Microsoft

Microsoft Cognitive Services

Applied AI:
Real-World Use Cases for
Azure Cognitive Services

DevReach Sofia 2017

Paige Bailey

Sr. Cloud Developer Advocate

Work Experience

- Focus at Microsoft is *machine learning* and *artificial intelligence*.
- Prior to joining Microsoft, was a *data scientist* and *geophysical application developer* in the energy industry for 5 years.
- *GIS Technician* (Esri products) for two years.

Toolkit

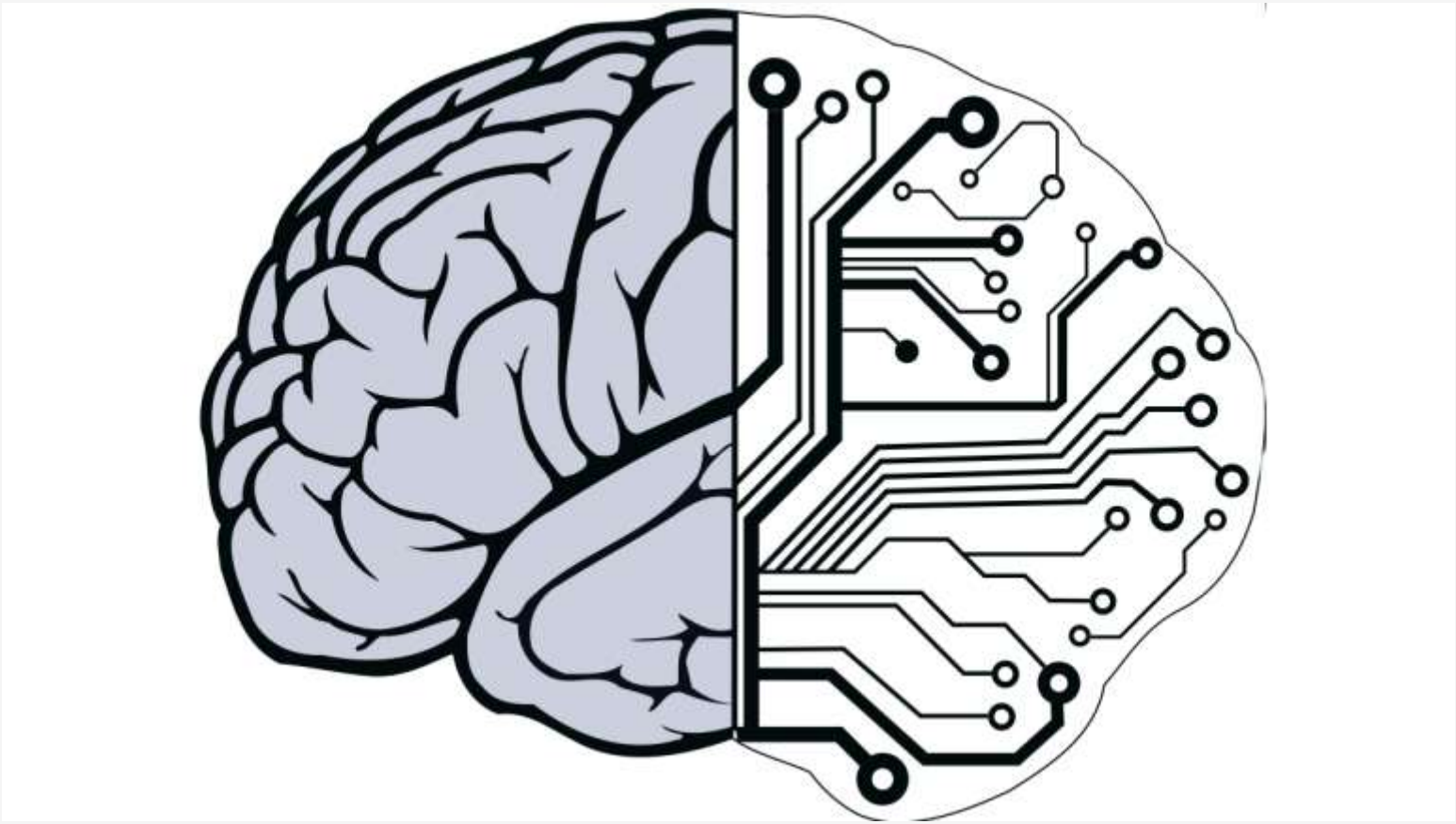
- Python *(10 years)*
- R *(4 years)*
- Spark, Kafka, Hive, HBase *(2 years)*

