AI for All

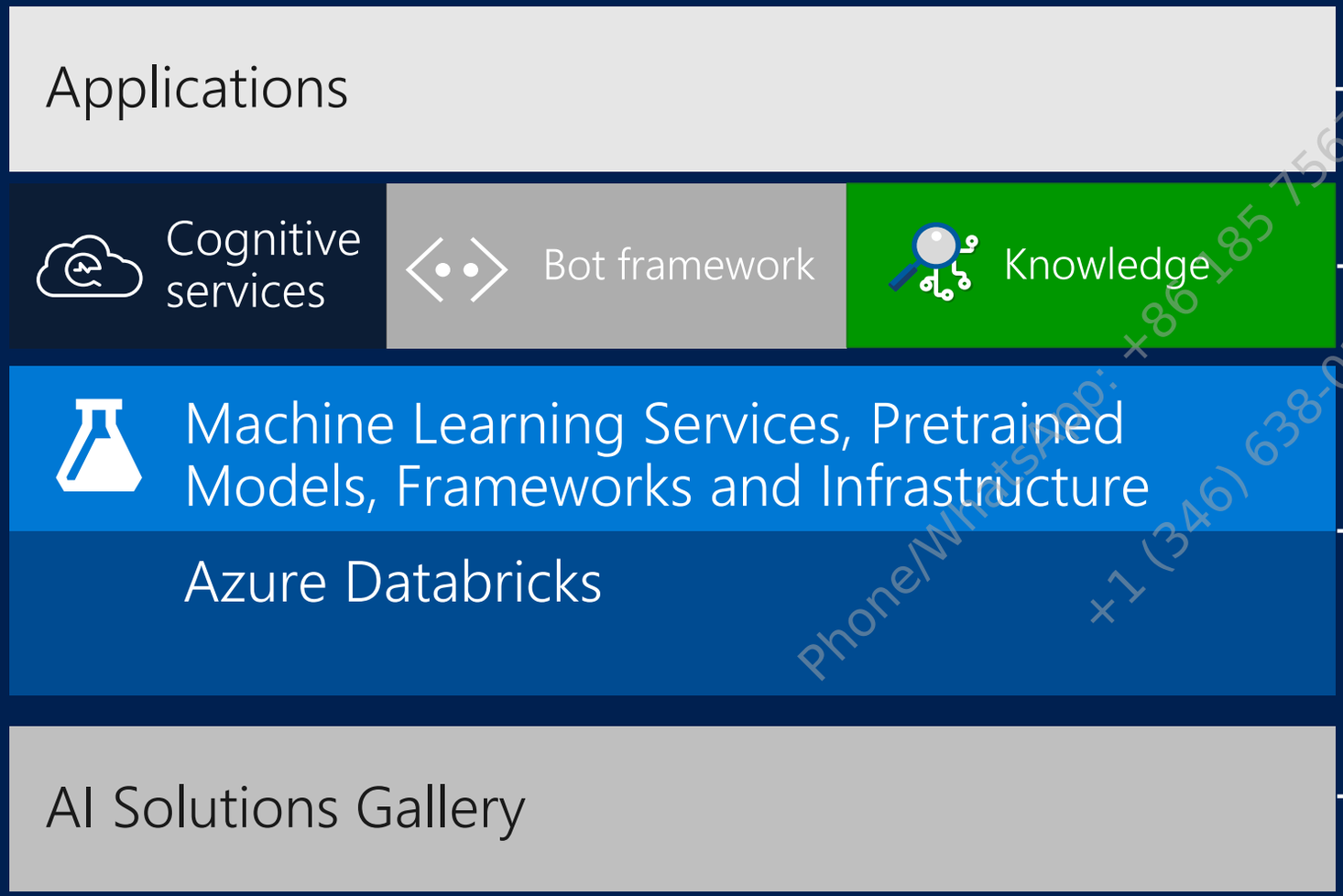
What to Use When

Chris Testa-O'Neill
Applied Data Scientist
Microsoft

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The Azure AI Landscape



Use AI
Artificial Intelligence in Applications

Include AI
Artificial Intelligence from Pre-built Services, Apps, and Knowledge Mining

Create AI
Artificial Intelligence with Platforms, Infrastructure and Tools

Find AI
Artificial Intelligence Solutions in a Portal

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Use AI - Applications

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- Office 365
- Dynamics 365
- SwiftKey
- Pix
- Customer Service and Support
- Skype
- Teams
- Calendar.help

