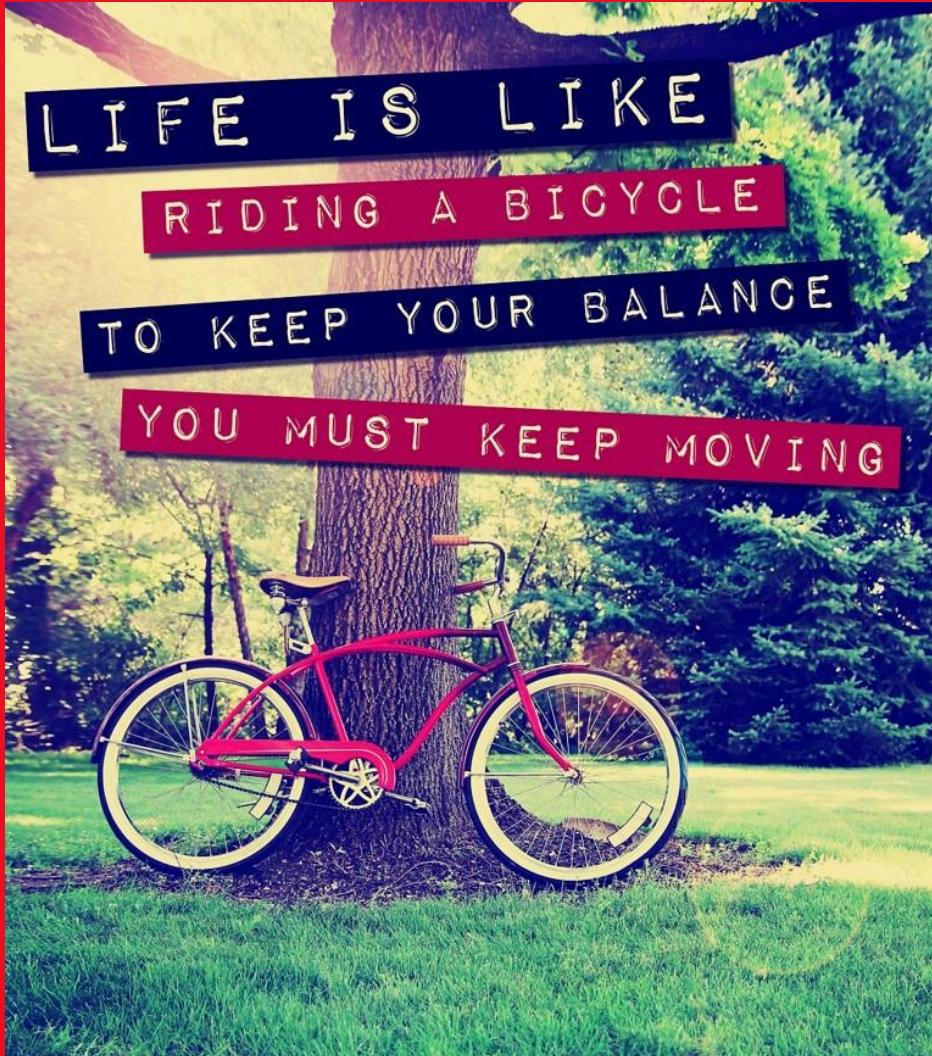
Categories [{"name": "people_swimming", "score": 0.099609375}]
Adult Content False
Adult Score 0.18533889949321747
Faces [{"age": 27, "gender": "Male", "faceRectangle": {"left": 472, "top": 258, "width": 199, "height": 199}}]

Image Colors:

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



OCR



Good At:

