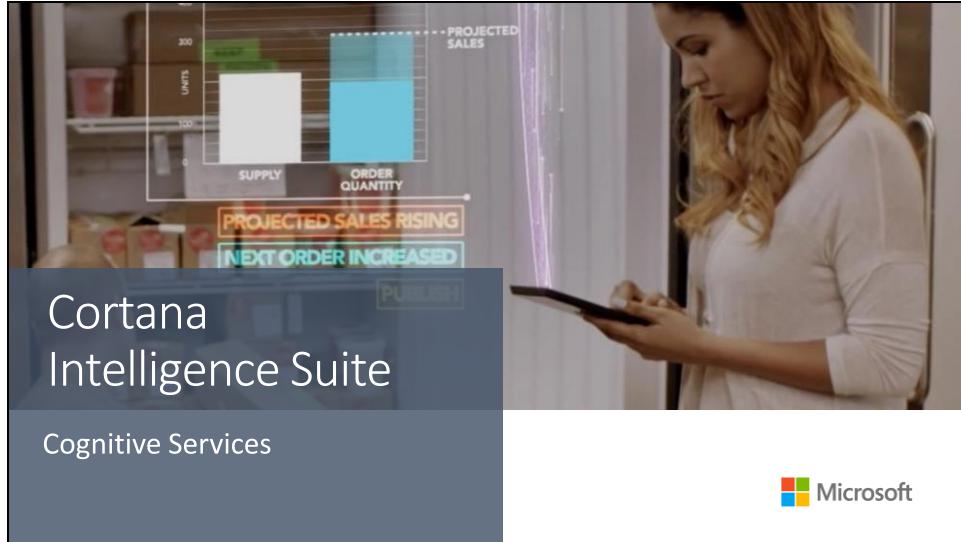


Cognitive Services Overview

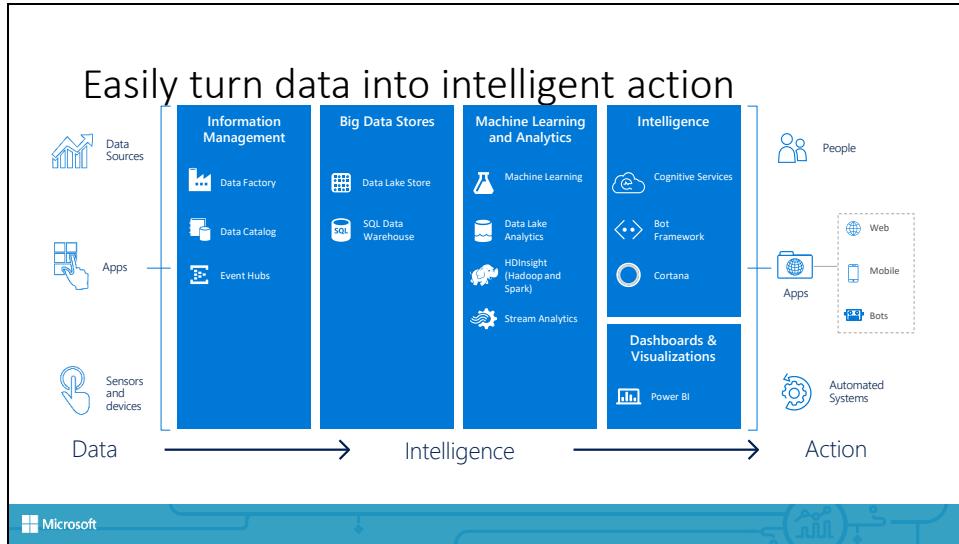




Hi, I'm ___, and I'm excited to discuss Microsoft's Cortana Intelligence Suite, and the value it can deliver to your organization.

More specifically, we're going to talk about Microsoft Cognitive Services.

Slide 3



Cortana Intelligence delivers an end-to-end platform with an integrated and comprehensive set of tools and services to help you build intelligent applications that let you easily take advantage of Advanced Analytics and intelligence capabilities.

First, Cortana Intelligence provides services to bring data in, so that you can analyze it. It provides information management capabilities like Azure Data Factory so that you can pull data from any source (relational DB like SQL or non-relational ones like your Hadoop cluster) in an automated and scheduled way, while performing the necessary data transforms (like setting certain data columns as dates vs. currency etc). Think ETL (Extract, Transform, Load) in the cloud. Event Hubs does the same for IoT type ingestion of data that streams in from lots of end points.

The data brought in then can be persisted in flexible big data storage services like Data Lake Store and Azure SQL Data Warehouse.

You can then use a wide range of analytics services from Machine Learning to Azure Data Lake Analytics to Azure HDInsight to Azure Stream Analytics to analyze the data stored in the big data storage. This means you can create analytics services and models specific to your business need (say real time demand forecasting).

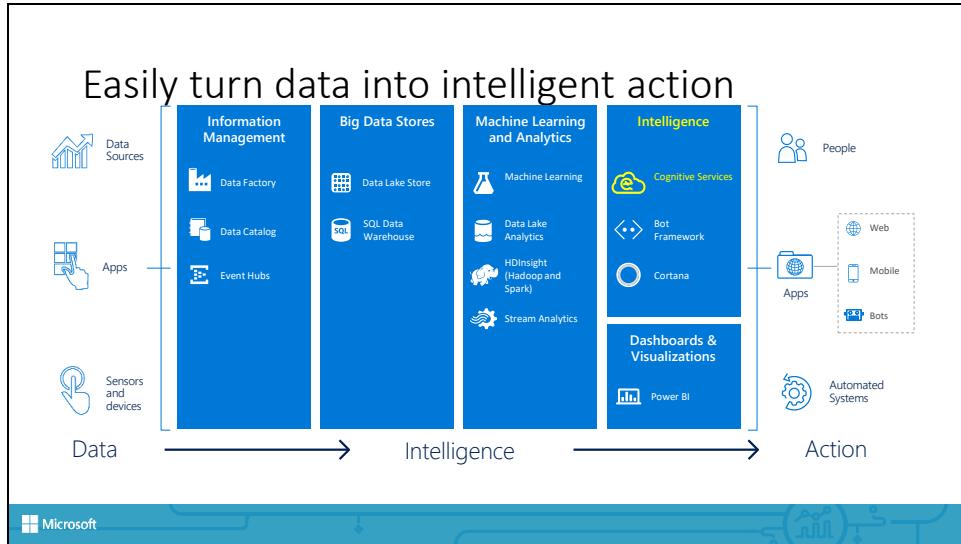
The resultant analytics services and models created by taking these steps can then be surfaced as interactive dashboards and visualizations via Power BI.

These same analytics services and models created can also be integrated into various different UI (web apps or mobile apps or rich client apps), or with Cortana, so end users can naturally interact with them via speech etc., and so that end users can get proactively be notified by Cortana if the analytics model finds a new anomaly (unusual growth in certain product purchases- in the case of real time demand forecasting example given above) or whatever deserves the attention of the business users. Similar integration can occur with Cognitive Services or Bot Framework based applications.

At a high level though, Cortana Intelligence capabilities are in three main areas: data, analytics and intelligence.

<Transition>: We're going to dive into each one.

Slide 4



We're going to detail the Intelligence layer, more specifically the Cognitive Services.



Why Microsoft Cognitive Services?

Easy Flexible Tested

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

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

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

GET A KEY BUILD

python node.js Windows Android Apple

GitHub StackOverflow msdn UserVoice

Why choose these APIs? They work, and it's easy.

Easy: The APIs are easy to implement because of the simple REST calls. Being REST APIs, there's a common way to implement and you can get started with all of them for free simply by going to one place, one website, www.microsoft.com/cognitive. (You don't have to hunt around to different places.)

