



# Reactor

机器学习的1234事

# Map



# 个人介绍



## Kinfey Lo – (卢建晖)

Microsoft Cloud Advocate

前微软MVP、Xamarin MVP和微软RD，拥有超过10年的云原生、人工智能和移动应用经验，为教育、金融和医疗提供应用解决方案。 Microsoft Ignite, TechEd 会议讲师，Microsoft AI 黑客马拉松教练，目前在微软，为技术人员和不同行业宣讲技术和相关应用场景。



爱编程(Python , C# , TypeScript , Swift , Rust , Go )

专注于人工智能，云原生，跨平台移动开发

Github : <https://github.com/kinfey>

Email : [kinfeylo@microsoft.com](mailto:kinfeylo@microsoft.com) Blog : <https://blog.csdn.net/kinfey>

Twitter : @Ljh8304

# 一. 什么是机器学习?



# 有了机器学习，我们可以



Insights Timeline ⏪ Download Chinese (Simplified) View Edit

Search

Topics

计算机 s

Play previous Play next

1 audio effect (preview)

Silence

Play previous Play next

17 keywords

里面 机器学习 大家 算力 相关 上面 服务 选择 去完成 +8

Play previous Play next

24 labels

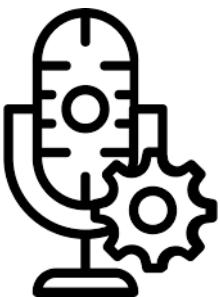
发短信 显示 电子学 截图 软件 网页 计算机图标 监控 +16

Play previous

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

# 在里面的操作，机器做了什么

## 语音转文字



Insights Timeline Download Chinese (Simplified) View Edit Autoscroll on

Search

00:00:03 哟哦今天我想给各位同学来介绍一下Azure机器学习的一个部分。

00:00:08 那如果大家呢，呃，有看上面的小视频呢？大家会知道，Azure上面呢，有非常  
00:00:08 强大的一些机器学习的一些功能啊，我们那之前呢就介绍过一个零代码的方  
式去做。

00:00:22 呃，一个计算机视觉的任务，那接下来呢？我想给大家更专业的部分，大家知道我  
们做机器学习的时候呢，会遇到一个状况，就是，呃，我们可能没有GPU。

00:00:35 或者是没有一些机器学习的平台，还有搭建环境的时候非常不方便。

00:00:40 但是如果你通过Azure了，可以很快速的去完成相关的工作，你可以不需要关注你  
的整个。

00:00:47 呃，平台的一些搭建情况啊，安装啊，配置文件之类的就是可以启动你的Azure的  
00:00:47 一些机器学习上面的一些服务，包括说logo，包括说Python的环境，还有就是一些  
GPU的一些算力的一些呃，使用在这里面的话呢，我想给大家介绍一下。

00:01:05 Azure的整个，呃，机器学习的一个服务的一个平台好。

00:01:10 首先呢，我们回到Azure的portal里面，在这个坡头里面呢？呃，会有很多的一些呃  
00:01:10 资源的一些创建，我们呢，首先还是要去创建一个Azure，去关于机器服务的，  
呃，资源，我们去选择AI加机器学习，然后呢在这里面定义列，呃，里面的。

00:01:29 呃，第一个就是我们的机器学习服务，然后点击创建，那这个收了，他就会引导你  
去做一个Azure的一个机器学习的一个。

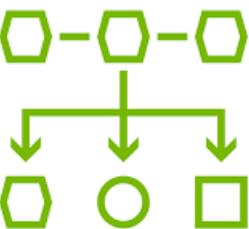
00:01:39 创建在里面的话，你可以选择的是原有的资源组或者是自己可以新建一个另外的  
00:01:39 你可能是要去创建一个机器学习的一个名字。