Resource: PowerPoint Translator

http://tinyurl.com/ycdt7rzn

Resource: Demo Flash-Fill

https://tinyurl.com/ybpwysyy

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Include AI - Services

Cognitive Services

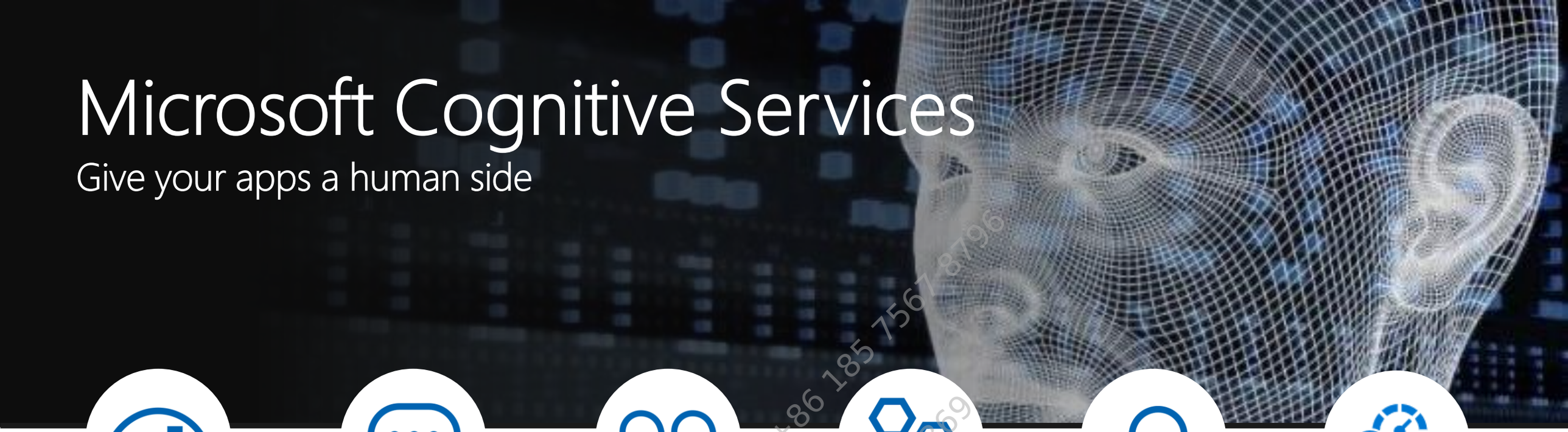
Bot Framework

Knowledge Mining

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Microsoft Cognitive Services

Give your apps a human side



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

Map complex information and data in order to solve specific tasks

Search

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

Anomaly Detection

Add anomaly detection capabilities to your apps to identify problems as soon as they occur

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Microsoft Cognitive Services



Vision

- Video Indexer
- Computer Vision
- Face
- Emotion
- Content Moderator
- Custom Vision

Speech

- Speaker Recognition
- Bing Speech
- Custom Speech
- Translator Speech
- Unified Speech
  - Speech to Text w. Custom Speech
  - Text to Speech w. Custom Voice
  - Speech Translation w. Custom Translator

Language

- Text Analytics
- Bing Spell Check
- Translator Text
- Language Understanding (LUIS)
- Custom Vision

Knowledge

- QnA Maker
- Azure Search

Search

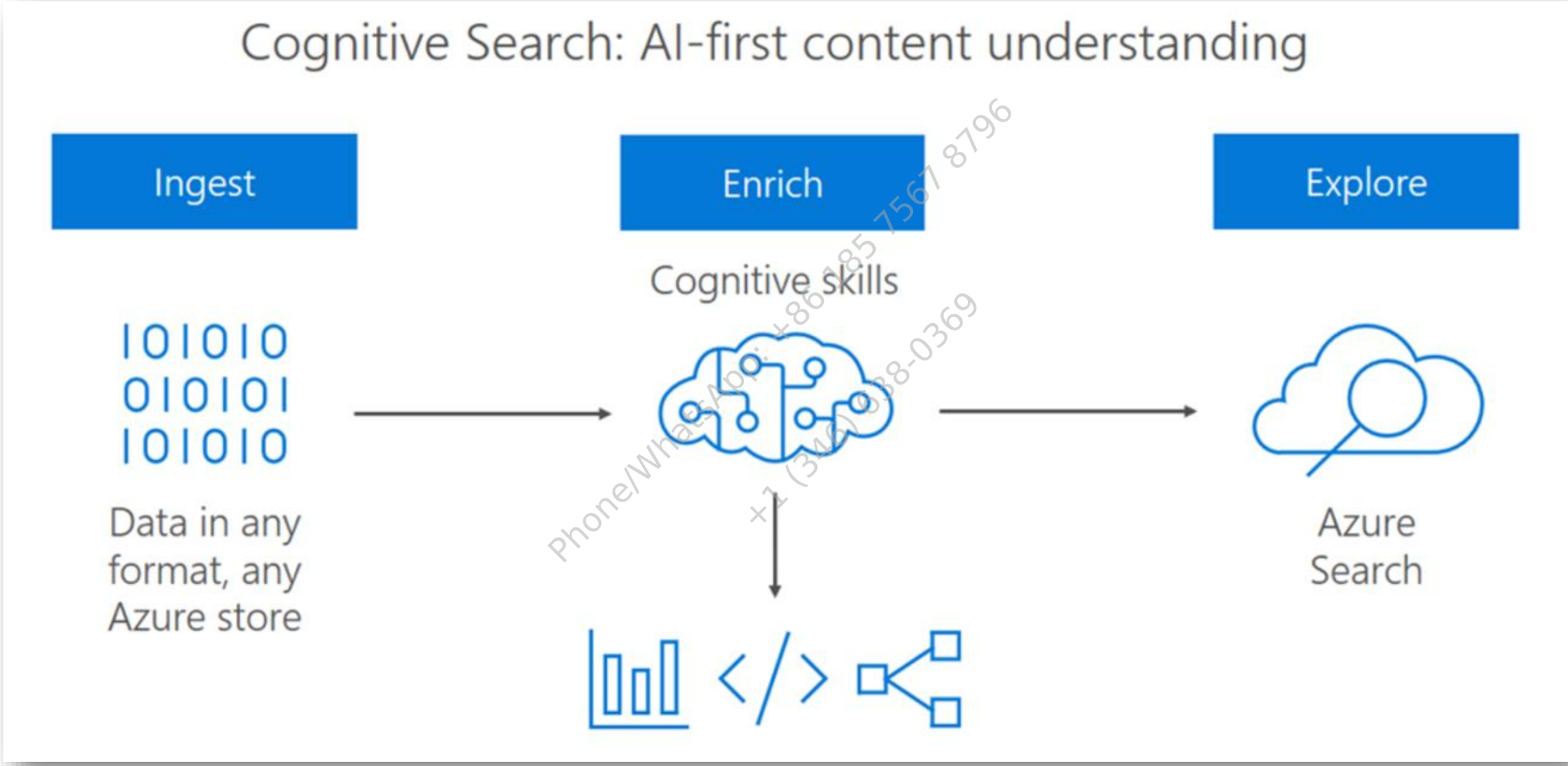
- Bing Entity Search
- Bing Autosuggest
- Bing Search
  - Web Search
  - Image Search
  - News Search
  - Video Search
- Bing Statistics add-in
- Bing Visual Search
- Bing Custom Search