Flexible: We've got a breadth of intelligence and knowledge APIs so developers will be able to find what intelligence feature they need; and importantly, they all work on whatever language, framework, or platform developers choose. So, devs can integrate into their apps—iOS, Android, Windows—using their own tools they know and love (such as python or node.js, etc.).

Tested: Tap into an ever-growing collection of powerful AI algorithms developed by experts. Developers can trust the quality and expertise built into each API by experts in their field from Microsoft's Research organization, Bing, and Azure machine learning and these capabilities are used across many Microsoft first party products such as Cortana, Bing and Skype.

Slide 6

Our Showcase Apps (visit our app catalog at aka.ms/cognitivegallery)

The image displays a grid of seven cognitive computing applications, each with a unique interface and purpose:

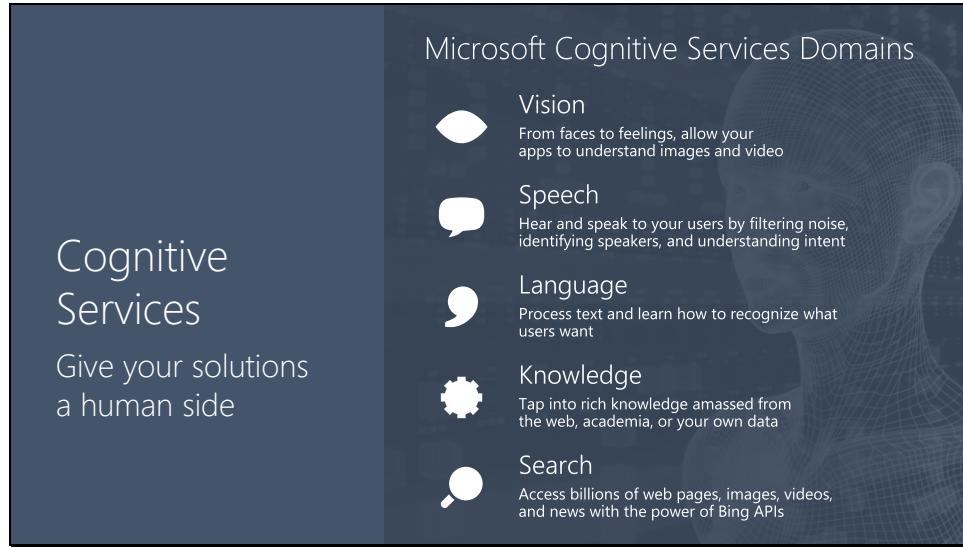
- How-Old.net**: A service that estimates a person's age based on their facial features. It shows a photo of a baby and a result of 34 years old.
- TwinsOrNot.net**: A service that identifies if two people in a photo are twins. It shows two men and a 100% match result.
- Mimicker Alarm**: An alarm clock that wakes you up by mimicking your facial expressions. It shows a woman smiling and a man making a face.
- Fetch**: A service that finds similar breeds for a given dog. It shows a man and a Dutch Shepherd dog.
- CaptionBot.ai**: A service that generates captions for images. It shows a man sitting at a computer and guesses he is Bill Gates.
- CelebsLike.Me**: A service that finds celebrities who look like you. It shows a comparison between a man and Anthony Hopkins with a 49% match.
- ProjectMurphy.net**: A service that performs "what if" scenarios. It shows a man with a long beard and the question "what if Satya Nadella had a long beard?"

The APIs



Anna, 2m

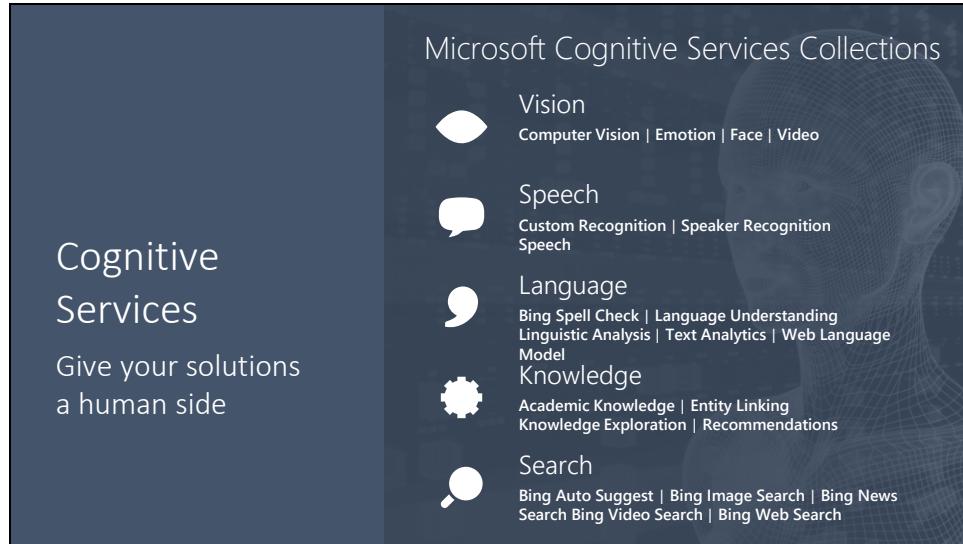
- Understand and intelligently act on data
- “democratization”
- Easy, Xplat, High-Tech



The slide features a dark blue background with white text and icons. On the left, there's a vertical column with the text "Cognitive Services" and "Give your solutions a human side". To the right, a large grid-based graphic of a human head is visible. The main title "Microsoft Cognitive Services Domains" is at the top. Below it, five domains are listed with corresponding icons:

- 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.

What are Cognitive Services? Microsoft Cognitive Services are a new collection of intelligence and knowledge APIs that enable developers to ultimately build smarter apps.



The slide features a dark blue background with white text and icons. On the left, there's a vertical column with the text "Cognitive Services" and "Give your solutions a human side". To the right, under the heading "Microsoft Cognitive Services Collections", are five service categories: Vision, Speech, Language, Knowledge, and Search, each accompanied by a small icon.

Microsoft Cognitive Services Collections	
	Vision Computer Vision Emotion Face Video
	Speech Custom Recognition Speaker Recognition Speech
	Language Bing Spell Check Language Understanding Linguistic Analysis Text Analytics Web Language Model
	Knowledge Academic Knowledge Entity Linking Knowledge Exploration Recommendations
	Search Bing Auto Suggest Bing Image Search Bing News Search Bing Video Search Bing Web Search

At Microsoft, we've been offering APIs for a very long time across the company. In delivering Microsoft Cognitive Services API, we started with 4 last year at /build (2015); added 7 more last December, and today we have 22 APIs in our collection.

Cognitive Services are available individually or as a part of the Cortana Intelligence Suite, formerly known as Cortana Analytics, which provides a comprehensive collection of services powered by cutting-edge research into machine learning, perception, analytics and social bots.

These APIs are powered by Microsoft Azure.

Developers and businesses can use this suite of services and tools to create apps that learn about our world and interact with people and customers in personalized, intelligent ways.

Vision



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

Computer Vision | Emotion | Face | Video



Do you need an API that gives you actionable information about images used in your app? The Computer Vision API gives you the tools to understand the contents of any image. Create tags identifying objects, beings, or actions present in the image, and then craft coherent sentences to describe it. Whether you want to execute better image search, or you want to create an assistive app for the visually impaired, the Computer Vision API helps get the job done.

