



# Hack Zurich

## Intro Microsoft & ABB Challenge



Sascha Corti

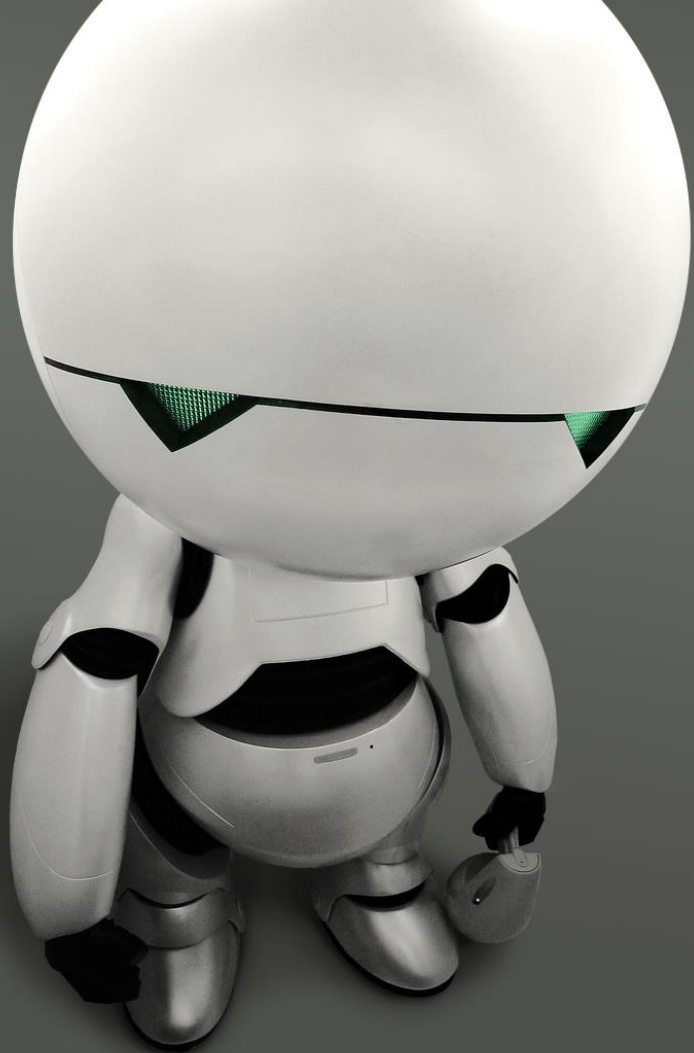
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# The Cognitive Robot

# Ready Your Tools!

## Our GitHub Repo

- ABB section for information specific to RobotStudio or YuMi
- Microsoft Section on Bot Framework, the Cognitive Services or Azure
- Misc section with sample code showing connection between YuMi & Azure



<http://aka.ms/hz17>

## Using the RobotStudio

- Get RobotStudio on a Flash Drive (Only for Windows) **@ABB Booth**
- Download it directly: <http://bit.ly/2h3wFTZ>
- Instantiate a preconfigured VM running RobotStudio (see GitHub)

## Use Azure for Free during the Hack

- Azure Voucher **@Microsoft Booth**



**Talk to us!**  
**We're here to help**





<http://aka.ms/hz17>





# Microsoft Bot Framework

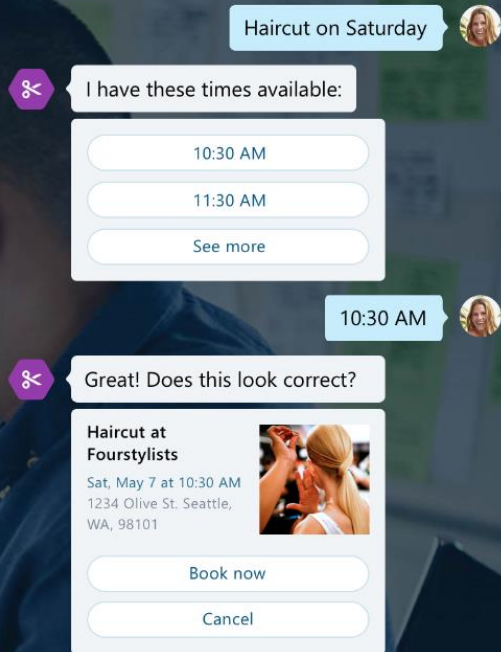
# Bots: Wherever your Users Are Talking

## Microsoft Bot Framework

Your bots — wherever your users are talking.

