

IBM Watson



Le API COGNITIVE ed il miele dell'innovazione

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I 3 elementi chiave per lo sviluppo del business cognitivo

Right Ecosystem



Right Platform

Right Data



3 casi esemplificativi basati su API COGNITIVE



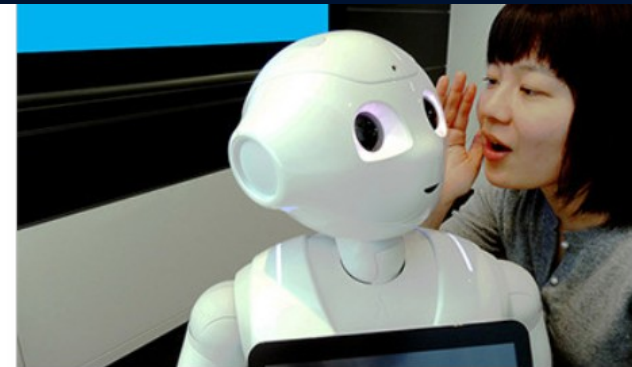
Under Armour

UA Record™ is your body's dashboard, with insights powered by IBM Watson. It collects your data and provides a 24/7 view of your progress. Set goals, capture sleep, log workouts, measure activity, track nutrition and connect with friends and athletes. Then UA Record analyzes all of your data and provides a single view of your daily progress with personalized insights and recommendations.



Medtronic

In a pilot to see how Watson can help people with diabetes, Medtronic and IBM took 600 past patient cases and applied cognitive analytics to the data from Medtronic insulin pumps and glucose monitors. Watson was able to predict hypoglycemia – extreme low blood sugar – up to three hours in advance of onset — early enough so a person with diabetes could take action to prevent a potentially dangerous health event.



SoftBank

SoftBank has infused Watson into their "empathetic" robot Pepper, enabling it to understand and answer questions in real time, opening up new possibilities for the use of robotics in business scenarios such as banking, retail and hospitality.



Play Video

Le API COGNITIVE sono in continua crescita alimentate da R&D

Watson that competed on *Jeopardy* in 2011 comprised what is now a single API—Q&A—built on five underlying technologies.

Since then, Watson has grown to

By the end of 2016, there will be nearly 50 Watson APIs—with more added every year.

a family of 18 APIs.