Slide 12

Analyze image



Is Adult Content: False
Categories: people_swimming

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

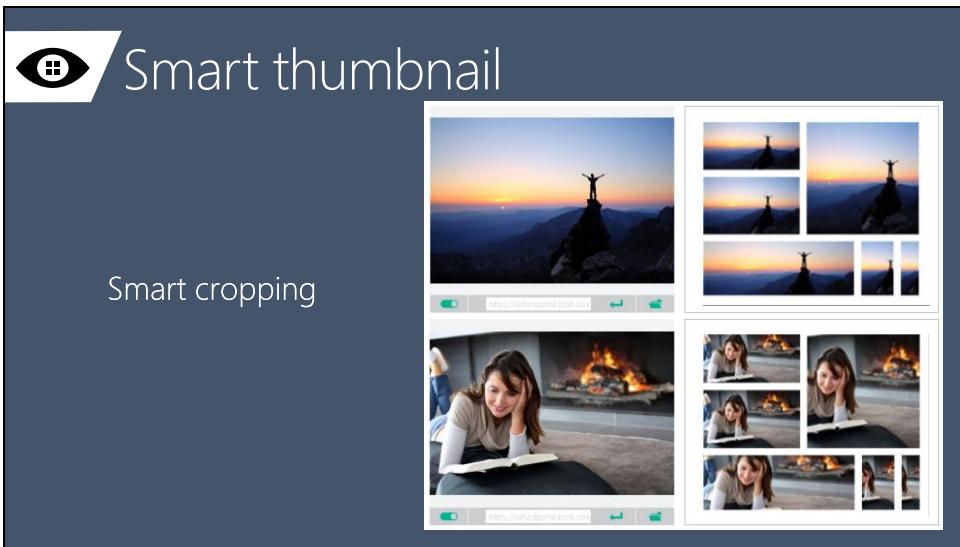
Dominant Color Background	White
Dominant Color Foreground	Grey
Dominant Colors	White
Accent Color	

OCR

Good at

Scanned documents
Photos with text
Fine grained location information

Vehicle license plate
Hand-written text
Characters with large sizes





How are you feeling? Can your app tell? With the Emotion API, you can build an app that recognizes emotions according to facial expressions—giving you the capability to provide an amazing, personalized experience.

Using facial expressions, this cloud-based API can detect happiness, neutrality, sadness, contempt, anger, disgust, fear, and surprise. The AI understands these emotions based on universal facial expressions, and it functions cross-culturally, so your app will work around the world.

Emotion APIs

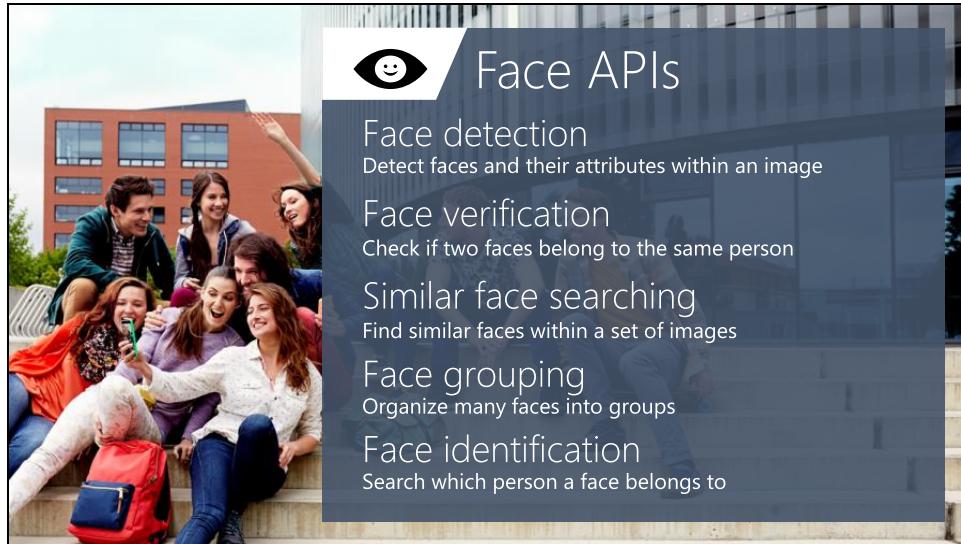


Face detection

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

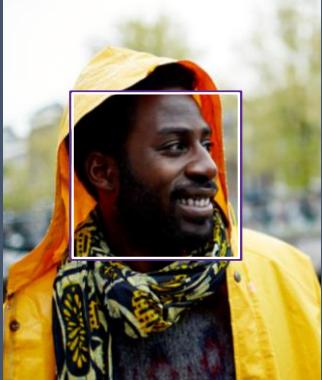
Emotion scores

```
"scores": { "anger": 5.182241e-8,  
"contempt": 0.0000242813,  
"disgust": 5.621025e-7,  
"fear": 0.00115027453,  
"happiness": 1.06114619e-8,  
"neutral": 0.003540177,  
"sadness": 9.30888746e-7,  
"surprise": 0.9952837}
```



Detect human faces and compare similar ones, organize people into groups according to visual similarity, and identify previously tagged people in images.

Face APIs



Detection

```
"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 204}  
...  
"attributes": { "age": 42, "gender": "male",  
"headPose": { "roll": "8.2", "yaw": "-37.8", "pitch": "0.0" }},  
"grouping": { "id": "1", "name": "Jasper Williams" },  
"identity": { "id": "1", "name": "Jasper Williams" }  
}
```

Feature attributes

Grouping



Identification

Jasper Williams



Intelligent video processing produces stable video output, detects motion, creates intelligent thumbnails, and detects and tracks faces.

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)



A side-by-side comparison of two video frames showing a wooden pier extending over a body of water. The left frame is labeled 'Original' and shows noticeable vertical shake and slight blurring. The right frame is labeled 'Stabilized' and appears much more stable and clear. The background features autumn-colored trees.

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

Motion detection

Indicates when motion occurs against a fixed background (e.g., surveillance video)

Trained to reduce false alarms, such as lighting and shadow changes

Current limitations:

- No support for night-vision videos
- Semi-transparent and small objects are not detected well



Start time	End time	In region
1.9	3.6	0
5.2	15.1	0

Speech



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

Custom Recognition | Speaker Recognition | Speech



Convert audio to text, understand intent, and convert text back to speech for natural responsiveness.

Speech Intent Recognition can return recognized text from audio inputs. It also returns structured information about speech to the apps that parse the intent of the speaker and drive further actions by the app. Models trained by [Project Oxford LUIS](#) service are used to generate the intent.

Slide 25



Speech API

- Recognize Voice** – Converts spoken audio to text. Support for 18 languages (28 locales)
- Synthesize Speech** – Synthesize audio from Text. Support for 9 languages (17 locales)

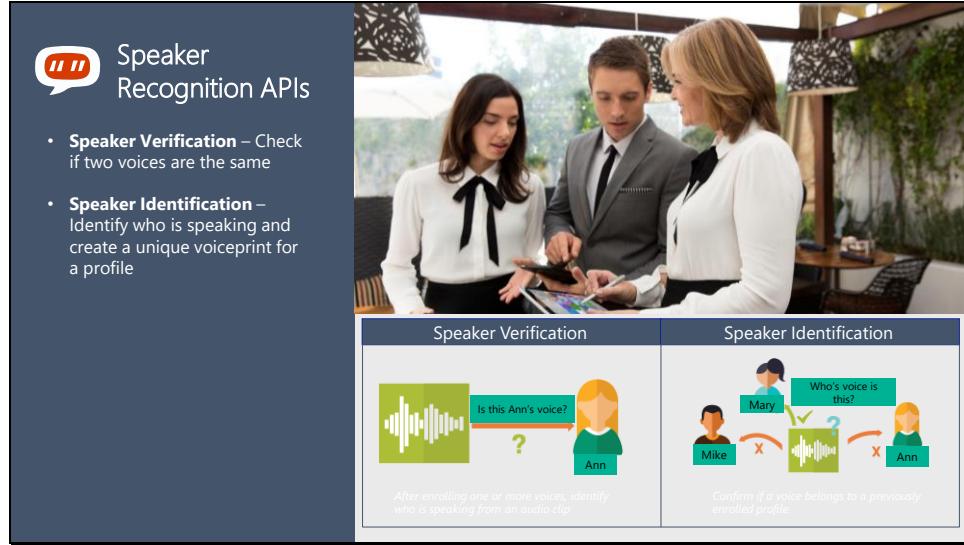


Speech Recognition	Speech Intent Recognition	Text to Speech Conversion
 450 6 th St. San Francisco	 *450 Sixth St in San Francisco.* *Four-hundred-sixth-St-San Francisco.* *450th-St-San-Francisco.*	 Convert text to spoken audio
Convert spoken audio to text	Convert audio to intent	



Your users' voices are their passports with the Speaker Recognition API. Your app can authenticate identities by using someone's voice, giving your users the capability to interact securely through speech.