Build and connect intelligent bots to interact with your users naturally wherever they are, from text/sms to Skype, Slack, Office 365 mail and other popular services.

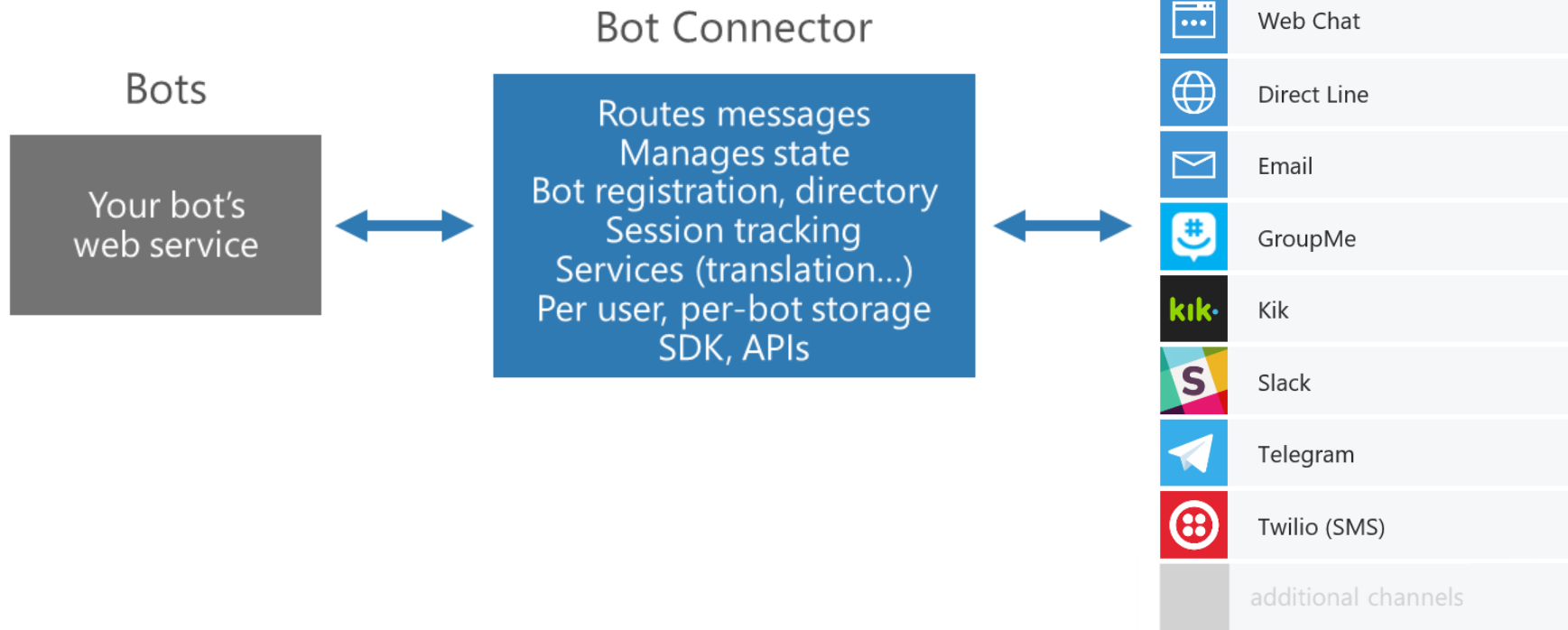
Get started



<http://botframework.com>



# Bot Connector: Channels



# demo

Bot Framework

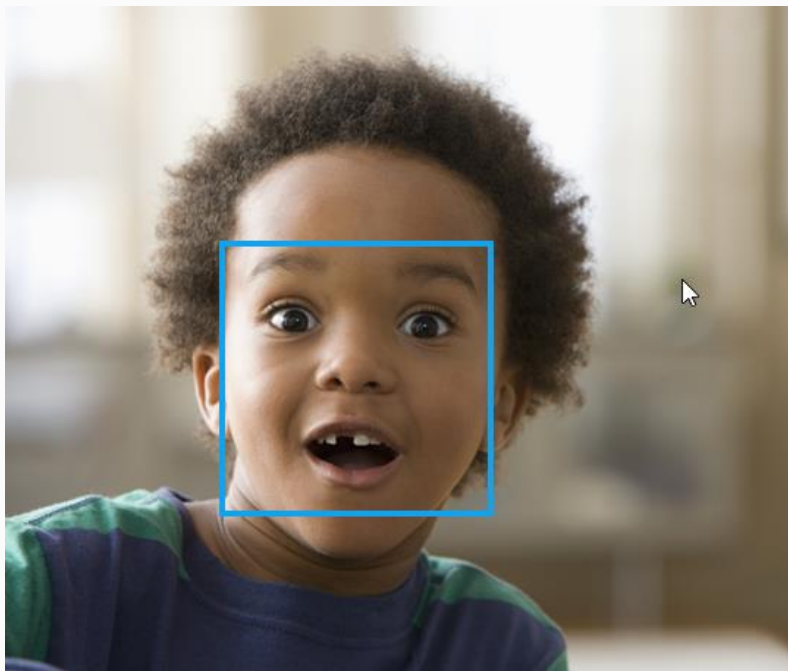


# Cognitive Services



# Cognitive Services

“Enable your Apps to See, Hear, Interpret, and Interact in more Human Ways.”



**Emotion  
API**

```
JSON: [
  {
    "faceRectangle": {
      "left": 175,
      "top": 187,
      "width": 215,
      "height": 215
    },
    "scores": {
      "anger": 0.000008473417,
      "contempt": 0.0000987896055,
      "disgust": 0.00003328445,
      "fear": 0.0005069857,
      "happiness": 0.132762313,
      "neutral": 0.0136927208,
      "sadness": 0.0000227907713,
      "surprise": 0.852874637
    }
  }
]
```

