

Microsoft Translator is powered by machine learning. Any voice or text information you provide will be used to improve Microsoft products and services.

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示文稿, 请选择您首选语言版本的
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www.translate.it/JEHlY



Machine learning in the wild

Tempest van Schaik
Andrew Fryer
Frances Tibble
Microsoft

WHY NOW?



Why Now?



2015

2012

2008



Intelligence



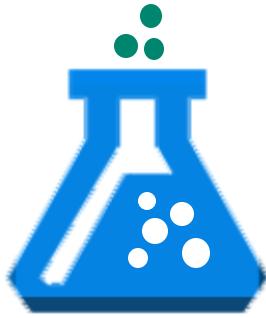
Big Data



Cloud



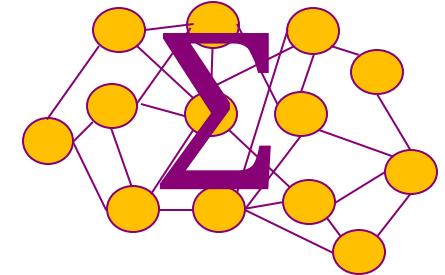
Cognitive Services



Azure
Machine Learning



Data Science
Languages



TensorFlow &
Computational
Network Toolkit

Commodity

Drag & Drop

Code

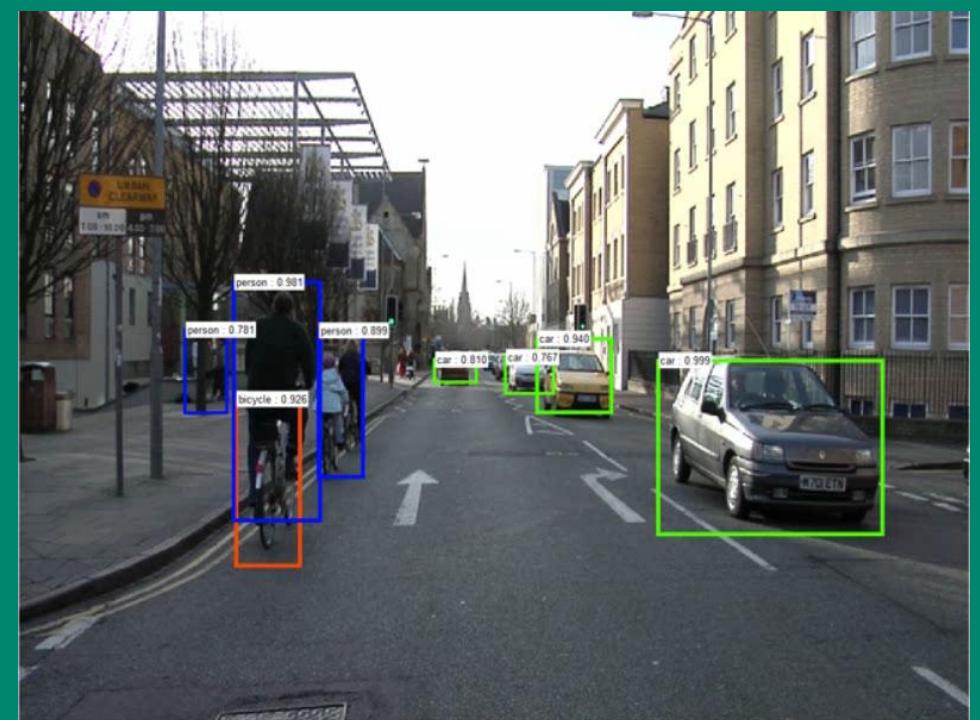
Microsoft ❤️ Linux



<https://octoverse.github.com/>

Organizations with the most open source contributors		
	Microsoft	16,419
	facebook	15,682
	docker	14,059
	angular	12,841
	google	12,140
	atom	9,698
	FontAwesome	9,617
	elastic	7,220
	Apache	6,999
	npm	6,815

Some examples



LEADERSHIP IN SPEECH



18th October 2016 - An Historic Achievement: researchers reach **human parity** in conversational speech recognition