Location: *Austin, TX*

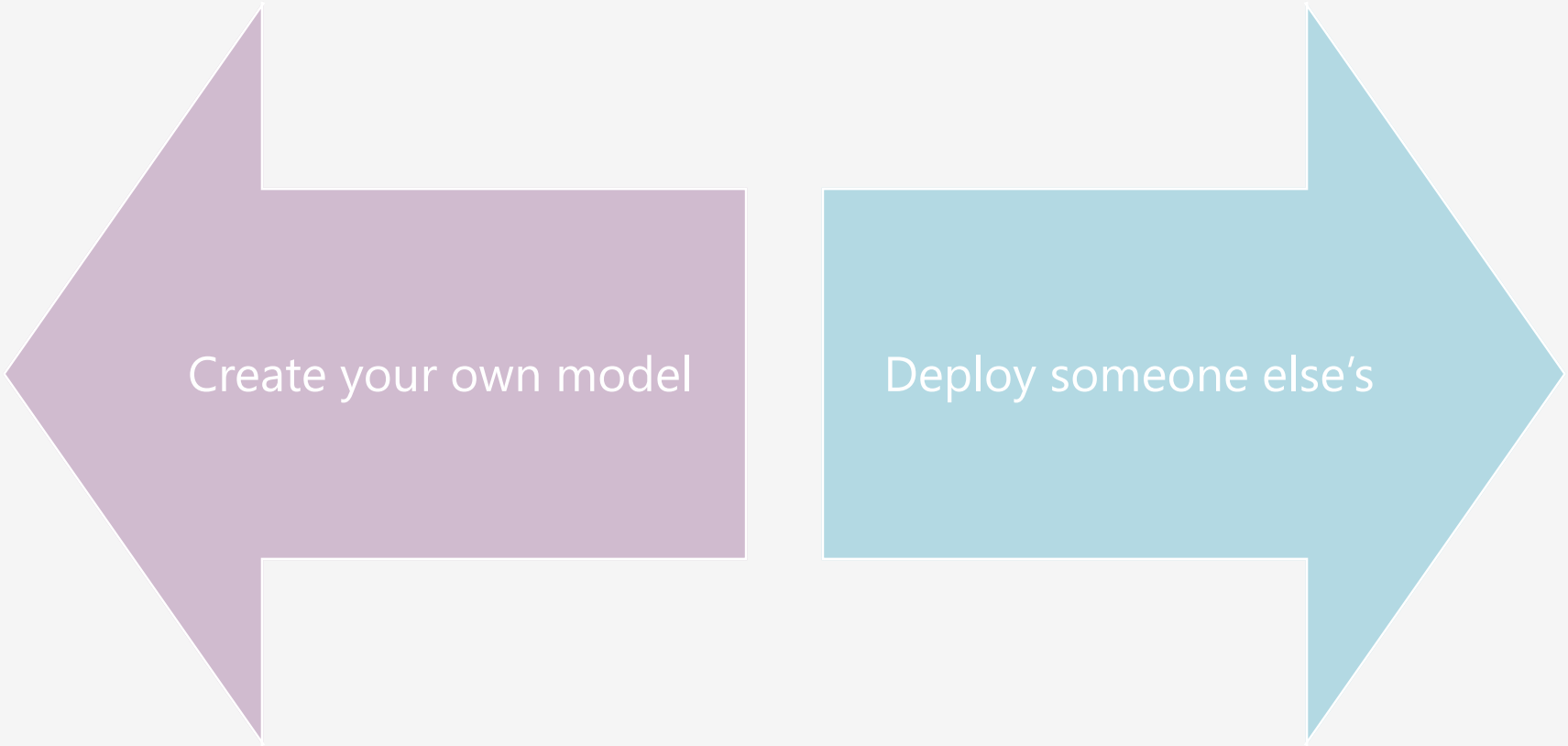
Twitter: *@DynamicWebPaige*

Microsoft | Data Platform

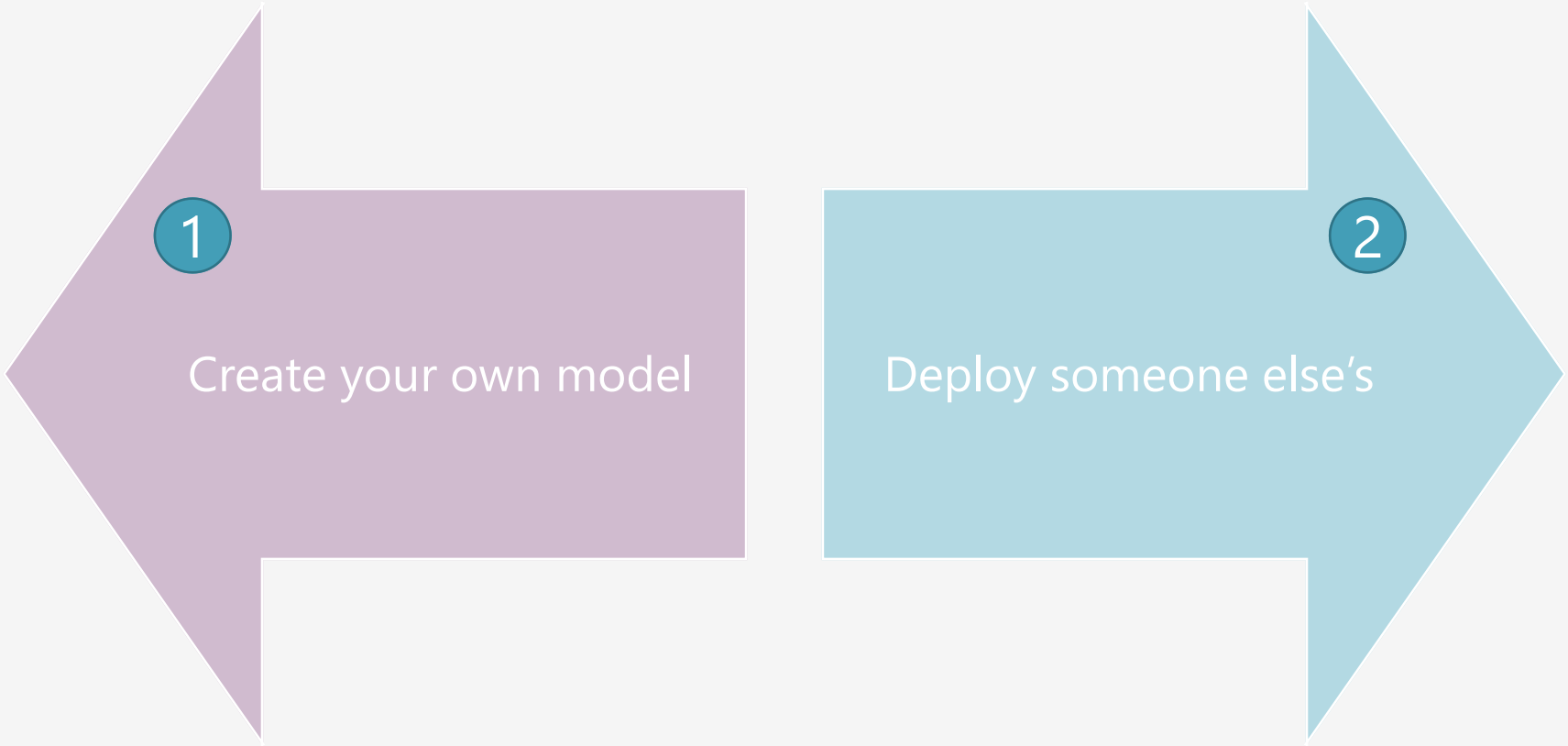
Microsoft



Microsoft



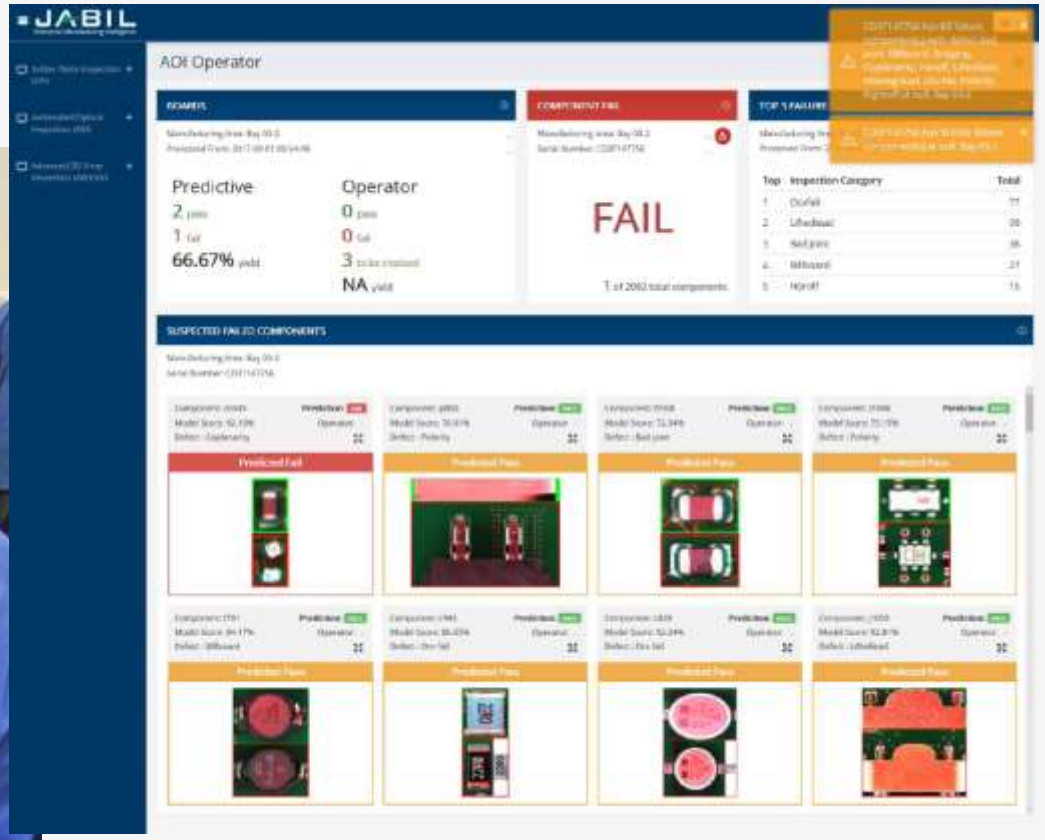
Microsoft



Microsoft

Creating Your Own Model

JABIL


JABIL
AOI Operator
Predictive
2
1
66.67%
Operator
0
0
3
NA
FAIL
1 of 2002 total components
Top
Inspection Category
Total
SUSPECTED FAILED COMPONENTS

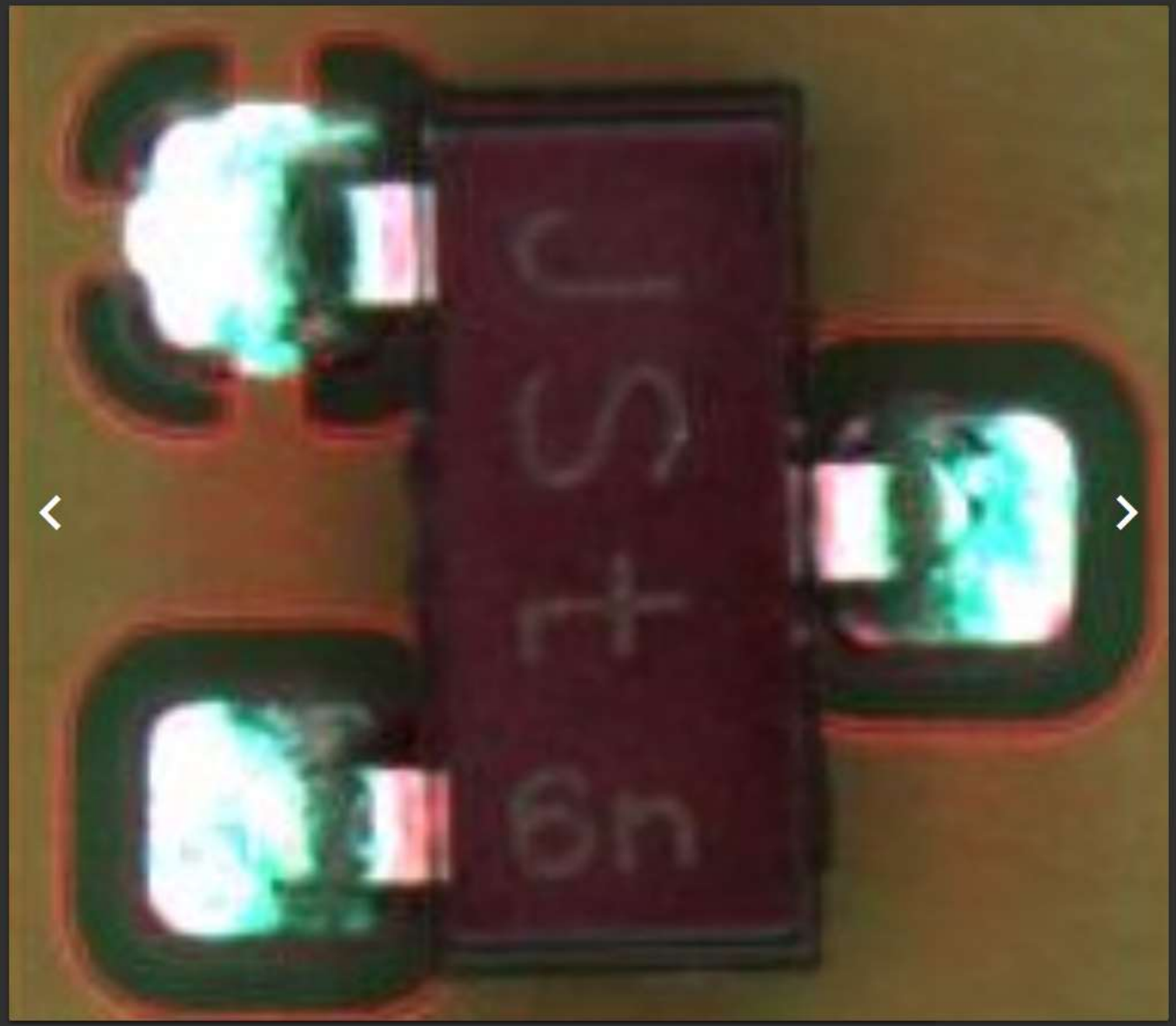
RKZ123610-1-2017-02-22

RKZ323220-1-2017-02-22

RYN901641-2-2017-04-01

RKZ123210-1-2017-05-10

Optical Image Analysis



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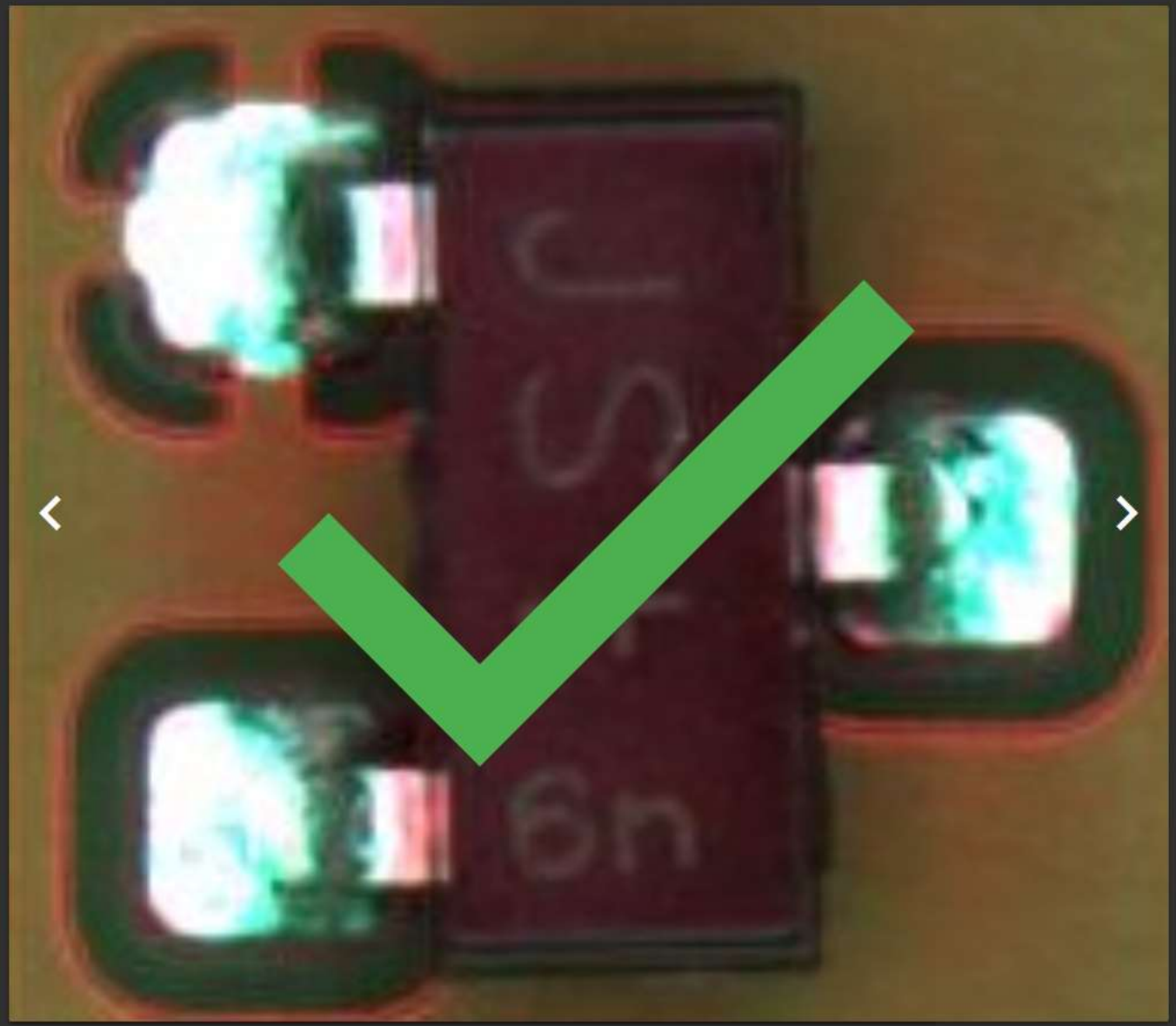