00:01:51 呃，像L demo。

00:01:54 哟然后呢，你可以选择你的区域，然后你的存储的账户为什么要存储呢？因为  
呃，在里面的话，它可以帮你去保存你的。

00:01:54 呃，朱比特的logo还有相关的一些，呃，关于数据的整理啊，呃还有另外的一些相

## 实体提取



17 keywords

里面 机器学习 大家 算力 相关 上面 服务 选择 去完成 环境  
非常 资源 去创建 做 一 3 中心 0 在

Play previous

Play next >

24 labels

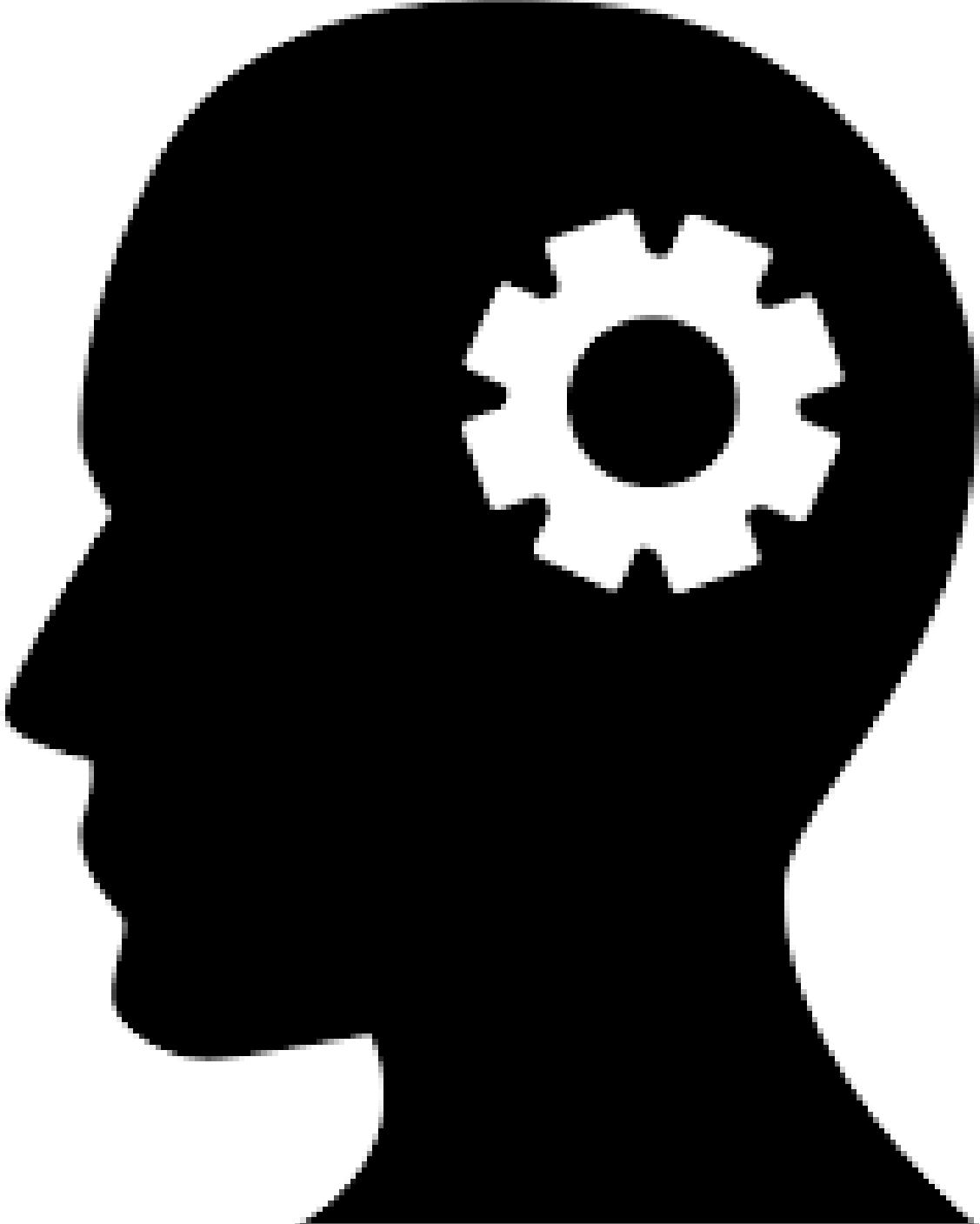
发短信 显示 电子学 截图 软件 网页 计算机图标 监控 +16

Play previous