Anomaly Detection

- Automatic Detection
- Powerful Inference Engine
- Customizable Settings

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Knowledge Mining



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Bot Framework - Engage with your users

A natural language interface across all conversation channels

Insights

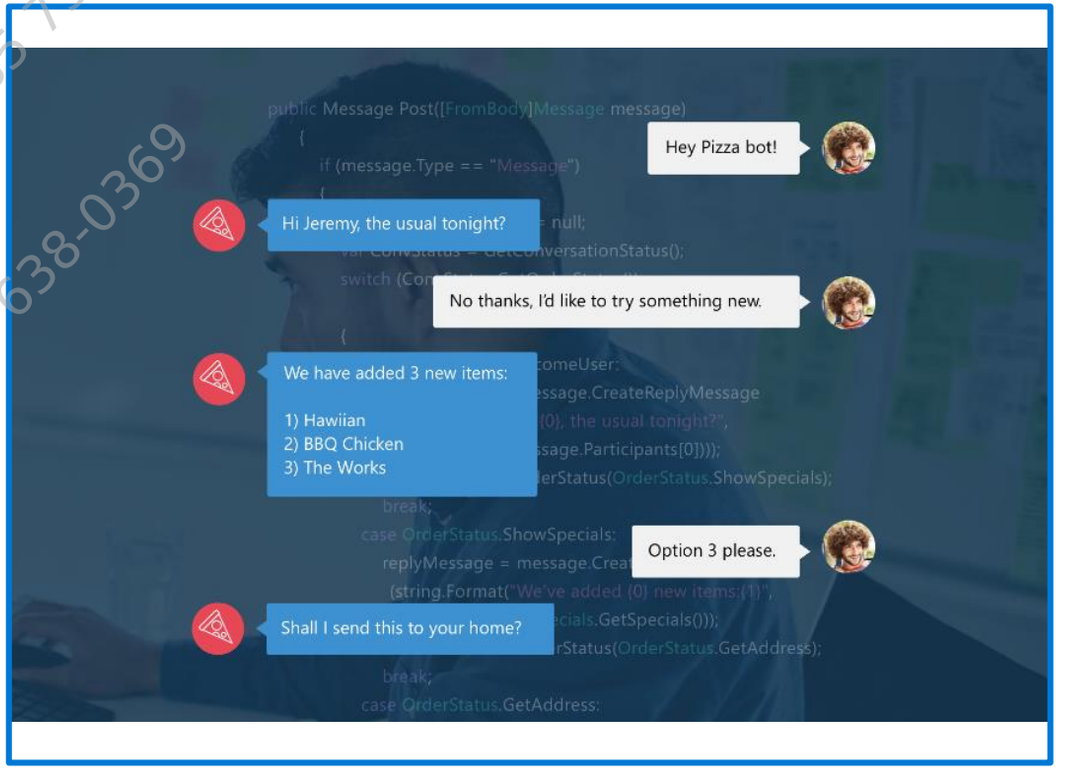
Provide information

Perform tasks

Make recommendations

Capture information

Operationalization



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Examples of real-world applications

Vision

What is in the image or video?