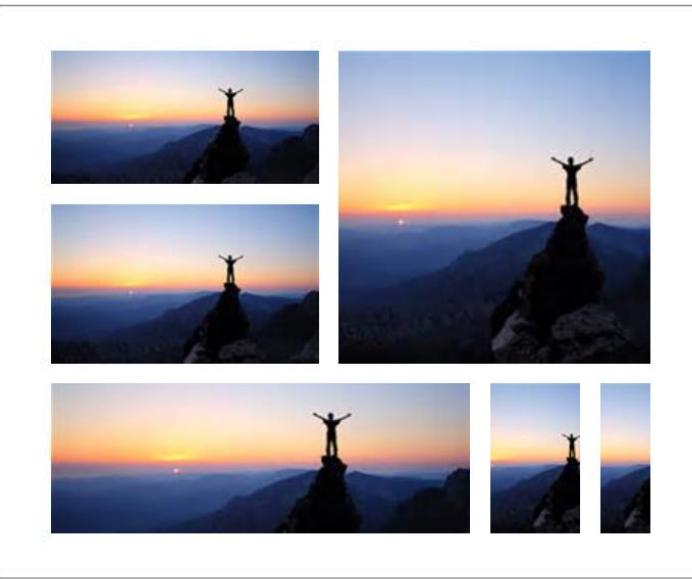
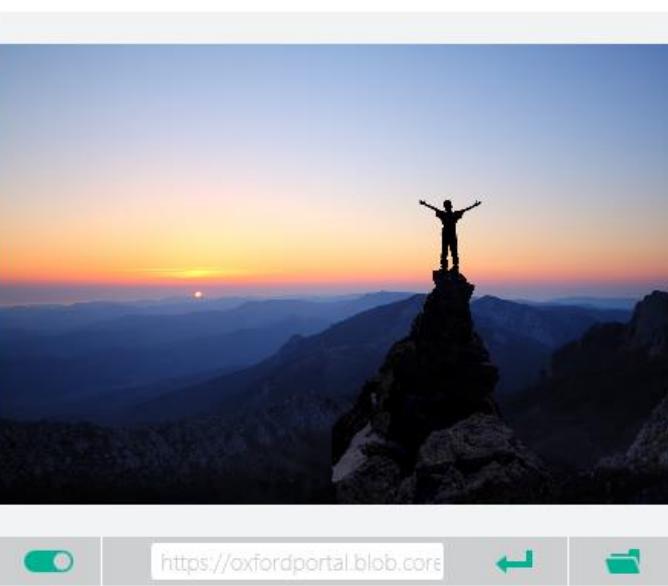
- Scanned Documents
- Photos with Text
- Fine Grained Location Information

Need to Improve

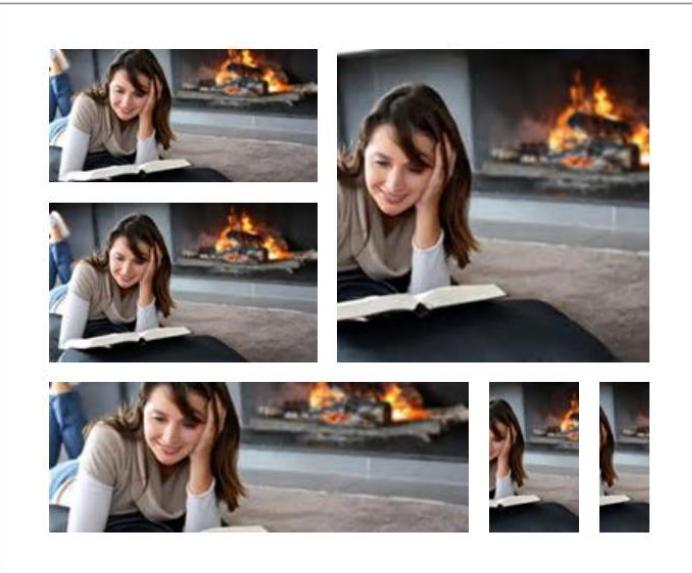
- Vehicle License Plate
- Hand-written Text
- Characters with Large Sizes



Smart Thumbnail



Smart Cropping On





Face APIs

Face Detection

Detect faces and their attributes within an image

Face Verification

Check if two faces belong to the same person

Similar Face Searching

Find similar faces within a set of images

Face Grouping

Organize many faces into groups

Face Identification

Search which person a face belongs to



Face APIs



Detection

```
"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 204}
```

...