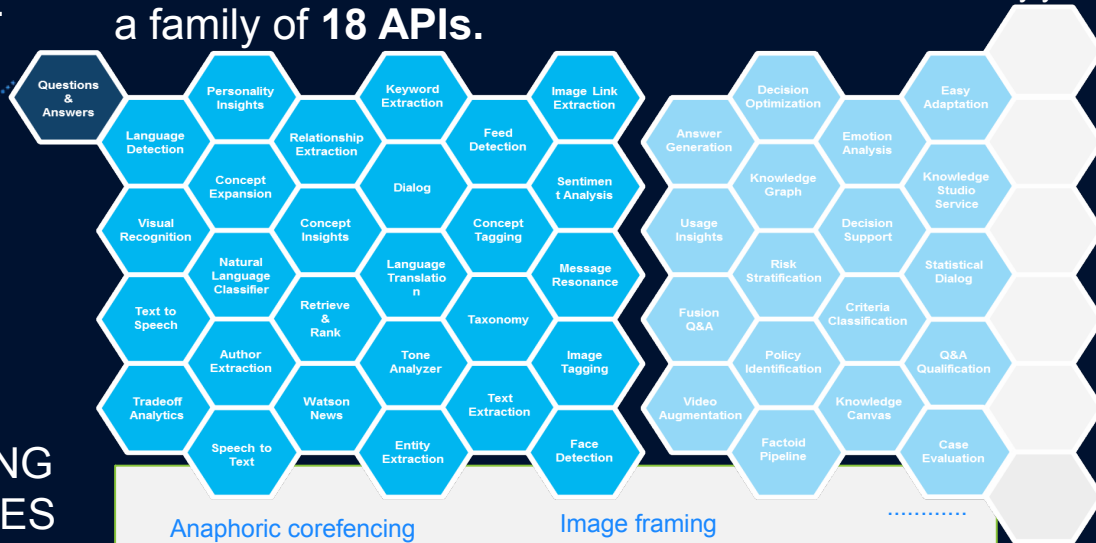
Natural Language Processing

Machine Learning

Question Analysis

Feature Engineering

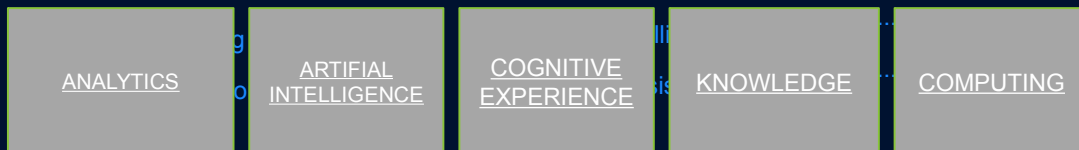
Ontology Analysis



50 UNDERLYING TECHNOLOGIES

- Anaphoric corefencing
- Image framing
- Colloquialism processing
- Knowledge Graph
- Content Management Versioning
- Knowledge Answering
- Convolutional Neural Network
- Knowledge Annotators
- Curation
- Knowledge Validation

5 RESEARCH FIELD



Oggi sono disponibili 18 servizi autoconsistenti suddivisi in 4 classi



Alchemy Data News



Alchemy Language



Alchemy Vision



Concept Expansion



Concept Insights



Dialog



Document Conversion



Language Translation



Natural Language Classifier



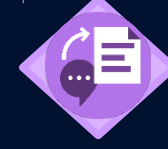
Personality Insights



Relationship Extraction



Retrieve and Rank



Speech to Text



Text to Speech



Tone Analyzer



Tradeoff Analytics



Visual Insights



Visual Recognition



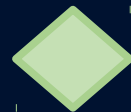
Text



Speech



Analytics



Vision

I servizi sono ospitati su piattaforma Cloud Paas Bluemix

Alchemy Data News	Alchemy Language	Alchemy Vision	Concept Expansion	Concept Insights	Dialog	Document Conversion	Language Translation	Natural Language Classifier
Personality Insights	Relationship Extraction	Retrieve and Rank	Speech to Text	Text to Speech	Tone Analyzer	Tradeoff Analytics	Visual Insights	Visual Recognition

= Text = Speech = Analytics = Vision

.js	.rb on rails		.rb sinatra	.java liberty	
.go	.php	CLOUD FOUNDRY™	.py	.net	

Servizi cognitivi – In pratica

Natural Language Classifier

Cos'è?

Interpreta e classifica espressioni in linguaggio naturale fornendo un grado di confidenza

Come funziona?

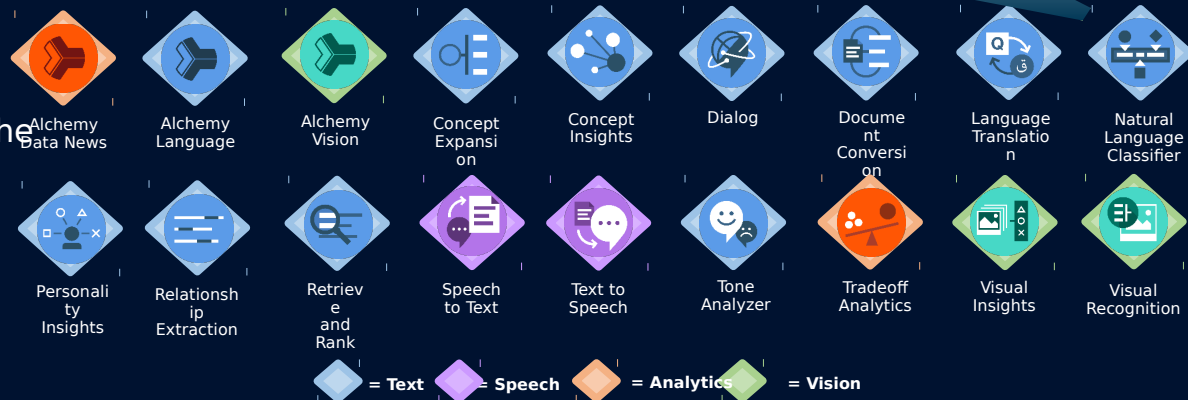
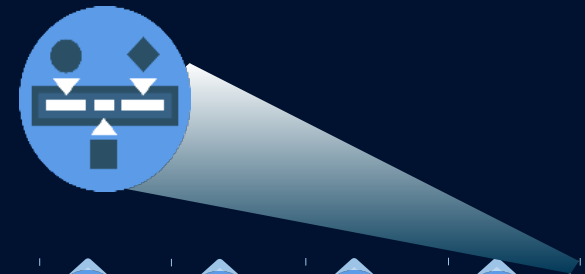
Utilizza il «deep-learning» per interpretare e classificare brevi testi con un grado di confidenza.