Intelligent Image insights



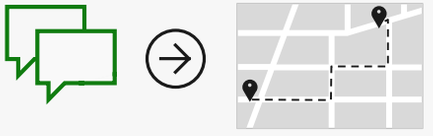
Category	People; 5 faces
Adult/Racy?	False/False
Dominant colors	
Accent color	

Computer Vision

Speech

Give me directions to the nearest local branch

Speech to text



- Convert spoken audio to text
- Convert text to spoken audio
- Extract intent of user

Speech Service

Language

Play today's customer call recording

Natural Language Processing

```
Intent: PlayCall
Content: Customer#
DateTime.date: today
```

Now Playing

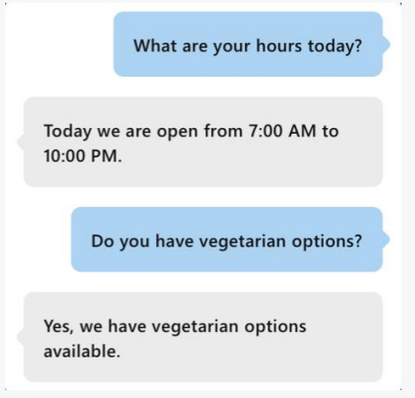
11/29/2016 Customer Call

Language Understanding

Knowledge

QnA Pair of this site?

Automatic extraction of questions and answers

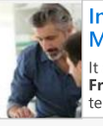


QnA Maker

Search

Search for 'fraud prevention'

Intelligent web search



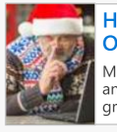
Information Communications Media Market News

It also investigates the top three expected **Fraud** Detection and **Prevention** programs, in terms of demand in key markets...



The Big Question: In-House or Outsourced Fraud Protection?

First, let's point out that there is not one absolute answer—there are "pros" and "cons" to each. Those who favor in-house...



How to Protect Your Business from Online Fraud this Holiday Season

Michael heads fraud prevention tool. Online and mobile shopping are expected to continue growing apace...

Bing News Search

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Infrastructure and Tools

Data Science Process
Pretrained Models
Azure Databricks
Services and Frameworks
Infrastructure

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Data Science Process

Business Understanding	• Define Objectives • Identify Data Sources
Data Acquisition and Understanding	• Ingest Data • Explore Data • Update Data
Modeling	• Feature Selection • Create and Train Model
Deployment	• Operationalize
Customer Acceptance	• Testing and Validation • Handoff • Re-train and re-score

aka.ms/tdsp

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Machine Learning on Azure

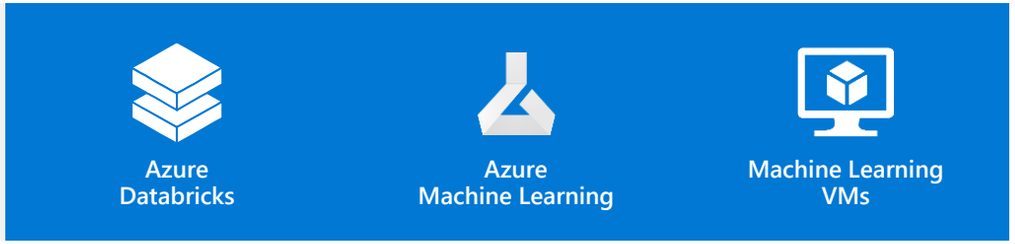
Sophisticated pretrained models
To accelerate solution development with easy to use pretrained models



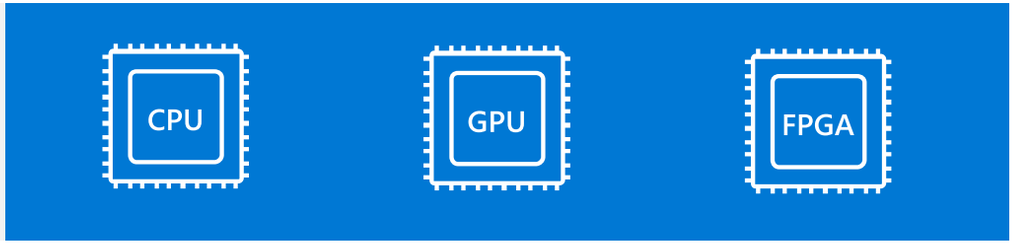
Popular frameworks
Build sophisticated deep learning solutions