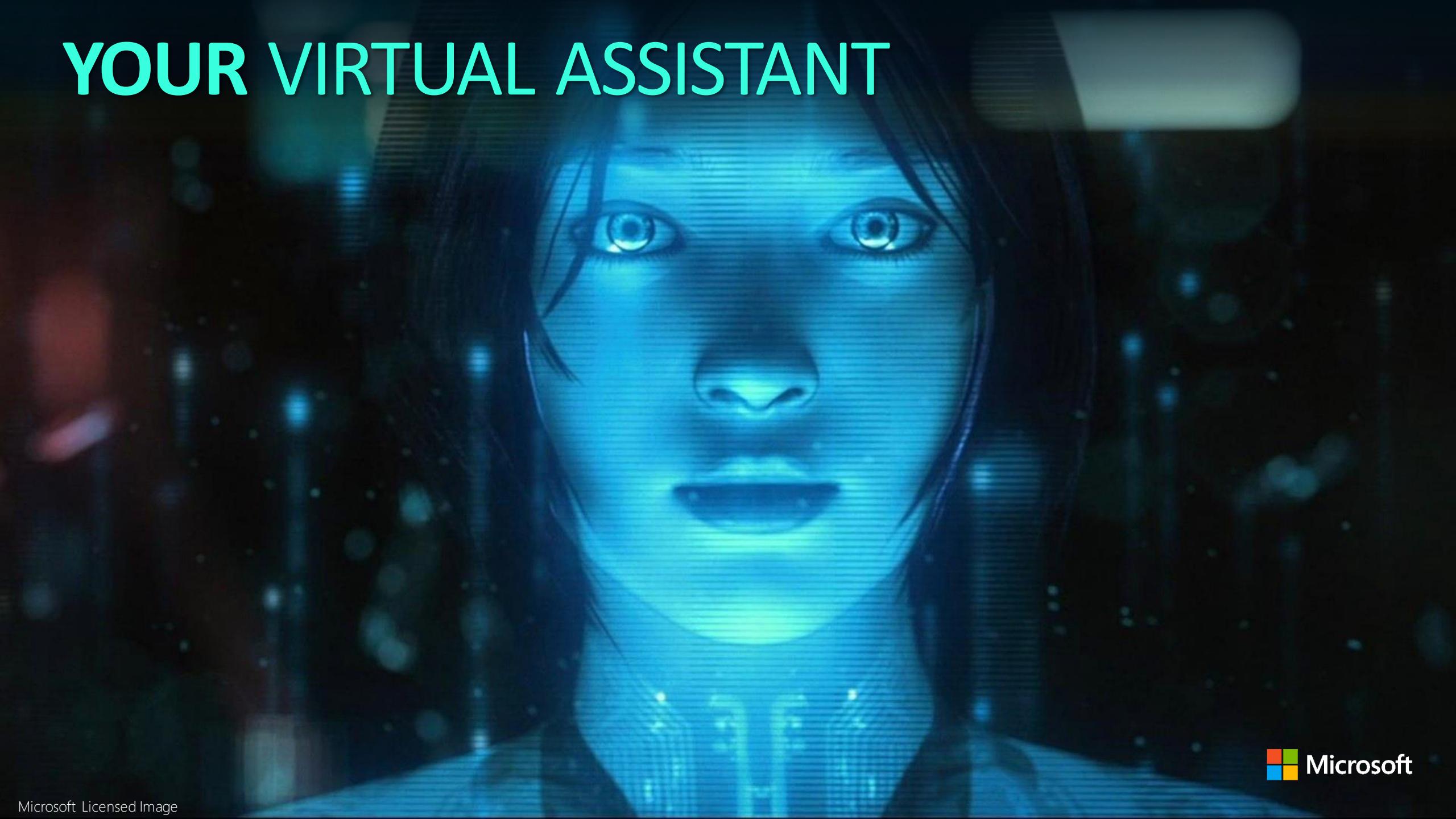
Healthcare



Cambridge Cognition: First Showing of Groundbreaking Mental Health Wearable Cognition Kit™ at Neurotech Investing Conference in Boston