Feature Attributes

```
"attributes": { "age": 42, "gender": "male",  
"headPose": { "roll": "8.2", "yaw": "-37.8", "pitch": "0.0" }}
```

Grouping



Identification

Jasper Williams



Speech APIs

Voice Recognition (Speech to Text)
Converts spoken audio to text

Voice Output (Text to Speech)
Synthesize audio from text



Voice Recognition

	REST API	Client Library
SUPPORTED PLATFORMS	Any	Windows, Android, iOS
DATA SUPPORT	Yes	Yes
MIC SUPPORT	No	Yes
SILENCE DETECTION ON MIC	No	Yes
LENGTH OF UTTERANCE	Short	Short and long
NUMBER OF RESPONSES	n-best response back	multiple partial results, n-best (short) and multiple phrases (long)

Same technology that supports Microsoft offerings of Xbox, Windows, and Cortana



Voice Recognition

	Short Form	Long Form
Duration of Audio	< 15 seconds	< 2 minutes
Final Result	n-best choice	Best Choice, delivered at sentence pauses
Partial Results	Yes	Yes



***** Final N-BEST Results *****

```
[0] Confidence=Normal Text="450 six St San Francisco."  
[1] Confidence=Normal Text="For 50 six St San Francisco."  
[2] Confidence=Normal Text="456th St San Francisco."  
[3] Confidence=Normal Text="450 six St in San Francisco."  
[4] Confidence=Normal Text="456 St San Francisco."
```



Voice Output



Synthesize audio from text via POST request
Maximum audio return of 15 seconds
17 languages supported

```
<speak version="1.0"  
xmlns="http://www.w3.org/2001/10/synthesis"  
xmlns:mstts="http://www.w3.org/2001/mstts"  
xml:lang="en-US">  
<voice name="Microsoft Server Speech Text to Speech  
Voice (en-US, ZiraRUS)">
```

Synthesize audio from text, to speak to your users.

```
</voice></speak>
```



Synthesize
audio from text,
to speak to
your users.



LUIS

Understand what your users are saying
Use pre-built Bing & Cortana models or
create your own



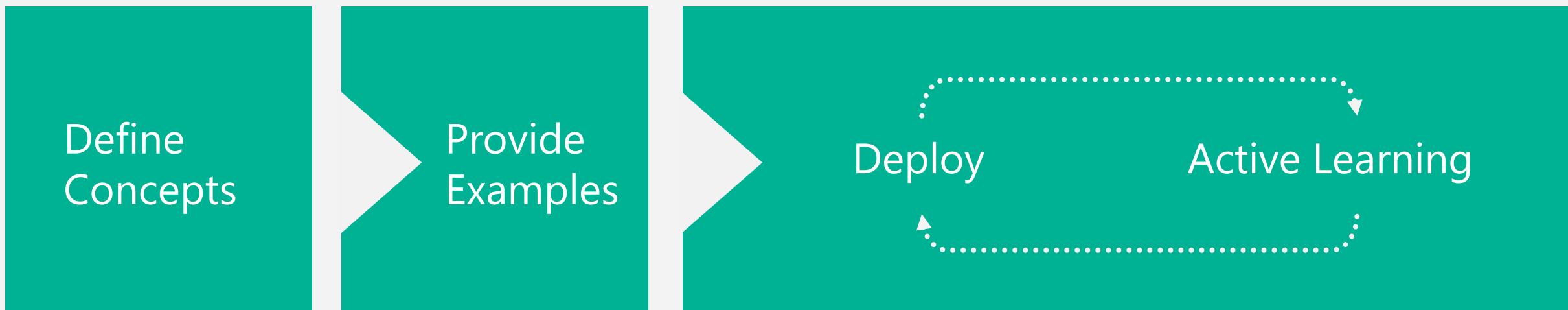
Language Understanding Intelligent Service