Productive services
Empower your development teams



Powerful infrastructure
Accelerate time to value



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Popular Frameworks

Use your favorite deep learning frameworks


TensorFlow


PyTorch


Scikit-Learn


MXNet


Chainer


Keras

without getting locked into one framework

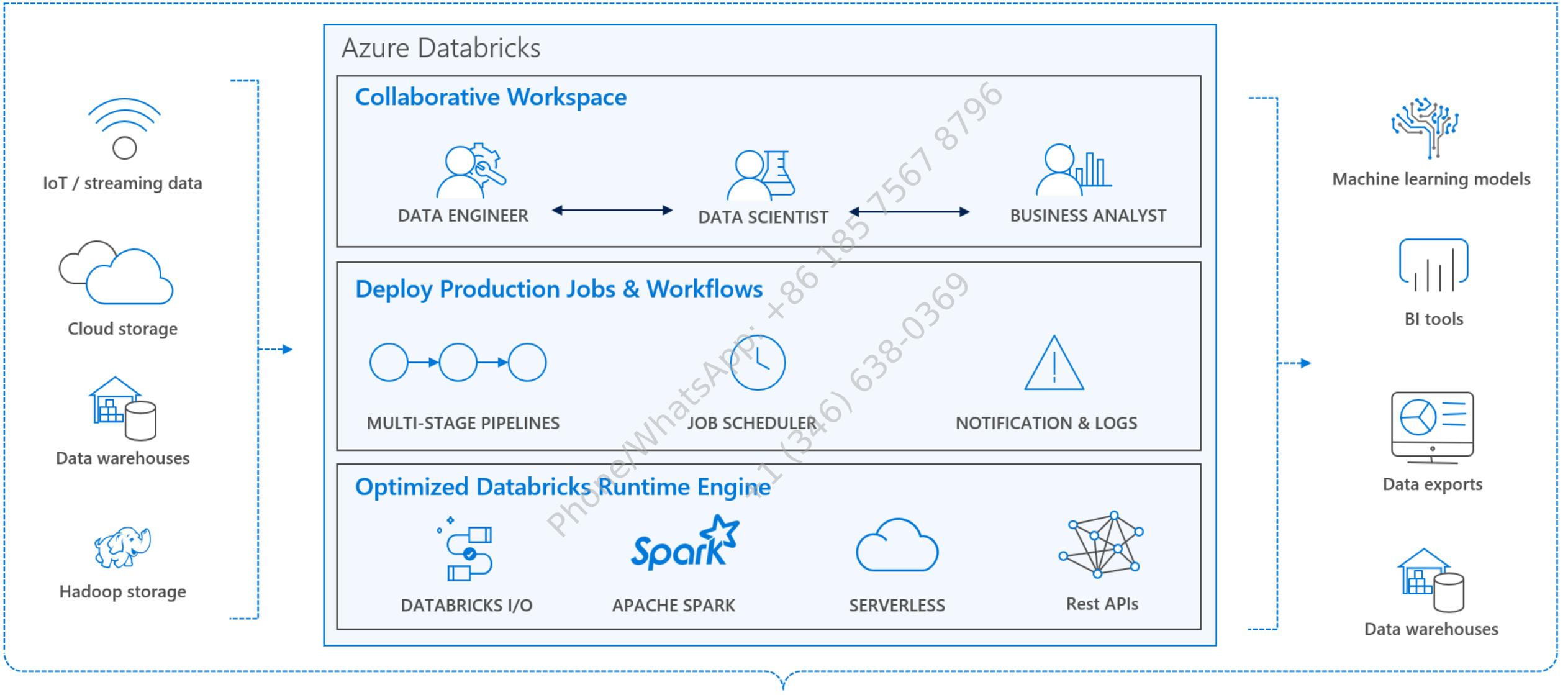

ONNX

Community project created by Microsoft and Facebook

Use the best tool for the job. Train in one framework and transfer to another for inference

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Azure Databricks



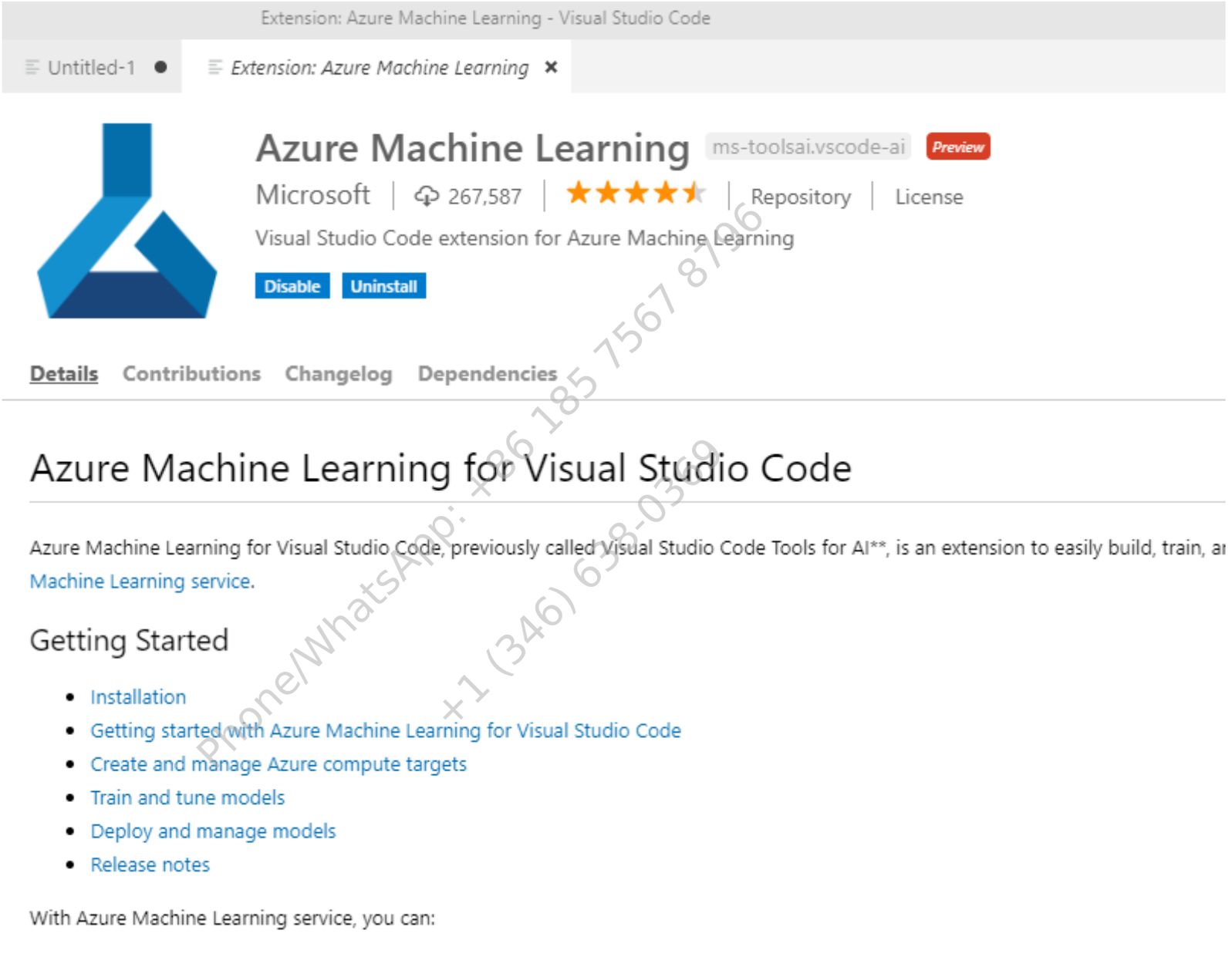
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Enhance Productivity