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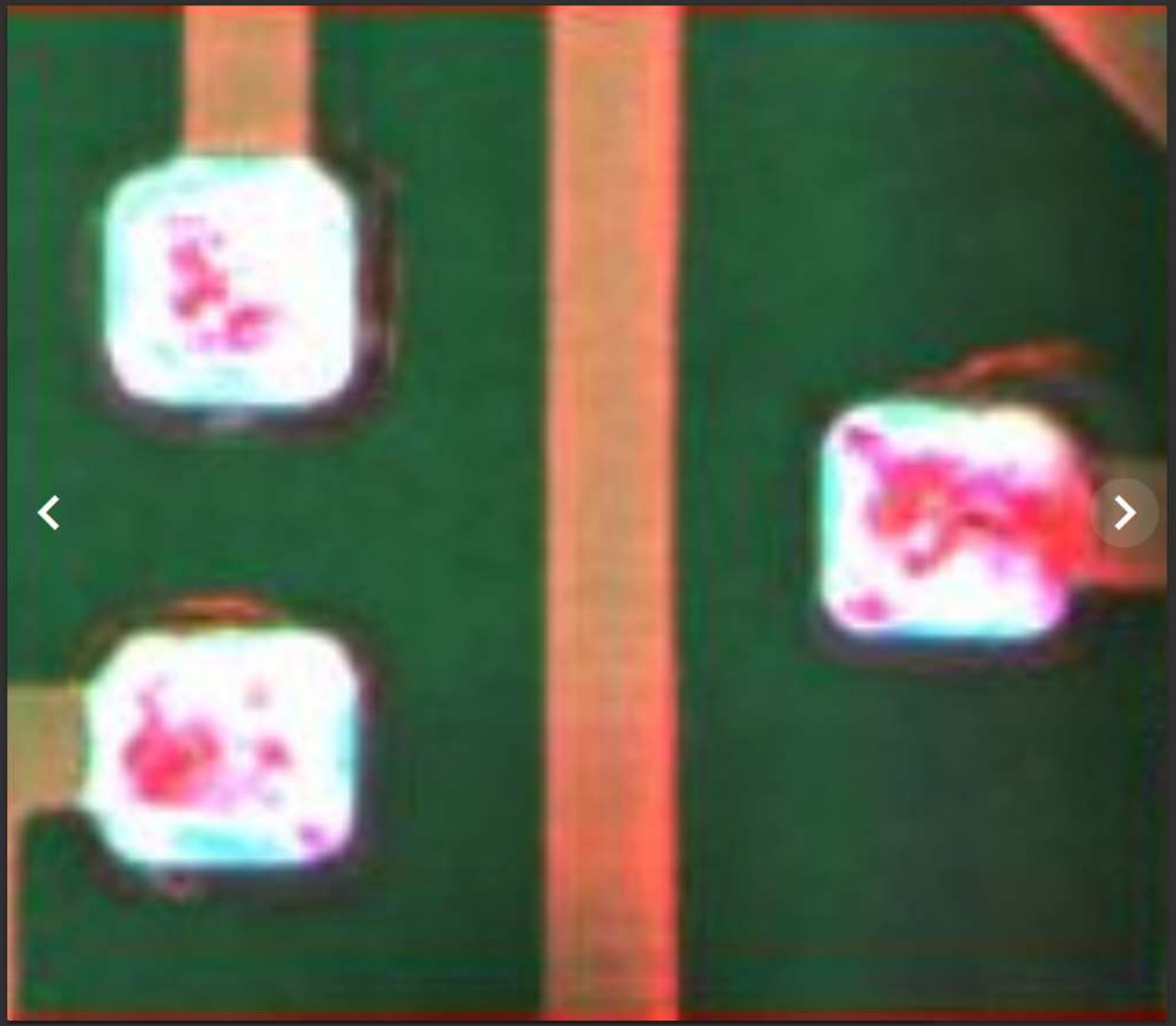

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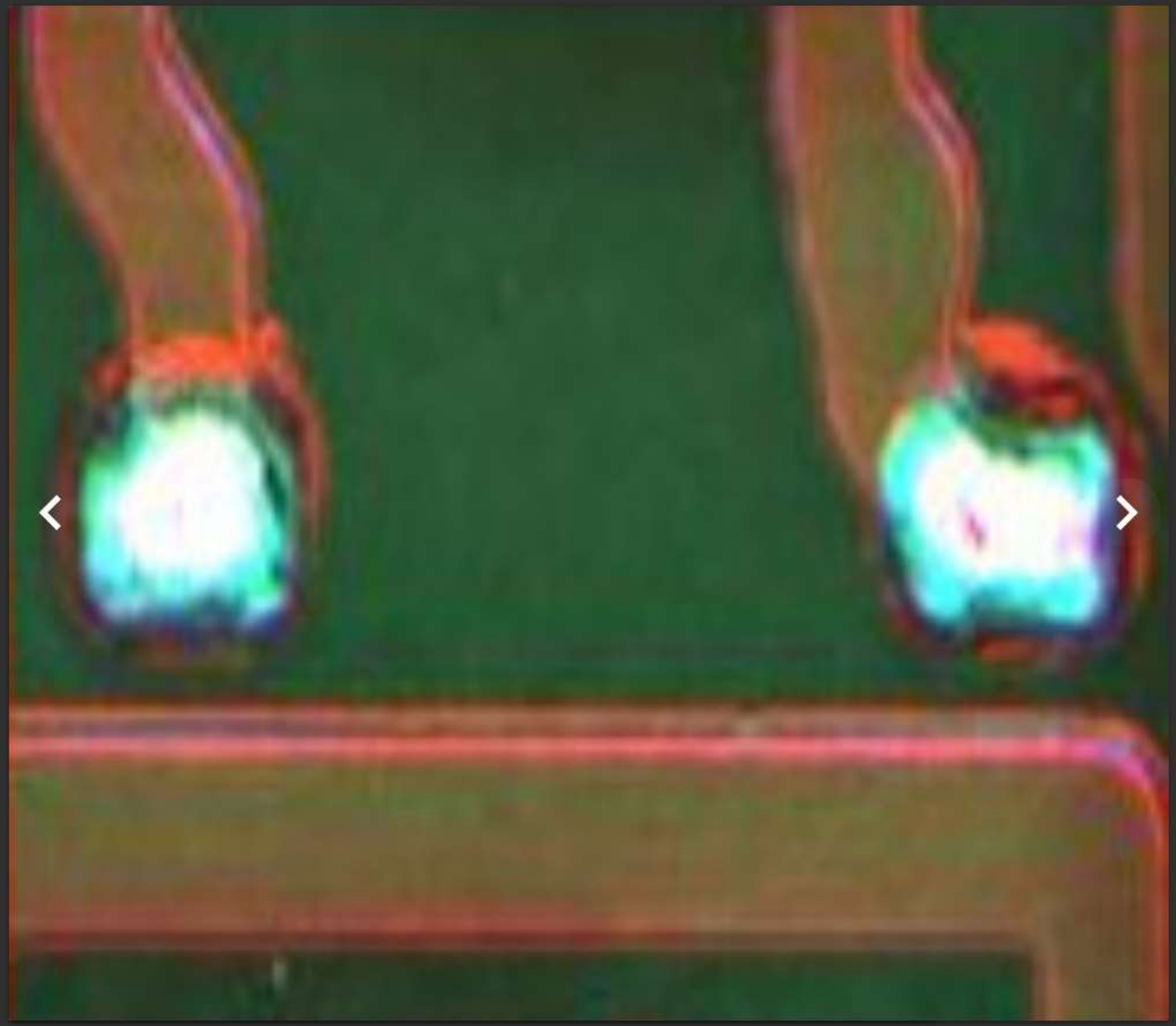

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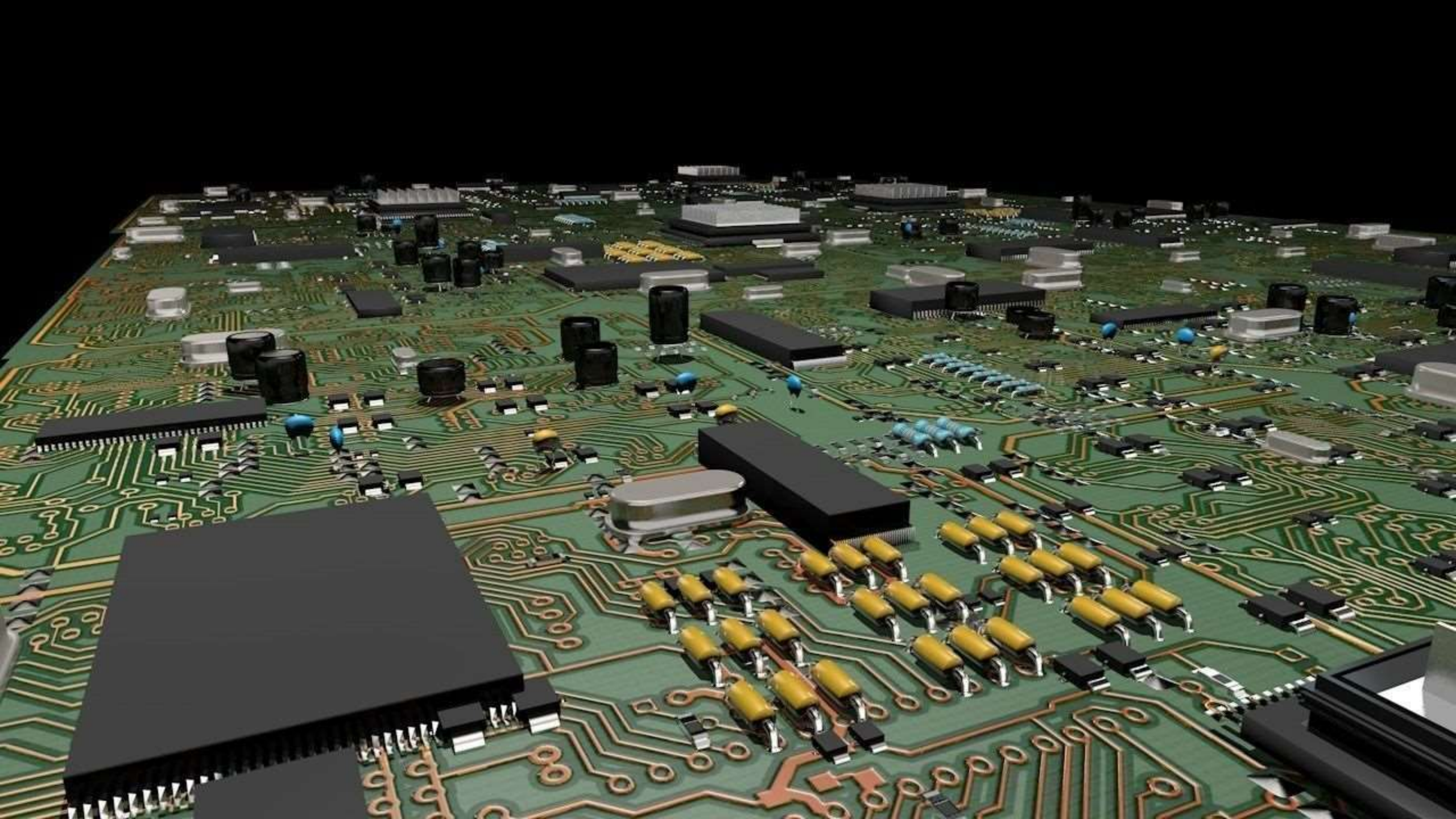


Microsoft

Creating a Machine Learning Model

Data Science Virtual Machines
Azure Machine Learning Workbench
Azure Notebooks

Microsoft

Azure Machine Learning Case Study:

Jabil Circuitboards

Microsoft

Creating a Machine Learning Model

Data Science Virtual Machines
Azure Machine Learning Workbench
Azure Notebooks

Microsoft

Data Science Virtual Machines

https://aka.ms/

DSVMs

Experience Level: Intermediate -- // -- Developers, Data Analysts

Microsoft

Data Science Virtual Machines

https://aka.ms/

AMLWorkbench

Experience Level: Intermediate -- // -- Developers, Data Analysts

Microsoft

Azure Notebooks

https://aka.ms/

AzureNotebooks

Experience Level: Advanced -- // -- Data Scientists, Data Analysts

Microsoft

Deploying Someone Else's

Microsoft

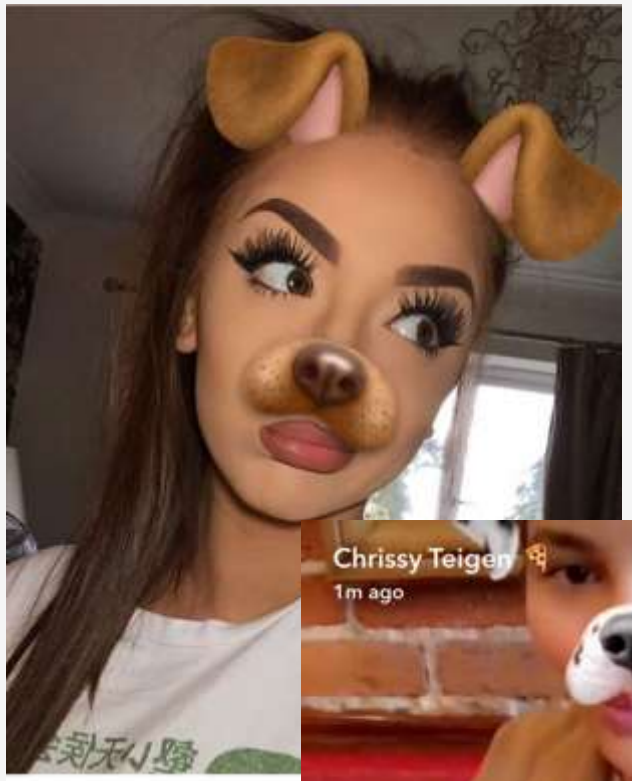
Deploying Machine Learning Models on Azure

Microsoft Excel
Azure Machine Learning Studio
Cognitive Services

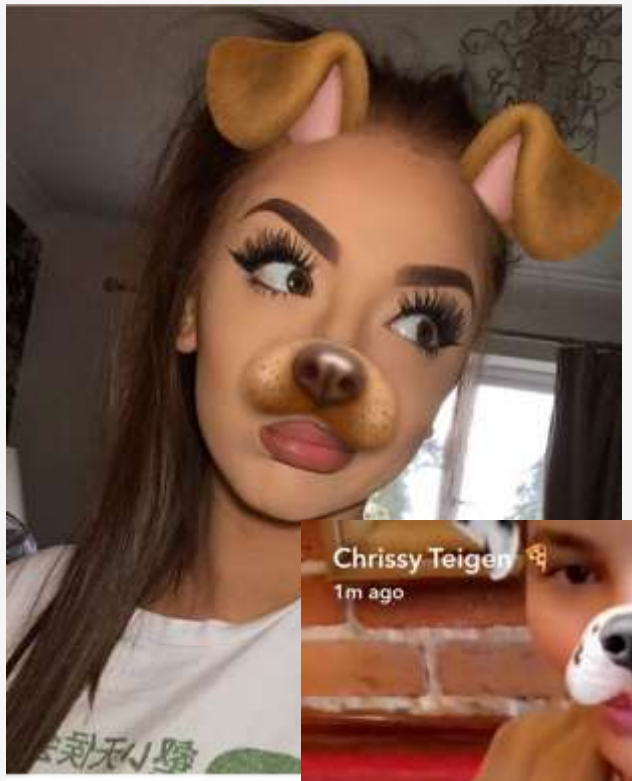

Why, you stuck-up, half-witted, scruffy-looking nerf herder!


Why, you stuck-up, half-witted, scruffy-looking nerf herder!


Why, you stuck-up, half-witted, scruffy-looking nerf herder!




Chrissy Teigen
1m ago

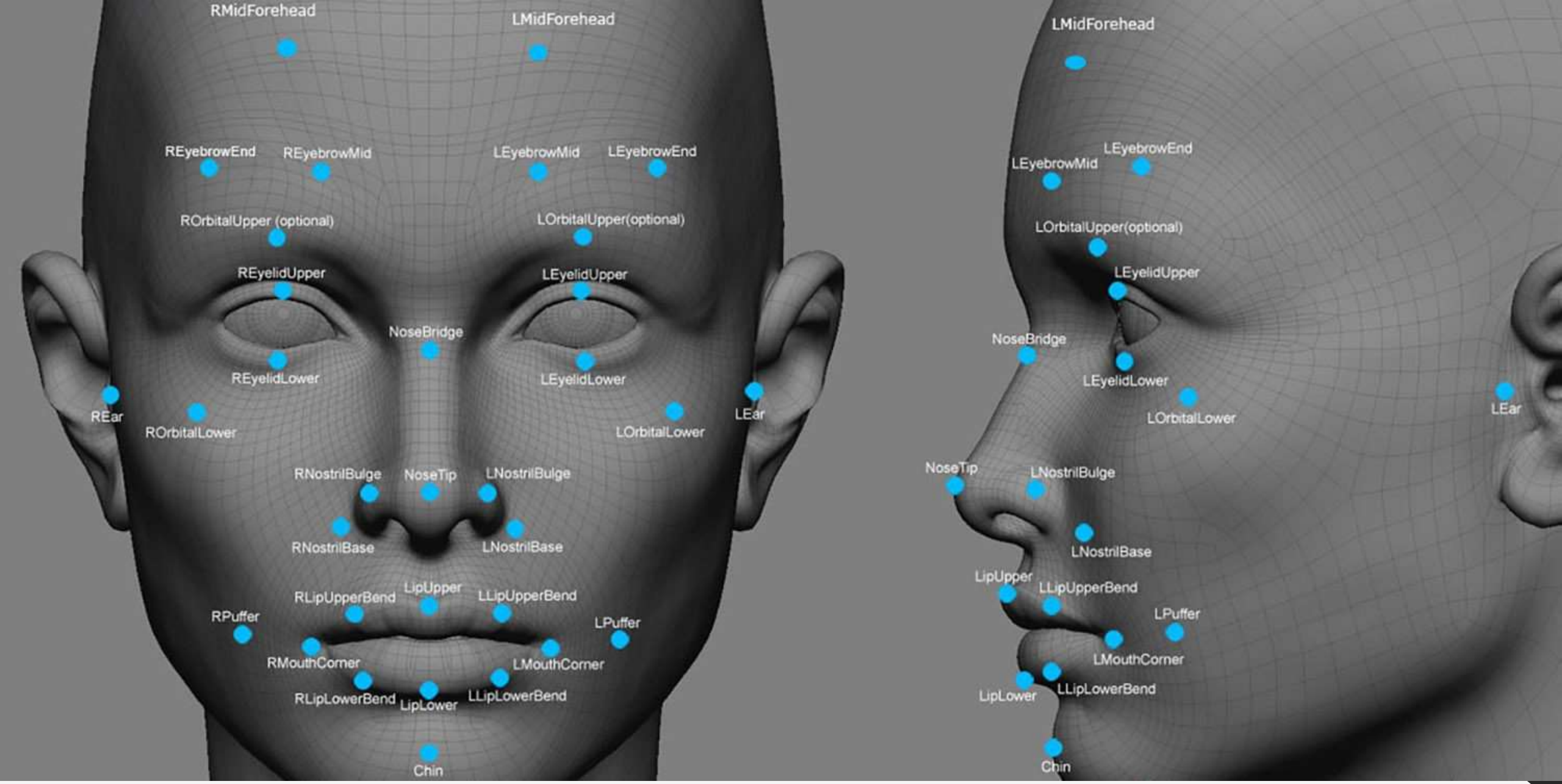



Chrissy Teigen
1m ago


Expecto patronum


MakeAGIF.com


MakeAGIF.com


RMidForehead
LMidForehead
REyebrowEnd
REyebrowMid
LEyebrowMid
LEyebrowEnd
ROrbitalUpper (optional)
LOrbitalUpper(optional)
REyelidUpper
LEyelidUpper
NoseBridge
REyelidLower
LEyelidLower
REar
ROrbitalLower
LOrbitalLower
LEar
RNostrilBulge
NoseTip
LNostrilBulge
RNostrilBase
LNostrilBase
LipUpper
RLipUpperBend
LLipUpperBend
RPuffer
LPuffer
RMouthCorner
LMouthCorner
RLipLowerBend
LipLower
LLipLowerBend
Chin
LMidForehead
LEyebrowEnd
LEyebrowMid
LOrbitalUpper(optional)
LEyelidUpper
NoseBridge
LEyelidLower
LOrbitalLower
LEar
NoseTip
LNostrilBulge
LNostrilBase
LipUpper
LLipUpperBend
LPuffer
LMouthCorner
LipLower
LLipLowerBend
Chin