YOUR VIRTUAL ASSISTANT



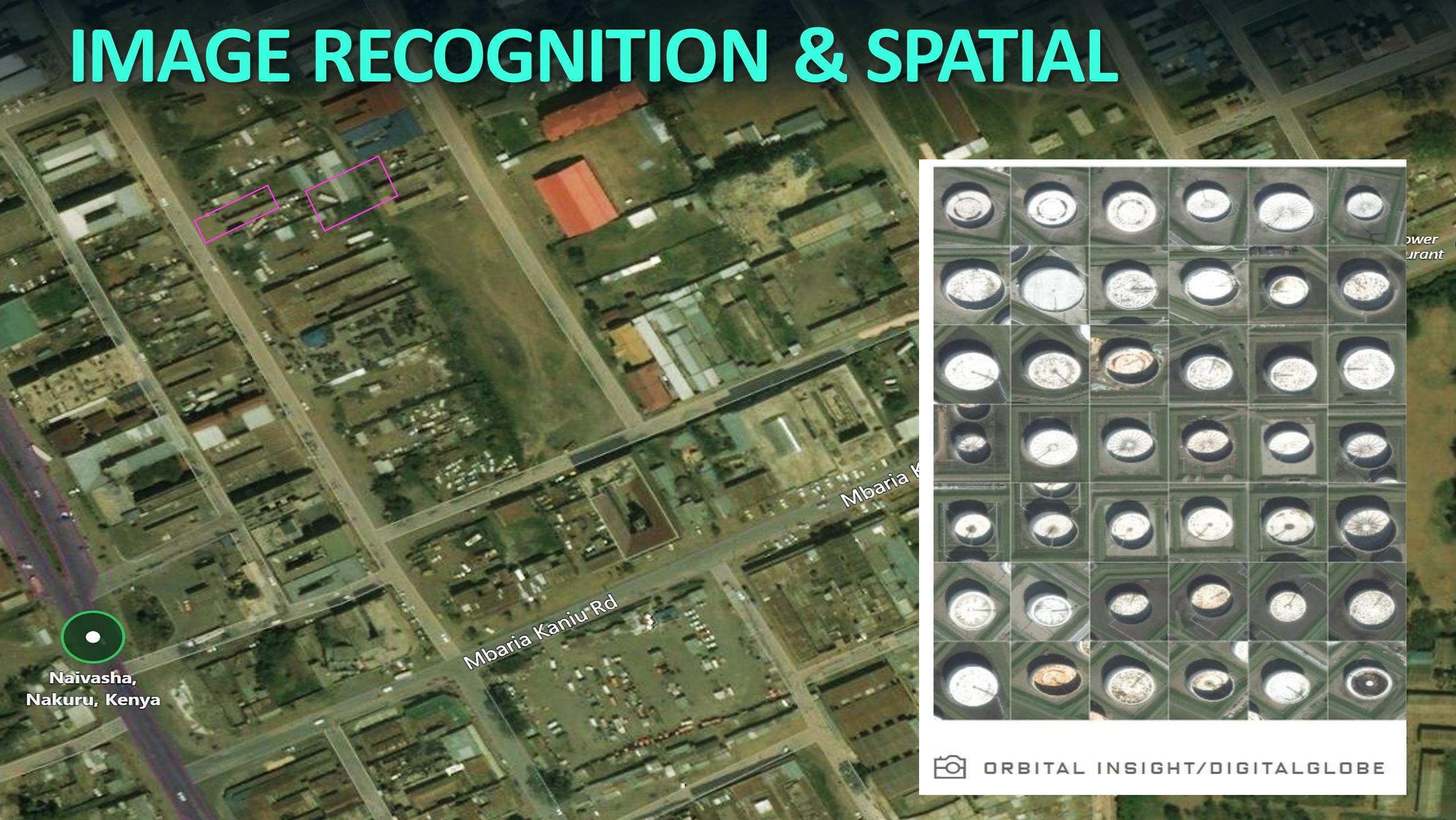
Microsoft

CUSTOMER SERVICE



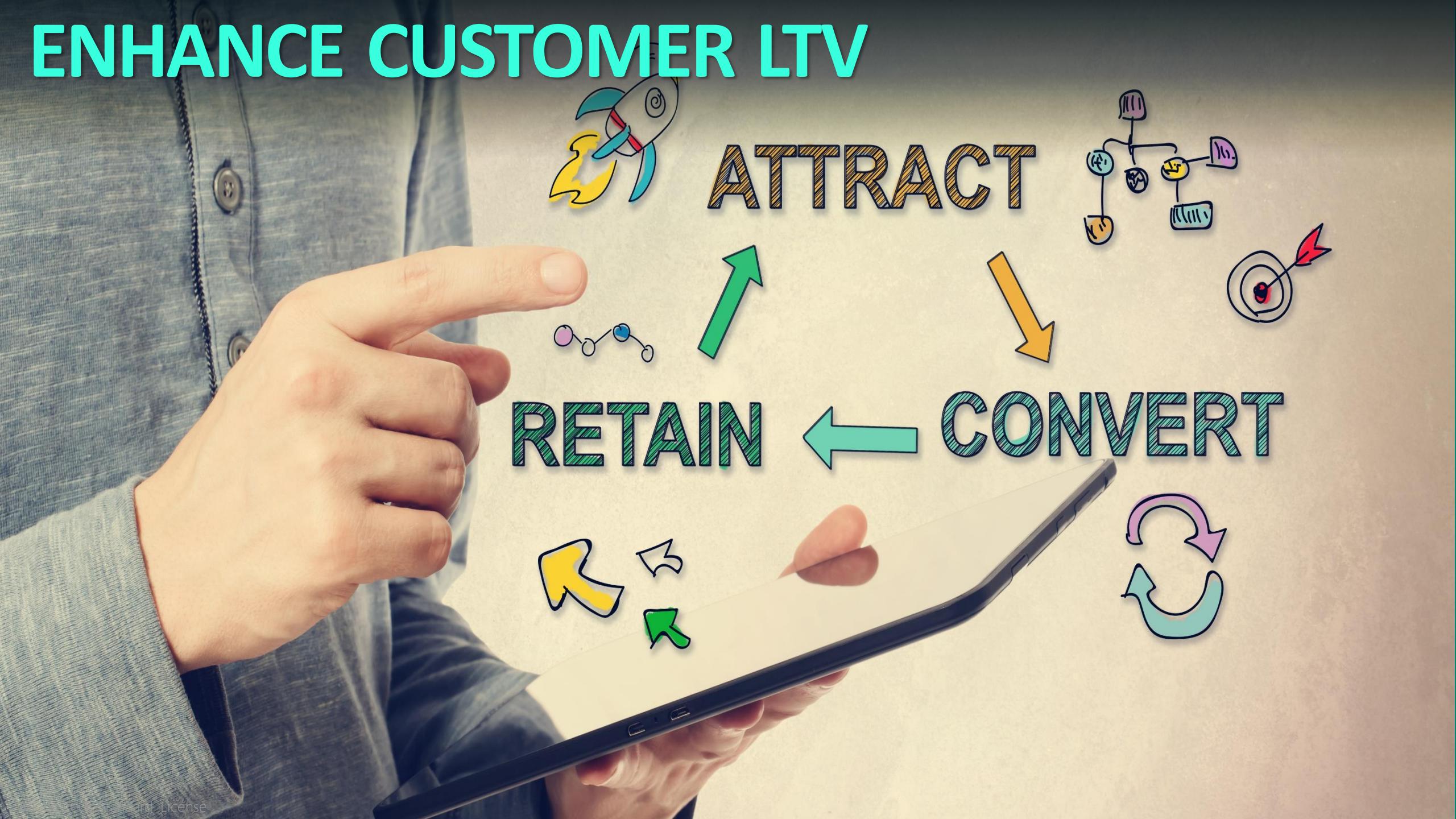


IMAGE RECOGNITION & SPATIAL



ORBITAL INSIGHT/DIGITALGLOBE

ENHANCE CUSTOMER LTV



AUTOMATE BUSINESS PROCESS



AI & HUMANITY

— 170 — **LIABILITY & ETHICS** — 165 —

— 160 —
160 —

155 —
— 155 —

— 150 —
150 —

145 —
— 145 —

— 140 —
140 —

135 —
— 135 —

— 130 —
130 —

125 —
— 125 —

— 120 —
120 —

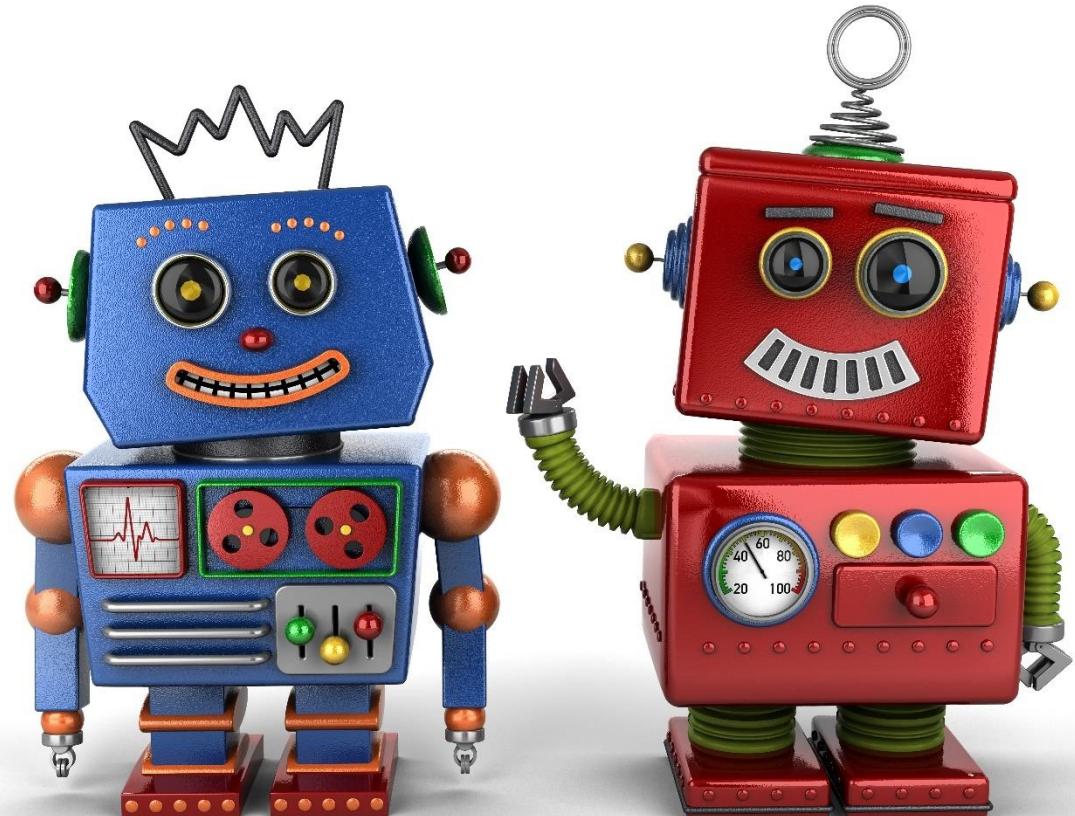
A woman with short blonde hair, wearing a white t-shirt, is shown from the side and back, standing against a light green wall with height markings. She is holding a black rectangular placard in front of her torso. The placard has white text on it.

The algorithm
made me
do it...

DIGITAL DISPLACEMENT?



BOTS: THE NEW APPS





<http://blogs.microsoft.com/blog/2016/03/25/learning-tays-introduction/#sm.000jgdndy1b4adobycu1ciuqrh60x>

Microsoft Xiaoice Chinese weather bot



pronounced Shao-ice

AI DESIGN PRINCIPLES



Transparent



Dignified



Private



Accountable

Where next?