Build on secure & trusted cloud

Scale without limits

Azure Machine Learning for Visual Studio and Code



Data Science Virtual Machine

Data Science Virtual Machine for Linux (Ubuntu)

Microsoft



Data Science Virtual Machine for Linux (Ubuntu)

Microsoft

Create | ♡ Save for later

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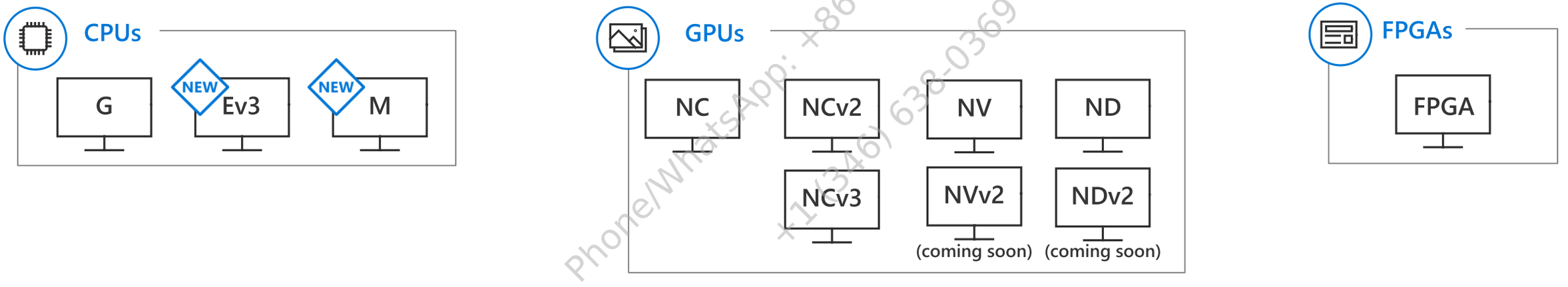
The Data Science Virtual Machine for Linux is an Ubuntu-based virtual machine image that makes it easy to get started with deep learning on Azure. The Microsoft Cognitive Toolkit, TensorFlow, MXNet, Caffe, Caffe2, Chainer, NVIDIA DIGITS, Deep Water, Keras, Theano, Torch, and PyTorch are built, installed, and configured so they are ready to run immediately. The NVIDIA driver, CUDA 9, and cuDNN 7 are also included. All frameworks are the GPU versions but work on the CPU as well. Many sample Jupyter notebooks are included. TensorFlow Serving, MXNet Model Server, and TensorRT are included to test inferencing.

The Data Science Virtual Machine for Linux also contains popular tools for data science and development activities, including:

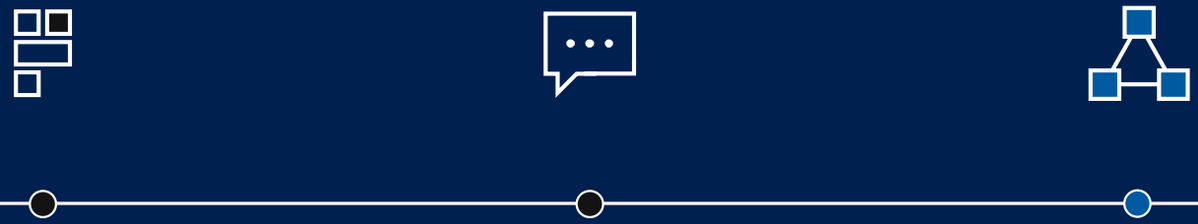
- Microsoft R Server 9.3 with Microsoft R Open 3.4.3, MicrosoftML package with machine learning algorithms, RevoScaleR and revoscalepy for distributed and remote computing, and R and Python Operationalization
- Anaconda Python 2.7 and 3.5
- JupyterHub with sample notebooks
- Spark local 2.3.1 with PySpark and SparkR Jupyter kernels
- Single node local Hadoop
- Azure command-line interface
- Visual Studio Code, IntelliJ IDEA, PyCharm, and Atom
- H2O, Deep Water, and Sparkling Water
- Julia
- Vowpal Wabbit for online learning
- xgboost for gradient boosting
- SQL Server 2017
- Intel Math Kernel Library

