NOVA IMS Information Management School

# AI

# Artificial Intelligence

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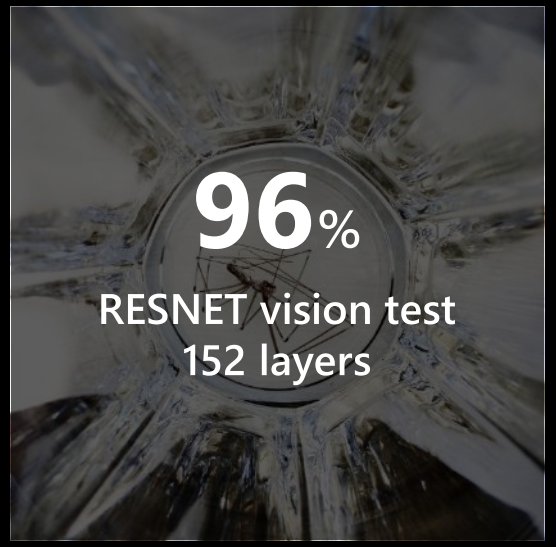
# AI – Microsoft AI Overview

Microsoft


*Our strategy is to build best-in-class **platforms** and productivity services for an **intelligent cloud and an intelligent edge** infused with **artificial intelligence** ("AI").*
Microsoft

