



# IBM Watson Cognitive Services

Cool apps at hackathons

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# So what is Watson?

- **Traditional programmable systems** are fed data and their results are based on processing that is preprogrammed by humans.
- **Cognitive computing** involves self-learning systems that can be trained and that use data mining, pattern recognition and natural language processing to mimic the way the works.
- **Deep Learning and Understandability** versus Software Engineering and Verification
- **From SQL to unstructured data**



# A practical example: classifiers, training and visual recognition



## Visual Recognition

Visual Recognition uses deep learning algorithms to analyze images that can give you insights into your visual content. You can organize image libraries, understand an individual image, and create custom classifiers for specific results that are tailored to your needs.

### Resources:

[API Reference](#)

[Documentation](#)

[Fork on Github](#)

[Start free in Bluemix](#)

Try

Train

## Train a demo classifier

To create a temporary trial classifier, select at least 3 classes from the example image bundles.

### Example Image Bundles

#### Dog Breeds



#### Moleskine Types



#### Insurance Claims



#### Satellite Imagery



#### Use Your Own



Images used in this demo are licensed under Creative Commons 2.0 General License and are attributed [here](#).

<http://visual-recognition-demo.mybluemix.net/train>

# Watson Developer Cloud on IBM Bluemix

Watson Developer Cloud

Start free in Bluemix

Services ▾

Docs

Starter Kits

Community

## Language

AlchemyLanguage

Conversation

Document Conversion

Language Translator

Natural Language Classifier

Personality Insights

Retrieve and Rank

Tone Analyzer

## Speech

Speech to Text

Text to Speech

## Vision

Visual Recognition

## Data Insights

AlchemyData News

Discovery

Tradeoff Analytics

## Embodied Cognition

Project Intu

<http://www.ibm.com/watson/developercloud/services-catalog.html>

# Where do I find the Watson services? <https://bluemix.net/>

IBM Cloud > Bluemix

Jump-start your cognitive app development with an array of software development kits, code examples, and tooling created for developers, by developers.



## Conversation

Give your apps the ability to interact with your customers in place of a call center or other outdated end-user interface. Watson combines a number of cognitive techniques to help you build and train your bot by defining intents and crafting dialogue to simulate conversation. Common applications include virtual agents and chat bots that can fully integrate and communicate on any channel or device.

→ View documentation

→ View code on GitHub



Deploy to **Bluemix**

### Try the API

Hi. It looks like a nice drive today. What would you like me to do?

Type something

#### Watson understands


```
1 {
2   "intents": [],
3   "entities": [],
4   "input": {},
5   "output": {
6     "log_messages": [],
7     "text": [
8       "Hi. It looks like a nice drive today. W
9     ],
10    "nodes_visited": [
11      "node_1_1467221909631"
12    ]
13  },
14  "context": {
15    "conversation_id": "bfe6d100-3566-4a7e-800
16    "previous": {
```

# They all come with demos



## Conversation

The IBM Watson Conversation service allows you to understand what users are saying and respond with natural language.

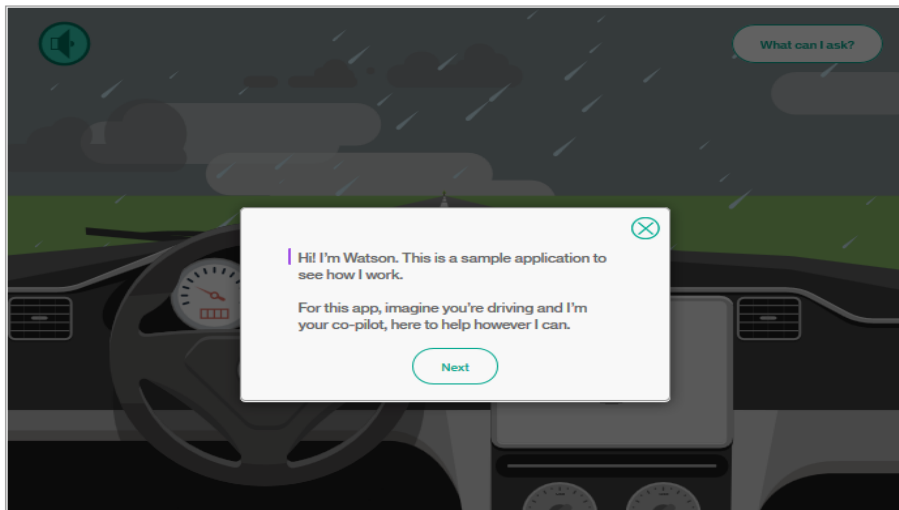
 Resources:

[Documentation](#)

[API Explorer](#)

In this demo, imagine you're in the driver's seat and Watson is your co-pilot. Watson can understand your entries and respond accordingly.

**Hint:** Try asking "where is the nearest restaurant" or "turn on the lights" to see how Watson understands your commands.



<https://conversation-demo.mybluemix.net/>

# And with documentation and tutorials

<https://www.ibm.com/watson/developercloud/conversation.html>

## Overview

How to use the service

Supported languages

Next steps

Getting started

Configuring a workspace

Developing your application

Improving accuracy

Tutorial

Sample applications

Integrations

Release notes

Reference

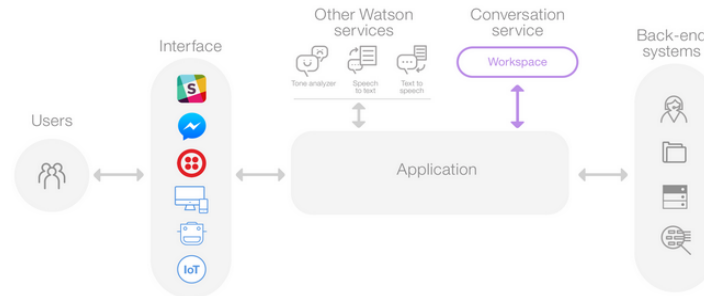
API reference [↗](#)

## Overview of the IBM Watson Conversation service

With the IBM Watson™ Conversation service, you can create an application that understands natural-language input and uses machine learning to respond to customers in a way that simulates a conversation between humans.

### How to use the service

This diagram shows the overall architecture of a complete solution:



<http://www.ibm.com/watson/developercloud/services-catalog.html>

# And an API reference

Conversation

API Reference

Introduction

API explorer

Authentication

Versioning

Methods

Send message

Data collection

Error handling

Introduction

The IBM Watson™ Conversation service combines machine learning, natural language understanding, and integrated dialog tools to create conversation flows between your apps and your users.

API explorer

To interact with this REST API, use the Conversation service [API explorer](#). Use the explorer to test your calls to the API and to view live responses from the server.

Authentication

You authenticate to the Conversation API by providing the username and password that are provided in the service credentials for the service instance that you want to use. The API uses Basic Authentication.

CurlNodeJavaPython

API Endpoint

`https://gateway.watsonplatform.net/conversation/api/v1`

Replace {username} and {password} with your credentials

`curl -u "{username}":"{password}" "https://gateway.watsonplatfo`

<https://www.ibm.com/watson/developercloud/conversation/api/v1/?curl#>



## Let's look at a Watson cognitive service

<https://www.ibm.com/watson/developercloud/conversation.html>



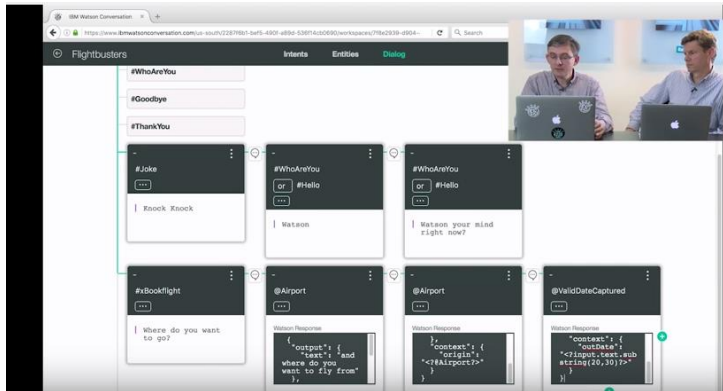
# Conversation

Build chatbots that understand natural language and deploy them on messaging platforms and websites, on any device