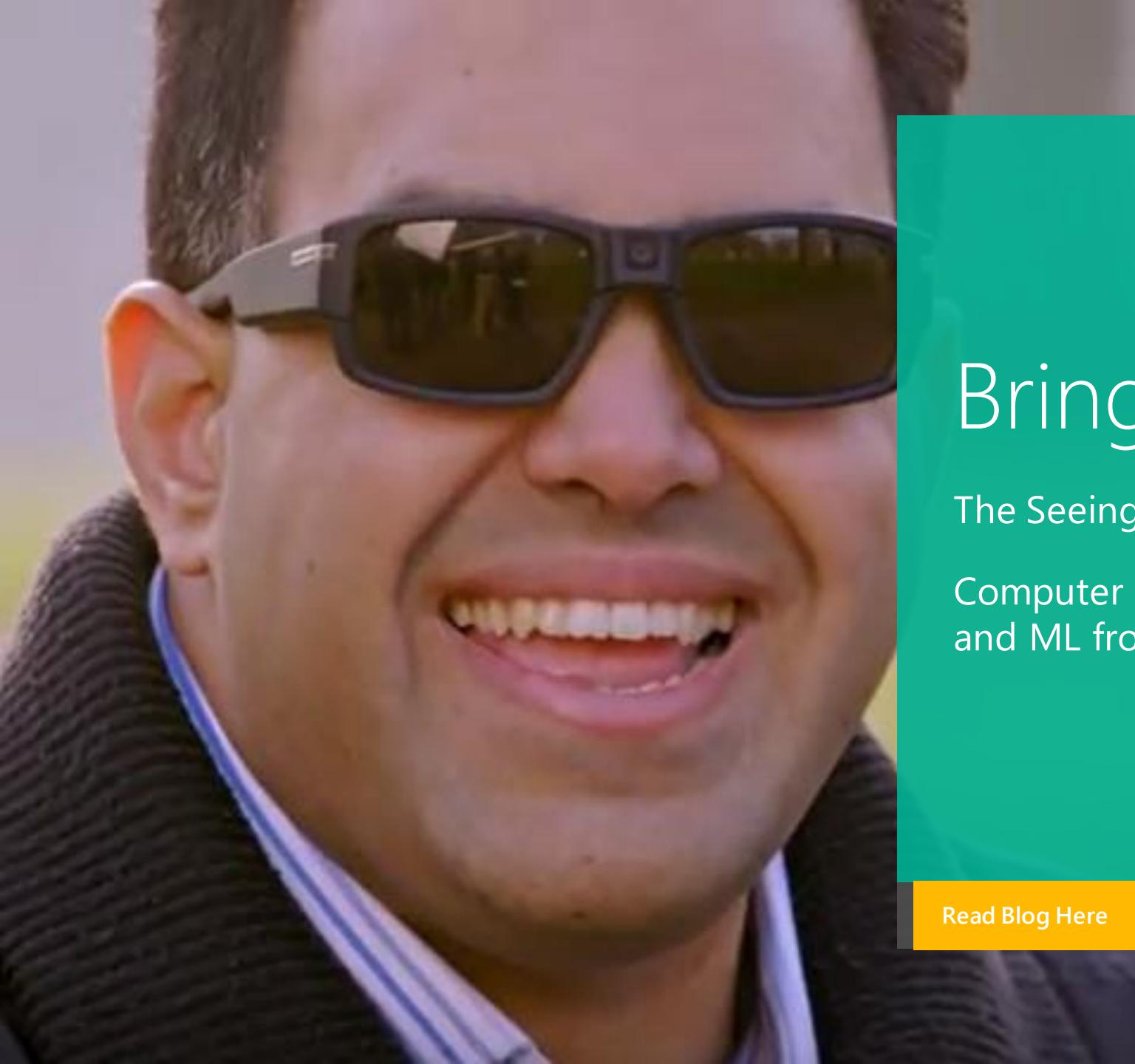


Any sufficiently advanced technology is indistinguishable from magic.

Arthur C Clarke

Any sufficiently advanced technology is invisible.

Microsoft Research



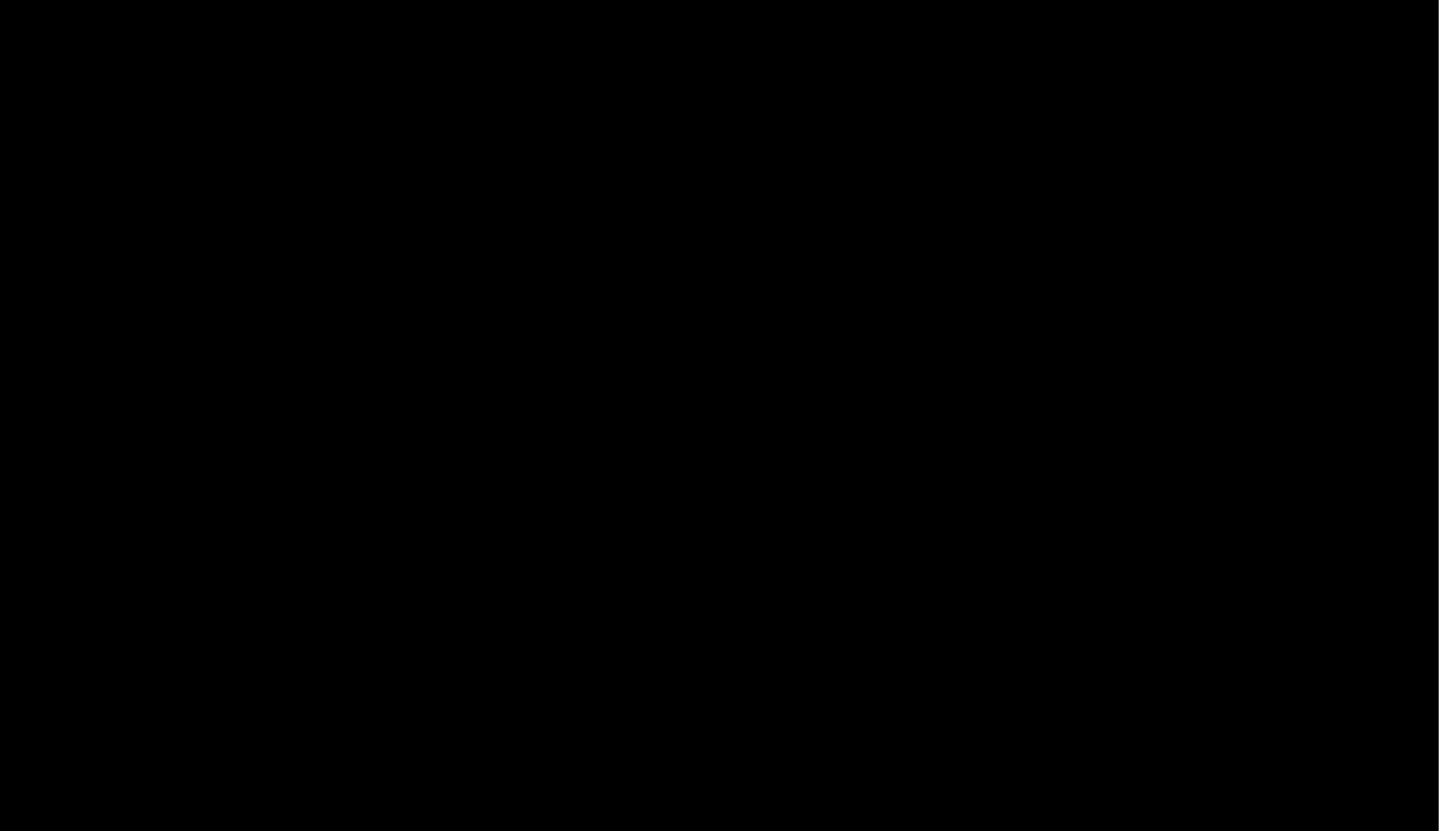
Bringing it all together

The Seeing AI App

Computer Vision, Image, Speech Recognition, NLP,
and ML from Microsoft Cognitive Services

[Read Blog Here](#)

[Watch Video Here](#)