# Microsoft AI breakthroughs

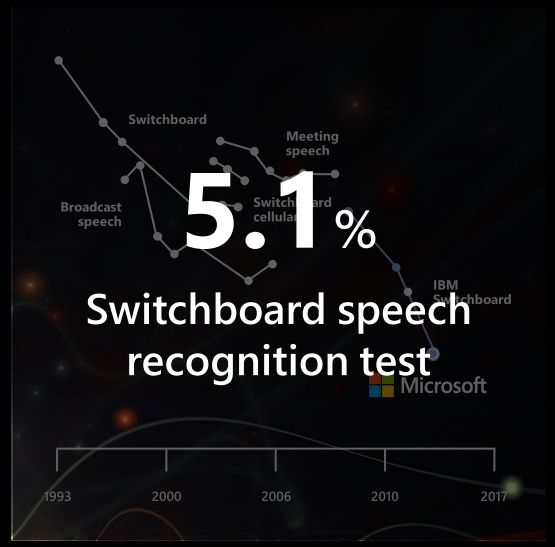
## Vision




2016

Object recognition
Human parity

## Speech



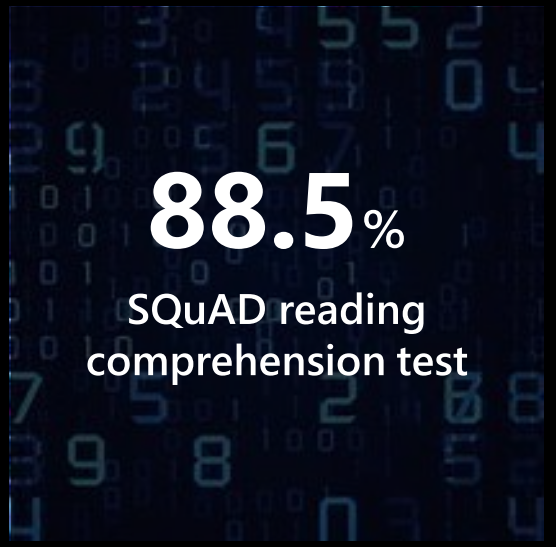

2017

Speech recognition
Human parity


March 2018

Machine translation
Human parity

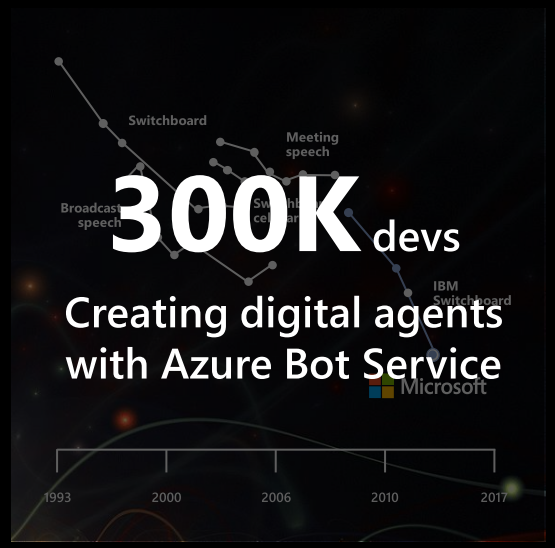
## Language



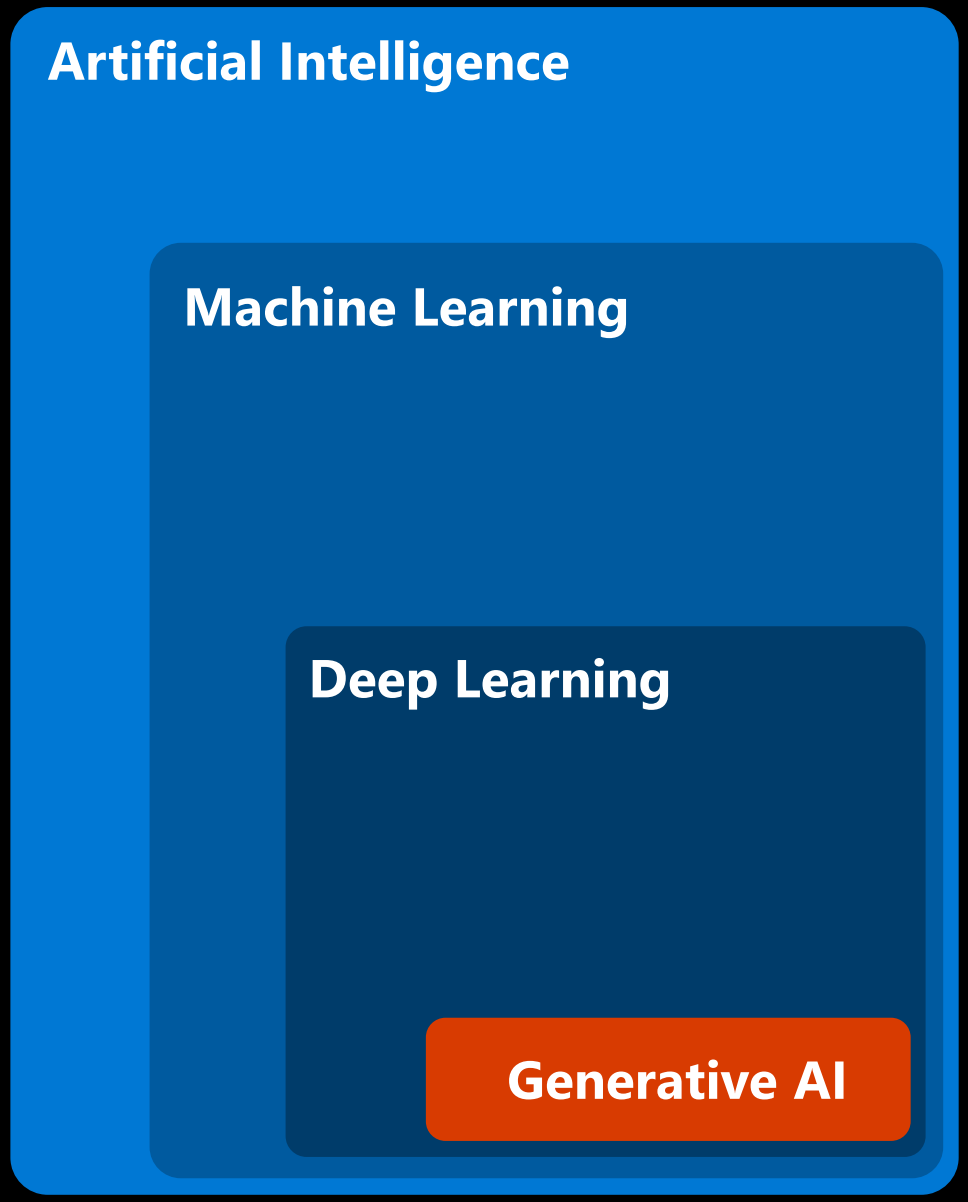

January 2018

Machine reading comprehension
Human parity

# Microsoft AI Momentum






1956

## Artificial Intelligence

the field of computer science that seeks to create intelligent machines that can replicate or exceed human intelligence

1997

## Machine Learning

subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions

2017

## Deep Learning

a machine learning technique in which layers of neural networks are used to process data and make decisions

2021

## Generative AI

Create new written, visual, and auditory content given prompts or existing data.

How the tech behind ChatGPT could change the world—an

How the tech behind ChatGPT could change the world—an updated episode from our archive | The Economist

*Microsoft Bets Big on the Creator of ChatGPT in Race to Dominate A.I.*

Microsoft Bets Big on the Creator of ChatGPT in Race to Dominate A.I. - The New York Times (nytimes.com)

**ChatGPT has given everyone a glimpse at AI's astounding progress**

OpenAI's ChatGPT is a fascinating glimpse into the scary power of AI - Vox

**OpenAI's new DALL-E model draws anything — but bigger, better and faster than before**

dall-e | TechCrunch

**GPT-3: We're at the very beginning of a new app ecosystem**

GPT-3: We're at the very beginning of a new app ecosystem | VentureBeat

*A.I. Can Now Write Its Own Computer Code. That's Good News for Humans.*

A.I. Can Now Write Its Own Computer Code. That's Good News for Humans. - The New York Times (nytimes.com)


*Ensure that artificial general intelligence (AGI) benefits humanity.*


*Empower every person and organization on the planet to achieve more*

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**GPT-3**

Generate and Understand Text

**Codex**

Generate and Understand Code

**DALL·E**

Generate images from text prompts

OpenAI Microsoft

# Generative AI

## GPT-3

Prompt:

```
Write a tagline for an ice cream shop.
```

Response:

```
We serve up smiles with every scoop!
```

## Codex

Prompt:

```
Table customers, columns = [CustomerId, FirstName, LastName, Company, Address, City, State, Country, PostalCode]

Create a SQL query for all customers in Texas named Jane
query =
```

Response:

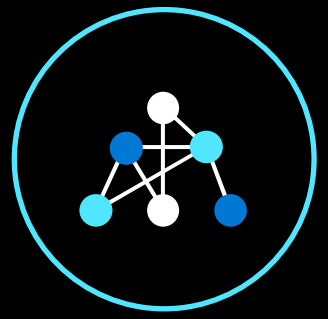
```
SELECT *
FROM customers
WHERE State = 'TX' AND
FirstName = 'Jane'
```

## DALL·E

Prompt: A white Siamese cat

Response:

# Azure AI

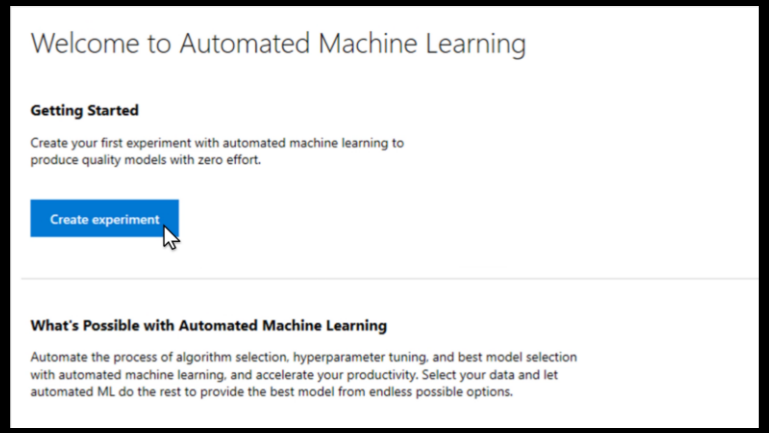


Machine learning

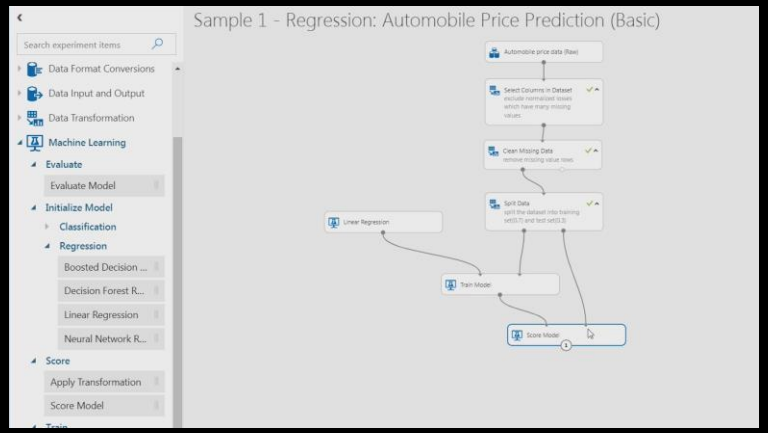
AI apps & agents

Knowledge mining

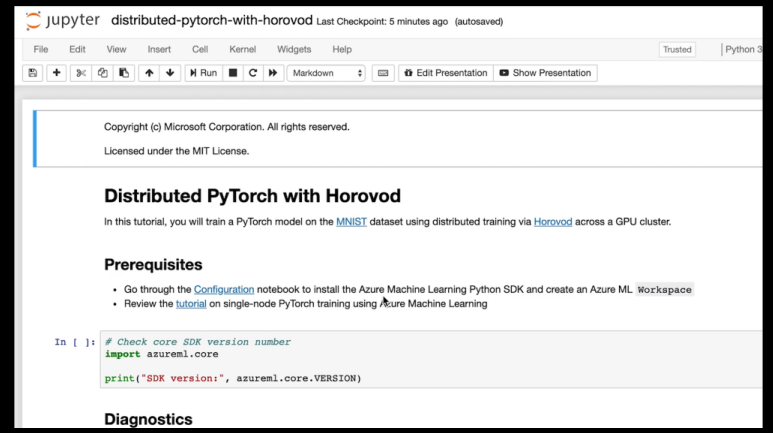
# Simplify machine learning for any skill level