GENERAL AVAILABILITY


<http://www.ibm.com/watson/developercloud/services-catalog.html>

# It's all about APIs: book flights with a Chatbot and API



<https://www.youtube.com/watch?v=MTCc4d-RXP0>

<http://business.skyscanner.net/portal/en-GB/Documentation/ApiOverview>

 business

[Sign In](#)

## APIs

- [Get started](#)
- [Overview](#)
- [Flights: Live Pricing](#)
- [Flights overview](#)
- [Test harness](#)
- [Car Hire](#)
- [Car Hire overview](#)
- [Test harness](#)
- [Hotels](#)

## Overview

The Skyscanner API is composed of services that can be used either individually, to add travel search functionality to an existing product, or combined, to build a fully-fledged travel search product.

Learn more about the benefits of our [Travel APIs](#)

### Flights

The [Live Pricing Service](#) returns all the flights available for a **specific route and date** (or single date for one-way searches). The response is a list of all the flights that can be booked for the selected airports and dates, along with a deeplink to the provider's website (airline or travel agent).

The [Browse Cache Service](#) gives instant access to millions of flight prices updated by our scrapers or stored as a result of searches performed by Skyscanner users. Browse Cache is the fastest way of browsing flights and should be used for **comparing multiple destinations, origins and/or dates**.

<https://conversation-demo.mybluemix.net/>

# So what Watson services are there?

- **AlchemyLanguage**

Natural language processing for advanced text analysis

<http://www.ibm.com/watson/developercloud/alchemy-language.html>

- **Conversation**

Build chatbots that understand natural language and deploy them on messaging platforms and websites, on any device

<https://www.ibm.com/watson/developercloud/conversation.html>

- **Document Conversion**

Converts various types of documents into formats that can be understood by Watson services, such as the Retrieve and Rank service.

<http://www.ibm.com/watson/developercloud/document-conversion.html>

# So what Watson services are there?

- **Language Translator**

Translate content into multiple languages

<https://www.ibm.com/watson/developercloud/language-translator.html>

- **Natural Language Classifier**

Understands the intent behind text and returns a corresponding classification, complete with a confidence score

*“What is the weather like today? or “Is it hot out?” or “Is it going to be nice today?” are all ways of asking about “temperature”.*

<https://www.ibm.com/watson/developercloud/nl-classifier.html>

- ***Personality Insights***

Understand personality characteristics, needs, and values in written text

Characteristics include the Big 5 Personality Traits, Values, and Needs. At least 1200 words of input text are recommended when using this service.

<https://www.ibm.com/watson/developercloud/personality-insights.html>

# So what Watson services are there?

- **Retrieve and Rank**

- For example, using R&R, an experienced technician can quickly find solutions from dense product manuals. A contact center agent can also quickly find answers to improve average call handle times. The Retrieve and Rank service works "out of the box," but can also be customized to improve the results.
- <https://www.ibm.com/watson/developercloud/retrieve-rank.html>

- **Tone Analyzer**

- Uses linguistic analysis to detect three types of tones in written text: emotions, social tendencies, and writing style.  
Use the Tone Analyzer service to understand emotional context of conversations and communications.  
Use this insight to respond in an appropriate manner.
- <https://www.ibm.com/watson/developercloud/tone-analyzer.html>

# So what Watson services are there?

- **Speech to Text**

Convert human voice into written word

- <https://www.ibm.com/watson/developercloud/speech-to-text.html>

- **Text to Speech**

Enable computers to speak like humans

<https://www.ibm.com/watson/developercloud/text-to-speech.html>

- **Visual Recognition**

Visual Recognition understands the contents of images - visual concepts tag the image, find human faces, approximate age and gender, and find similar images in a collection.