A worked example of Machine Learning

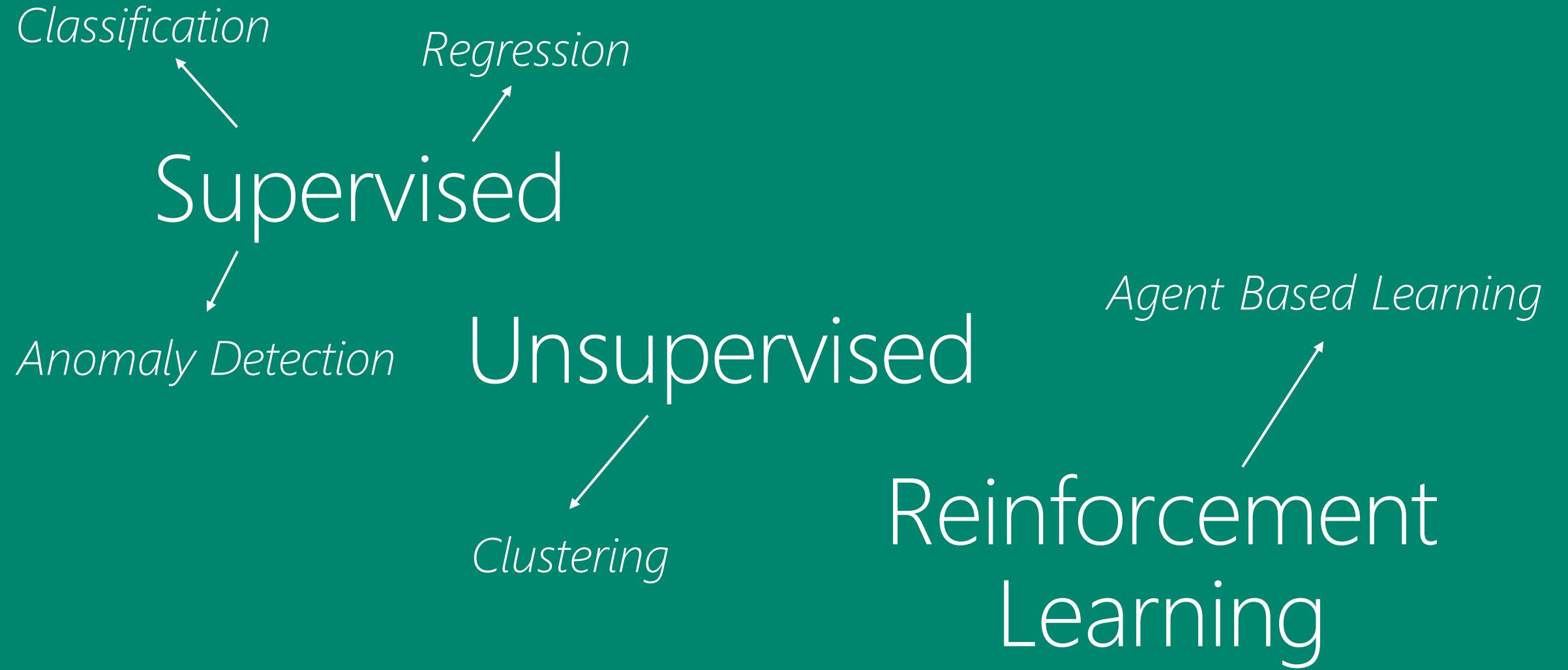


A computer would deserve to be called intelligent if it could deceive a human into believing that it was human.