Automated machine learning UI

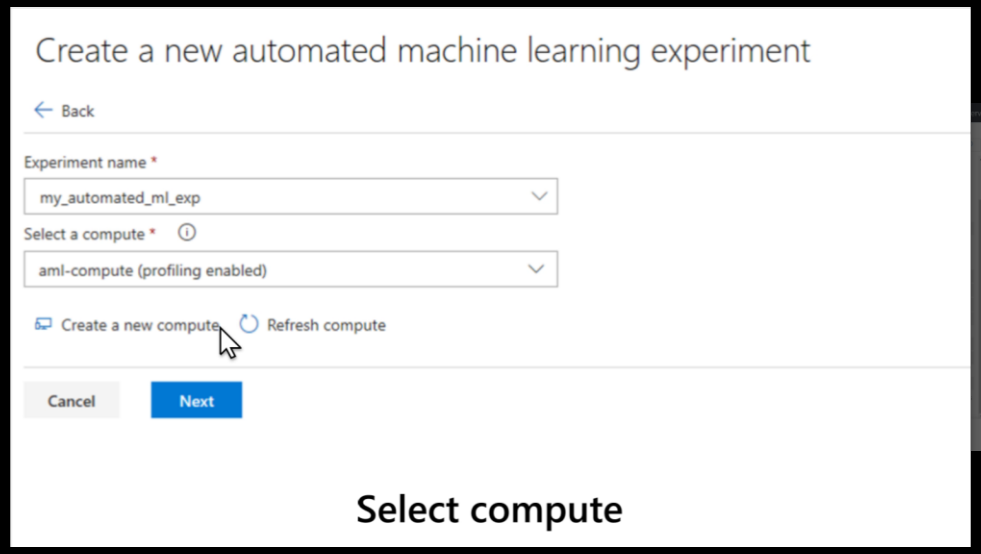



Visual interface



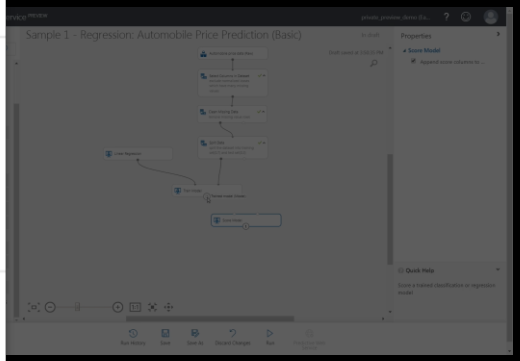

Machine learning notebooks

# Simplify machine learning for any skill level

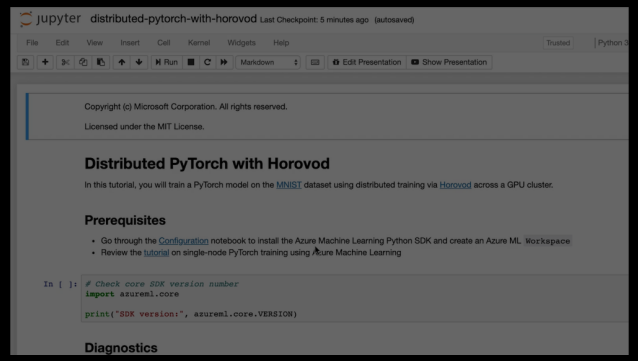



Select compute

Automated machine learning UI

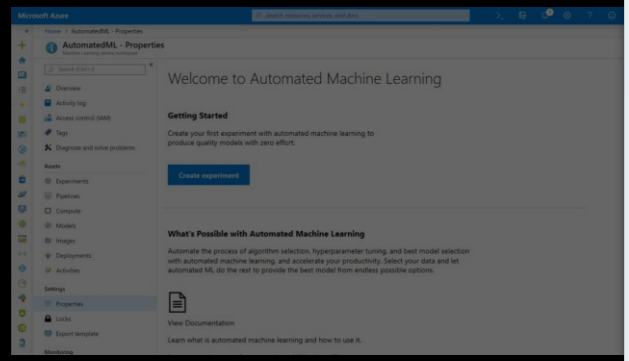


Visual interface

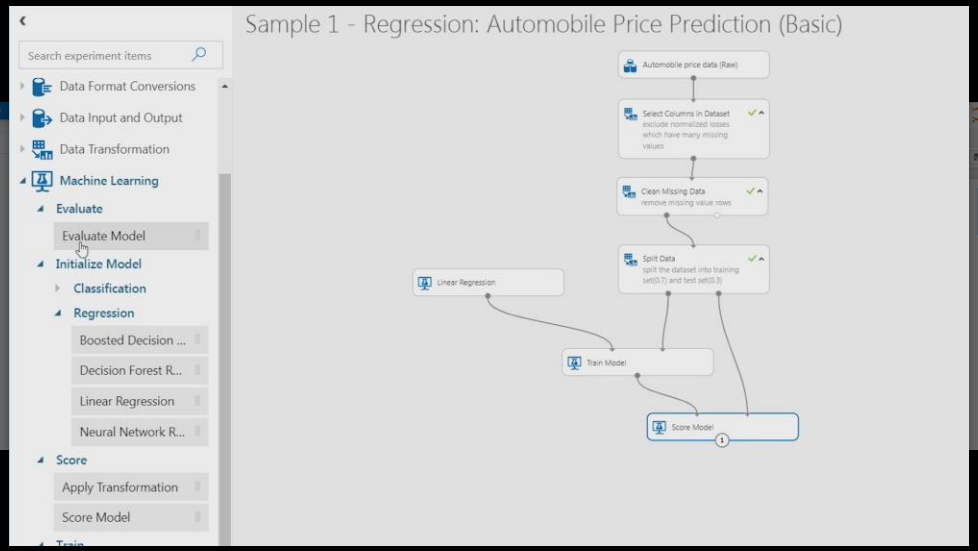



Machine learning notebooks

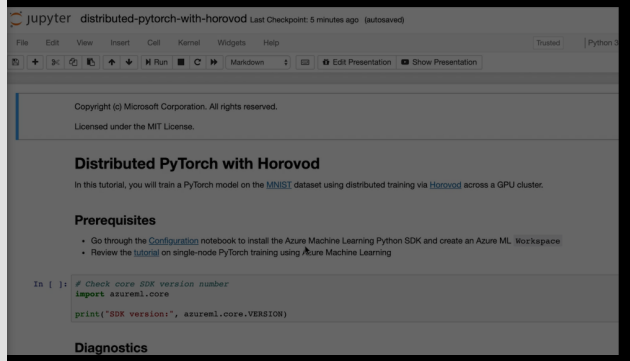
# Simplify machine learning for any skill level