Casi D'uso

Rispondere a domande ricorrenti che solitamente sono gestate da operatori

Classificazione di SMS come personali, di lavoro, o promozionali

Classificazione di tweets (eventi, notizie, opinion)



mare

FO s. m. l'insieme delle acque salate che circondano sette decimi della superficie terrestre, caratterizzata da concentrazione salina e temperatura superficiale elevata

nel linguaggio marinairesco, per indicare movimento ondoso

FO s. m. qualsiasi zona di tale estensione di acque

esplorare il mare fra le isole *Aggiungi esempio d'uso*

Aggiungi una relazione lessicale

Aggiungi una sotto accezione

Posto

Aggiungi una categoria ontologica

Lista dei synset associati

Apri discussione

pioggia

s. grande quantità in rapida successione

s. precipitazione di gocce d'acqua dal vapore condensato nell'atmosfera

due giorni di pioggia senza interruzione sono uscito senza l'ombrello e ho preso l'acqua *Aggiungi esempio d'uso*

Sinonimie **Meronomie** **Iponimie** **Iperonimie** **+**

acqua: precipitazione di gocce d'acqua dal vapore condensato nell'atmosfera

Aggiungi Sinonimia

Aggiungi una sotto accezione

Aggiungi una categoria ontologica

n#07830260 [Collegamento verso Babelnet](#)

pioggia: precipitazione atmosferica di gocce d'acqua, che ha origine dalla condensazione del vapore acqueo contenuto nell'atmosfera [accuratezza: 50% - Maria.C]



Pioggia: precipitazione di gocce d'acqua dal vapore condensato nell'atmosfera

- PHYSIC_PROCESS (0.67)
- SUBSTANCE (0.19)
- PHYSIC_STATE (0.03)
- QUALITY (0.03)
- NATURAL_OBJECT (0.02)
- CHANGE (0.01)
- LIVING_BEING (0.01)
- BODY_STATE (0.01)
- SPATIAL_QUALITY (0.01)
- ENTITY (0.00)



IBM Watson Developer Cloud Services ▾ Docs Starter Kits Communit

Watson Services

Take your first step into the cognitive era with our variety of smart services.

All General Availability Beta Experimental

Language

<p>AlchemyLanguage Learn more Documents</p>	<p>Concept Expansion Learn more Documents</p>	<p>Concept Insights Learn more Documents</p>
<p>Dialog Learn more Documents</p>	<p>Document Conversion Learn more Documents</p>	<p>Language Translation Learn more Documents</p>

Natural Language Classifier

LANGUAGE | GENERAL AVAILABILITY

Interpret and classify natural language with confidence.

How it works

The service enables developers without a background in machine learning or statistical algorithms to create natural language interfaces for their applications. The service interprets the intent behind text and returns a corresponding classification with associated confidence levels. The return value can then be used to trigger a corresponding action, such as redirecting the request or answering a question.

[View Documentation](#)
[View Demo](#)

Tone Analyzer

LANGUAGE | BETA

Discover, understand, and revise the language tones in text.

How it works

Wonder how your message might be perceived by the end user? Perhaps a bit too angry in your emails? Tone Analyzer can help. The IBM Watson™ Tone Analyzer Service uses linguistic analysis to detect three types of tones from text: emotion, social tendencies, and language style. Emotions identified include things like anger, fear, joy, sadness, and disgust. Identified social tendencies include things from the Big Five personality traits used by some psychologists. These include openness, conscientiousness, extroversion, agreeableness, and emotional range. Identified language styles include confident, analytical, and tentative.

Joy (12%)	Anger (12%)
Confidence (28%)	
Openness (28%)	

[View Documentation](#)
[View Demo](#)

Il potenziale di innovazione non ha limite.....



Organized Data

Watson APIs

... le nuove potenziali applicazioni potrebbero essere pari alle **possibili combinazioni fra servizi e sorgenti dati disponibili**

... un'esperienza per esplorare il potenziale

About IBM Cognitive Build

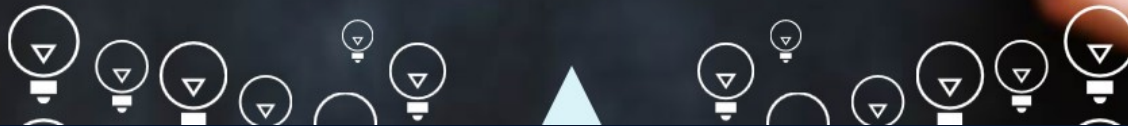
You
Invest.

