

Drive Intelligence from Text in Smart Apps

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Slides Courtesy of Microsoft Corporation



Drive Intelligence from Text in Smart Apps

The session covers how to use cognitive services to drive insights and intelligence in your applications. The session covers how to work with unstructured text and turn unstructured text into meaningful insights into mobile, web and line of business applications.

The session will be showing how to use a few lines of code to easily analyze sentiment, extract key phrases, detect topics, and detect language for any kind of text.

The session will provide an overview on Microsoft Cognitive Services and all related text analysis services including:

- Sentiment Analysis
- Key Phrase extraction
- Topic Detection
- Language detection

The session is code driven & will provide samples on how to build smart apps with cognitive services from Microsoft.

About the Speaker



Adnan Masood, Ph.D. is a software architect, machine learning researcher, and Microsoft MVP for Data Platform. Before joining UST Global as Chief Architect of AI and Machine Learning, Dr. Masood worked at Green Dot Corporation, a leading prepaid financial technology institution as a Sr. Systems Architect. In the past life he has also served as principal engineer for an ecommerce start-up, and as a solutions architect for a leading British nonprofit organization.

A strong believer in the development community, Adnan is an active member of the Open Web Application Security Project (OWASP), an organization dedicated to software security. In the .NET community, he is a cofounder and president of the Pasadena .NET Developers group, co-organizer of Tampa Bay Data Science Group, and Irvine Programmer meetup. A certified ScrumMaster, Dr. Masood also hold certifications in big data, machine learning, and systems architecture from Massachusetts Institute of Technology; Application Security certification from Stanford University, and SOA Smarts certification from Carnegie Mellon University. he is a Microsoft Certified Solutions Developer, and Sun Certified Java Developer.

Dr. Masood teaches Data Science course at Park University, and has taught Windows Communication Foundation (WCF) courses at the University of California, San Diego. He is a regular speaker to various academic and technology conferences (, IEEE-HST, IASA, and DevConnections), local code camps, and user groups. He is also a volunteer STEM FLL robotics coach for middle school students.

For more details, visit Adnan's blog (<http://blog.adnanmasood.com>), GitHub repository (<http://github.com/adnanmasood>), and Twitter (@adnanmasood). Adnan can be reached at adnan.masood@owasp.org.