# Cognitive Services

Give your solutions  
a human side

## Microsoft Cognitive Services preview



### 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

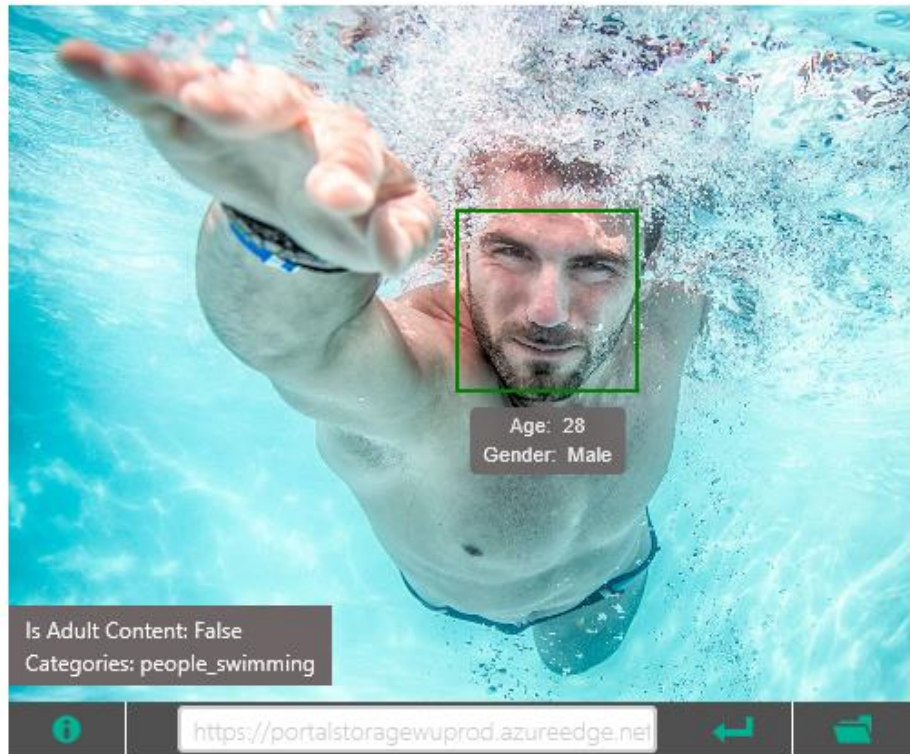


### Search

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



# Computer Vision API



## Features:

Feature Name	Value
Description	{ "type": 0, "captions": [ { "text": "a man swimming in a pool of water", "confidence": 0.7850108693093019 } ] }
Tags	[ { "name": "water", "confidence": 0.9996442794799805 }, { "name": "sport", "confidence": 0.9504992365837097 }, { "name": "swimming", "confidence": 0.9062818288803101, "hint": "sport" }, { "name": "pool", "confidence": 0.8787588477134705 }, { "name": "water sport", "confidence": 0.631849467754364, "hint": "sport" } ]
Image Format	jpeg
Image Dimensions	1500 x 1155
Clip Art Type	0 Non-clipart
Line Drawing Type	0 Non-LineDrawing
Black & White Image	False

# Text Analytics Service

Analyzes unstructured text.

## Sentiment analysis

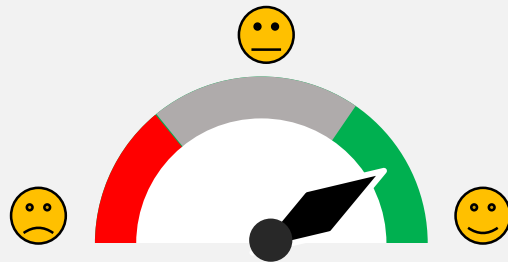
How do your customers feel about your brand or products?

## Key phrase extraction

What are your customers talking about?

"It was a wonderful hotel, with unique décor and friendly staff."

### Sentiment analysis



### Key phrase extraction

"It was a **wonderful hotel**, with **unique décor** and **friendly staff**."

[Interactive experience](#)