You can also train the service by creating your own custom concepts.

<https://www.ibm.com/watson/developercloud/visual-recognition.html>

# So what Watson services are there?

- **Alchemy Data News**

AlchemyData provides news and blog content enriched with natural language processing to allow for highly targeted search and trend analysis. Now you can query the world's news sources and blogs like a database.

<https://www.ibm.com/watson/developercloud/speech-to-text.html>

- **Discovery**

Rapidly build a cognitive search and content analytics engine and add it to existing applications with minimal effort.

<https://www.ibm.com/watson/developercloud/discovery.html>

- **Tradeoff Analytics**

Tradeoff Analytics helps people make decisions when balancing multiple objectives.

When you make decisions, how many factors are considered?

How do you know when you've identified the best option?

With Tradeoff Analytics, you can avoid lists of endless options and determine the right option by considering multiple objectives.

<https://www.ibm.com/watson/developercloud/tradeoff-analytics.html>

# So what Watson services are there?

## **Project Intu**

Embed cognitive functions in various form factors such as spaces, avatars or other IoT devices.

<https://www.ibm.com/watson/developercloud/project-intu.html>



**So what can I do with Watson Services ?**

# An App KnowsU

Do a test and find out more music, movie, and books!

Get Started →

I worked on the back-end with different APIs, front-end animations, and tried to get a variety of response from the APIs to make the user experience more enjoyable. We want to use Watson to understand the user's tone and emotion and give them interesting and fun suggestions of musics, movies, and books.



Kangbo Lu +

A young computer science student, who love

<https://devpost.com/software/knowsU>

# So what Watson services are there?

- **Speech to Text**

Convert human voice into written word

- <https://www.ibm.com/watson/>

- **Text to Speech**

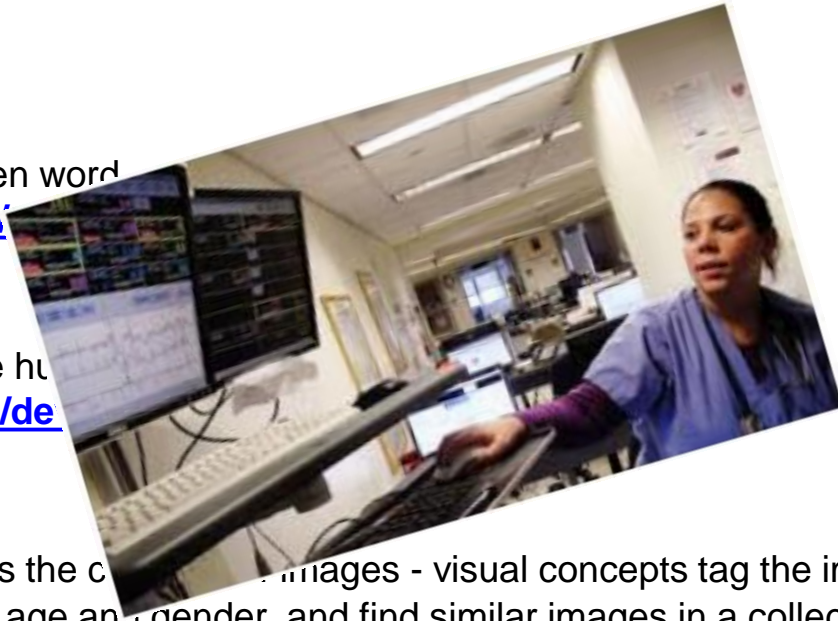
Enable computers to speak like humans

<https://www.ibm.com/watson/de>

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Visual Recognition understands the content of images - visual concepts tag the image, find human faces, approximate age and gender, and find similar images in a collection. You can also train the service by creating your own custom concepts.