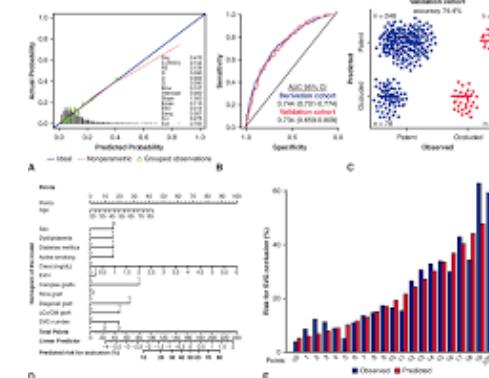
Play next >

# 自然语言

自然语言理解是研究如何让电脑读懂人类语言的一门技术，是自然语言处理技术中最困难的一项。



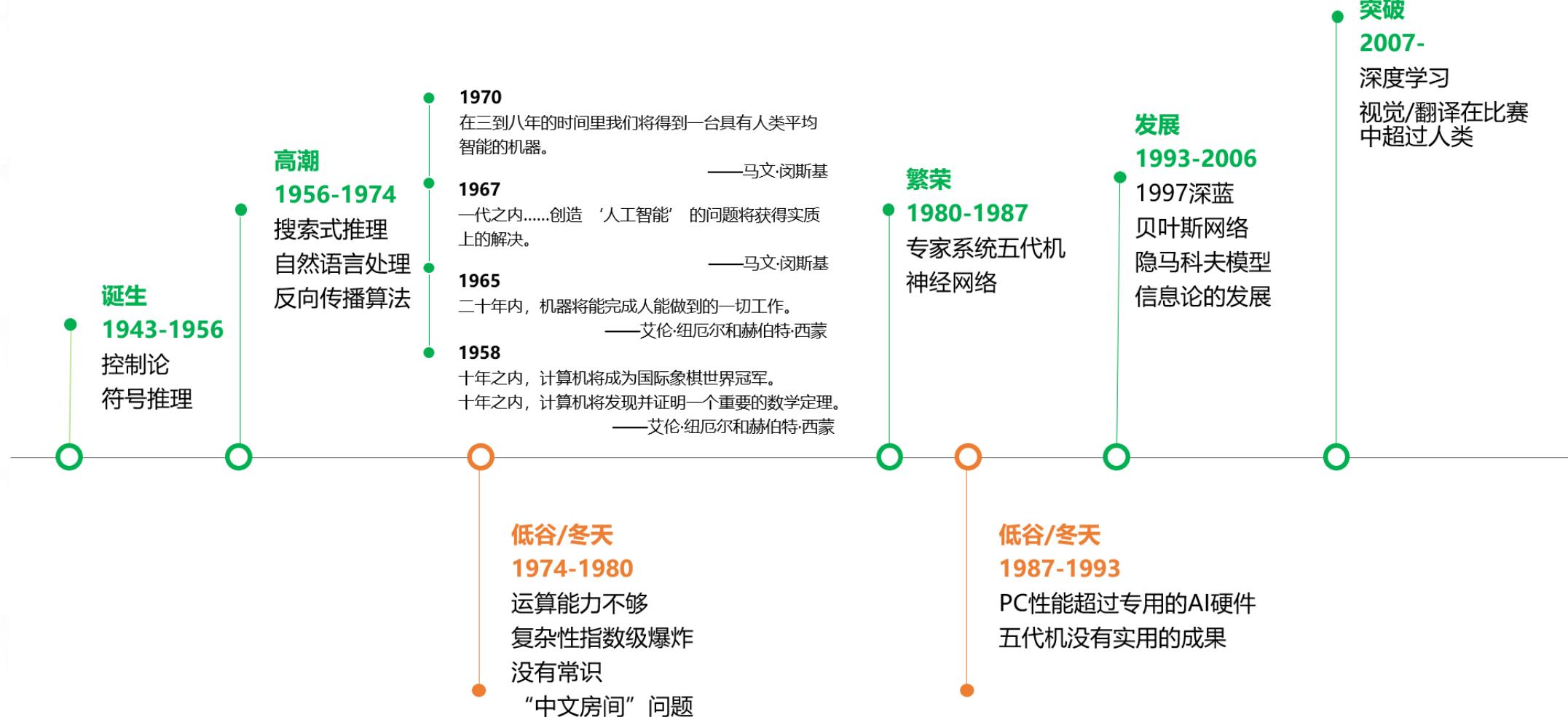
# 自然语言的应用领域



# 自然语言相关技术



# 发展过程



## 二. 怎么做机器学习?



# 需要应用/研发机器学习的人群



教师



医生



律师



银行家



CTO



开发人员



数据科学家

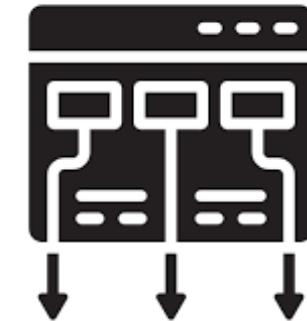
# 如何快速便捷进入机器学习领域?