Slide 27

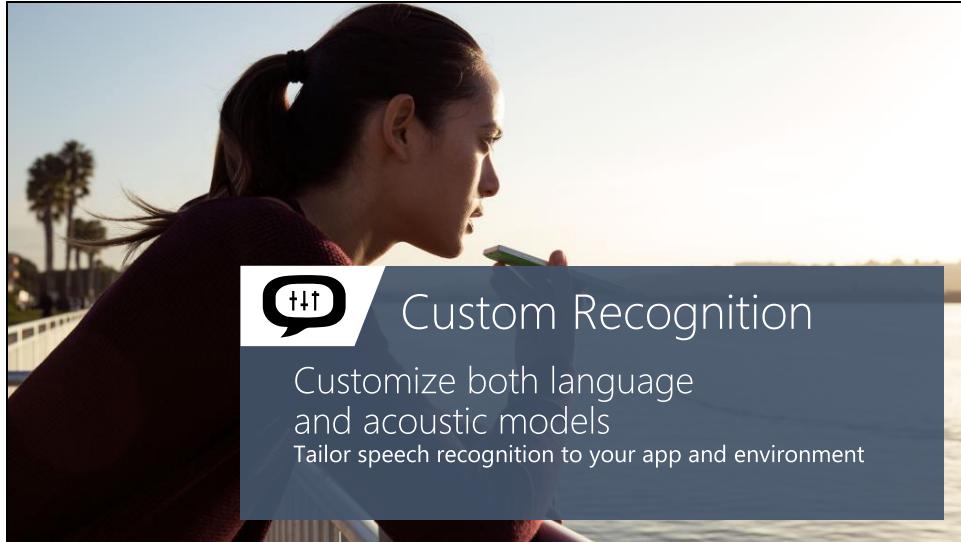


The slide features a dark blue header with a white speech bubble icon containing three horizontal bars. To its right, the text "Speaker Recognition APIs" is displayed. Below this, there is a list of two items:

- **Speaker Verification** – Check if two voices are the same
- **Speaker Identification** – Identify who is speaking and create a unique voiceprint for a profile

On the right side of the slide, there is a photograph of three people in professional attire (two women and one man) looking at a tablet device together. Below this image is a diagram illustrating the two concepts:

Speaker Verification	Speaker Identification
 <p>Is this Ann's voice?</p> <p>After enrolling one or more voices, identify who is speaking from an audio clip</p>	 <p>Who's voice is this?</p> <p>Confirm if a voice belongs to a previously enrolled profile</p>



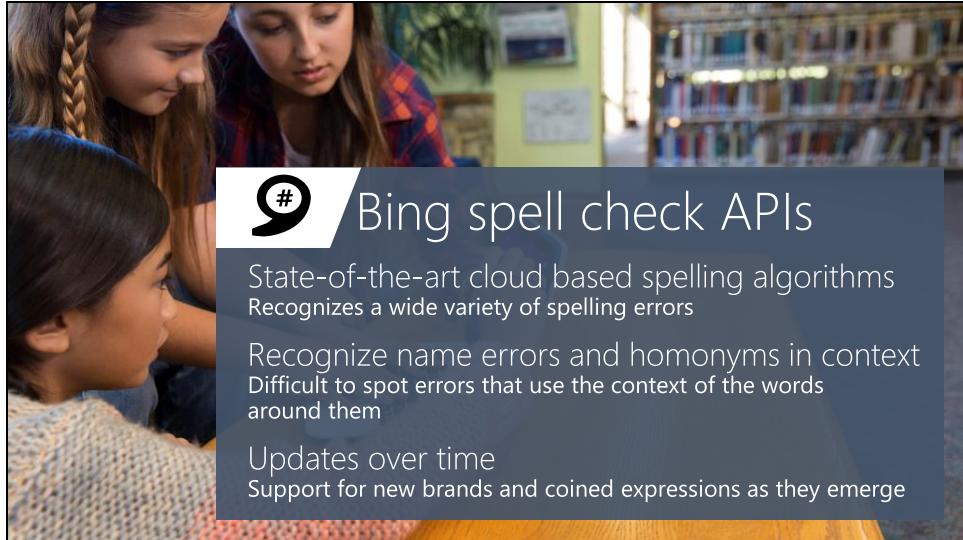
It Eliminate speech recognition barriers like speaking style, background noise, and vocabulary. The Custom Recognition Intelligent Service (CRIS) helps you create custom speech recognition endpoints. So accents and environments are features, not challenges anymore.

Language

,

Process text and learn how to recognize what
users want

Bing Spell Check | Language Understanding |
Linguistic Analysis | Text Analytics | Web Language Model



Bing spell check APIs

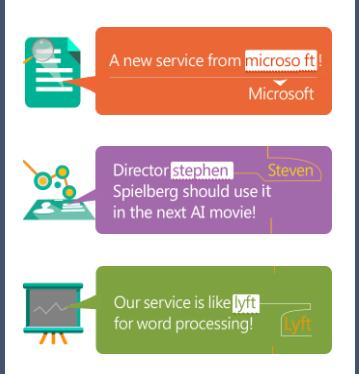
State-of-the-art cloud based spelling algorithms
Recognizes a wide variety of spelling errors

Recognize name errors and homonyms in context
Difficult to spot errors that use the context of the words around them

Updates over time
Support for new brands and coined expressions as they emerge

The Bing Spell Check API corrects spelling errors, contextually recognizes names and slang, understands homonyms, and supports brand names.

Bing spell check APIs



A new service from Microsoft

Director Stephen Spielberg should use it in the next AI movie!

Our service is like Lyft for word processing!