You
Decide.

What if...

there was a place to
showcase brilliant ideas
for new **cognitive**
solutions

we let the crowd decide
how investments are
made on **business**
innovations



BACK UP

Beta services available now with more in plan



User Modeling

Personality insights to engage users on their own terms



Message Resonance

Communicate with people with a style and words that suits them



Concept Expansion

Maps euphemisms to more commonly understood phrases



Relationship Extraction

Intelligently finds relationships between sentences components



Machine Translation

Translate text from one language to another.



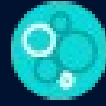
Language Identification

Identifies the language in which text is written



Question and Answer

Direct responses to users inquiries fueled by primary document sources



Visualization Rendering

Graphical representations of data analysis for easier understanding



Concept Insights

Explores concepts behind your input, identifying associations beyond traditional text matching



Speech to Text

Transcribes English speech to text with low latency



Text to Speech

Synthesizes natural-sounding speech from English or Spanish text



Tradeoff Analytics

Helps users make better choices by weighing multiple and often conflicting goals



Visual Recognition

Analyzes the visual content of images and video frames to understand their content directly

The Content Marketplace provides data for Watson services

Watson Content Marketplace Pricing
Next ✕

CDC.gov

updated: 9/2/2014

Short plain language articles written by the CDC covering a wide range of health and (...)

Wikivoyage

updated: 9/2/2014

Wikivoyage is free worldwide travel guide with over 26,000 English language articles (...)

National Institute of Diabete

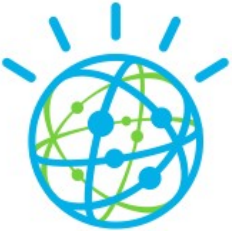
updated: 9/2/2014

The National Insitute of Diabetes and Digestive and Kidney Diseases content (...)

CDC Traveler's Health

updated: 9/2/2014

Short plain language articles written by the CDC covering a wide range of health and (...)



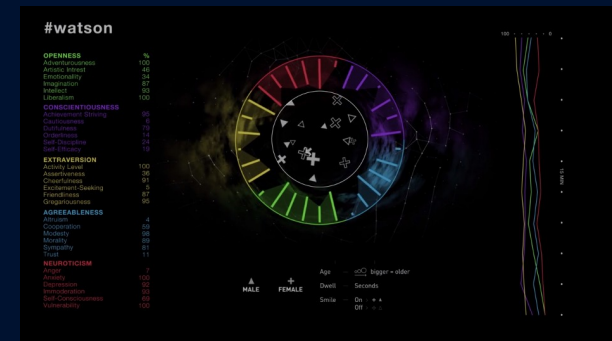
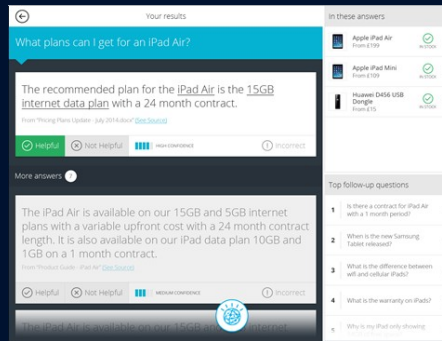
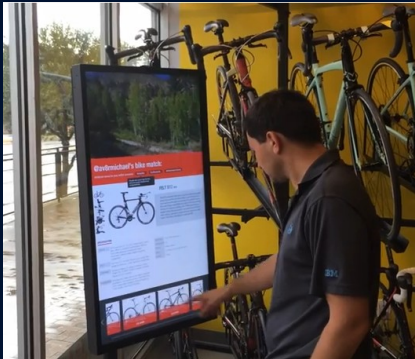
Welcome to the Watson **Content Marketplace**

For our October launch, all content is free!

As an Ecosystem Partner, you have full access to add our content to your app in XManager!

Who is using the services today?

We ran a five week closed beta with twelve participants. Examples:



“...we were able to quickly and easily embed Watson's capabilities into our eyeQinsights platform to provide an even more personalized shopping experience”

“we're able to work with cognitive computing capabilities that we couldn't dream of creating ourselves - it's a fantastic opportunity and a real chance to transform our industry”

“[this] is like putting the Hubble telescope in the hands of a backyard astronomer... Watson's cognitive possibilities alone will spawn a completely new service industry...”

IBM Watson



facebook.com/ibmwatson



ibmwatson.com



[@ibmwatson](https://twitter.com/ibmwatson)

User Modeling

What is it?

Personality insights to engage users on their own terms

How does it work?