# Language Understanding Intelligent Service

Understand what Users are Saying

- Determines Intent
- Detects Entities

Seamless Integration with  
Speech Recognition

Learns over Time

Use pre-built, World Class  
Models from Bing and Cortana

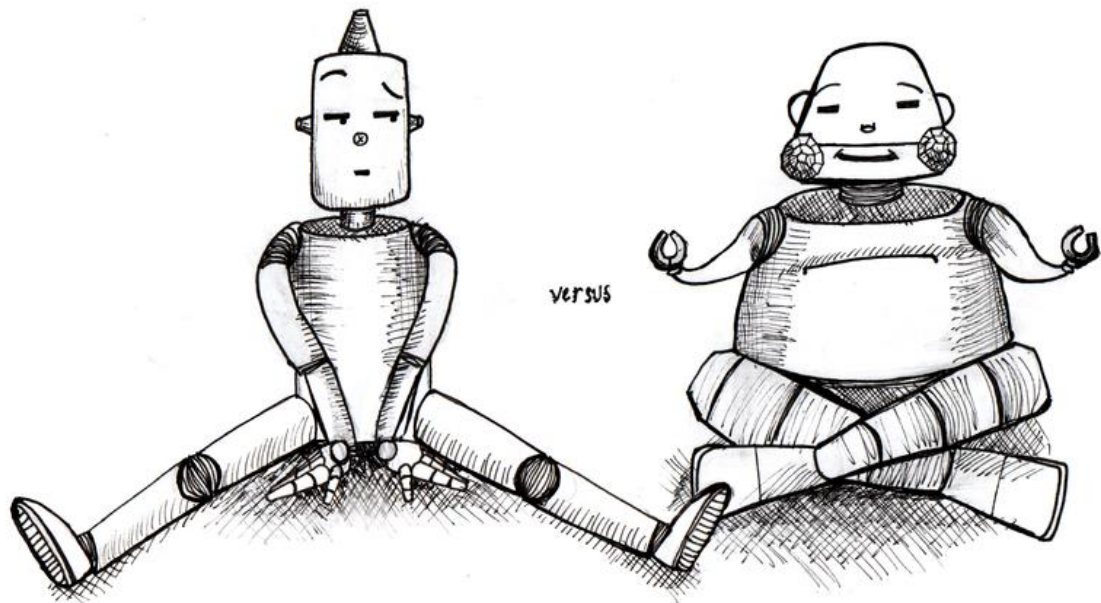
"How much  
parking is available  
in Urania?"

```
{
  "entities": [
    {
      "entity": "urania",
      "type": "Parking"
    }
  ],
  "intents": [
    {
      "intent": "FindParking",
      "score": 0.92853384
    },
    {
      "intent": "None",
      "score": 0.07289317
    },
    {
      "intent": "RepeatLastRequest",
      "score": 0.0167122427
    },
    {
      "intent": "ListAllParkings",
      "score": 0.0091929924
    }
  ]
}
```

# demo

Cognitive Services





MACHINE LEARNING

DEEP LEARNING

# Machine Learning Studio



# Machine Learning Studio

Microsoft Azure Machine Learning

Luis Cabrera-Cordon-Free... ?

Experiment created on 2/13/2016

Finished running ✓

Draft saved at 4:02:16 PM

Properties Project

**Two-Class Neural Network**

Create trainer mode  
Single Parameter

Hidden layer specification  
Fully-connected case

Number of hidden no...  
100

Learning rate  
0.1

Number of learning ite...  
100

The initial learning wei...  
0.1

The momentum  
0

The type of normalizer  
Min-Max normalizer

☒ Shuffle examples

Quick Help  
Creates a binary classifier using a neural network algorithm  
[\(more help...\)](#)

Adult Census Income Binary...