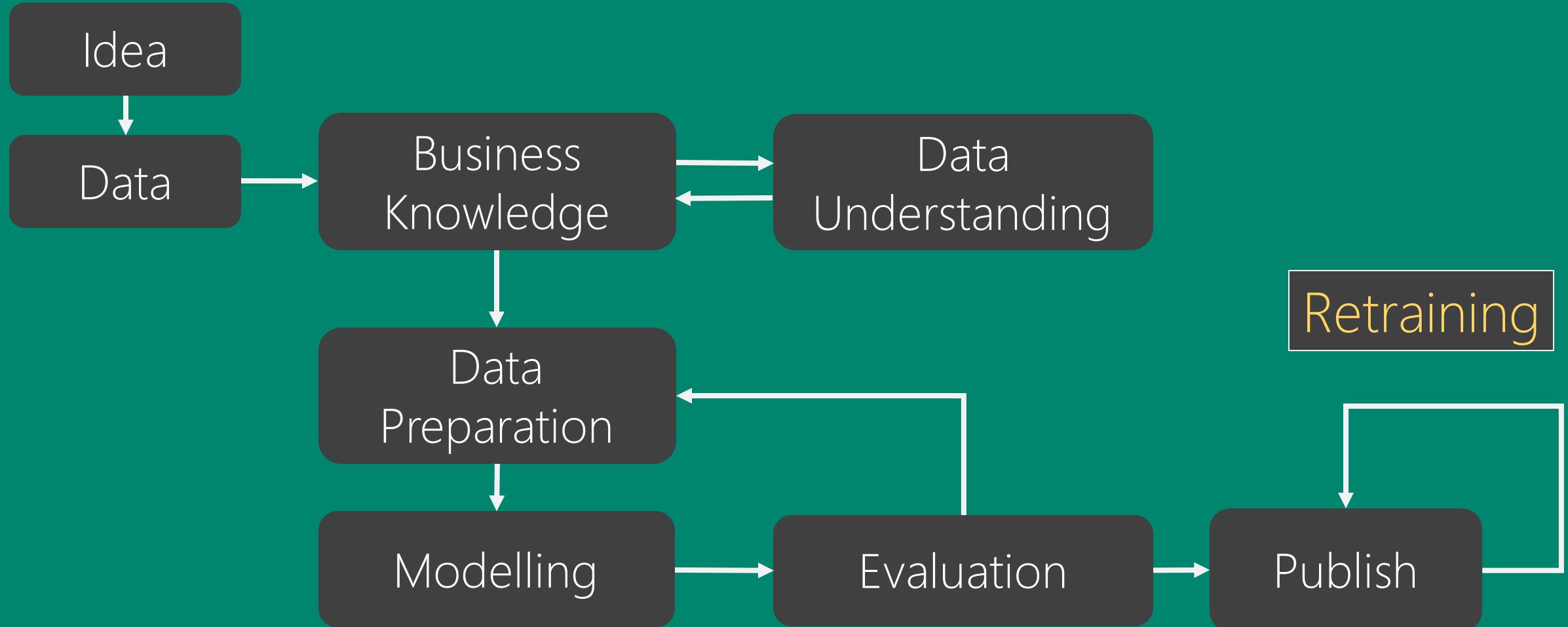


Computing Systems that become
smarter with Experience

Experience = Past Data + Human Input



Machine Learning Process Model



Azure Machine Learning Studio

<https://studio.azureml.net/>

<https://1drv.ms/f/s!AhZKtpbe3mRPqp9jIIH-3tyLuWsghg>

Microsoft Azure Machine Learning: Algorithm Cheat Sheet



This cheat sheet helps you choose the best Azure Machine Learning Studio algorithm for your predictive analytics solution. Your decision is driven by both the nature of your data and the question you're trying to answer.

ANOMALY DETECTION

One-class SVM

→ >100 features,
aggressive boundary

PCA-based anomaly detection

→ Fast training

Finding unusual
data points

CLUSTERING

K-means

Discovering
structure

REGRESSION

Ordinal regression

→ Data in rank ordered categories

Poisson regression

→ Predicting event counts

Fast forest quantile regression

→ Predicting a distribution

Linear regression

→ Fast training, linear model

Bayesian linear regression

→ Linear model, small data sets

Neural network regression

→ Accuracy, long training time

Decision forest regression

→ Accuracy, fast training

Boosted decision tree regression

→ Accuracy, fast training,
large memory footprint

START

TWO-CLASS CLASSIFICATION

Two-class SVM

→ >100 features,
linear model

Two-class averaged perceptron

→ Fast training,
linear model

Two-class logistic regression

→ Fast training,
linear model

Two-class Bayes point machine

→ Fast training,
linear model

MULTI-CLASS CLASSIFICATION

Multiclass logistic regression

→ Fast training, linear model

Multiclass neural network

→ Accuracy, long training times

Multiclass decision forest

→ Accuracy, fast training

Multiclass decision jungle

→ Accuracy, small memory footprint

One-v-all multiclass

→ Depends on the two-class classifier, see notes below

→ Accuracy,
fast training

Two-class decision forest

→ Accuracy,
fast training,
large memory
footprint

Two-class boosted decision tree

→ Accuracy,
small memory
footprint

Two-class decision jungle

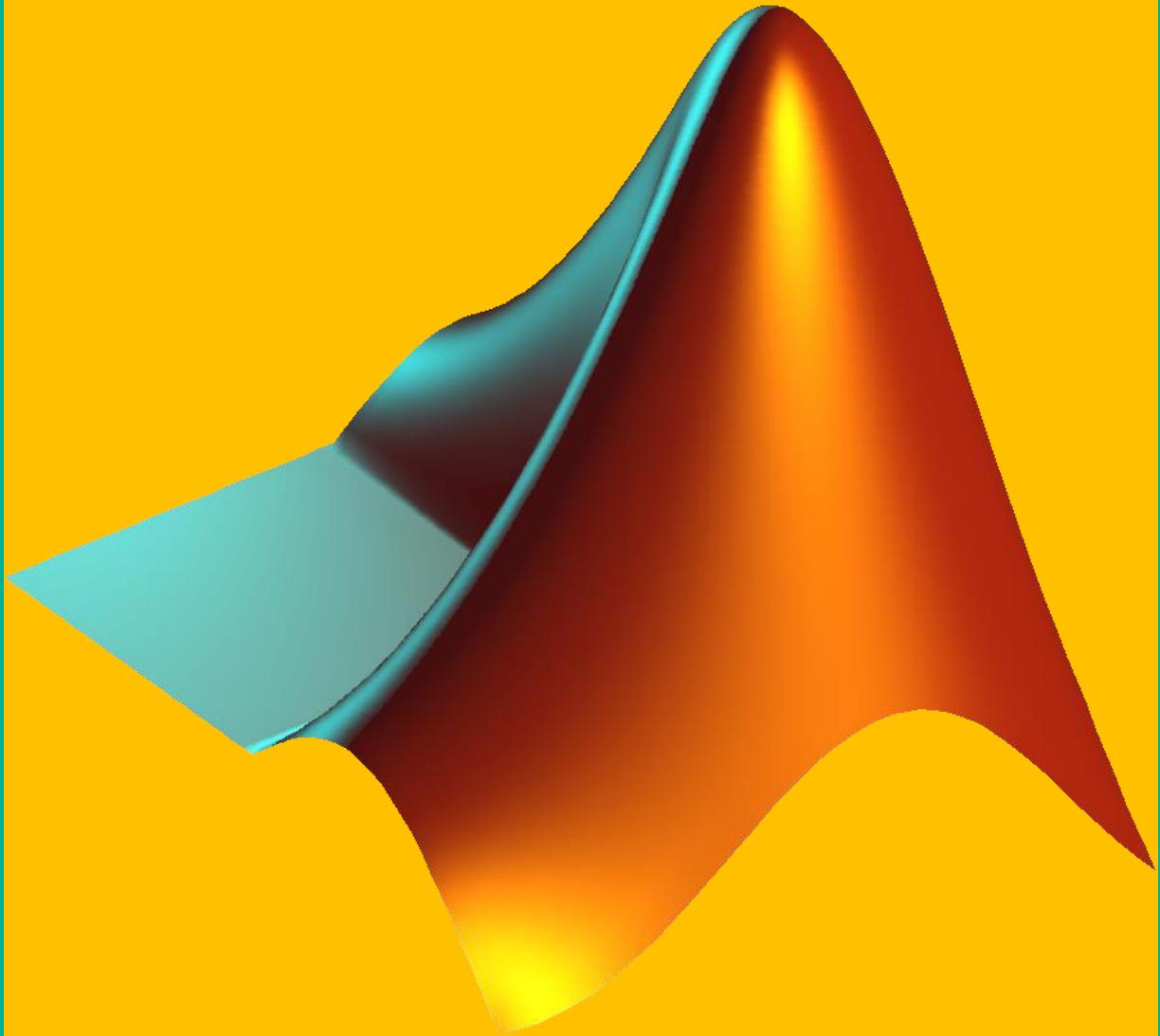
→ >100 features

Two-class locally deep SVM

→ Accuracy, long
training times

Two-class neural network

But what about
Matlab?