<https://www.ibm.com/watson/developercloud/visual-recognition.html>



# Watson Visual Recognition



## Visual Recognition

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### Resources:

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[Fork on Github](#)  
[Start free in Bluemix](#)

[Try](#)

[Train](#)

## Try the service

Choose a sample image or upload your own image to try out Visual Recognition.

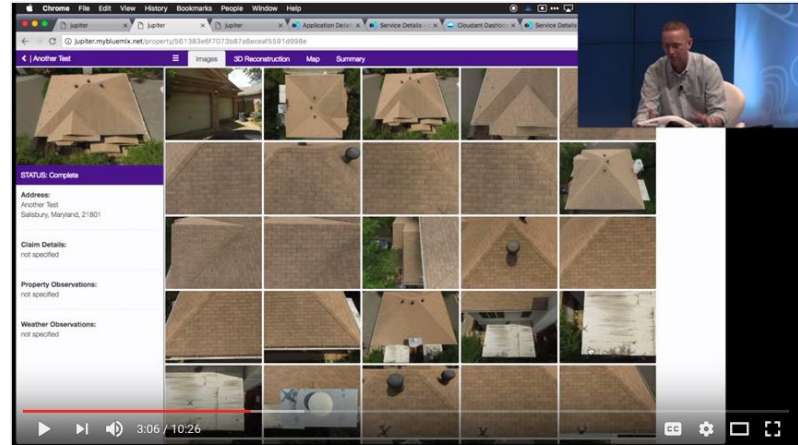


<https://visual-recognition-demo.mybluemix.net/>



<http://www.dji.com/phantom>

## Andy Trice, drones and hail damage to shingled roofs



Hail damage insurance analytics with drones & IBM Watson

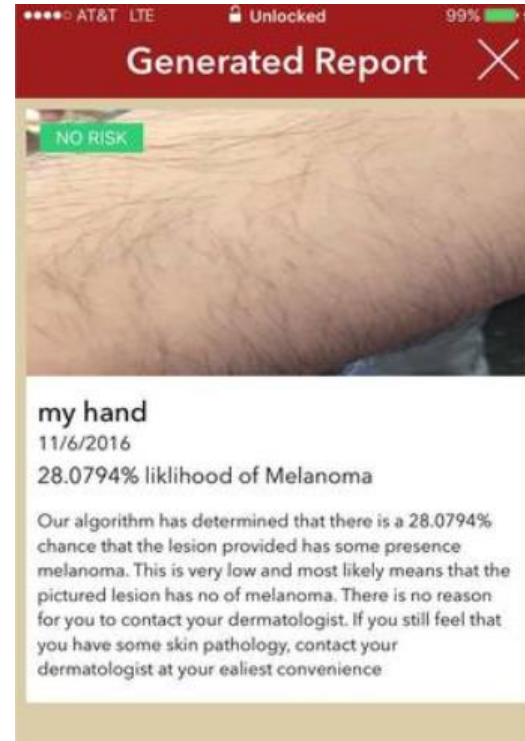
<https://www.youtube.com/watch?v=ITE-TCtDIBM>

# Watson Visual Recognition

- I wrote the backend and set up the IBM-Watson visual recognition platform.
- I compiled all the training data and used the watson api to make a custom classifier.
- I also wrote the entire restful api using Flask and Python which allowed for curl requests to the server for the same prediction which was used by the Electron app.