Automated machine learning UI

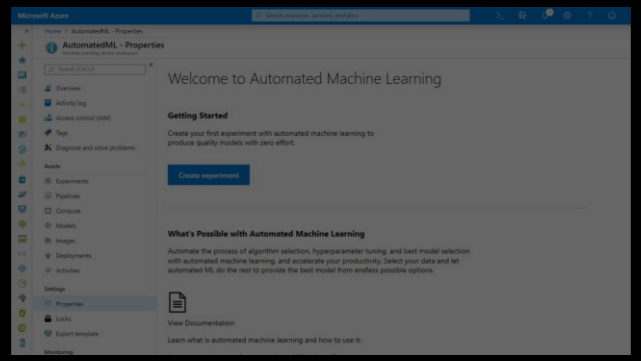



Visual interface

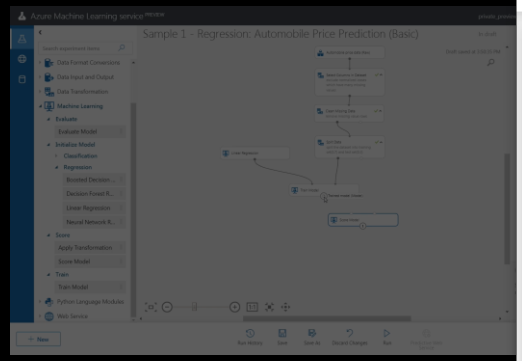



Machine learning notebooks

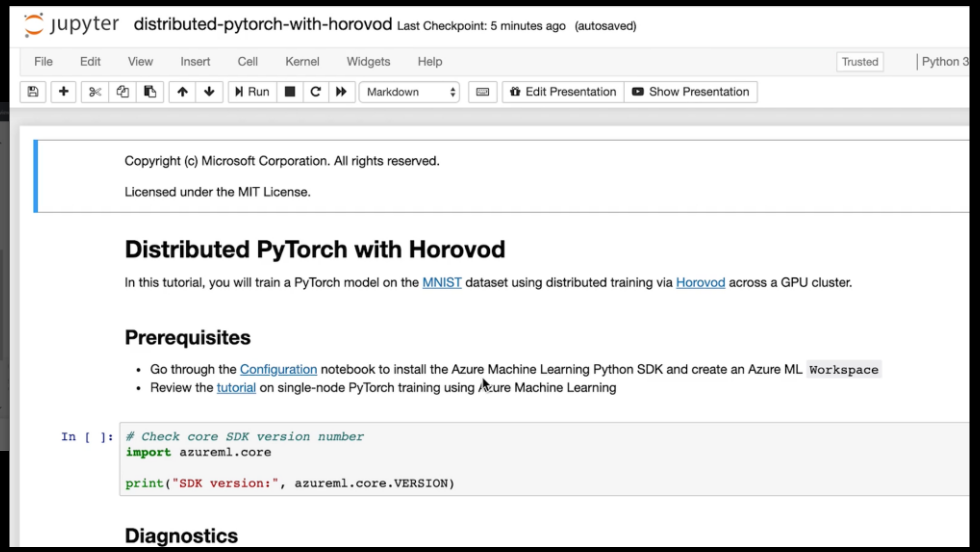
# Simplify machine learning for any skill level