Check a single word or a whole sentence
"Our engineers developed this **four** you!"
Corrected Text: "four" → "for"

Identify errors and get suggestions

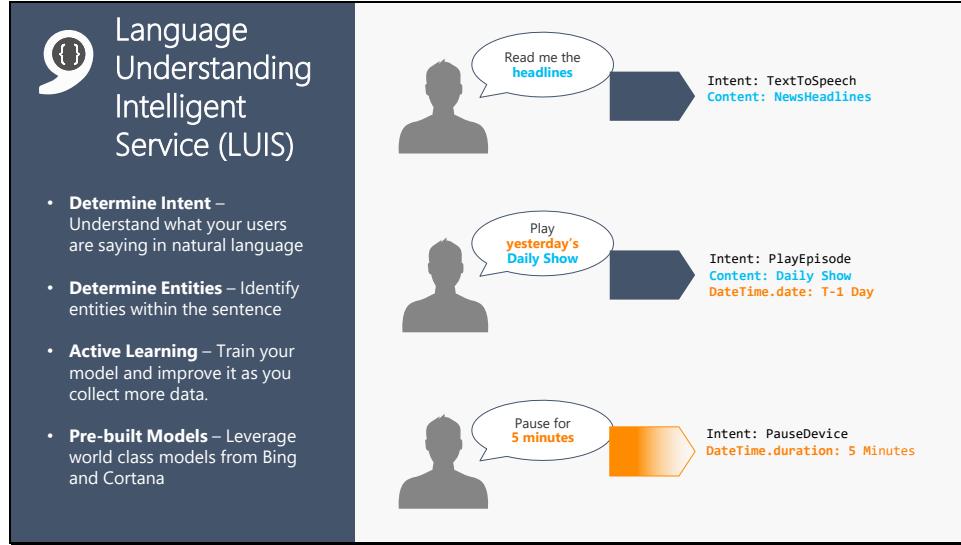
```
"spellingErrors": [ { "offset": 5, "token": "gona", "type": "UnknownToken", "suggestions": [ { "token": "gonna" } ] } ] }
```



This Understands language contextually, so your app communicates with people in the way they speak.

With the Language Understanding Intelligent Service (LUIS) API, you can integrate language models that understand your users quickly and easily. And if one of our preexisting models won't work, it will guide you through building your own.

Prebuilt models will recognize places, times, numbers, and temperatures, and handle common requests like "set an alarm for 8 AM." LUIS supports dialogue and action fulfillment, so your users can carry on a conversation with your app. For example, the input "schedule a meeting with Allison" results in the question "when?," allowing the user to respond "3 PM," and the meeting gets scheduled.



The diagram illustrates a language understanding model. It features a white silhouette of a person's head and shoulders against a dark blue background. Above the person's head is a white speech bubble containing the text "News about flight delays". To the right of the person is a large grey arrow pointing to the right. On the far right, there is a block of JSON code showing entities and intents.

```
{  
  "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  
    }  
  ]  
}
```

Slide 35

The screenshot shows the LUIS web interface for the 'ExerciseTracker' application. The left sidebar lists intents: None, StartActivity, StopActivity, SetHeartRateTarget, and ActivityType (which is highlighted in red). It also includes sections for Entities, Pre-built Entities, Regex Features, Phrase List Features, and ActivityWords. The main area displays three utterances for the 'StartActivity' intent:

- begin a **run** now (Predicted Intent: StartActivity(0.96))
- begin **running** now (Predicted Intent: StartActivity(0.94))
- start tracking a **run** now (Predicted Intent: StartActivity(0.94))

A dropdown menu at the top right shows 'Intent: StartActivity'. The right sidebar, titled 'Performance analysis', shows the following results for the 'StartActivity' intent:

- 11 utterances: 11 correctly predicted (green bar)
- 5 utterances: 5 correctly predicted (green bar)
- 5 utterances: 5 correctly predicted (green bar)
- 17 utterances: 17 correctly predicted (green bar)

Legend: Green bar = Correctly predicted, Red bar = Error (predicted as other intent).

At the bottom left, there is a 'Train' button and a message: 'Last train completed: 8/21/2015 2:04:09 PM'. The Microsoft logo is at the bottom right.



Linguistic analysis

Analysis tools for natural language processing
Access to part-of-speech tagging and parsing,
identifying concepts, and actions

You know what your users are saying, but do you know what it means? The Linguistic API uses advanced linguistic analysis tools for natural language processing, giving you access to part-of-speech tagging and parsing. These tools allow you to hone in on important concepts and actions. The API can tap into traditional linguistic analysis tools that allow you to identify the concepts and actions in your text with part-of-speech tagging, and find phrases and concepts using natural language parsers. Whether you're mining customer feedback, interpreting user commands, or consuming web text, understanding the structure of the text is a critical first step.



Understanding and analyzing unstructured text is an increasingly popular field and includes a wide spectrum of problems such as sentiment analysis, key phrase extraction, topic modeling/extraction, aspect extraction and more.

Text Analytics API is a suite of text analytics services : we currently offer APIs for sentiment analysis, key phrase extraction and topic detection for English text, as well as language detection for 120 languages. In this initial preview release, we offer APIs for sentiment analysis and key phrase extraction of English text. No labeled or training data is needed to use the service - just bring your text data. This service is based on research and engineering that originated in Microsoft Research and which has been battle-tested and improved over the past few years.



Automate a variety of standard natural language processing tasks using state-of-the-art language modeling APIs.

Do you need to know how frequently certain words appear together? Or figure out which words a user might type next? Or how to break a hashtag into individual words? The Web Language Model API lets your app do all of this quickly and accurately.

Knowledge



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

Academic Knowledge
Entity Linking | Knowledge Exploration
Recommendations

Knowledge

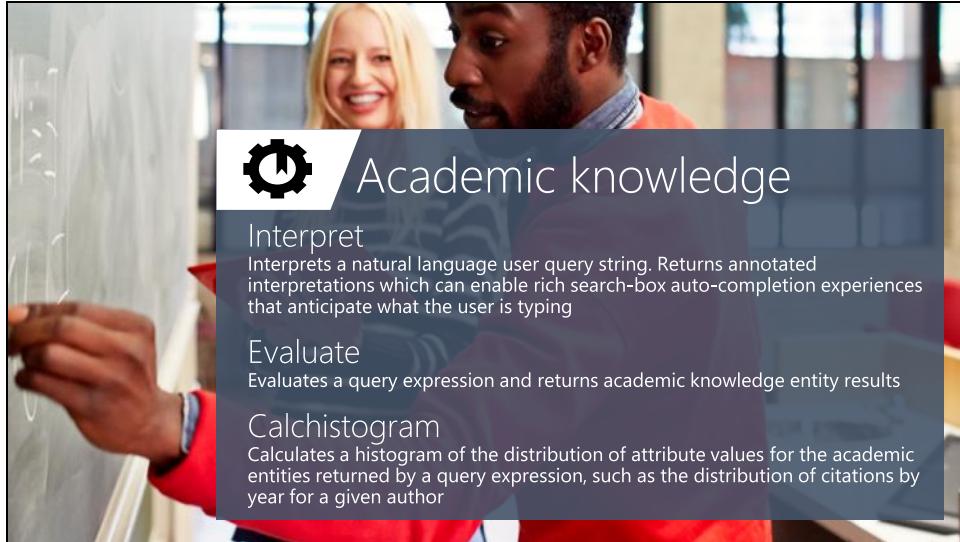
Academic Knowledge API Explore relationships among academic papers, journals, and authors	Knowledge Exploration Service Add interactive search over structured data to your project	Entity Linking Service Contextually extend knowledge of people, locations, and events	Recommendations API Provide personalized product recommendations for your customers
---	---	---	---

Academic Knowledge API: The Academic Knowledge API enable developers to interpret user queries for academic intent and retrieve rich entity information about research papers, authors, journals, conferences, and universities from the Microsoft Academic

Knowledge Exploration Service API: Enable interactive search experience over structured data via natural language. Indexes customer's structured data with support for prefix completion. Generates annotated interpretations/completions of natural language queries.

Entity Linking Service API: Given a specific paragraph of text within a document, the Entity Linking will recognize and identify each separate entity based on the context. It Links the entity to wikipedia. **Use cases:** A news agency would use this to analysis their news article to create relations between articles, a news agency would use this to generate tags for article and make recommendation for reader, a company would use this to track the PR articles mentioned it and product comments to track customer feedback.