Microsoft Cognitive Services

Give your apps
a human side

Slides Courtesy of Microsoft Corporation



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

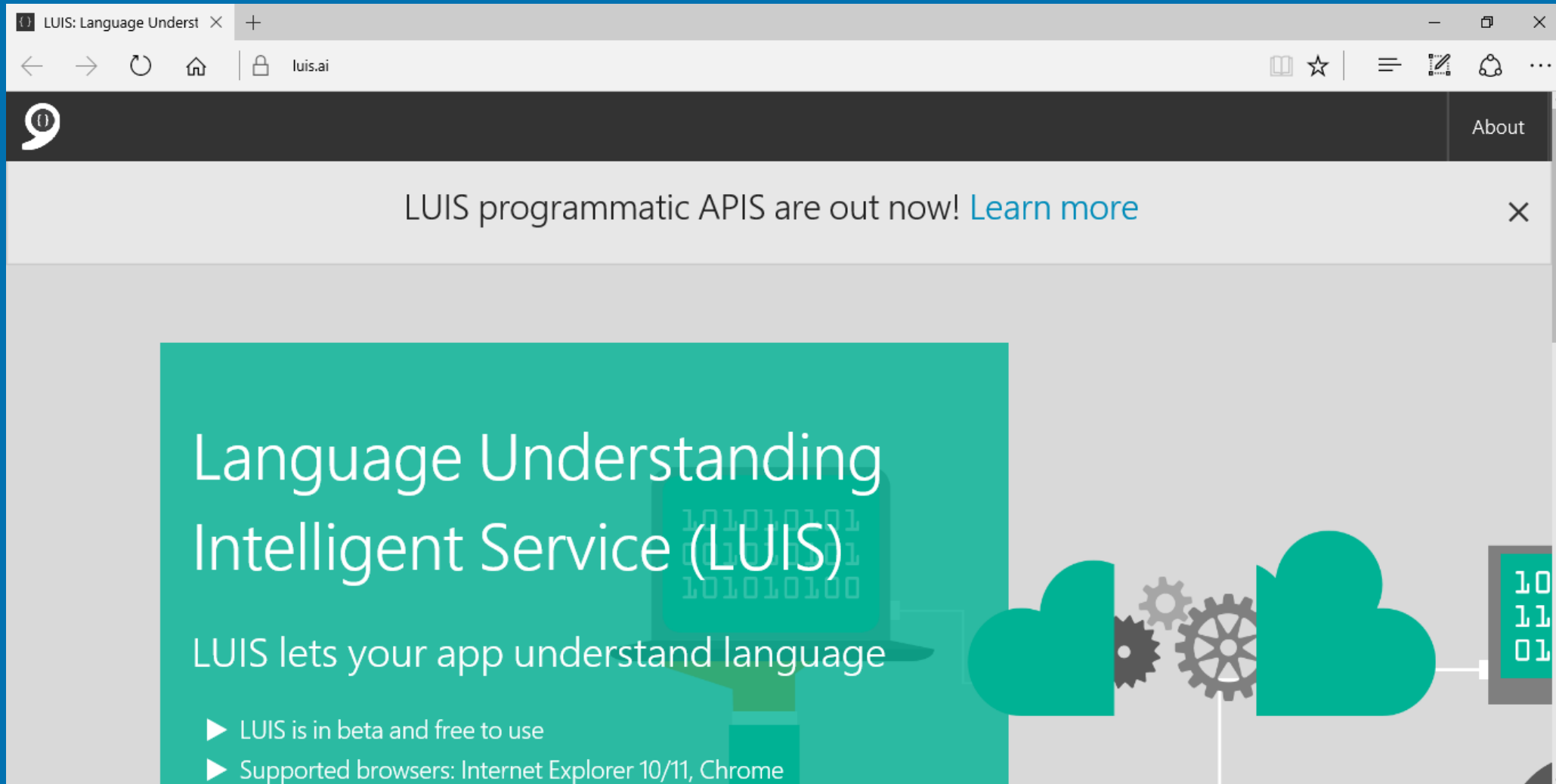
Tap into rich knowledge amassed from the web, academia, or your own data



Search

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

Language Understanding Intelligent Service



<https://www.luis.ai/>

Why Microsoft Cognitive Services?

Easy

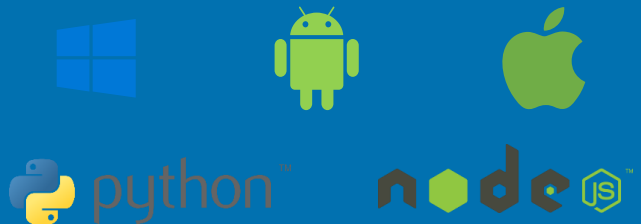
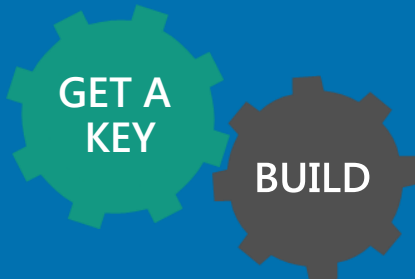
Roll your own with REST APIs
Simple to add: just a few lines of code required

Flexible

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

Tested

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



Scenarios

Emotion detection
at retail displays

Facial identification to
find missing children

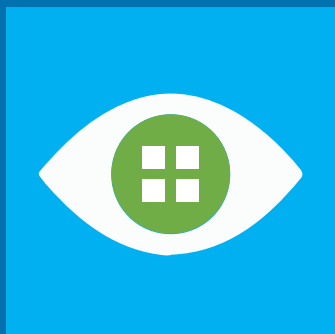
Sentiment analysis
to learn how
customers feel