Reduce labeling effort with interactive features

Use visualizations to gauge performance and improvements

Leverage Speech recognition with seamless integration

Deploy using just a few examples with active learning





Language Understanding Models



```
{  
  "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

Publish

Intents



None

StartActivity

StopActivity

SetHeartRateTarget

Entities



ActivityType

Pre-built Entities



number

Regex Features



No patterns added

Phrase List Features



ActivityWords



New utterances

Search

Suggest

Review labels

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

Performance analysis

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)

Text Analytics

How do your customers feel about your products?

Text Analytics



Bring your unstructured text, and use this API to perform sentiment analysis and key phrase extraction.

Speech Text Intent

4194

3 months ago

[◀ Back to results](#)

Bellagio Casino • Fri, Aug 21 - Sat, Aug 22 • 1 Room

Book online or call 1-800-238-0767

Bellagio ★★★★☆

Las Vegas Blvd S, Las Vegas, NV 1-855-296-5765

\$279

[Book](#)

Excludes \$32.48 daily resort fee

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+ Get more as an Expedia+ rewards member

Don't worry, we're tracking prices for you

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Venere \$279

Travelocity \$279

[Compare all](#) **Wonderful!**

of guests recommend

4.5 out of 5

Expedia Guest Rating

[View all 8,383 Expedia Verified Reviews](#)TripAdvisor Traveler Rating
Based on 2186 reviews**Points of interest**

Bellagio Casino - 0 miles

Las Vegas Eiffel Tower - 0 miles

[View all on Map](#)

Bellagio ratings based on 8383 Verified Reviews

4.5 out of 5



94% of guests recommend



4.7 Room cleanliness

4.4 Service & staff

4.6 Room comfort

4.6 Hotel condition



Expedia Verified Reviews

They paid and stayed. We double-checked.

See reviews for

Everyone

Language

All

Sort by

English first

4 out of 5

Posted Aug 10, 2015

✓ Recommended
for Everyone

by A verified traveler

Still one of the best hotels on the strip! My girlfriend and I stayed in the newer Spa towers which was very nice. Only complaint was the watery and flavorless crab legs at The Buffet.

Was this review helpful to you? Yes: 0 No

4 out of 5

Very Long Check in Lines!

Posted Aug 10, 2015

✓ Recommended
for Everyone

by A verified traveler

Overall I had a great experience. My only complain is that the check in Line was too long and it was on Sunday!

Was this review helpful to you? Yes: 0 No

5 out of 5

Love the fountain view and in the middle of everyt

Posted Aug 10, 2015

✓ Recommended
for Everyone

by Jaime R from Bridgewater NJ

Great staff. Very attentive and polite. Made you feel very special. Check in to check out very smooth.

Was this review helpful to you? Yes: 0 No



How a friend would describe the Bellagio

Good	OK	Hit or Miss	Bad
beautiful hotel location staff	rooms	view	price, resort fee beds, shower wifi
restaurants		buffet	
fountains pool area	casino		long line check in, elevators
anniversary wife	husband family		
Le Cirque shopping			reservation cigarette smoke

How it works – behind the scenes

More ideas

Current rating experience



Bellagio Las Vegas

3600 S Las Vegas Blvd, Las Vegas, NV 89109

Your first-hand experiences really help other travelers. Thanks!

Your overall rating of this property

Draft saved at 8:56 PM.



Title of your review

Summarize your visit or highlight an interesting detail

Your review