Microsoft

Microsoft Azure Cognitive Services

Some Examples

Microsoft Translator Text API

Computer Vision API

Distill actionable information from images

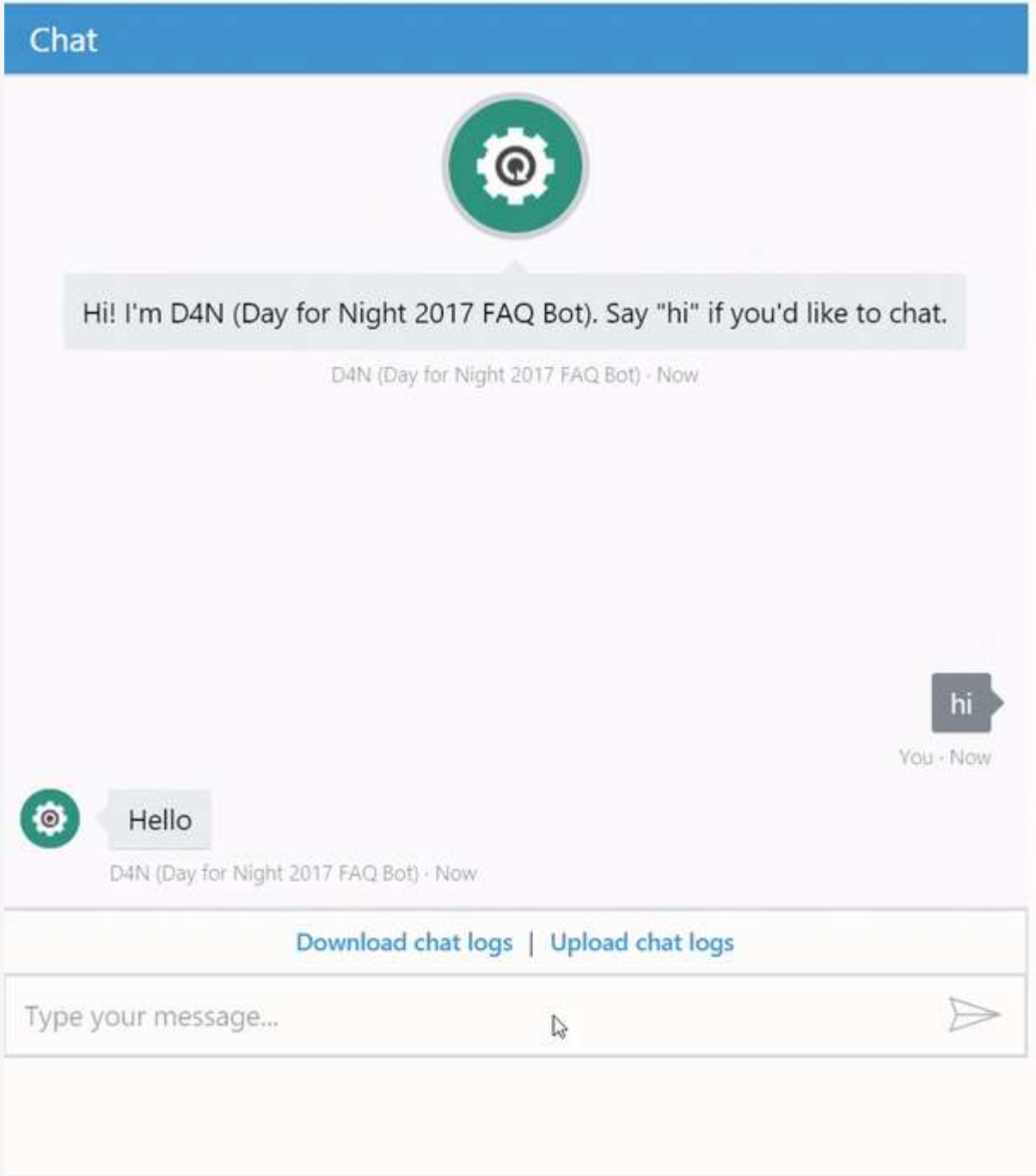
Day 2: Face API - Emotions

Emotion API PREVIEW

Personalize user experiences with emotion recognition

{ } Language Understanding Intelligent Service PREVIEW

Teach your apps to understand commands from your users



```python
import http.client, urllib.request, urllib.parse, urllib.error, base64, json

# Replace the subscription_key string value with your valid subscription key.
subscription_key = secret

# Replace to match your region.

uri_base = 'westcentralus.api.cognitive.microsoft.com'

headers = {
    # Request headers.
    'Content-Type': 'application/json',
    'Ocp-Apim-Subscription-Key': subscription_key,
}

params = urllib.parse.urlencode({
    # Request parameters. All of them are optional.
    'visualFeatures': 'Categories,Description,Color',
    'language': 'en',
})

body = "{'url':'http://paigevie.ws/zurich_rolls.JPG'}"

try:
    # Execute the REST API call and get the response.
    conn = http.client.HTTPSConnection('westcentralus.api.cognitive.microsoft.com')
    conn.request("POST", "/vision/v1.0/analyze?%s" % params, body, headers)
    response = conn.getresponse()
    data = response.read()

    # 'data' contains the JSON data. The following formats the JSON data for display.
    parsed = json.loads(data.decode())
    print ("Response:")
    print (json.dumps(parsed, sort_keys=True, indent=2))
    conn.close()

except Exception as e:
    print('Error:')
    print(e)
```

```python
import requests

# Get the key from tab Keys on Azure portal
key = "INSERT YOUR KEY HERE"

url4authentication = 'https://api.cognitive.microsoft.com/sts/v1.0/issueToken'
headers4authentication = {'Ocp-Apim-Subscription-Key': key}
resp4authentication = requests.post(url4authentication, headers=headers4authentication)
token = resp4authentication.text

# Call the Text Translate API
text = """

This woman needs steak, immediately.
Can you please assist?


"""
come = "en"
to = "sk"

url4translate = 'https://api.microsofttranslator.com/v2/http.svc/Translate'
params = {'appid': 'Bearer '+token, 'text': text, 'from': come, 'to': to}
headers4translate = {'Accept': 'application/xml'}
resp4translate = requests.get(url4translate, params=params, headers=headers4translate)
print(resp4translate.text)
```

Code and Examples available at:

@DynamicWebPaige

Suz 🐢 vim witch ❄
@noopkat
Following

Using some silly code I wrote to stress test the face api + hotel wifi. Surprisingly responsive!

Asim Hussain
@jawache
Following

Just released my first web component! smiletounlock.com built using @stenciljs. Want to give away free content on your site? How about asking for a smile in return 😄

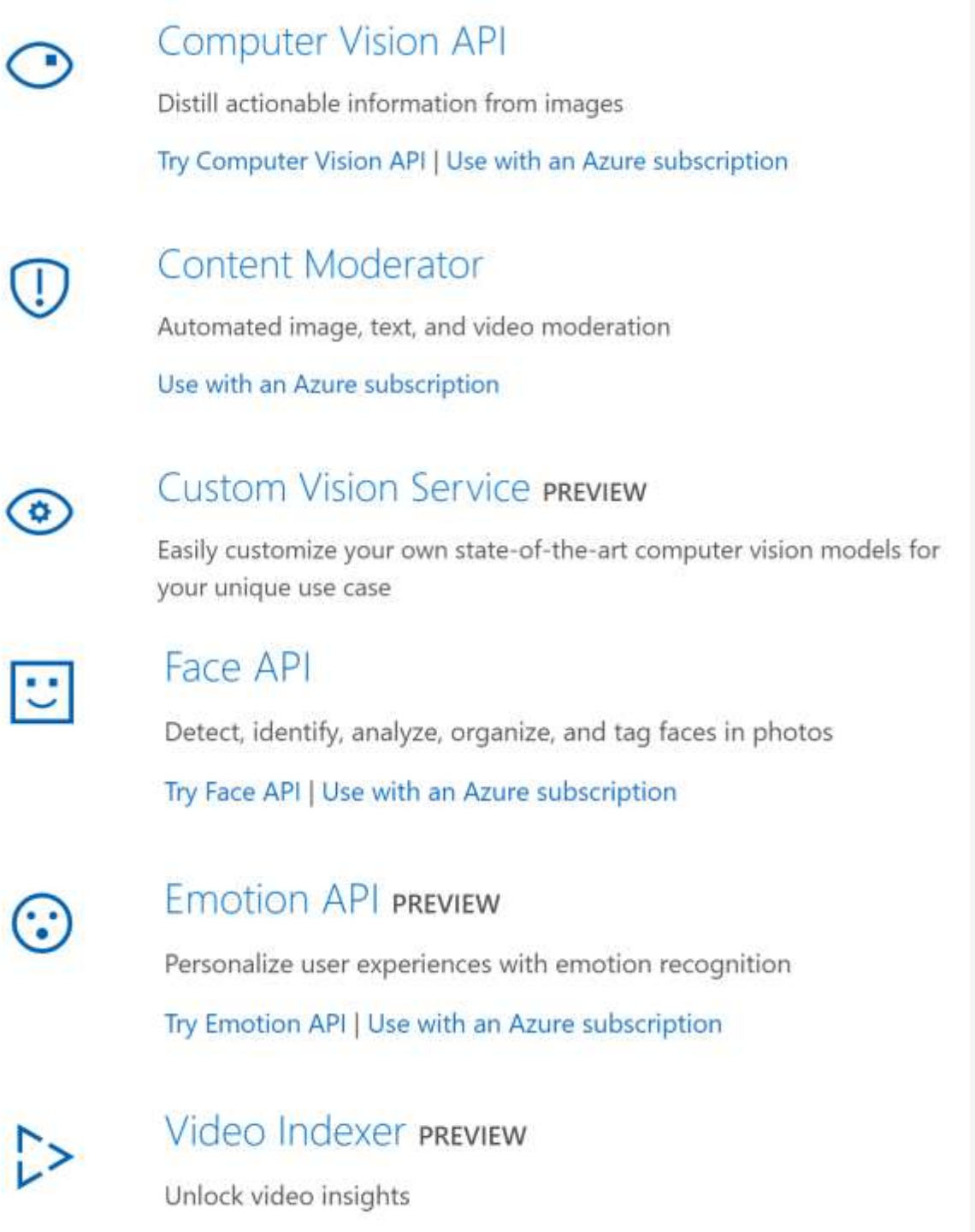
Microsoft

Cognitive Services

Microsoft

Vision

Image processing algorithms to smartly identify, caption, and moderate your pictures.



Microsoft

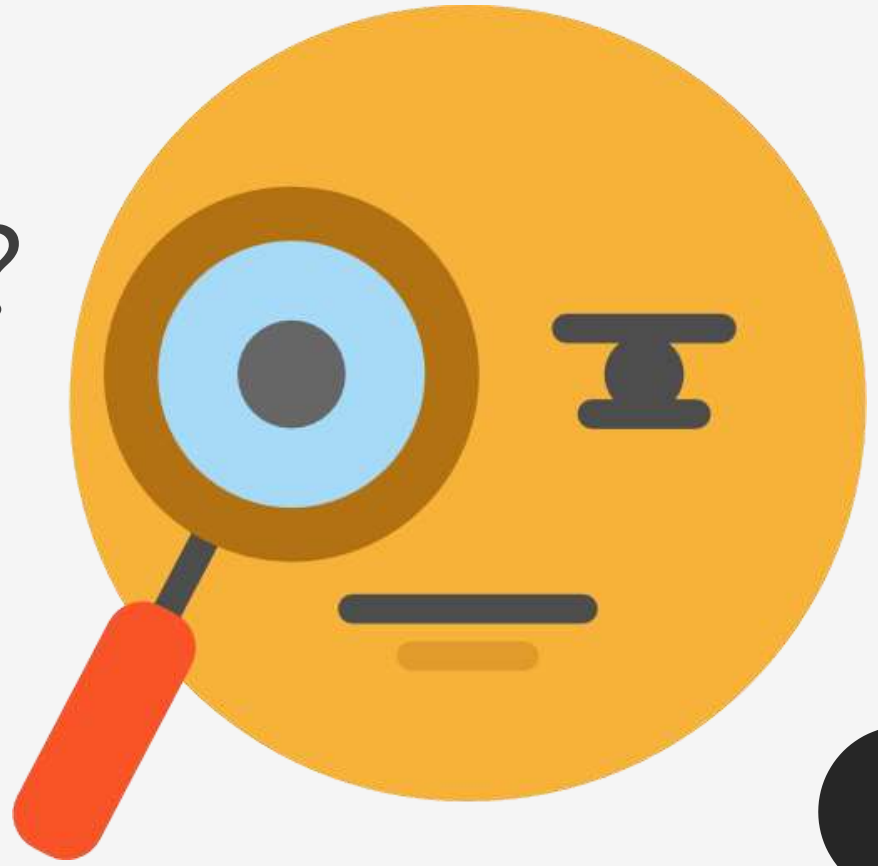
LIVE DEMO: the most terrifying experience of them all

Microsoft

Right about now,
you should be wondering:

Microsoft

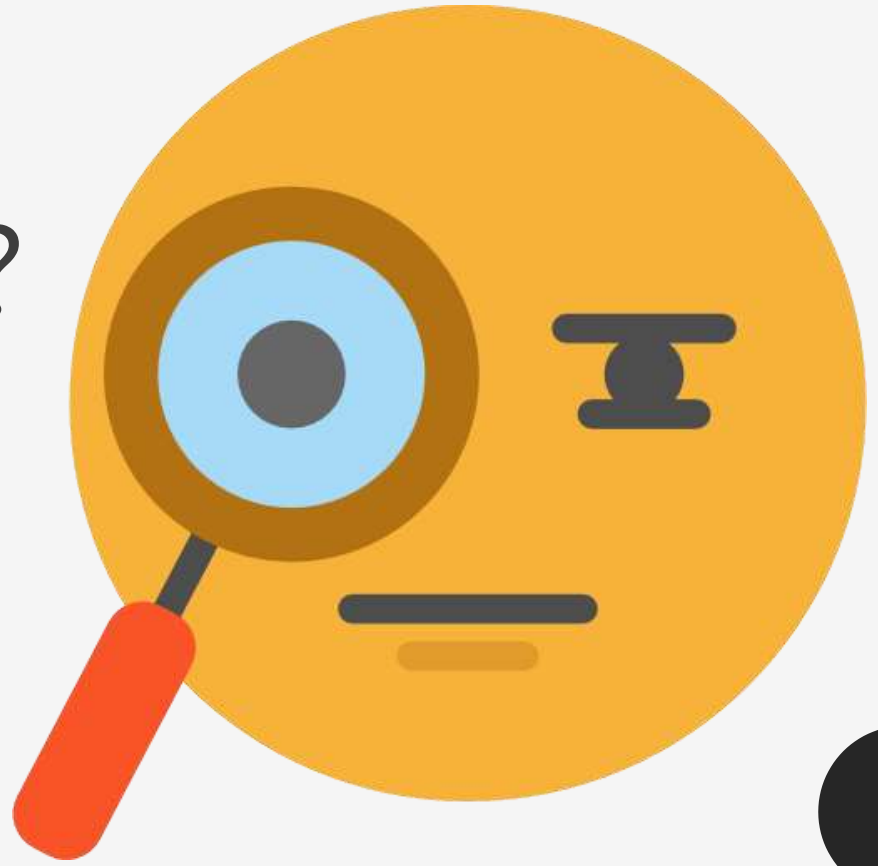
...what is this strange magic?