Recommendations API:

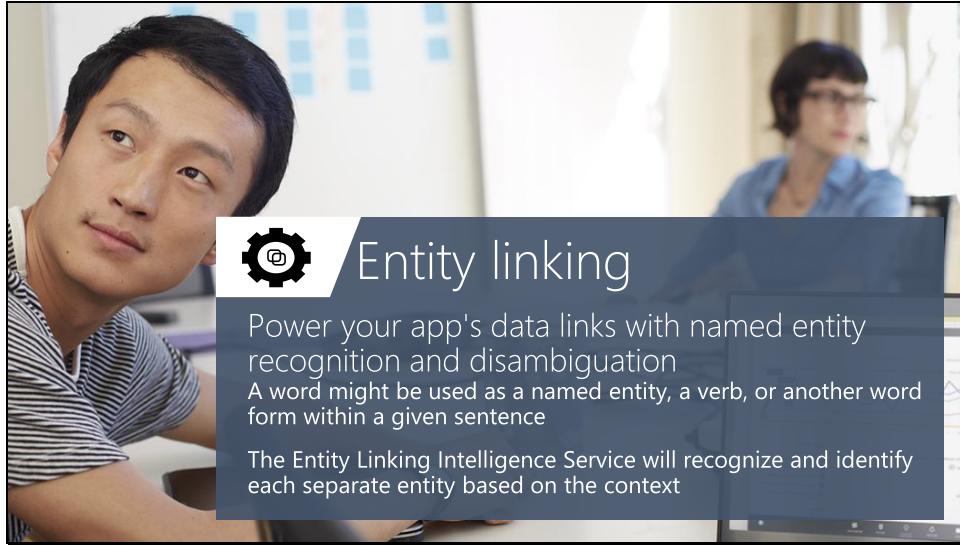


Tap into the wealth of academic content in the Microsoft Academic Graph using the Academic Knowledge API.

Do your users know who the top scholars have been in machine learning over the last three years? What about every paper authored by an expert like Li Deng from Microsoft? The Academic Knowledge API answers these and other questions by applying the Knowledge Exploration Service to the Microsoft Academic Graph. Users can start from natural language queries, or you can ping the graph directly through structured query expressions.

Additionally, the Academic Knowledge API can auto-complete natural language queries and return entity results, helping users narrow research results faster.

It can also create a histogram of attribute values for academic entries returned by a query—for example, the distribution of papers by year for an author.



Provide better user experiences by adding the Entity Linking Service to your app so that it can provide additional knowledge and facts from the web to supplement the text in context. The Entity Linking Service uses a prebuilt knowledge base to build links, and the option to acquire knowledge from your own data.

For example, your app may need to understand that "London, the capital" is the city of London in the United Kingdom and not London, Ontario, or Jack London, the author.

The Entity Linking Service provides this information quickly and within context, offering a faster, more intelligent user experience.

Slide 43

Entity Linking Service

- **Identify Entities** - Identify mentions of people, places, and things within a document
- **Disambiguate Entities** - Disambiguate mentions within the context of the sentence

RollingStone MUSIC POLITICS TV MOVIES CULTURE SPORTS REVIEWS LI

Has the artificial intelligence revolution taken us to the verge of witnessing the birth of a new species? How long until machines become smarter than us?

Welcome to robot nursery school.* Pieter Abbeel says as he opens the door to the Robot Learning Lab on the seventh floor of a sleek new building on the northern edge of the UC-Berkeley campus. The lab is chaotic: bikes leaning against the wall, a dozen or so grad students in disorganized cubicles, whiteboards covered with indecipherable equations. Abbeel, 38, is a thin, wiry guy, dressed in jeans and a stretched-out T-shirt. He moved to the U.S. from Belgium in 2000 to get a Ph.D. in computer science at Stanford and is now one of the world's foremost experts in understanding the challenge of teaching robots to think intelligently. But first, he has to teach them to "think" at all. "That's why we call this nursery school," he jokes. He introduces me to Brett, a six-foot-tall humanoid robot made by Willow Garage, a high-profile Silicon Valley robotics manufacturer that is now out of business. The lab acquired the robot several years ago to experiment with. Brett, which stands for "Berkeley robot for the elimination of tedious tasks," is a friendly-looking creature with a big, flat head and widely spaced cameras for eyes, a chunky torso, two arms with grippers for hands and wheels for feet. At the moment, Brett is off-duty and stands in the center of the lab with the mysterious, quiet grace of an unplugged robot. On the floor nearby is a box of toys that Abbeel and the students teach Brett to play with: a wooden hammer, a plastic toy airplane, some giant Legos blocks. Brett is only one of many robots in the lab. In another cubicle, a nameless 18-inch-tall robot hangs from a sling on the back of a chair. Down in the basement is an industrial robot that plays in the equivalent of a robot sandbox for hours every day, just to see what it can teach itself. Across the street in another Berkeley lab, a surgical robot is

Let's turn to Bing for this one.

Pieter Abbeel—Associate Professor UC Berkeley...
www.eecs.berkeley.edu/~pabbeel

Quick picks I will be lecturing on Deep Reinforcement Learning at the Machine Learning Summer School (with John Schulman) I am co ...

Contact
eecs.berkeley.edu/~pabbeel/contact.html

Teaching
eecs.berkeley.edu/~pabbeel/teaching.html

Publications
eecs.berkeley.edu/~pabbeel/publications.html

Lab Tours
eecs.berkeley.edu/~pabbeel/labtours.html

Pieter Abbeel | ECECS at UC Berkeley
www.eecs.berkeley.edu/Faculty/Homespages/abbeel...
Pieter Abbeel Associate Professor Research Areas Artificial Intelligence (AI) Control, Intelligent Systems, and Robotics (CIR) Machine Learning: ...

Images

[See more images](#)

proximally-Seminar : Pieter Abbeel : Machine Learn...
www.youtube.com/watch?v=S2QAsPf03ls
BY-CMURCCS 67 MIN 12K VIEWS
Oct 10, 2011 · Pieter Abbeel Assistant Professor, Department of Electrical Engineering and Computer Science, UC ...



Do you have structured data for users to explore via natural language? The Knowledge Exploration Service takes structured data and linguistic resources you provide and creates a service that enables interactive search.

For example, as your users enter queries in a search box, the Knowledge Exploration Service offers auto-complete suggestions and semantic annotations. You can retrieve the top matching objects from the data, and you can create histograms of attribute values among the matches.

Slide 45

Knowledge Exploration Service

- **Explore your data** – Enable interactive search over your own structured data.
- **Search in Natural Language** – Search and browse your data using natural language
- **Get Query Auto-suggestions** – Get suggestions as you type to get to the results faster

Microsoft Academic

machine learning

Sort: Relevance

More than 50,000 publications matching machine learning (0.80 seconds)

Page 1 of 6250

Advanced

Year

- 1989
- 1990
- 1993
- 1994
- 1995

See more...

Authors

- David E. Goldberg
- Vladimir Venk
- Michael I. Jordan
- T. J. Quinlan
- Bernhard Schölkopf

See more...

Affiliations

- Massachusetts Institute of Technology
- Microsoft
- Carnegie Mellon University
- University Of California Berkeley
- Stanford University

See more...