Tips for writing a great review

Tell people about your experience: your room, location, amenities?

(200 character minimum)

What sort of trip was this?

Business Couples Family Friends Solo

When did you travel?

Select one

Could you say a little more about it? (optional)

We'd love your opinion! Anything you can share will help other travelers choose their perfect hotel. Thanks.

Hotel Style & Amenities

Is this a **boutique** hotel?

Yes No Not Sure

Is this a **charming** hotel?

Yes No Not Sure

Was the **wifi** faster than average?

Yes No Not Sure

Was the **pool** better than average?

Yes No Not Sure

Was the hotel's **restaurant** better than average?

Yes No Not Sure

Is this a **romantic** hotel?

Yes No Not Sure

Hotel Ratings

Service



Click to rate

Rooms



Click to rate

Cleanliness



Click to rate

What is the area around this hotel known for? (select all that apply)

Nightlife

Restaurants

Landmarks

Outdoor activities

Kids activities

Did this hotel have in-room wifi?

Yes, free wifi Yes, paid wifi No wifi Not Sure

Add a tip to help travelers choose a good room

E.g., best views, quieter floors, accessibility, etc.

Did this hotel have in-room wifi?

Yes, free wifi Yes, paid wifi No wifi Not Sure

Add a tip to help travelers choose a good room

E.g., best views, quieter floors, accessibility, etc.

Share your thoughts on the hotel's environmentally-friendly practices

E.g., recycling, water conservation, lighting, etc.

Do you have photos to share? (optional)

Add a photo

Submit your review

I certify that this review is based on my own experience and is my genuine opinion of this hotel, and that I have no personal or business relationship with this establishment, and have not been offered any incentive or payment originating from the establishment to write this review. I understand that TripAdvisor has a zero-tolerance policy on fake reviews. [Learn more](#)

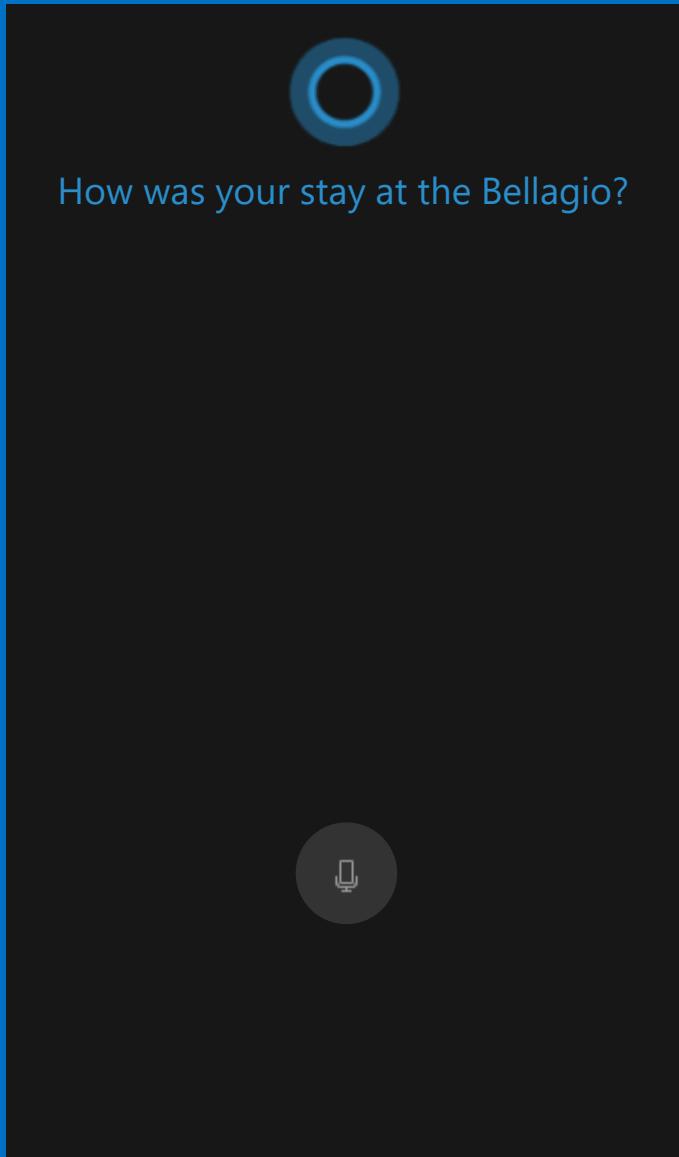
Submit your review

[Preview your review](#)

Give reviews that don't feel like giving reviews



Speech API



Text
Analytics

Show me what I like

Hotel Preferences

- High-speed Internet (80)
- Air conditioning (75)
- Swimming pool (85)
- Babysitting service (5)
- Business services (53)
- Childcare (4)
- Children's club (1)
- Dry cleaning/laundry service (48)
- Fitness equipment (55)
- Free airport transportation (8)
- Free newspaper (31)
- Free parking (74)
- Hair dryer (65)
- Kitchen (15)
- Kitchenette (8)
- Laundry facilities (49)
- Pets allowed (conditions apply) (85)
- Restaurant in hotel (39)
- Room service (35)
- Spa services on site (19)

Flamingo Las Vegas ★★★★
Las Vegas (The Strip) [Map](#)
1-866-295-5798 • Expedia Rate ✓ Free Cancellation
Booked in the last 25 minutes

Vdara Hotel & Spa ★★★★★
Las Vegas (West of The Strip) [Map](#)
1-866-298-0996 • Expedia Rate ✓ Free Cancellation
Booked in the last 24 minutes

Rio All-Suite Hotel & Casino ★★★★
Las Vegas (West of The Strip) [Map](#)
1-866-313-6242 • Expedia Rate ✓ Free Cancellation
Booked in the last 38 minutes

The LINQ Hotel & Casino ★★★★
Las Vegas (The Strip) [Map](#)
1-866-608-6760 • Expedia Rate ✓ Free Cancellation
Booked in the last 12 minutes

family
with kids

dog



```
[ { "name": "animal_dog", "score": 0.99609375 } ]
```



Face API



Vision
API



Product
Recommendations



Discover right now the [Cortana Analytics Perceptual APIs](#) ready to boost your services



Go ahead and try some of our [demos](#)



Contact us with any questions or comments:
mlappssupport@microsoft.com