Split Data

Two-Class Neural Network 1

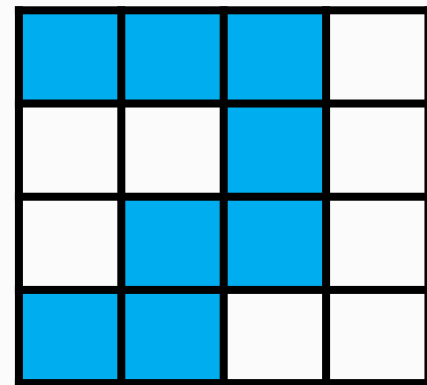
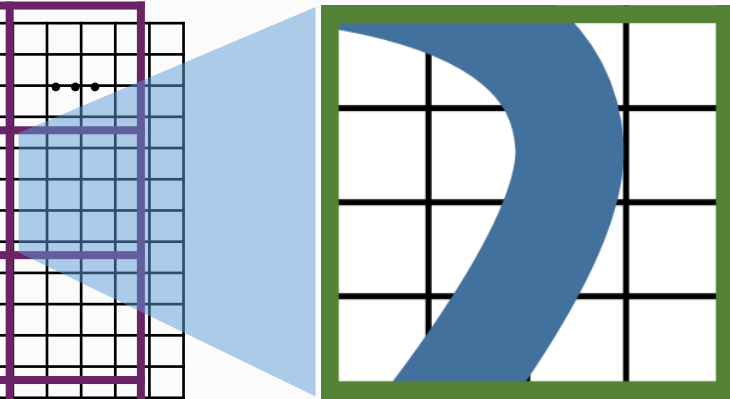
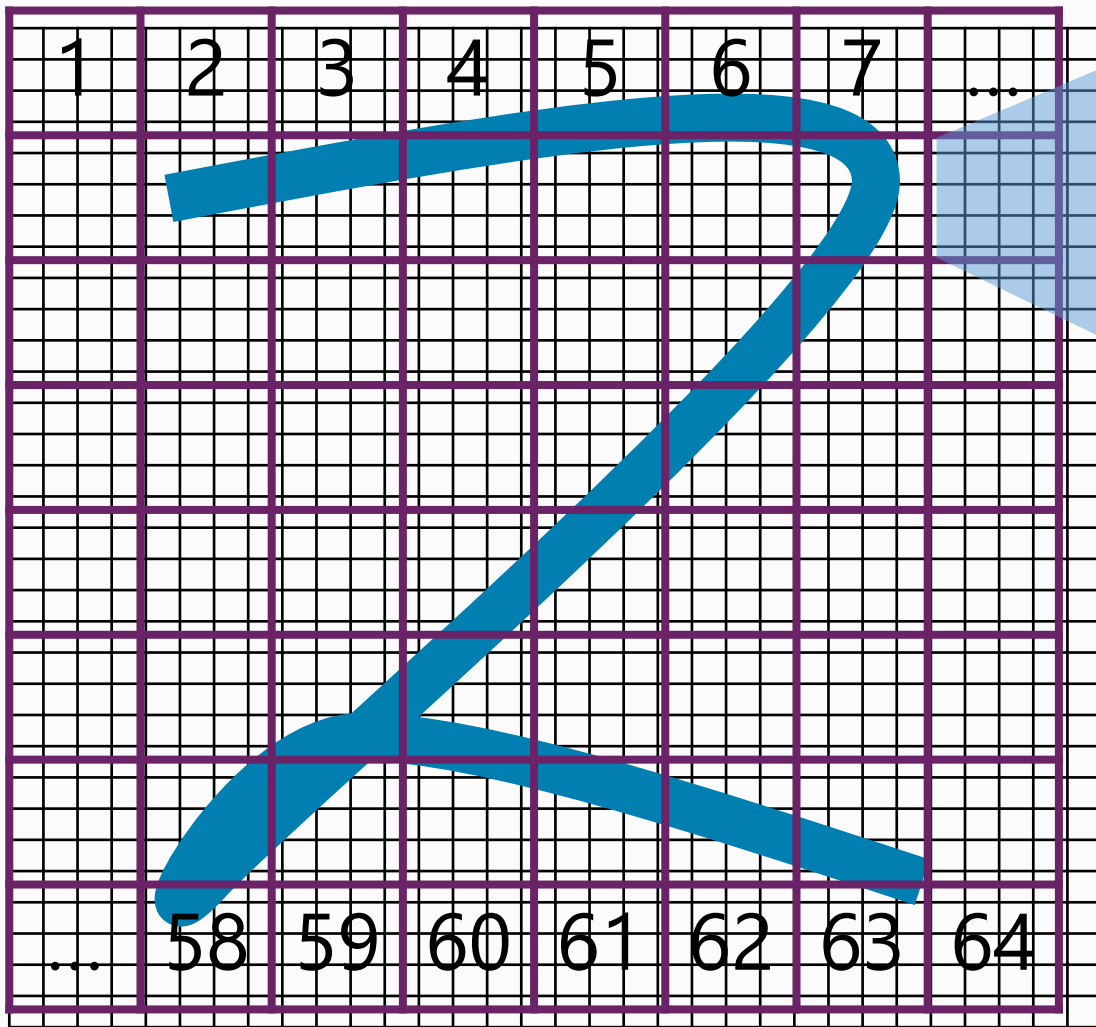
Train Model

Score Model

Evaluate Model

SET UP WEB SERVICE

NEW RUN HISTORY SAVE SAVE AS DISCARD CHANGES RUN SET UP WEB SERVICE PUBLISH TO GALLERY



0 to 16: 8

# demo

Machine Learning





# Microsoft