Microsoft

why should I trust this

...what is this strange magic?

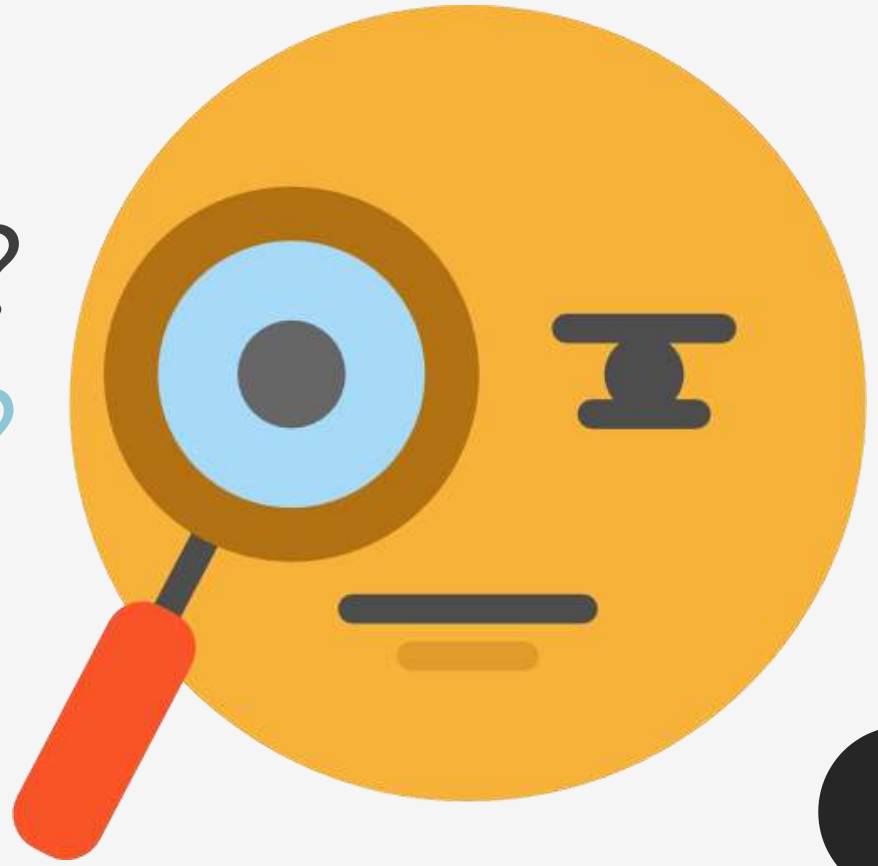


Microsoft

why should I trust this

...what is this strange magic?

what confidence do you have?



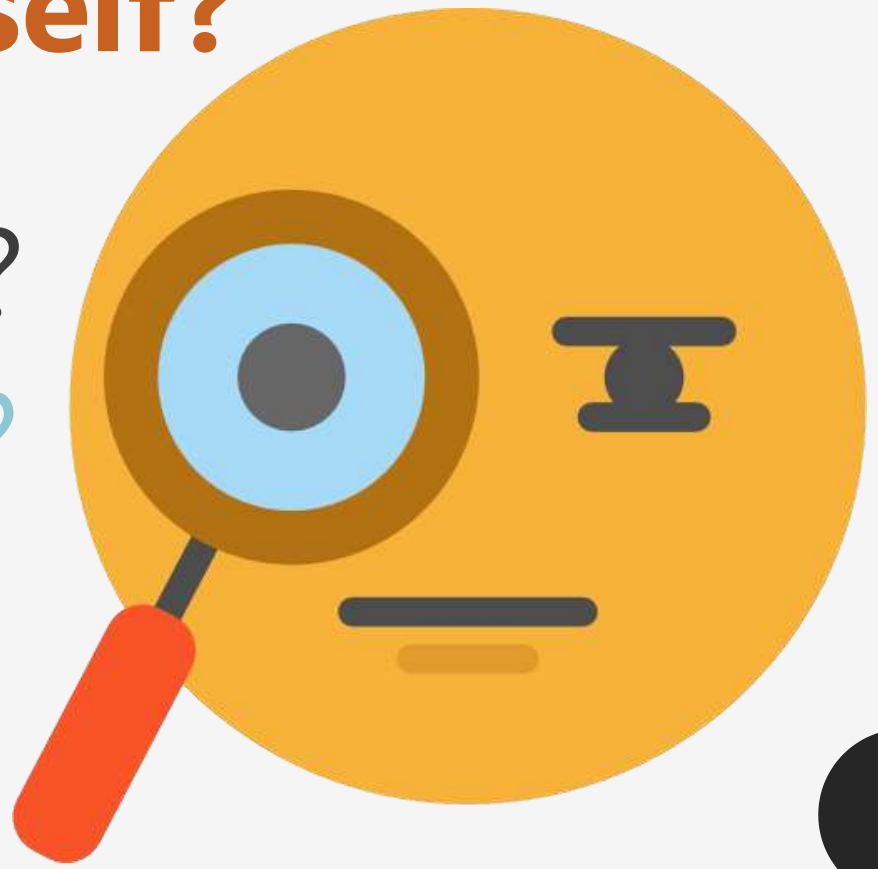
Microsoft

why should I trust this

Couldn't I build this myself?

...what is this strange magic?

what confidence do you have?



Microsoft

- **Built on top of CNTK.**
  …which is ***open-source***, and completely transparent.
  If you have a question about how the model is working, you can look directly at source code.

- **Trained on massive amounts of data.**
  Ex: Bing Image searches, billions of webpages.
  Your company likely doesn't have that kind of volume just lying around as a training data set.

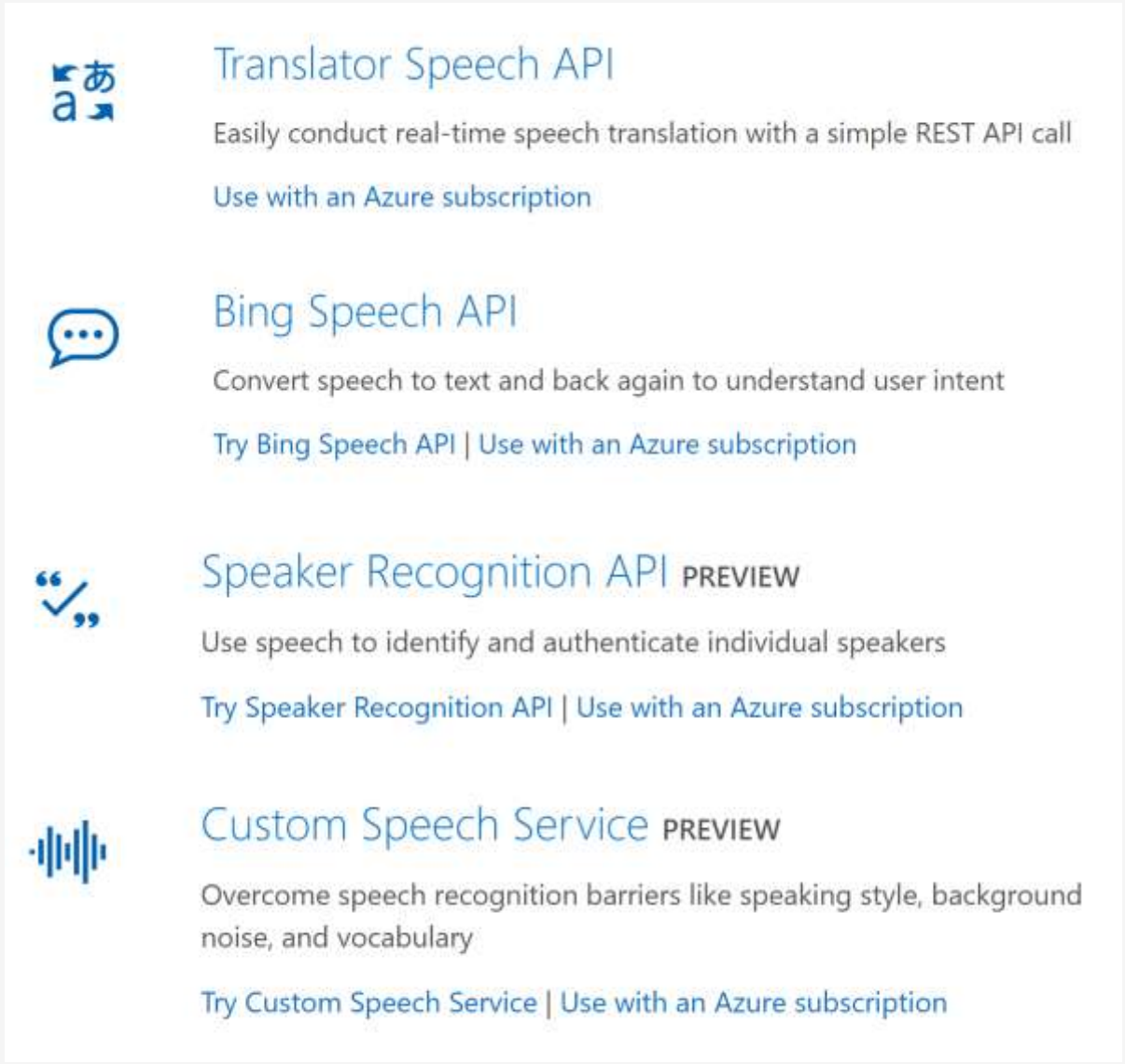
- **Each API call also returns a confidence level.**
  …which means that you can understand uncertainty.