Matlab on Azure

Running MATLAB Distributed Computing Server on a cluster of Azure VMs provides user-friendly, high performance computing at very low cost compared to the total cost of ownership of providing an equivalent MATLAB Distributed Computing Server capability on on-premises servers deployed in our own data centres. The users of MATLAB Distributed Computing Server are able to start and stop the Azure-based cluster, or even just portions of it, using some simple PowerShell scripts, thereby keeping Azure billing costs to a minimum.

*James Mann
Solution Architect
Aberdeen Asset Management PLC*

<https://azure.microsoft.com/en-us/blog/create-matlab-clusters-using-azure-virtual-machines/>

Matlab on Azure - 3 options



Azure Batch



Azure Virtual Machines

Scheduling

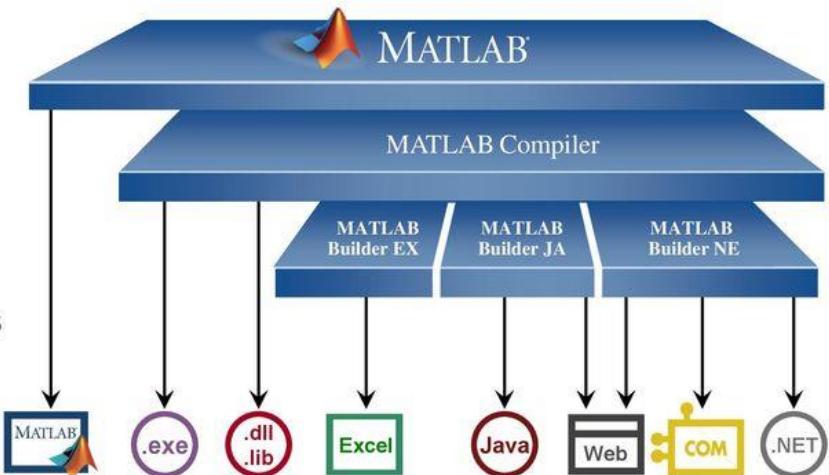


Compute



Deploying Applications with MATLAB

- Automated deployment
- Share applications with end users who do not need MATLAB
 - Stand-alone executables
 - Shared libraries
 - Software components
 - Encrypted
- Uses MATLAB Component Runtime Libraries



Matlab Migration



Azure Batch or Azure Functions



https://blogs.msdn.microsoft.com/uk_faculty_connection/

Microsoft | Developer

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FACULTY CONNECTION Microsoft Faculty Connection

Most Recent Most Comments

Exploring data with F# type providers

Guest post by Thomas Denny Microsoft Student Partner at the University of Oxford About Me Hi I am currently studying Computer Science at the University of Oxford. I am the president (2017-18) and was the secretary (2016-17) of the Oxford University Computer Society, and a member of the Oxford University History and Cross Country societies....

July 4, 2017 By Lee Stott ★★★★★ 0

How to implement the backpropagation using Python and NumPy

I was recently speaking to a University Academic and we got into the discussion of practical assessments for Data Science Students, One of the key principles students learn is how to implement the back-propagation neural network training algorithm. Many students start by learning this method from scratch, using just Python 3.x and the NumPy package....

July 4, 2017 By Lee Stott ★★★★★ 0

Getting Started with http://customvision.ai – creating a custom model for image recognition.

Guest blog by Julian Chow Microsoft Student Partner at Imperial College London. Introduction: I am Julian, a first year student studying Computing at Imperial College London. I was born and raised in Hong Kong, where I developed a great enthusiasm for football, the outdoors, and technology. Using Custom Vision to easily build and train image...

July 3, 2017 By Lee Stott ★★★★★ 0

How to Develop and Host a Proof-of-Concept Prototype on Azure App Services for Web Apps

Guest blog from Microsoft Student Partner Fangfang Hu from Imperial College London. Fangfang Hu is an Electrical and Electronic Engineering student at Imperial College London. Introduction I will be starting my second year in fall. I am from Singapore, where I had worked with a few research institutions and corporations in areas relating to hardware...

July 2, 2017 By Lee Stott ★★★★★ 0

FACULTY CONNECTION

TRANSLATE bing

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Microsoft Imagine 

Microsoft Imagine Pick a contest. Perfect your skills. Win prizes. ▶ Students, code and compete! 

Microsoft Imagine Power up 

Demo: Image classification in Azure ML Workbench

(<https://github.com/Azure/MachineLearningSamples-ImageClassificationUsingCNTK>)



SPOTTY



STRIPED



LEOPARD PRINT

ML Workbench: a handy environment for machine learning

- Data wrangling GUI which logs each operation
- Command line access
- Run history: logging all your passed and failed script runs, how long they took etc
- Easily switch from local compute to virtual machine
- Easily pull down pretrained models like Resnet
- See plots of accuracy as you experiment with different parameters
- Deploy model (as API)
- Version control and collaboration

Yes, you can
use Tensorflow
in Workbench





Follow us:

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