Extracts a set of personality and social traits based on the way a person communicates.

Use Cases-

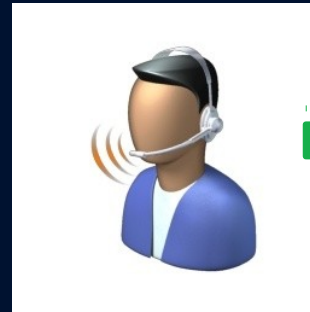
Guiding customer treatment - if a customer calls in, should my representative be friendly, outgoing, or just matter-of-fact



Machine Translation

What is it?

Translate text from one language to another.



Translate your text

Select translation language: English to Spanish

How does it work?

Converts text input in one language into a destination language



Use Cases

A French speaking help desk representative is assisting a Portuguese speaking customer through a chat



Message Resonance

What is it?

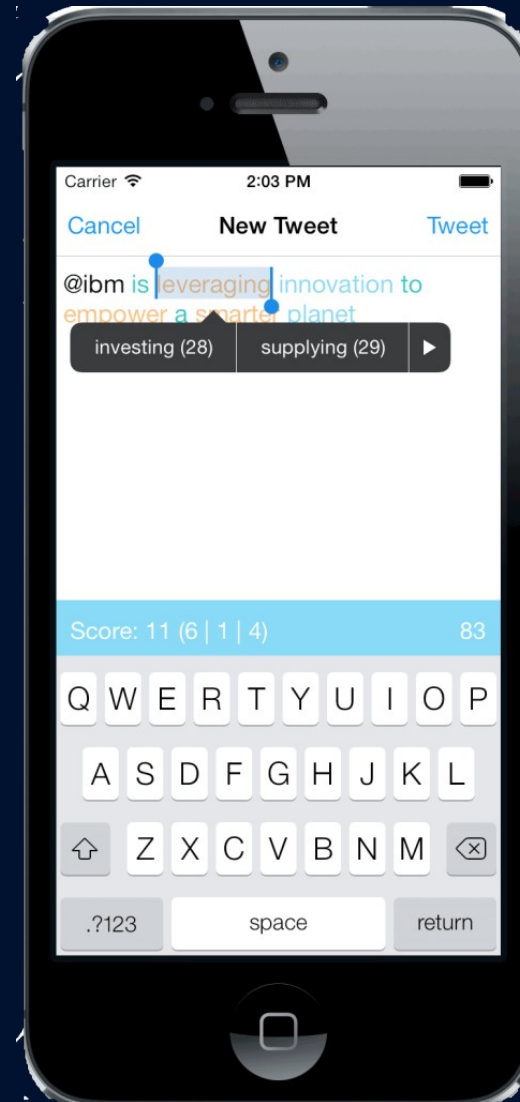
Communicate with people with a style and words that suits them

How does it work?

Analyzes draft content and scores how well it is likely to be received by a specific target audience.

Use Cases

Among people active in cloud computing discussions, option A content is likely to resonate very well



Concept Expansion

What is it?

Maps euphemisms or colloquial terms to more commonly understood phrases

How does it work?

Analyses text and interprets its meaning based on usage in other similar contexts.

Use Cases-

Example: interprets “The Big Apple” as meaning “New York City”.

Concept Expansion Sample

Label:

Corpus:

- Medical Transcriptions
<http://www.mtsamples.com>
- Social Media - WARNING: Might take a couple minutes depending on seed list

Seeds:

motrin
 tylenol
 aspirin

Output:

Prevalence	Result
24	multivitamin daily , aspirin
19	tricolor 145 mg daily , aspirin
14	penicillin
14	abilify 5 mg daily , motrin
12	venom - bee / wasp
12	adhesive tape
12	aspirin , plavix
10	aspirin one tablet daily , tylenol
9	hydrocodone / acetaminophen tablets and motrin
7	insulin sliding scale , tylenol
7	aricept 5 mg daily , tylenol
6	oxazepam 15 mg daily ; aspirin
6	a beta blocker , aspirin
6	nkda . medications : tylenol
6	plenty of fluids . tylenol
6	antiinflammatory or aspirin
6	2 . tylenol
6	d . 2 . tylenol
6	lasix on a
6	none . medications : tylenol
6	plan : 1 . aspirin
5	aspirin . dr
5	sublingual nitro
5	lunesta 2 mg
5	5 . aspirin
5	motrin , lotensin
5	and aspirin
5	advair 250 as needed , aspirin
5	ibuprofen
5	d . 5 . aspirin
5	he may see dr . xyz
5	daily . 17 . aspirin
5	tylenol . now resolved . 2
5	tylenol . now resolved
5	plan : 1 . motrin
5	cardura

Relationship Extraction

What is it?