Automated machine learning UI

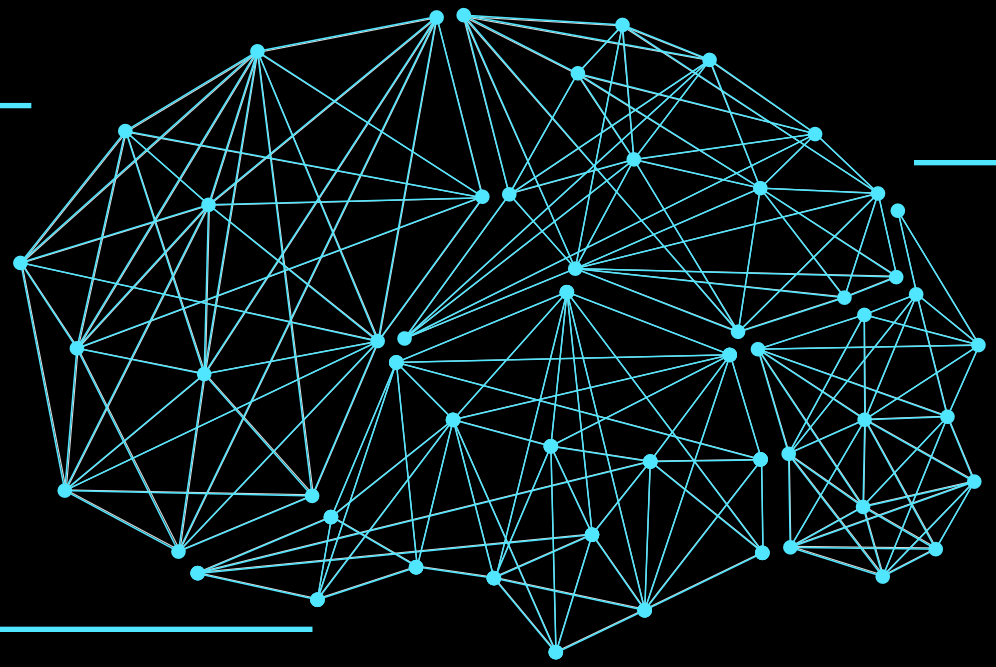



Visual interface




Machine learning notebooks

# Azure Cognitive Services



Decision

Language

Vision

Speech

Web search

# Azure Cognitive Services

## The most comprehensive pre-trained AI

Personalizer

**Decision**

Content Moderator

Anomaly Detector

Computer Vision

Ink Recognizer

Face

**Vision**

Video Indexer

Custom Vision

Form Recognizer

Text Analytics

Translator Text

Bing Spell Check

**Language**

Language Understanding

Content Moderator

QnA Maker

Conversation transcription capability

Custom Speech

**Speech**

Speech transcription

Text-to-Speech

Neural Text-to-Speech

Bing Custom Search

Bing Video Search

Bing Entity Search

Bing News Search

**Web search**

Bing Local Business Search

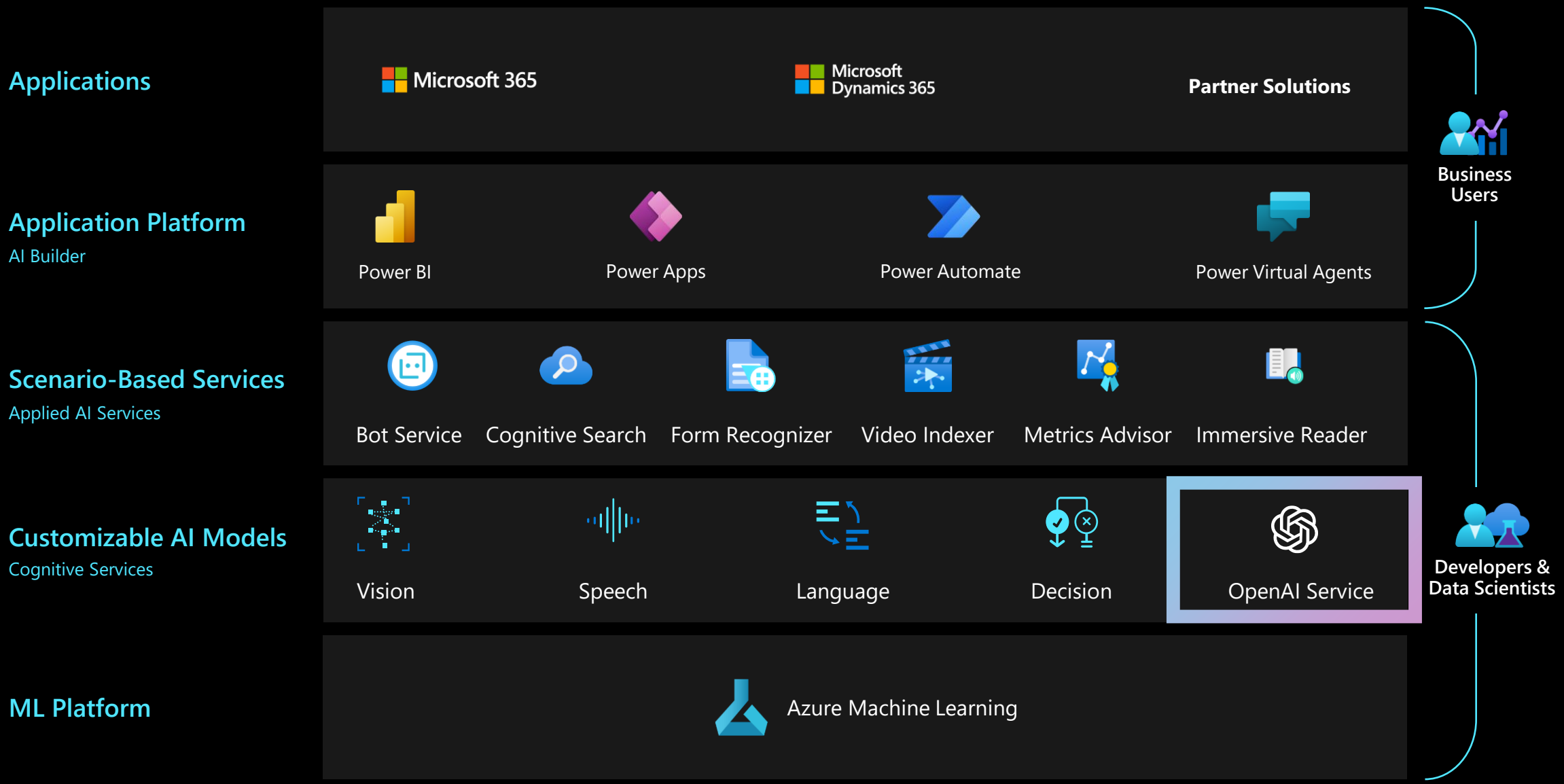
Bing Web Search

Bing Image Search

Bing Autosuggest

Bing Visual Search

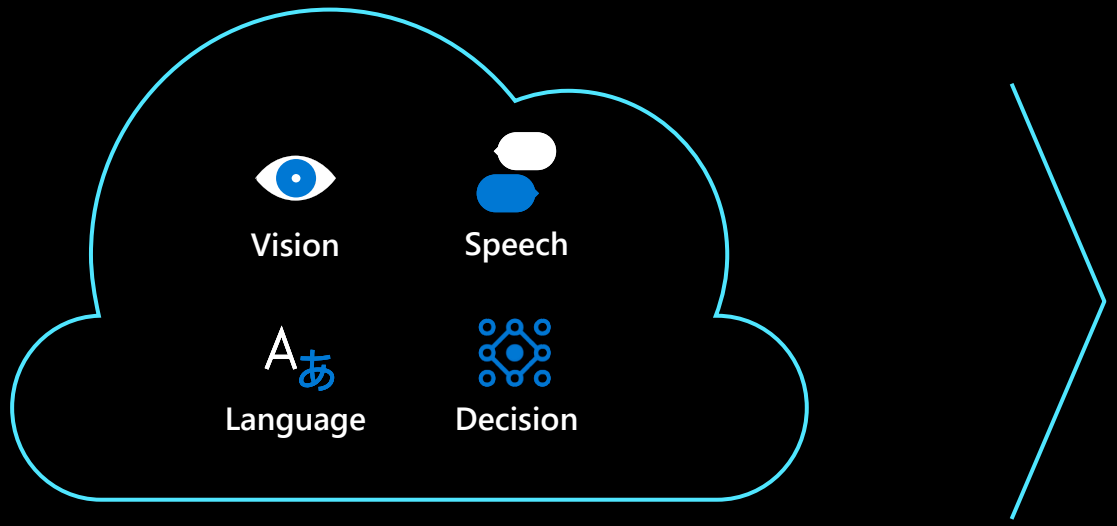
# Azure AI


Applications
Microsoft 365
Microsoft Dynamics 365
Partner Solutions
Application Platform
AI Builder
Power BI
Power Apps
Power Automate
Power Virtual Agents
Business Users
Scenario-Based Services
Applied AI Services
Bot Service
Cognitive Search
Form Recognizer
Video Indexer
Metrics Advisor
Immersive Reader
Customizable AI Models
Cognitive Services
Vision
Speech
Language
Decision
OpenAI Service
Developers & Data Scientists
ML Platform
Azure Machine Learning