- **Additional perks:**
  - Flexibility and customization
  - Ease of use
  - Free tier
  - Legal indemnification

Microsoft

Speech

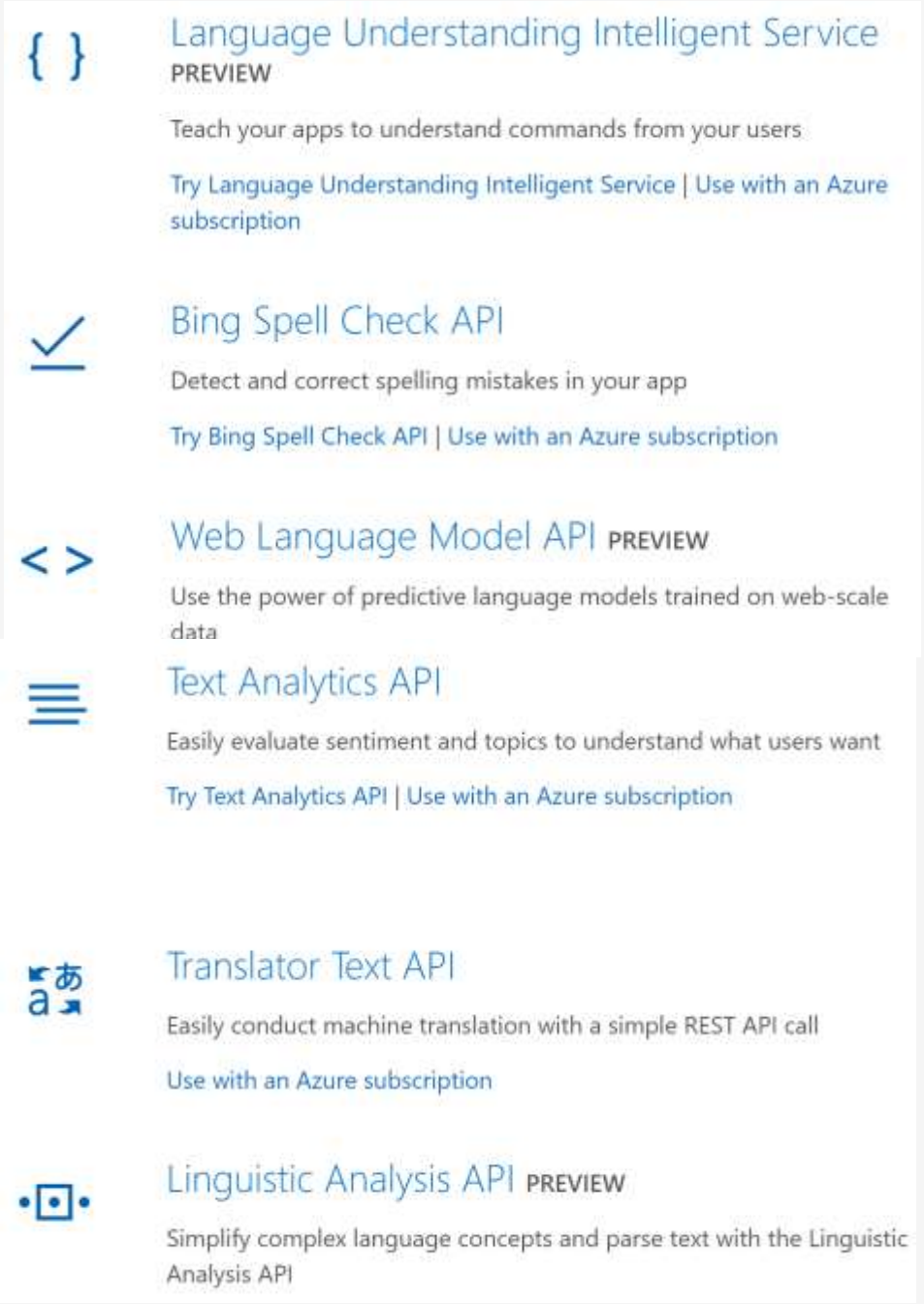
Convert spoken audio into text, use voice for verification, or add speaker recognition to your app.



Microsoft

Language

Allow your apps to process natural language with pre-built scripts, evaluate sentiment and learn how to recognize what users want.



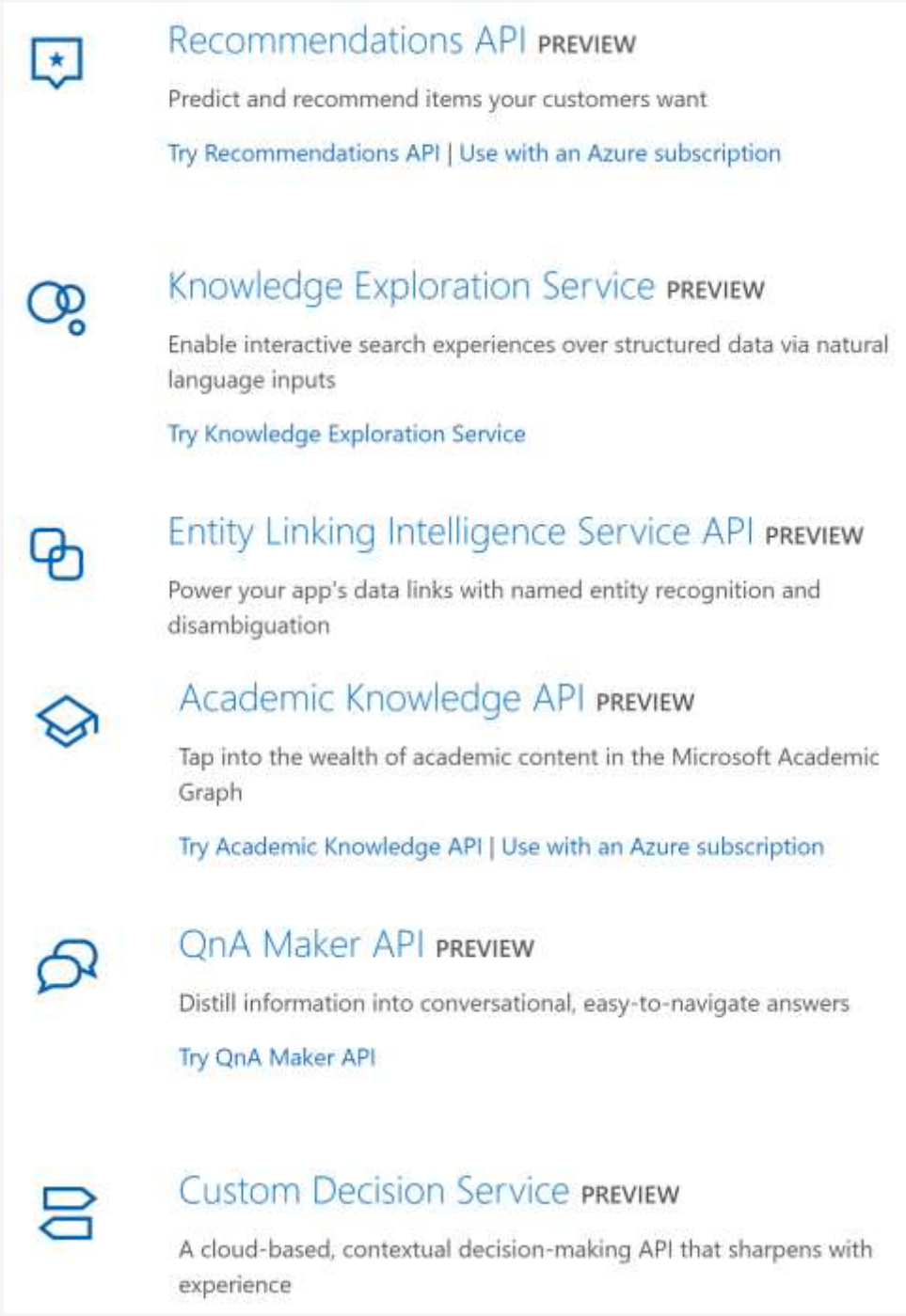
Microsoft

LIVE DEMO: the most terrifying experience of them all

Microsoft

Knowledge

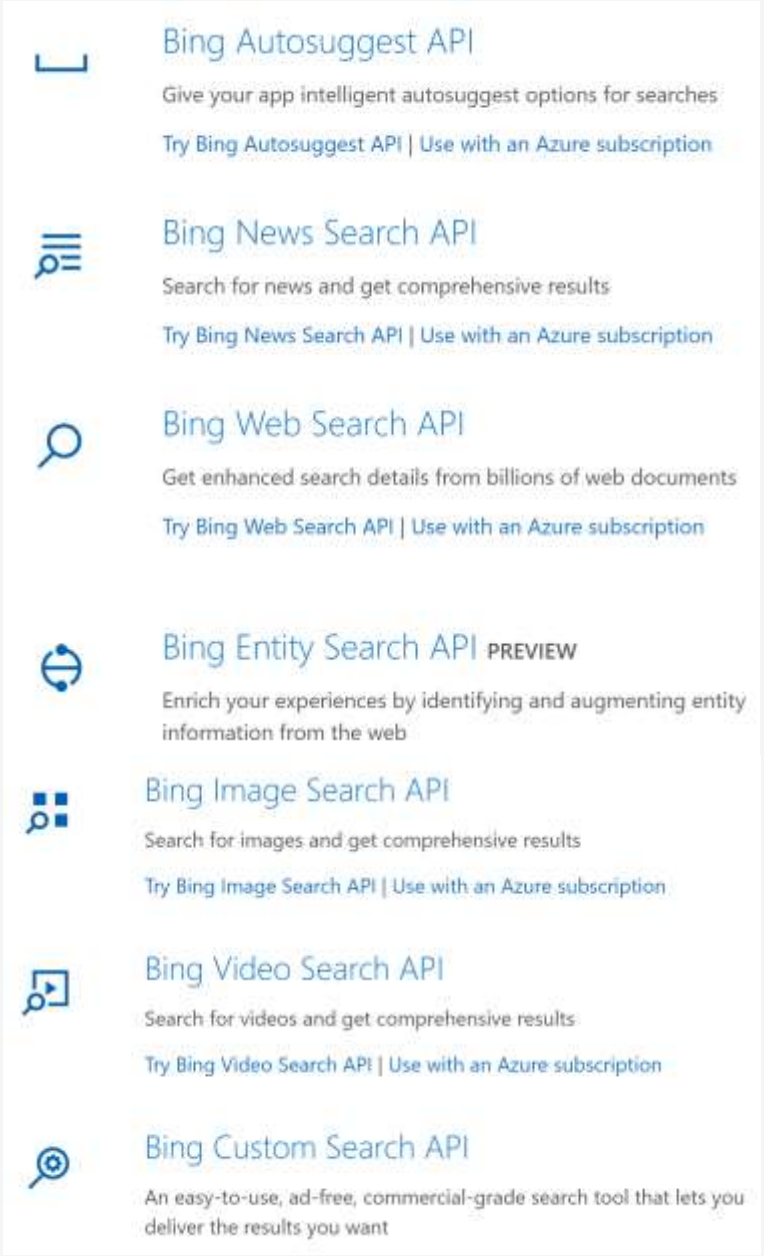
Map complex information and data in order to solve tasks such as intelligent recommendations and semantic search.



Microsoft

Search

Add Bing Search APIs to your apps and harness the ability to comb billions of webpages, images, videos, and news with a single API call.



Microsoft

Labs

Rad cool new stuff in beta

Project Johannesburg

Experimental

Calculate route logistics with deeper location intelligence to account for enterprise requirements, like weight, height, and hazardous materials.

Project Nanjing

Experimental

Calculate isochrones - time and distance-based recommendations for enterprise route optimization.

Project Wollongong

Experimental

Score the attractiveness of a location, based on how many of a particular amenity are within a specific distance.

Project Abu Dhabi

Experimental

Create distance matrices, enabling you to calculate a histogram of travel times, and serve as stepping stone for enterprise route optimization.