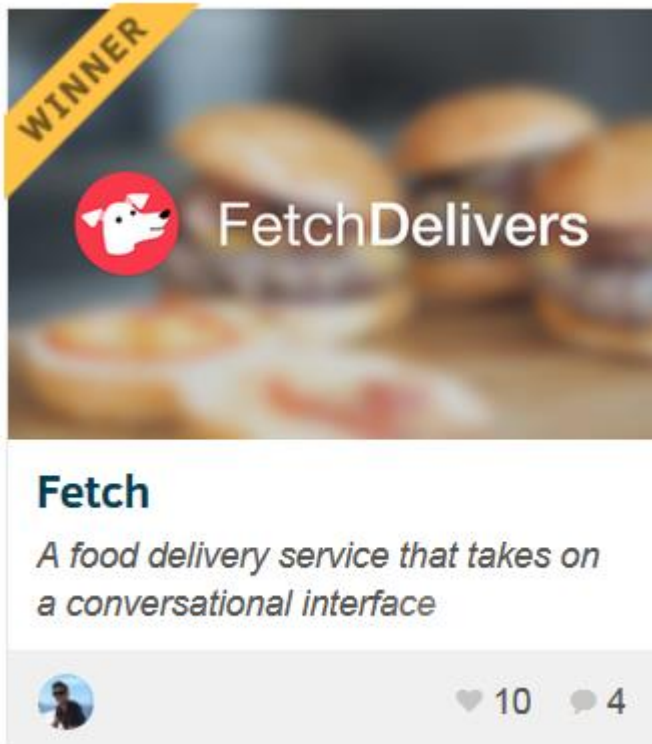
health++

Stanford's Inaugural Health Hackathon  
Nov 5 + 6, 2016



<https://devpost.com/software/dermyx>

# Fetch



## What it does

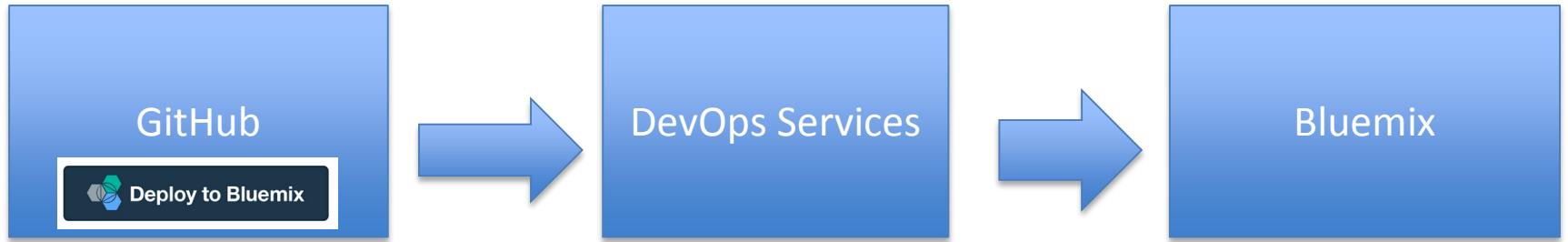
Fetch scours the internet and sifts through local restaurant data looking for food vendors nearby. Once it finds the perfect fit for your needs, it can have almost anything delivered right to your door!

## How I built it

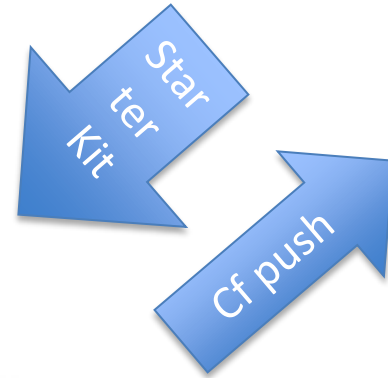
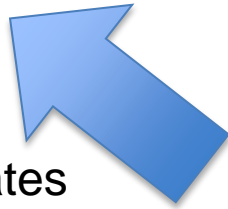
The app takes advantage of Watson's Dialog and Classifier service, and I wrote my own python script in order to determine what food or restaurant the user was looking for using a complex mix of statistics. Once Fetch knows what you are looking for it uses the Yelp API to get a list of restaurants in the area. It then finds a corresponding menu using Foursquare and Locu, and after checkout the order goes to Postmates to have it delivered to your door.

<https://devpost.com/software/fetch-bdf9tl>

# Creating cool apps with the Watson Services



Code updates  
From laptop to  
Github







# THANK YOU

QUESTIONS?