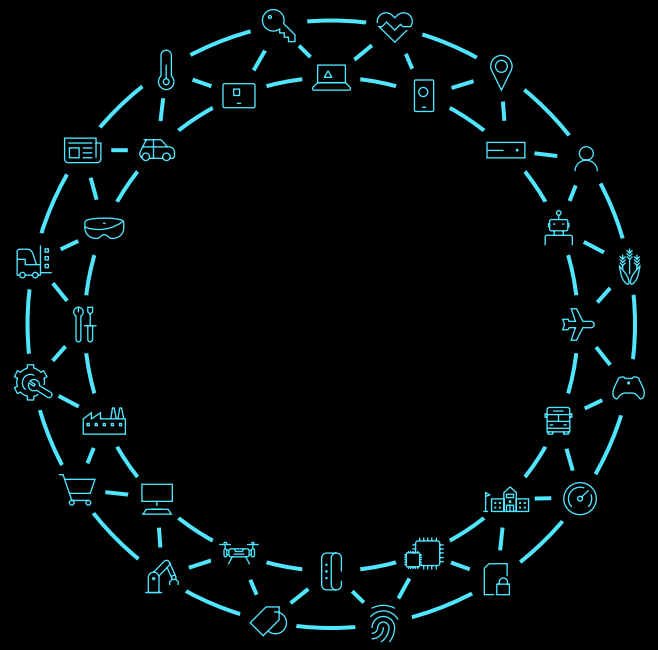
# Azure Cognitive Services

## Deploy anywhere using containers

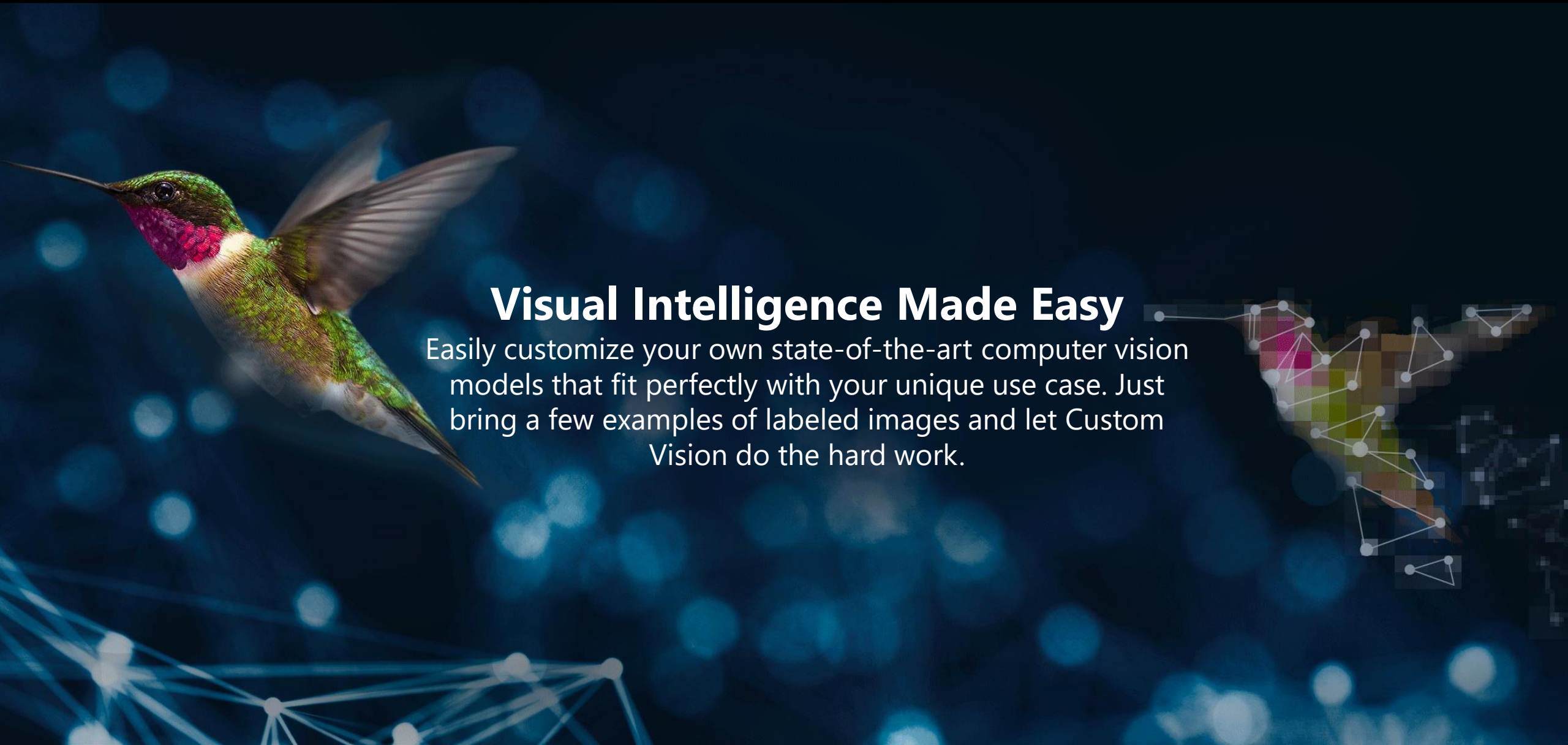
### Azure Cognitive Services




### Wherever your data resides



# Computer Vision



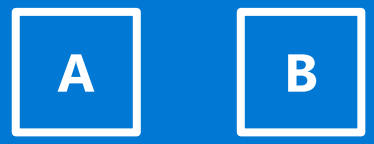
## Visual Intelligence Made Easy

Easily customize your own state-of-the-art computer vision models that fit perfectly with your unique use case. Just bring a few examples of labeled images and let Custom Vision do the hard work.

# Main Types of Computer Vision Algorithms

## IMAGE CLASSIFICATION

What are my images about?




## OBJECT DETECTION

Locate rectangular areas containing known objects in an image

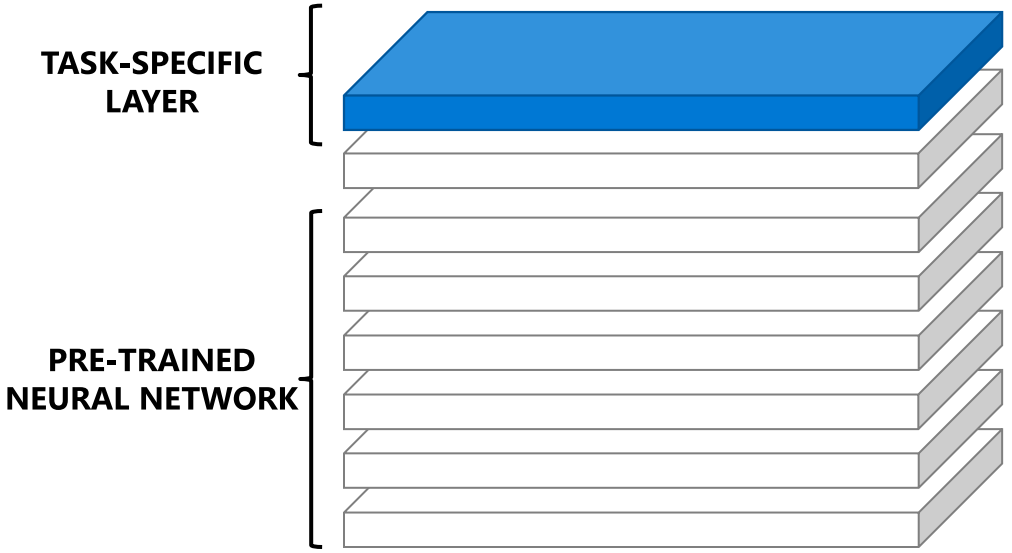
## SEMANTIC SEGMENTATION

Locate known objects in an image, at pixel level

# Standing on the Shoulder of Giants – Transfer Learning

By **leveraging existing pre-trained models** it becomes possible to train highly performant models using a relatively small task-specific data set.

**Microsoft Cognitive Services for Computer Vision are ready-to-use and designed around that approach. Custom models trained on ImageNet (AlexNet, Resnet…) are also good examples of foundations for transfer learning.**