You can view a full list of installed tools for the Linux edition here.

Azure ML/AI Infrastructure



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AI Solution Portal

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TUTORIAL

Call an operationalized Microsoft Cognitive Toolkit model from an Android app

By Don Glover (Zensa Inc) for Microsoft • April 6, 2017

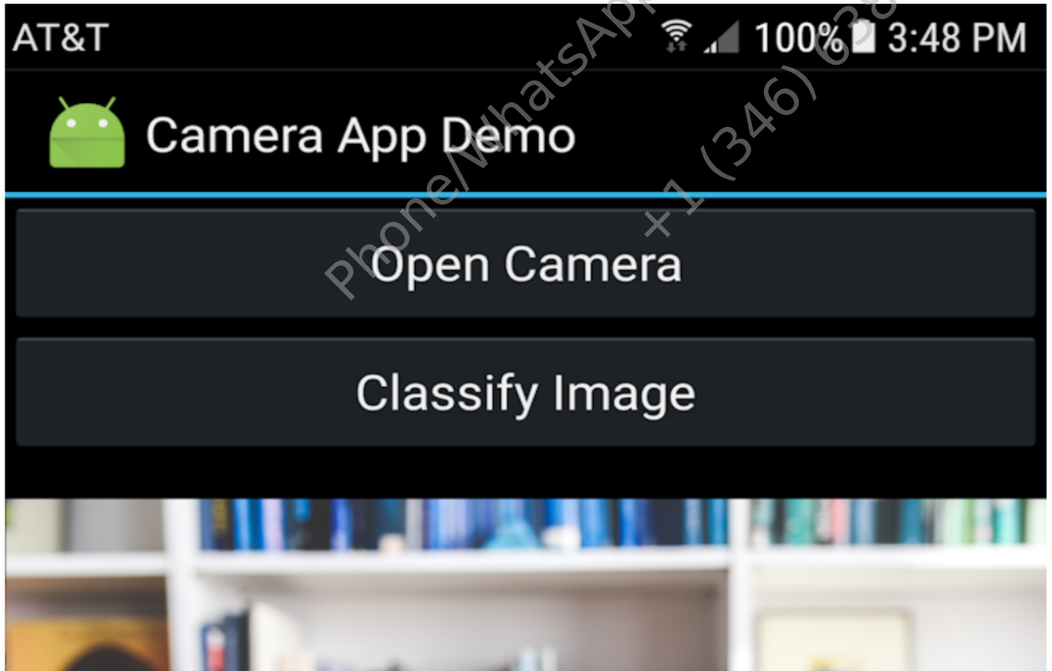
2 likes

Summary

This sample shows you how to deploy a pretrained Microsoft Cognitive Toolkit image classification model (Resnet) as a real-time web service. You will then write a mobile app that can take a picture and pass it to the service for classification.

Description

Once you have deployed the model as a web service and built the mobile app you should get results similar to those shown in the following image:



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View Code

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RELATED ITEMS


Cognitive Toolkit Evaluation on Azure
TUTORIAL by Microsoft


Cognitive Toolkit 203: Reinforcement ...
TUTORIAL by Microsoft


Cognitive Toolkit Tutorial: Getting Star...
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RELATED LINKS

TAGS

Report Abuse

Resource: AI Gallery

https://gallery.azure.ai

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Start AI with Ethics

Microsoft believes that AI technology should embody the following principles:

- Fair - AI must maximize efficiencies without destroying dignity and guard against bias
- Accountable - AI must have algorithmic accountability
- Transparent - AI must be transparent
- Ethical - AI must assist humanity and be designed for intelligent privacy