Fields Of Study

- machine learning
- regression
- segmentation
- regression analysis
- decision tree
- fuzzy set

Genetic Algorithms in Search, Optimization and Machine Learning

1989, David E. Goldberg

Cited 18,910 times

View PDF

Induction of Decision Trees

1986, Machine Learning

decision tree expert system machine learning computer science

Cited 4,819 times

View PDF

Outline of a New Approach to the Analysis of Complex Systems and Decision Processes

1973, IEEE Transactions on Systems, Man, and Cybernetics, issue 1, pp 28-44

Loff A Zadeh (University Of California Berkeley)

fuzzy set complex systems artificial neural network computer simulation

machine learning artificial intelligence computer science

Cited 2,602 times

Applied logistic regression

2000, Contemporary Sociology

David W Hosmer, Stanley Lemeshow

computerized adaptive testing logistic regression regression analysis

Cited 9,058 times

View PDF

C4.5: Programs for Machine Learning

1993, Ross Quinlan

Cited 7,022 times

View Link

Machine Learning

Field Of Study

Classification: 305,721

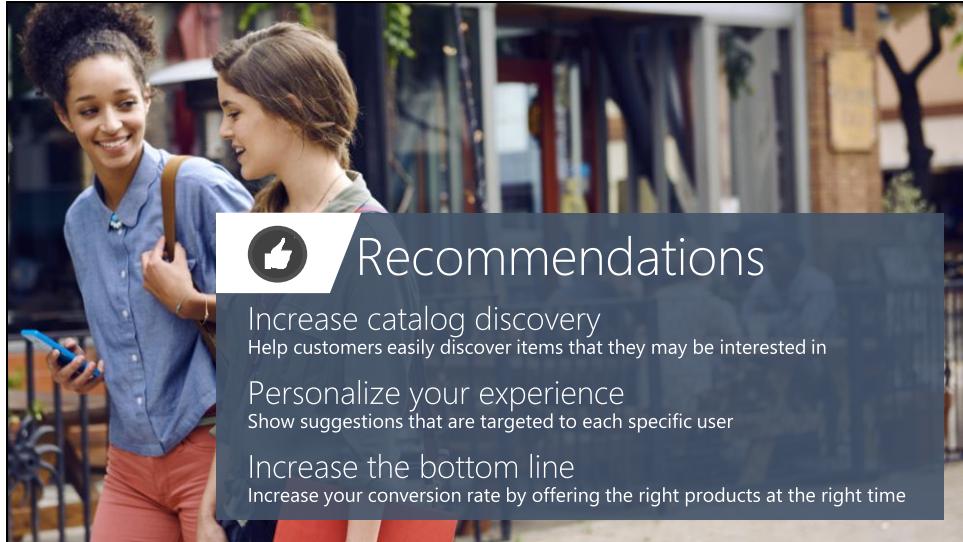
Citation: 3,371

Top journals: pami, ieee transactions on neural networks, ml, tsmc, neco

Top conferences: cpr, rips, icml, kdd, nips

Subdiscipline of: computer science

artificial neural network, linear discriminant analysis, support vector machine, bayesian model, evolutionary algorithm, unsupervised learning, fuzzy control, reinforcement learning, genetic algorithm, evolutionary computation, anomaly detection, data mining, biological neural network, reinforcement learning heuristic, temporal difference learning, intelligent control, statistical learning theory, soft computing, recommender system, computational learning theory, handwriting recognition, gene expression programming, swarm intelligence, feature selection, data stream mining, ensemble learning, instance-based learning, clinical decision support system, information theory, conceptual clustering, automated reasoning, learning classifier system, learning classifier, granular computing, learning classifier, deep belief network, classification, classification, inductive learning, inductive programming, sensor-driven learning



The Recommendations API helps your customer discover items in your catalog. Customer activity in your digital store is used to recommend items and to improve conversion in your digital store.

The recommendation engine may be trained by uploading data about past customer activity or by collecting data directly from your digital store. When the customer returns to your store you will be able to feature recommended items from your catalog that may increase your conversion rate.

Search



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

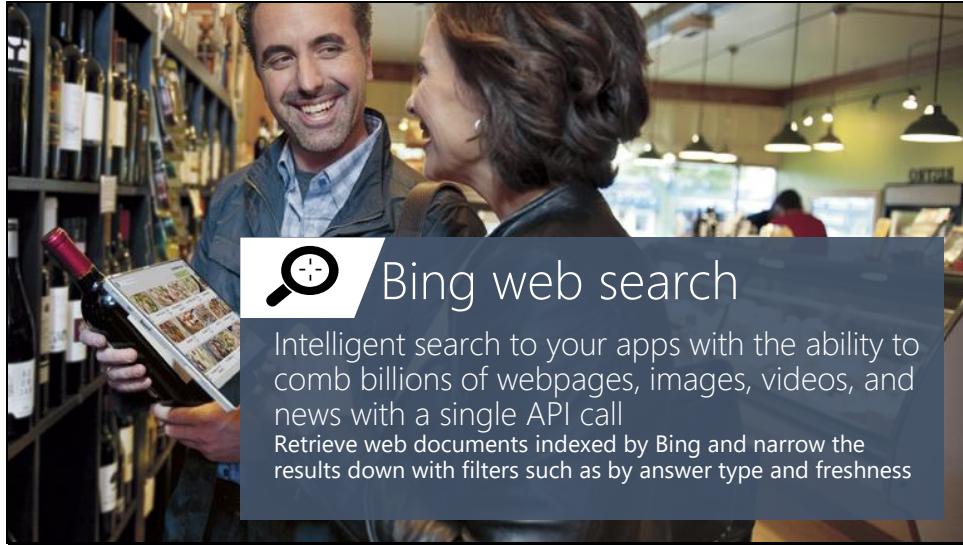
Bing Web Search | Bing Image Search
Bing News Search | Bing Video Search
Bing Auto Suggest

Search

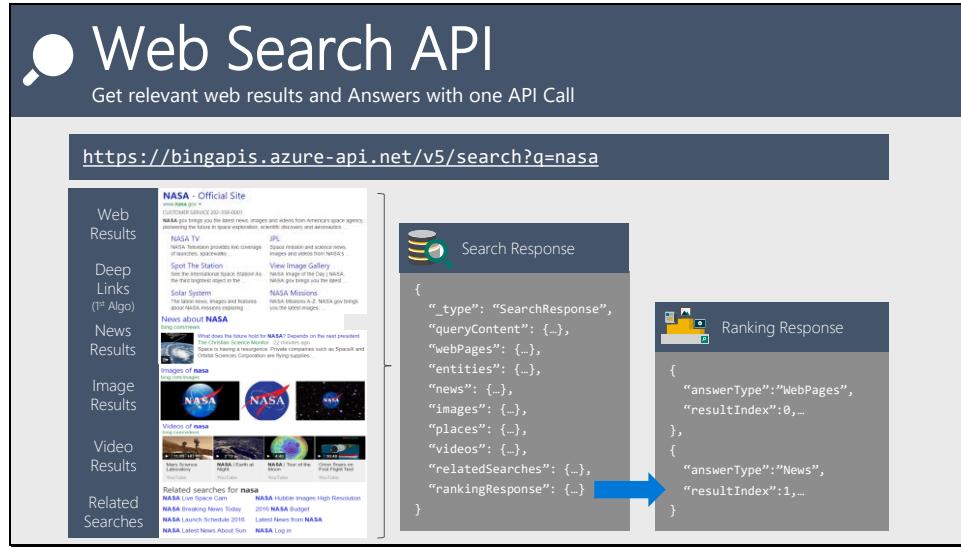


Web Search API Image Search API Video Search API News Search API Autosuggest API

Bring intelligent web search to your apps and harness the ability to comb billions of webpages, images, videos, news and autosuggest results with a few lines of code