Project Cuzco

Experimental

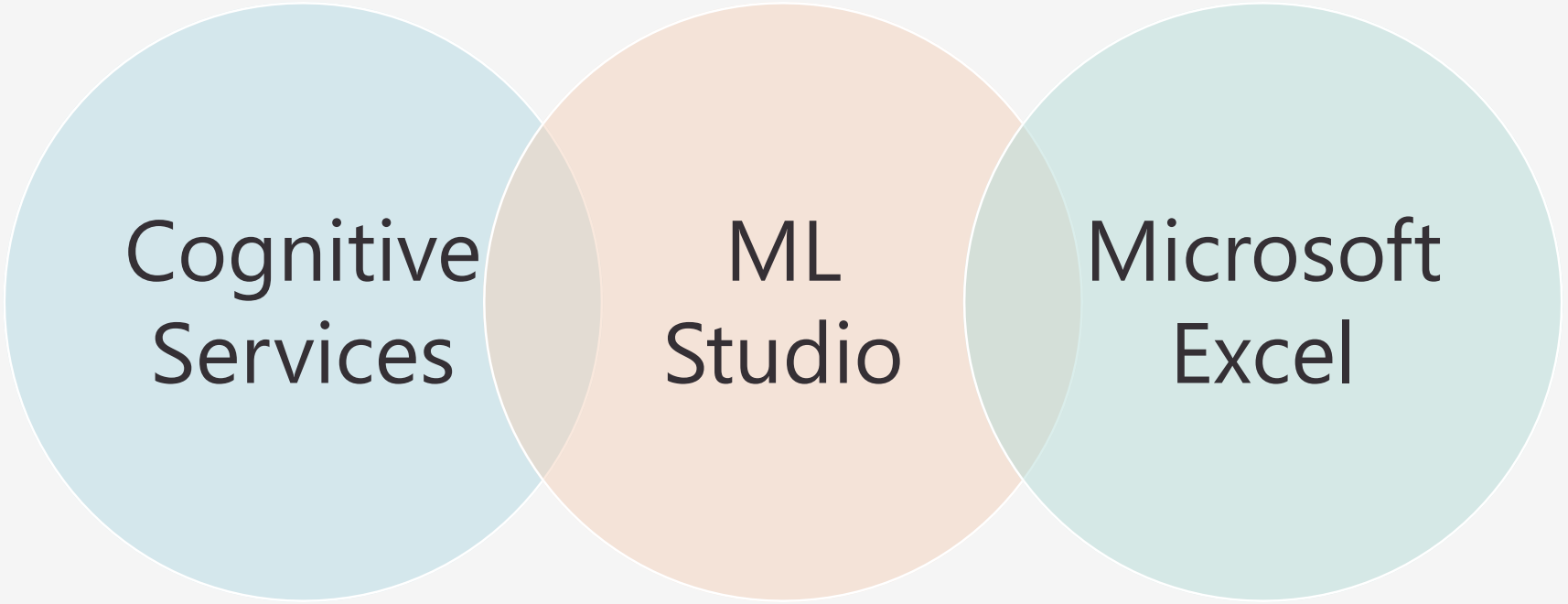
Find events associated with Wikipedia entities. Begin with a Wikipedia entity, and receive a list of related events organized by time.

Project Prague

Experimental

Incorporate gesture-based controls into your apps. Quickly define and implement customized hand gestures, creating a more natural user experience.

Microsoft



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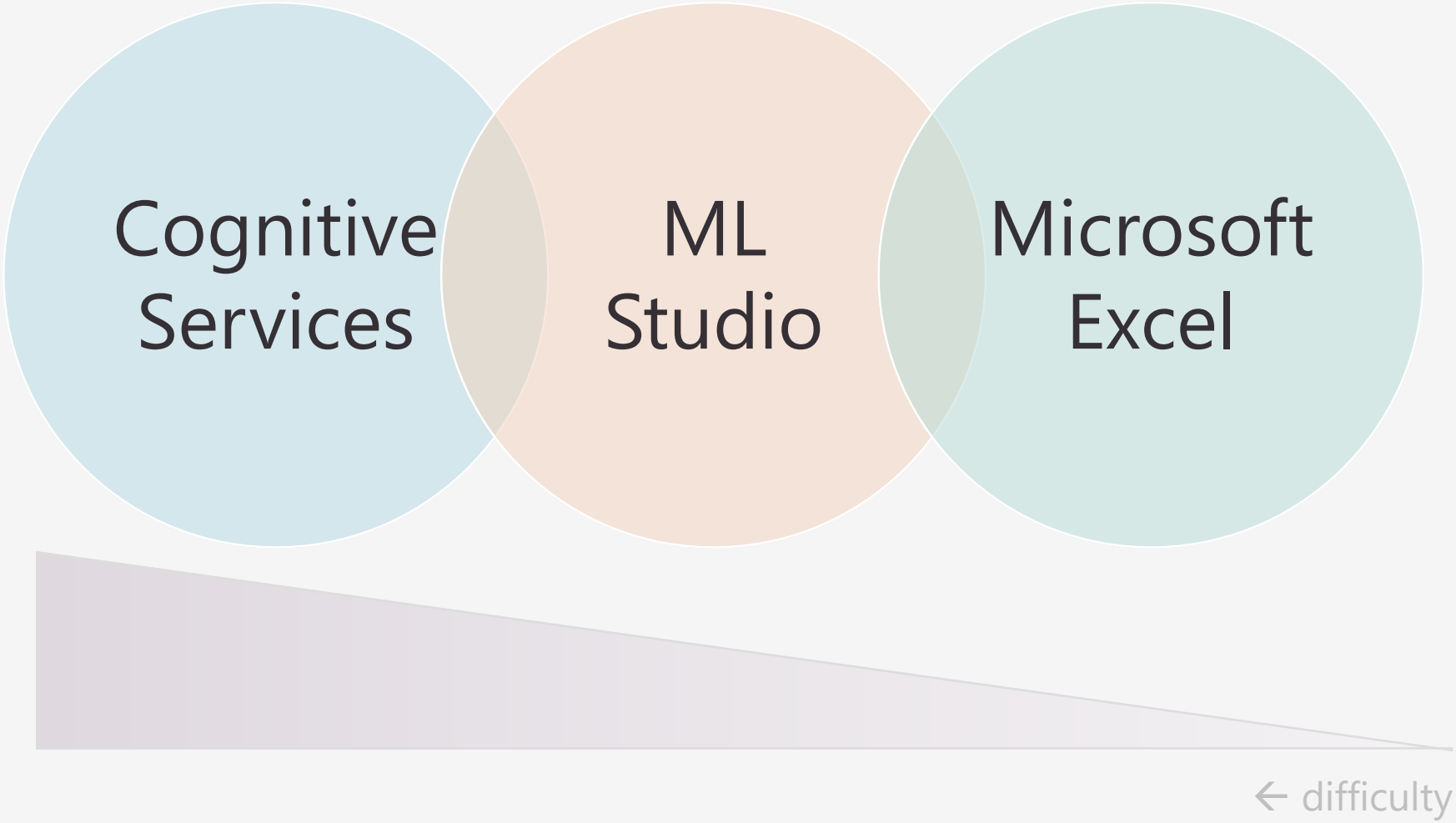


Microsoft

Azure Notebooks

https://aka.ms/

CognitiveServices

Experience Level: Intermediate -- // -- Developers, Data Analysts

Microsoft

Azure ML Studio

https://aka.ms/

AzureMLStudio

Experience Level: Intermediate -- // -- Business Intelligence Analysts

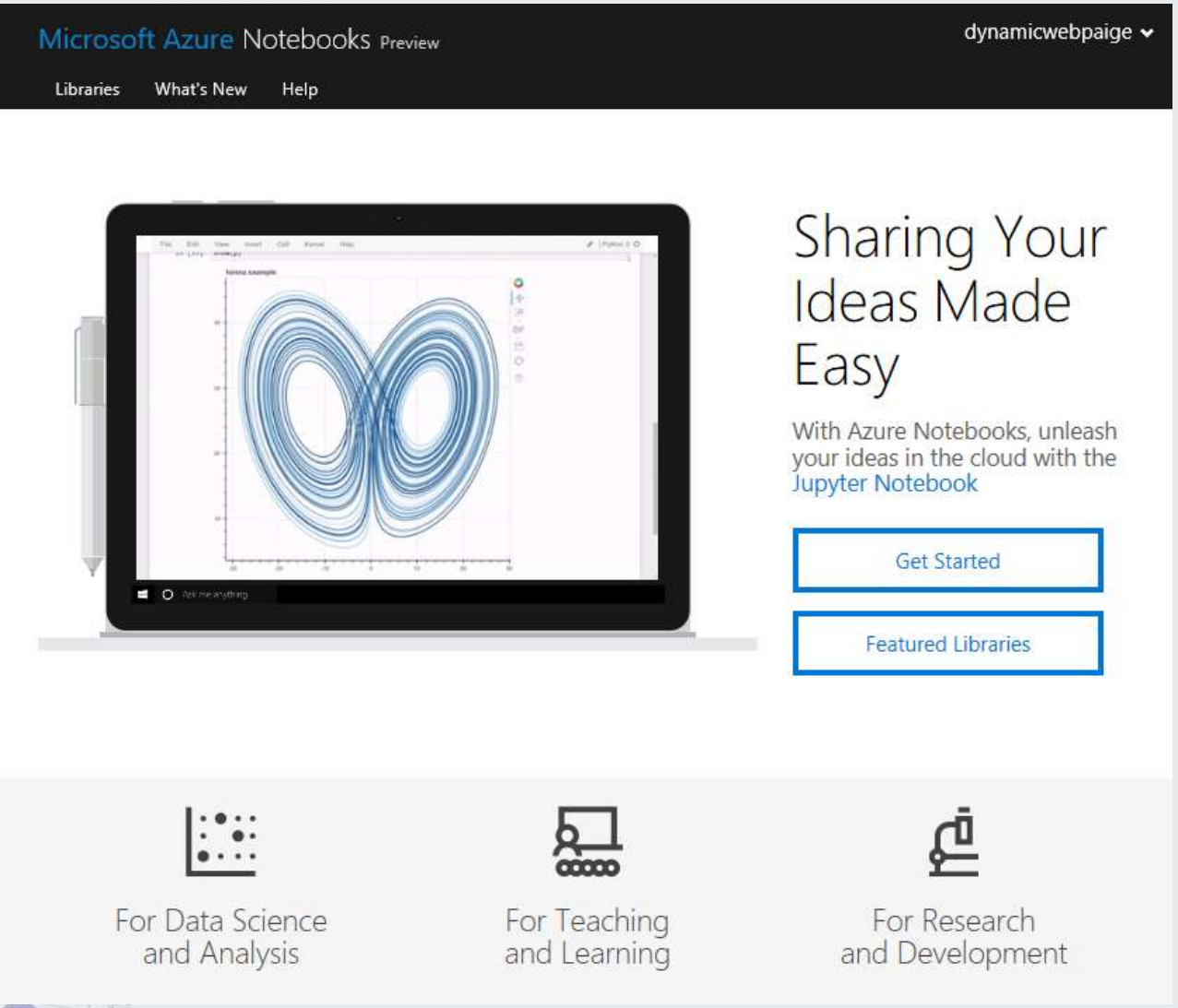
Microsoft

Microsoft Excel

https://aka.ms/

ExcelML

Experience Level: *Beginner* -- // -- *Business Intelligence Analysts, ML Enthusiasts*



Getting Started

- Azure Notebooks
- DevReach 2017 Library
- Dev Reach 2017 Presentation

AI on Azure

- Azure ML Studio
- Cortana Intelligence Gallery
- Data Science Virtual Machines
- Microsoft Docs

Thank you!