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https://aka.ms/ai-ethics

Thank you

@ctesta_oneill

https://www.linkedin.com/in/ctestaoneill/

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References

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Microsoft

http://microsoft.com/ai

http:// aka.ms/ai-landscape

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Resource: Vision Demo and Code Bootcamp

https://tinyurl.com/zejavwf

https://tinyurl.com/yb79dqna

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Field Resource: Bot Bootcamp

https://tinyurl.com/yah8rxpc

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Demo and Technical Links

- AI Portal – Technical Content and Demos

Machine Learning/Deep Learning

Description	Title and Link	Audience	Add'l Notes
Demo	Azure Databricks Spark Streaming	TSP, CSA, GBB	
Code Samples	https://github.com/Azure/data-ai-iot/tree/master/databricks	TSP, CSA, GBB	
Code Samples	https://github.com/Azure/data-ai-iot/raw/master/databricks/assets/notebooks/AzureDatabricks-SampleNotebooks.zip	TSP, CSA, GBB	These are 3 sample Databricks Notebooks
Demo	Seeing AI iOS App	AE, PSS, SSP,TSP, CSA, GBB	
Demo	https://www.what-dog.net/	AE, PSS, SSP,TSP, CSA, GBB	
Reference Architecture	Image classification with convolutional neural networks	TSP, CSA, GBB	
Workshop	Data Science VM and Deep Learning VM Currency Detector	TSP, CSA, GBB	
Workshop	ImageClassificationCIFAR-10 MLADS Deep Learning Tutorial	TSP, CSA, GBB	
Workshop	Deep Learning Lab (Japanese)	TSP, CSA, GBB	
Code Samples	https://github.com/Azure/AzureChestXRay	TSP, CSA, GBB	
Code Samples	https://github.com/xiaoyongzhu/SeeingAI-Currency-Detection	TSP, CSA, GBB	
Code Samples	https://github.com/Azure/data-ai-iot	TSP, CSA, GBB	
Competition	Amazon Deep Learning AMIs	TSP, CSA, GBB	
Competition	GCP Cloud Datalab	TSP, CSA, GBB	

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Demo and Technical Links

- AI Portal – Technical Content and Demos

Create AI Agents

Description	Title and Link	Audience	Add'l Notes
Demo	Litware Insurance	SSP, TSP, CSA, GBB	The sign in to all Litware Bots is Username: Bot Password: Azure
Demo Script	Demo Script	SSP, TSP, CSA, GBB	
Demo	Litware Bank	SSP, TSP, CSA, GBB	The sign in to all Litware Bots is Username: Bot Password: Azure
Demo	Litware Manufacturing	SSP, TSP, CSA, GBB	The sign in to all Litware Bots is Username: Bot Password: Azure
Demo	Litware Lifestyle (Retail)	SSP, TSP, CSA, GBB	The sign in to all Litware Bots is Username: Bot Password: Azure
Code Samples	https://github.com/Microsoft/BotFramework-Samples/tree/master/StackOverflow-Bot	TSP, CSA, GBB	
Code Samples	https://github.com/Azure/ConferenceBuddy	TSP, CSA, GBB	
Workshop	Bot in a Day	TSP, CSA, GBB	This material is probably being updated
Documentation	Azure Bot Service	TSP, CSA, GBB	
Video	Stack Overflow Video	SSP, TSP, CSA, GBB	
Video	Microsoft AI overview for developers : Build 2018	SSP, TSP, CSA, GBB	Noelle LaCharite does the Litware Lifestyle demo 15 minutes into Harry Shum's Keynote
Reference Architecture	https://github.com/Azure/ConferenceBuddy/blob/master/README.md	SSP, TSP, CSA, GBB	
Reference Architecture	https://azure.microsoft.com/en-us/services/bot-service/	SSP, TSP, CSA, GBB	Three diagrams under the Explore Azure Bot Service scenarios heading

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Demo and Technical Links

- AI Portal – Technical Content and Demos

Create AI Apps

Description	Title and Link	Audience	Add'l Notes
Demo	JFK Files	SSP, TSP, CSA, GBB	
Demo	Intelligent Kiosk Demo App	SSP, TSP, CSA, GBB	
Demo Script Files	Mall Kiosk Script Files	SSP, TSP, CSA, GBB	
Demo	AI.lab	SSP, TSP, CSA, GBB	
Demo	https://aidemos.microsoft.com/	SSP, TSP, CSA, GBB	
Demo	Seeing AI iOS App	AE, PSS, SSP,TSP, CSA, GBB	
Demo	Translator App	AE, PSS, SSP,TSP, CSA, GBB	
Demo	https://how-old.net	AE, PSS, SSP,TSP, CSA, GBB	
Demo	https://www.what-dog.net/	AE, PSS, SSP,TSP, CSA, GBB	
Code Samples	https://github.com/Microsoft/AzureSearch_JFK_Files/blob/master/README.md	TSP, CSA, GBB	
Book	Developer's Guide to Building AI Applications	SSP,TSP, CSA, GBB	
Documentation	Azure Cognitive Search	SSP,TSP, CSA, GBB	
Documentation	Azure Cognitive Services	SSP,TSP, CSA, GBB	
Blog	https://azure.microsoft.com/en-us/blog/topics/cognitive-services/	SSP,TSP, CSA, GBB	
Blog	https://azure.microsoft.com/en-us/blog/topics/artificial-intelligence/	SSP,TSP, CSA, GBB	

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Demo and Technical Links

- AI Portal – Technical Content and Demos

General Education

Description	Title and Link	Audience	Add'l Notes
Education	https://aischool.microsoft.com/learning-paths	AE, PSS, SSP,TSP, CSA, GBB	AI School
Education	AI for Earth	AE, PSS, SSP,TSP, CSA, GBB	
Education	Learn AI Bootcamp		

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