Intelligently finds relationships between nouns, verbs, subjects, objects, etc.

How does it work?

Parses sentences into their various components and detects relationships between the components.

Use Cases-

News article analysis to extract relevant people, organization, event type, date/time, or location

The United States House of Representatives is one of the two houses of the United States Congress (a bicameral legislature). It is frequently referred to as The House. The other house is the Senate.

The composition and powers of the House are established in Article One of the United States Constitution. The major power of the House is to pass federal legislation that affects the entire country, although its bills must also be passed by the Senate and further agreed to by the U.S. President before becoming law (unless both the House and Senate re-pass the legislation with a two-thirds majority in each chamber). The House has some exclusive powers: the power to initiate revenue bills,[1] to impeach officials (impeached officials are subsequently tried in the Senate),[2] and to elect the U.S. President in case there is no majority in the Electoral College.[3]

Each U.S. state is represented in the House in proportion to its population as measured in the census, but every state is entitled to at least one representative. The most populous state, California, currently has 53 representatives. On the other end of the spectrum, there are seven states with only one representative each (Alaska, Delaware, Montana, North Dakota, South Dakota, Vermont, and Wyoming). The total number of voting representatives is fixed by law at 435.[4] Each representative serves for a two-year term. The Speaker of the House, who presides over the chamber, is elected by the members of the House, and is therefore traditionally the leader of the House Democratic Caucus or the House Republican Conference, whichever party has more voting members. The House meets in the south wing of the United States Capitol.



EVENT_COMMUNICATION PEOPLE ORGANIZATION TIME PERSON FACILITY
 CARDINAL LOCATION DATE EVENT_VIOLENCE

P *Ukraine* said that dozens of pro-Russian separatists were killed in fighting around a regional airport that continued for a second day on Tuesday, forcing schools to close and residents to flee.

P Rebel fighters took over Donetsk International Airport early Monday.

P prompting the military to deploy helicopters, fighter jets and paratroopers to regain control of the main terminal.

P The Journal's reporters have been posting photos to social media from Ukraine as the country has fallen into turmoil.

P See the photos.

P Follow the continuing conflict in and around eastern Ukraine.

P "The airport is under our full control," Interior Minister Arsen Avakov said on Tuesday.

P "The enemy suffered serious losses and we have lost none."

P He estimated that dozens of separatist fighters had been killed, and said the combat operation was continuing to drive out the remnants of the pro-Russian forces.

PERSON

Question and Answer

What is it?

Direct responses to users inquiries fueled by primary document sources

How does it work?

Interprets and answers user questions based on source data and returns candidate responses with associated confidence levels and links to supporting evidence.

Use Cases-

Healthcare: What is a stroke? What is the cause of Wilson Disease?

Travel: Where is the best place to stay in Prague?



Asks a question



Understands question



Produces possible answers and evidence



Analyzes evidence



Computes confidence



Delivers response, evidence and confidence



Considers response and evidence

Visualization Rendering

What is it?

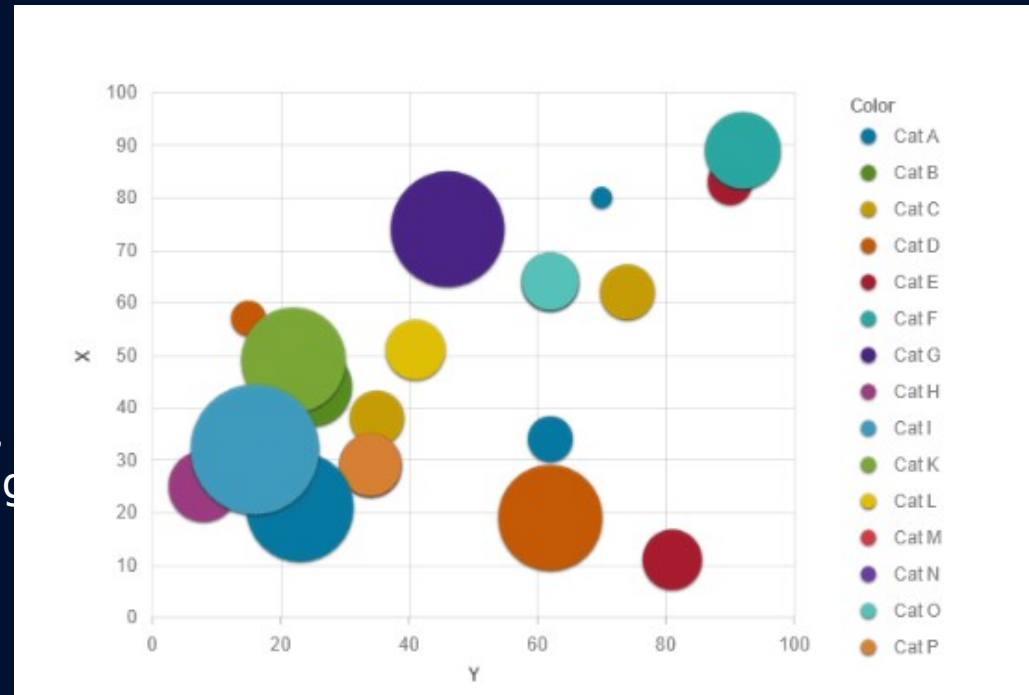
Graphical representations of data analysis for easier understanding