Facial detection
to calculate the
male/female ratio
at a nightclub

Language
understanding to allow
automated support
bots to understand
natural language

Object recognition to
enable a blind person
to read a menu

Vision



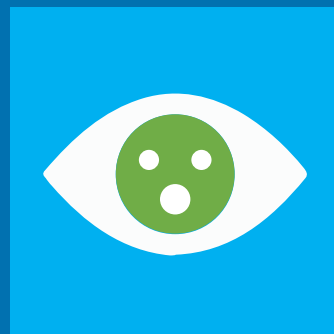
Computer Vision API

Distill actionable information from images



Face API

Detect, identify, analyze, organize, and tag faces in photos



Emotion API

Personalize experiences with emotion recognition



Video API

Analyze, edit, and process videos within your app

Speech



Bing Speech API

Convert speech to text
and back again, and
understand its intent



Speaker Recognition API

Give your app the ability
to know who's talking



Custom Recognition Intelligent Service

Fine-tune speech
recognition for anyone,
anywhere

Language



Bing Spell Check API

Detect and correct spelling mistakes within your app



Web Language Model API

Leverage the power of language models trained on web-scale data



Linguistic Analysis API

Easily parse complex text with language analysis



Language Understanding Intelligent Service

Teach your apps to understand commands from your users



Text Analytics API

Detect sentiment, key phrases, topics, and language from your text



Text analytics

Sentiment analysis

Understand if a record has positive or negative sentiment

Key phrase extraction

Extract key phrases from a piece of text, and retrieve topics

Topic detection

Use clustering techniques to identify the trending topics on a large set of text records

Language detection

Identify the language, 120 supported languages



Text analytics

Sentiment analysis **English, Spanish, French, and Portuguese**
Understand if a record has positive or negative sentiment

Key phrase extraction **English, Spanish, German, and Japanese**
Extract key phrases from a piece of text, and retrieve topics

Topic detection **English**
Use clustering techniques to identify the trending topics on a large set of text records

Language detection
Identify the language, 120 supported languages

Demo

Text analytics

<http://text-analytics-demo.azurewebsites.net>

Language understanding (LUIS)

Define entities and intents

Entities—DepartureCity, ArrivalCity, DepartureDate, ReturnDate

Intent—book a flight

Map some utterances to an intent

Examples: "I want to go to Paris from Sept 25 to Sept 29, 2016", "Book me a flight from DTW to CDG leaving on 9/25/2016 and returning 9/28/2016", etc.

Help your model improve over time based on real feedback

See what real users are sending to your model, and map those utterances to intents (or create new intents based on what your users are asking).



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

Apps Powered by MS Cognitive Services

I think it's a person sitting in front of a computer and he seems 😊. I am 99% sure that's **Bill Gates**



CaptionBot.ai

CelebsLike.Me
Which Oscar nominee do you look like?



Celebslike.me



ProjectMurphy.net

Cognitive Services

microsoft.com/cognitive

 Vision

Computer Vision

Emotion

Face

Video

 Speech

Custom
Recognition

Speaker
Recognition

Speech

Translator

 Language

Bing Spell Check

Linguistic Analysis

Language
Understanding

Text Analytics

WebLM

 Knowledge

Academic
Knowledge

Entity Linking

Knowledge
Exploration

Recommendations

 Search

Bing
Web Search

Bing
Image Search

Bing
Video Search

Bing
News Search

Bing
Autosuggest

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Bing
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Bing
Autosuggest

Vertical Search APIs

Get more results, features and metadata tailored to each search vertical

Image Search API



source: nasa.gov

<https://bingapis.azure-api.net/v5/images/search?q=shuttle+launch>

- Enhanced metadata and filters (size, license, style, freshness, color)
- Image insights (entity recognition, visually similar)