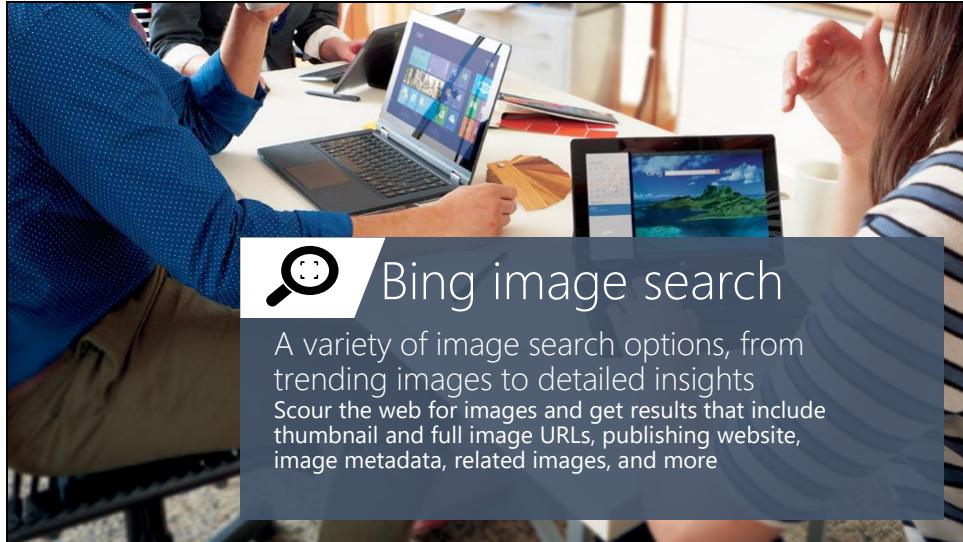


The Bing Search API adds intelligent search to your app, combing hundreds of billions of webpages, images, videos, and news to provide relevant results with no ad requirements. The results can be automatically customized to your users' locations or markets, increasing relevancy by staying local.



Call-outs:

- GET Request to REST Endpoint -> notice the URL schema (version / search vertical) and Request header to pass the subscription key
- Foundation of the Search APIs : One call to rule them all -> Web + DeepLinks, Image, Video, News, Related Search Results
- Ranking hint for optimal positioning in the page layout



The Bing Image Search API gives you powerful image searching tools with a single call. You can tap into trending images of people, places, and things from around the world, and filter results by image style, size, layout, date added, and license type.

Image Insights

Access Bing's deep image intelligence capabilities with a few lines of code

<https://bingapis.azure-api.net/v5/images/search?q=<query>&insightstoken=<imageTokenId>&modulesRequested=<moduleType>>

Entity Recognition

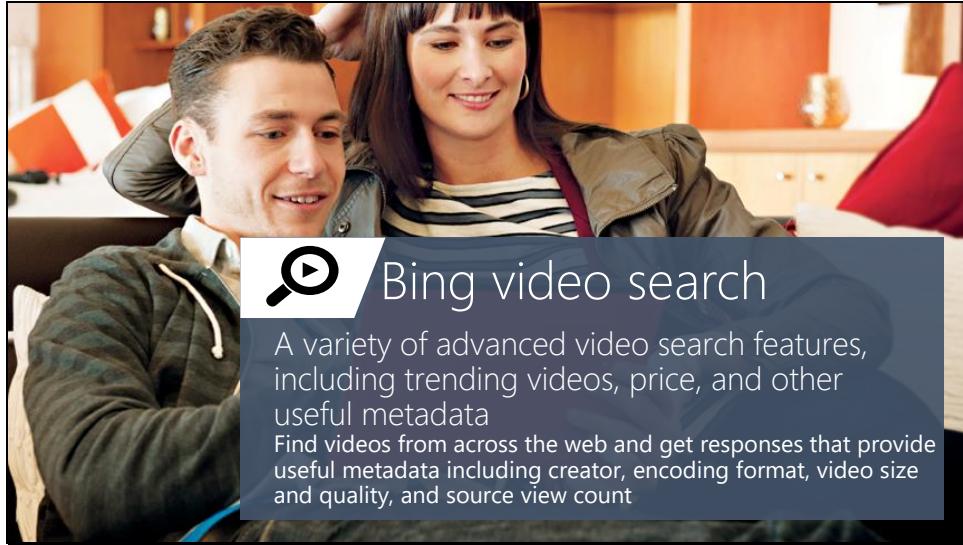
```
matchingEntities": [{"entity": {"_type": "Person", "name": "Satya Nadella"}, "score": 1.0}], "entityText": "Satya Nadella", "entityType": "Person", "language": "en", "text": "Satya Nadella is an Indian-American businessman and engineer, currently serving as the CEO of Microsoft Corporation."}
```

Visually Similar

```
visuallySimilarProducts": [{"name": "...", "hostPageUrl": "..."}]
```

Merchant/Recipe Sources

```
shoppingSources": [{"offers": [{"url": "http://www.contoso.com/...", "seller": "contoso.com"}]}]
```



The Bing Video Search API offers robust video searching features with a single API call. You can receive information from around the world about trending videos, updated on a daily basis. Search results can be returned by either a static image or a motion thumbnail, allowing you to customize how your users see what they're looking for.



The Bing News Search API can help turn your app into an up-to-date news center. Results from a single call bring trending news from around the world, which is updated in near-real time, so users can be kept up to date on whatever's happening in their neighborhood—or across the globe.

Trending on the Web

Explore what's trending on the web as fast as it appears in Bing

Trending Images

Adele Shia LaBeouf Mountain lion Bald eagle

GET <https://bingapis.azure-api.net/v5/images/trending>

Trending Videos

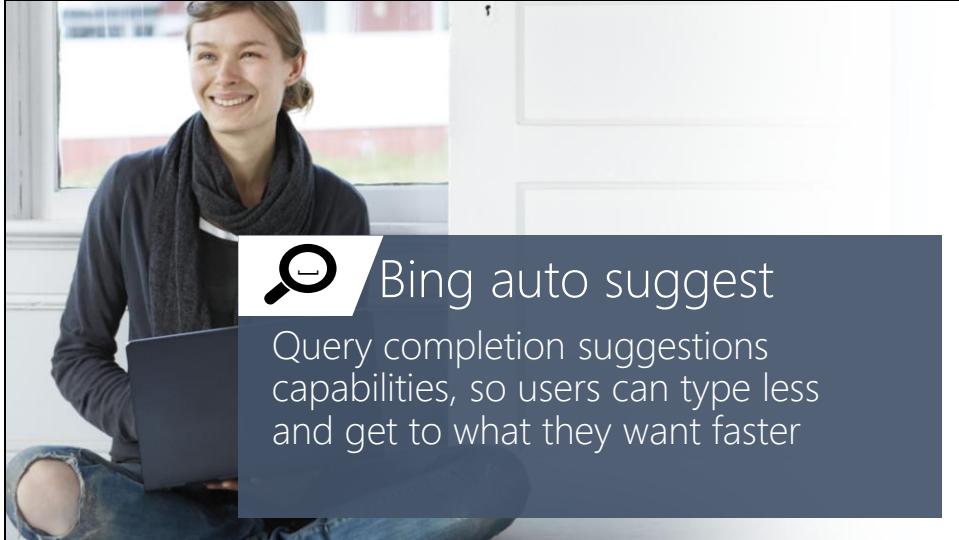
Sorry Justin Bieber Alligator Hatching Licks Like Jurassic Park Game of Thrones

GET <https://bingapis.azure-api.net/v5/videos/trending>

Trending News

Exploding toilet claim FBI fight 'bad dream' Terror attack foiled Robot company for sale Tribute to father

GET <https://bingapis.azure-api.net/v5/news/search>



Whether you're searching the web, a local set of data, or just asking users to enter an input into your app, the Bing Autosuggest API helps narrow the search quickly by allowing your users to see suggestions for popular search terms. It can correct perceived mistakes, and returns detailed contextual suggestions according to other searches people have found useful.

Questions?