How does it work?

Graphically renders data as an interactive visualization that can be easily modified to match user needs, visual styling, and types of data being analyzed.

Use Cases-

Representation of neighborhood demographic data as showing income levels centered on geographic locations on maps



Language Identification

What is it?

Identifies the language in which text is written

How does it work?

Can be used in tandem with the Machine Translation service.

Use Cases-

A building block for Machine Translation and future tech.



Speech to Text

What is it?

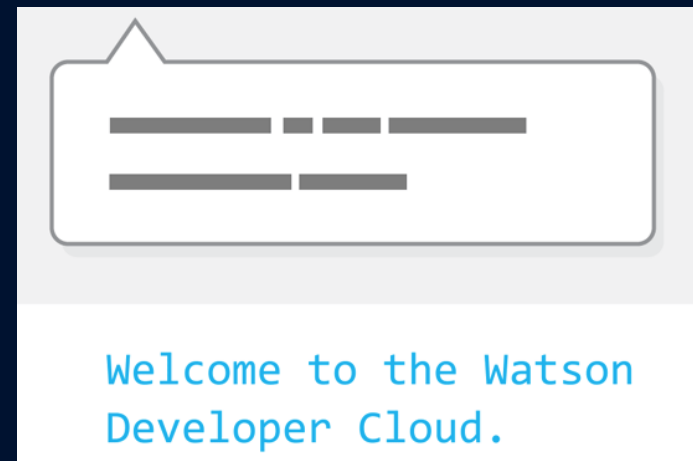
Recognition of the words that are being spoken in a live audio stream and transcribes into text

How does it work?

In addition to converting a raw audio signal into a best-guess of the words that are being spoken, intelligence about the relevant grammar / how language is used within a specific context is incorporated to generate a more accurate transcription.

Example Use Cases

- Mobile apps.
- Voice-control of applications / embedded devices.
- Transcription of meetings and conference calls.
- Dictation of emails.



Text to Speech

What is it?

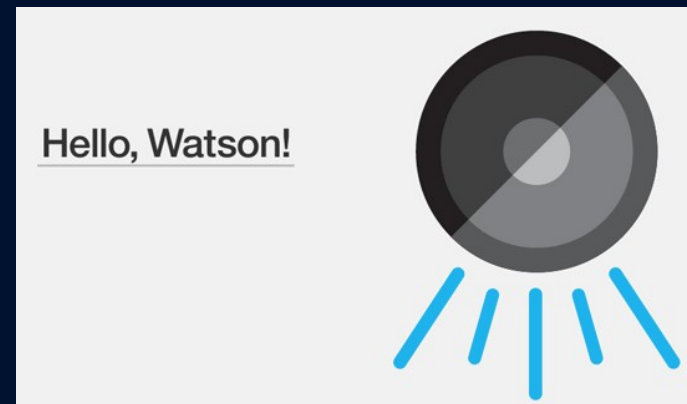
Generates an audio file that has a verbal representation of the input text – complete with appropriate cadence and intonation.

How does it work?

Converts textual input into speech, and provides the option of three voices in English or Spanish, including the American English voice used by Watson in the 2011 Jeopardy match.

Example Use Cases

- Mobile apps.
- Assistance tools for the vision-impaired.
- Read texts / emails aloud.



Concept Insights

What is it?