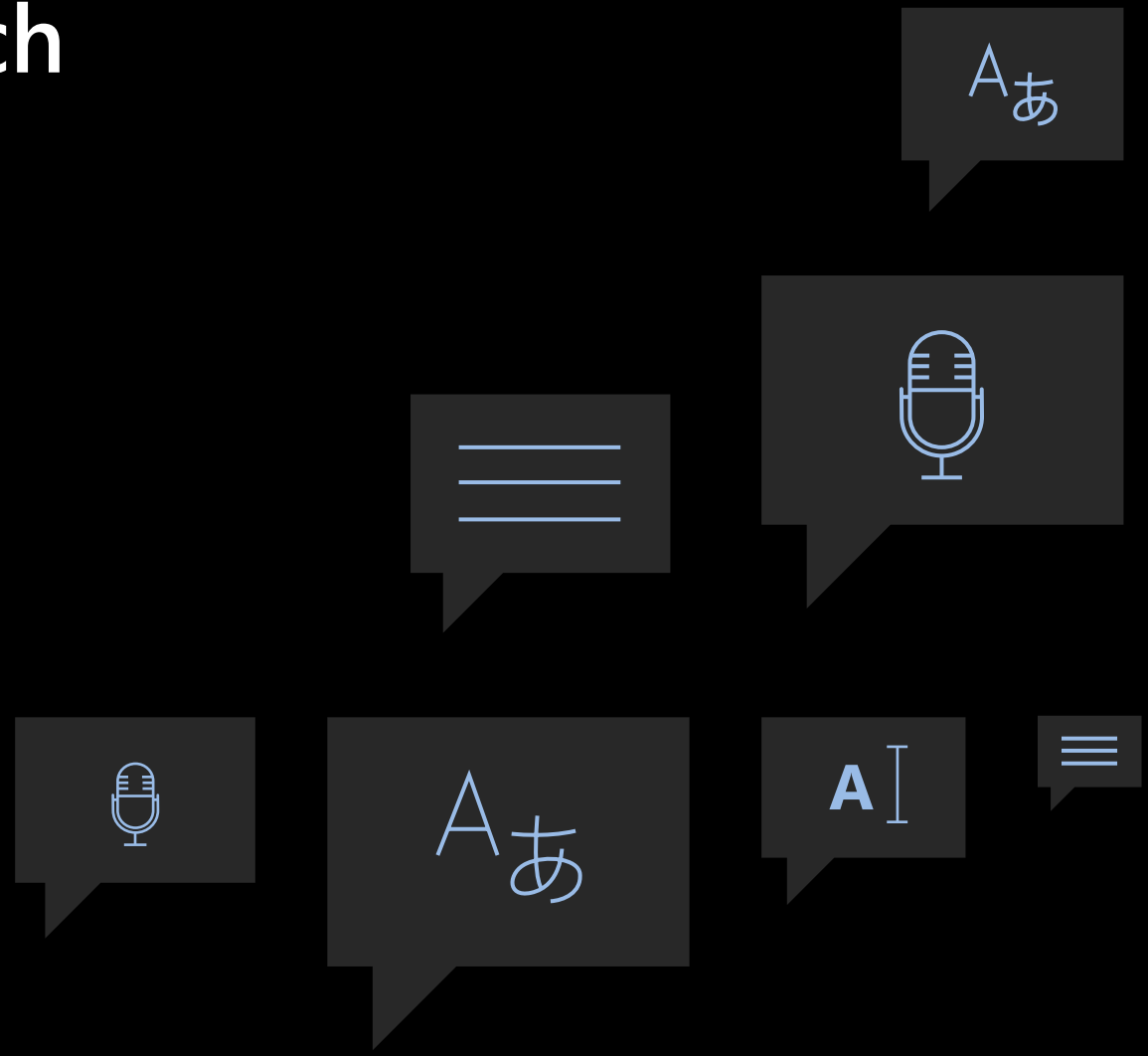
# DEMO

Object Detection – Custom Vision API

- GENERAL AVAILABILITY

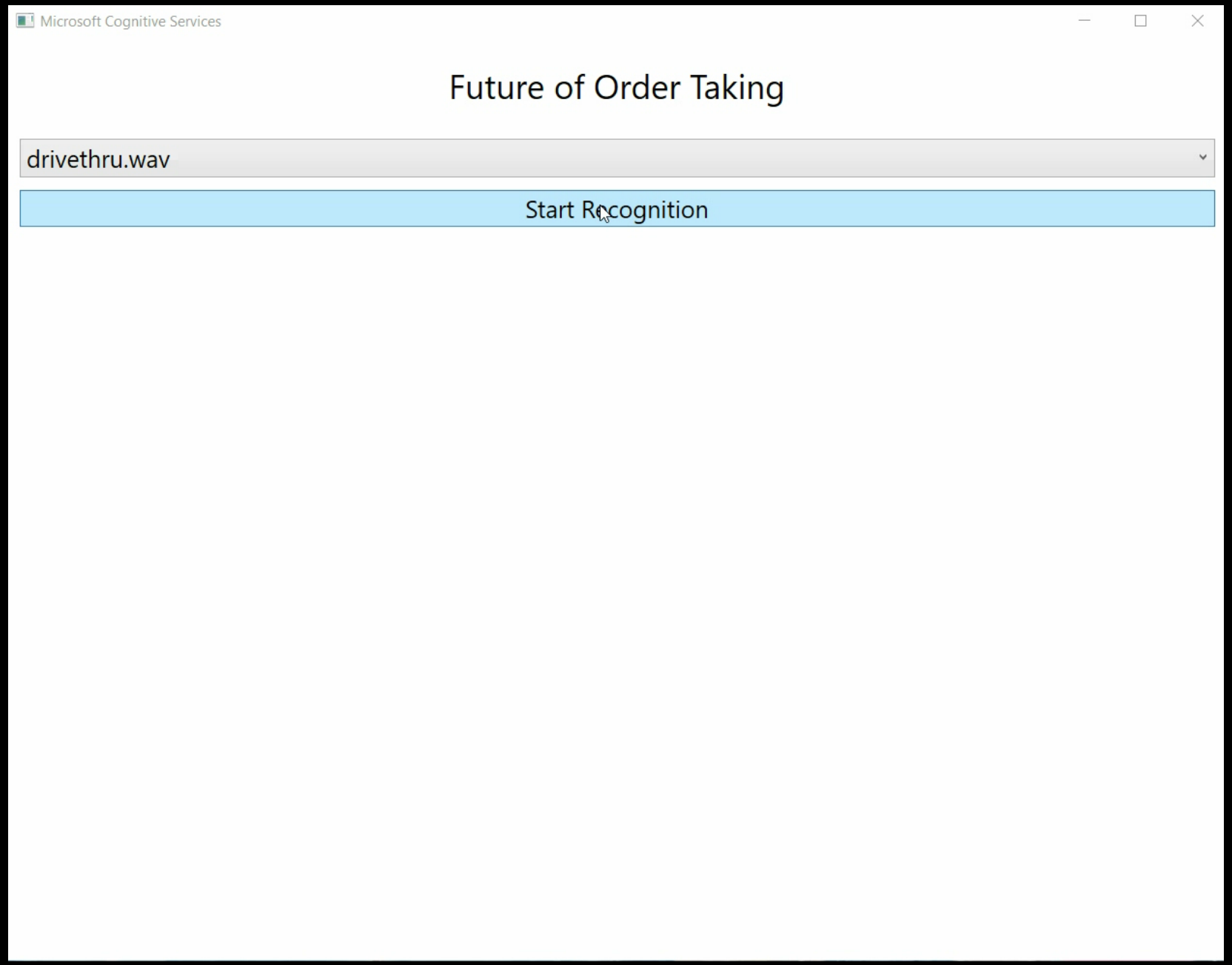
# Cognitive Services—Speech

- Speech to text
- Text to speech
- Speech translation
- Ability to customize all three capabilities



# DEMO

Text To Speech– Speech API
Automatic Speech Recognition – Speech API


Microsoft Cognitive Services
Future of Order Taking
drivethru.wav
Start Recognition

# Neural TTS Samples

A palpable chill passes through the room at this maladroit refusal .