Video Search API

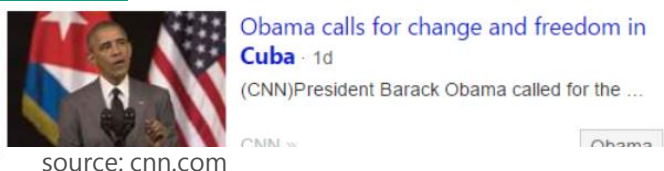


source: youtube.com

<https://bingapis.azure-api.net/v5/videos/search?q=viral+videos>

- Enhanced metadata and filters (price, resolution, length, freshness)
- Motion thumbnails (video preview)

News Search API



source: cnn.com

<https://bingapis.azure-api.net/v5/news/search?q=cuba>

- News by category/market, and trending news
- Rich article metadata (featured entities)

*screenshots show actual search results in bing.com

Accessing the APIs

1. Obtain API subscription key from microsoft.com/cognitive
2. Call REST endpoint, and pass API key via special header

```
GET https://bingapis.azure-api.net/v5/search?q=nasa HTTP/1.1  
OCP-Apim-Subscription-Key: <API KEY>
```


LUIS + Computer Vision

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
    }
  ]
}
```

Language Understanding Models

Reduce labeling effort with interactive featurizing

Seamless integration to Speech API

Deploy using just a few examples with active learning

Supports 5 languages (English, Chinese, Italian, French, Spanish)



Demo

Updated Computer Vision API



Content of Image:

Categories

```
v0: [{ "name": "animal", "score": 0.9765625 }]  
v1: [{ "name": "grass", "confidence": 0.9999992847442627 },  
  { "name": "outdoor", "confidence": 0.9999072551727295 },  
  { "name": "cow", "confidence": 0.99954754114151 },  
  { "name": "field", "confidence": 0.9976195693016052 },  
  { "name": "brown", "confidence": 0.988935649394989 },  
  { "name": "animal", "confidence": 0.97904372215271 },  
  { "name": "standing", "confidence": 0.9632768630981445 },  
  { "name": "mammal", "confidence": 0.9366017580032349,  
    "hint": "animal" },  
  { "name": "wire", "confidence": 0.8946959376335144 },  
  { "name": "green", "confidence": 0.8844101428985596 },  
  { "name": "pasture", "confidence": 0.8332059383392334 },  
  { "name": "bovine", "confidence": 0.5618471503257751,  
    "hint": "animal" },  
  { "name": "grassy", "confidence": 0.48627158999443054 },  
  { "name": "lush", "confidence": 0.1874018907546997 },  
  { "name": "staring", "confidence": 0.165890634059906 }]
```

Describe

```
0.975 "a brown cow standing on top of a lush green field"  
0.974 "a cow standing on top of a lush green field"  
0.965 "a large brown cow standing on top of a lush green field"
```

Translator API

NEW:

- Translate speech

Not NEW - but still very useful:

- Translate text between 50 languages, any to any
- Highly customizable translation
 - Collaborative methods for engaging the community to improve translation
 - Self-service custom training, using your previously translated documents
- AJAX, REST and SOAP interface
- Methods:
 - Translate, Detect, Speak, AddTranslation, GetTranslations, BreakSentences
 - Array variants of the above

Developer Call to Action

- Sign up and get started today for free at

www.microsoft.com/cognitive

Developer Resources

Preview Pricing

<https://www.microsoft.com/cognitive-services/en-us/pricing>

Documentation

<https://www.microsoft.com/cognitive-services/en-us/computer-vision-api/documentation>

Client SDKs and Samples

<https://www.microsoft.com/cognitive-services/en-us/sdk-sample>

Join Our Community

<https://stackoverflow.com/questions/tagged/microsoft-cognitive>

<https://social.msdn.microsoft.com/forums/azure/en-US/home?forum=mlapi>

<https://cognitive.uservoice.com/>

Q & A