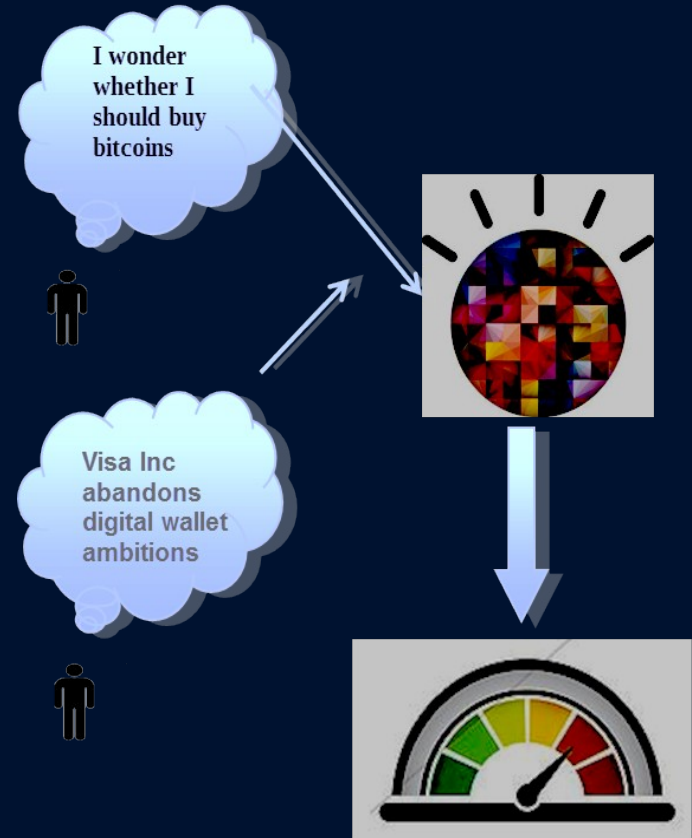
Locate relevant documents that may not directly mention your query.

How does it work?

Maps user-input words to the underlying concepts of those words based on training on English Wikipedia data. The service identifies explicit links when an input document directly mentions a concept, and implicit links when relevant concepts that are not directly mentioned.

Example Use Cases

- A legal firm could utilize this service to identify cases which may be related to the case in question
- Improve engagement on any external website



Visual Recognition

What is it?

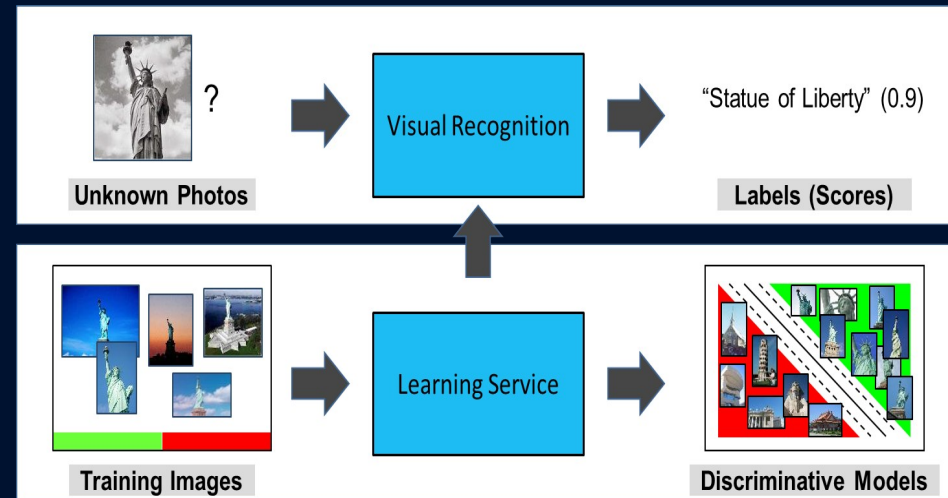
Analyzes the visual appearance of images or video frames to understand what is happening in a scene.

How does it work?

Includes an unmatched number of preset classifier and trained labels (2,000+), a taxonomy that recognizes 150+ different sports, and can ingest 1,000+ batch images with the ability to recognize multiple labels in a picture.

Example Use Cases

- Audio-visual indexing and search of media archive
- Automatic “Smart Album” generation
- Marketing data analysis from social media - For e.g., mine Pinterest images and perform segmentation



Tradeoff Analytics

What is it?

Helps make better choices under multiple conflicting goals with smart visualizations and analytical recommendations.

How does it work?

Uses Pareto filtering techniques in order to surface only the optimal alternatives across multiple criteria. It then uses various analytical and visual approaches to help the decision maker analyze the tradeoffs.

Use Cases

- Enable retailers and manufacturers to determine product mix
- Allow consumers to compare and contrast competitive products or services