 Synthesized

 Recorded

You can't know how long Tara would have been mad , because that was taken away from her.

 Synthesized

 Recorded

In Georgia , governor Zell Miller has declared a state of emergency in four counties.

 Recorded

 Synthesized

Nostalgia could still be evoked after only twenty years , and many remembered when.

 Recorded

 Synthesized

The forecast for next week shows sunshine with highs in the mid forties.

 Synthesized

 Recorded

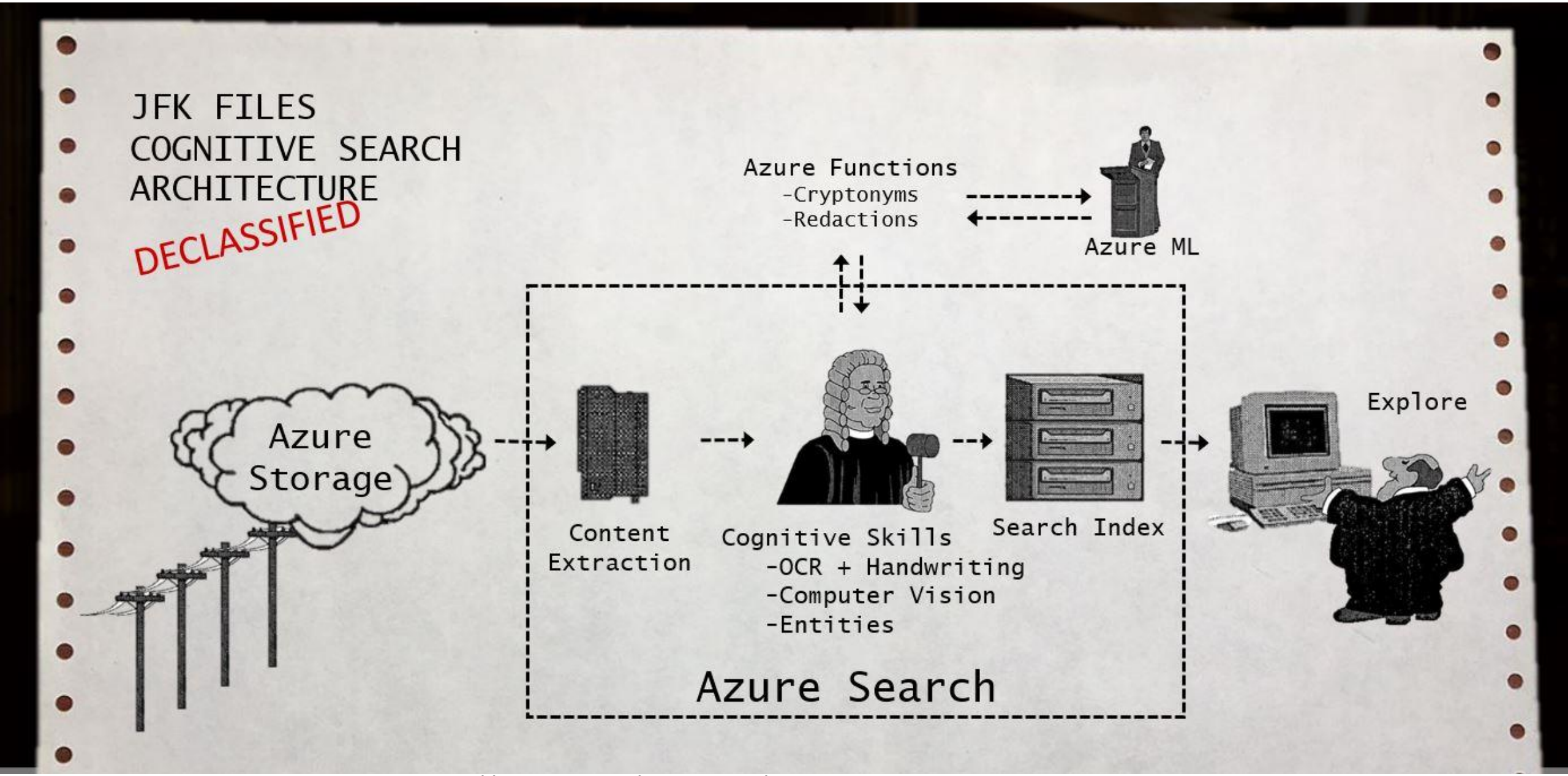
# DEMO

Automated Speech Recognition & Text To Speach

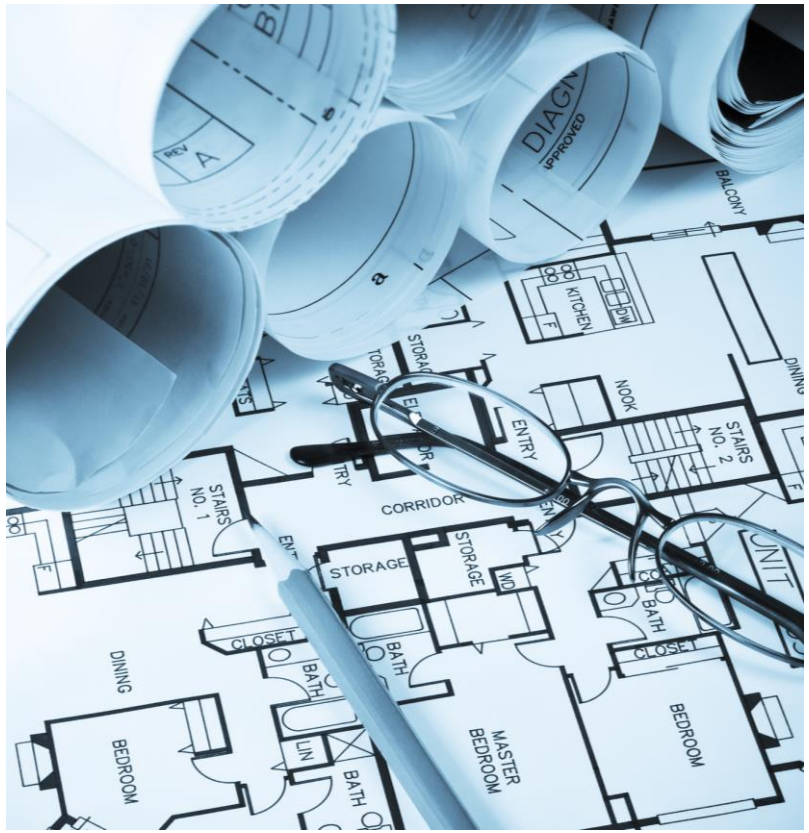
# JFK Files

https://www.microsoft.com/en-us/ai/ai-lab-jfk-files


https://github.com/Microsoft/AzureSearch_JFK_Files




https://github.com/Microsoft/AzureSearch_JFK_Files





Analyzing legal contracts

Understanding engineering plans

Extracting form information

https://jfk-demo.azurewebsites.net/#/


Making AI real for your Projects


You have more power at your fingertips than ever before.


Use Cognitive Services to
change the world that you see