编程语言



编程工具



机器学习框架

# 编程语言说起



# Python

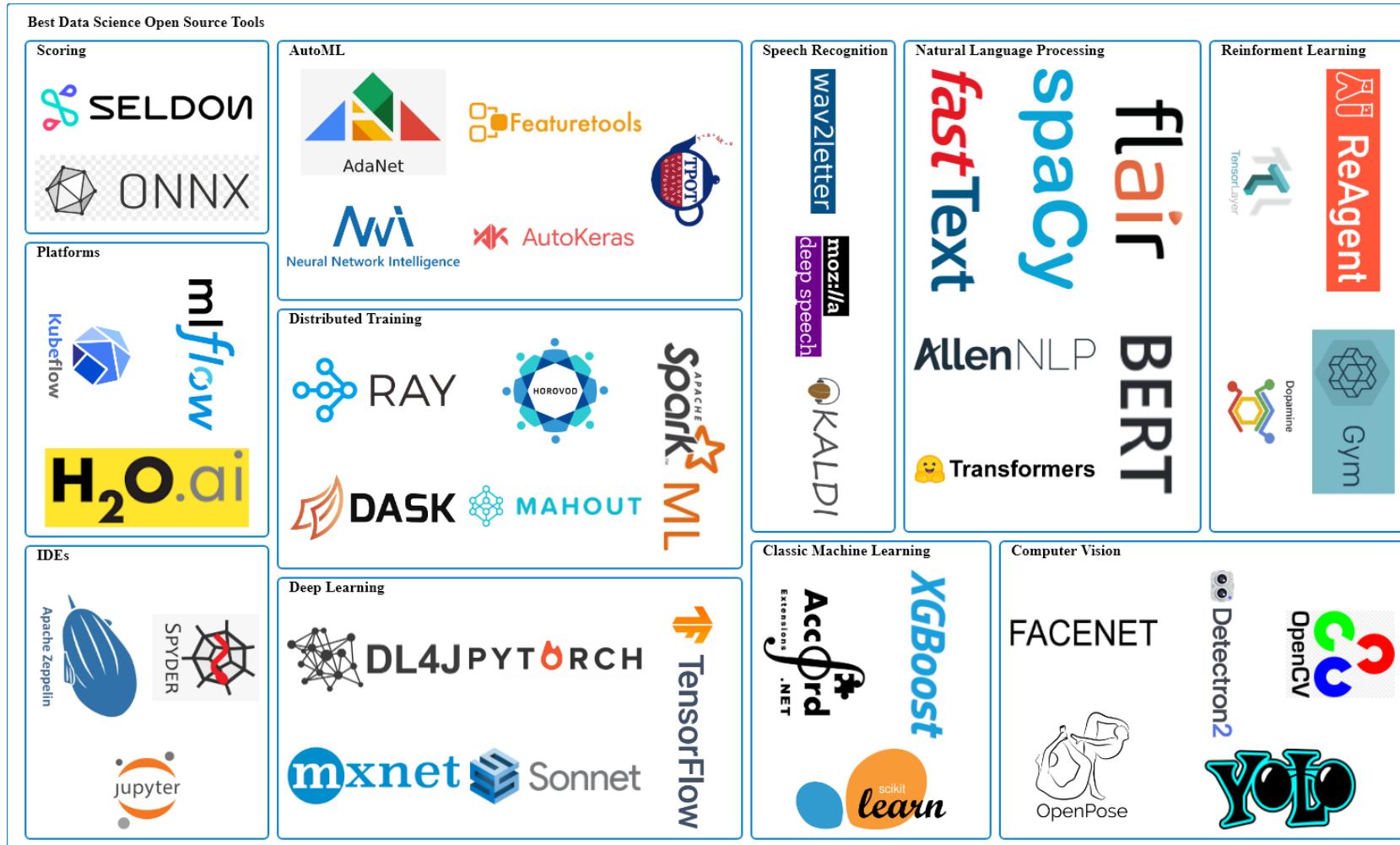
Python是数据科学的第一语言

[aka.ms/Python01](http://aka.ms/Python01)



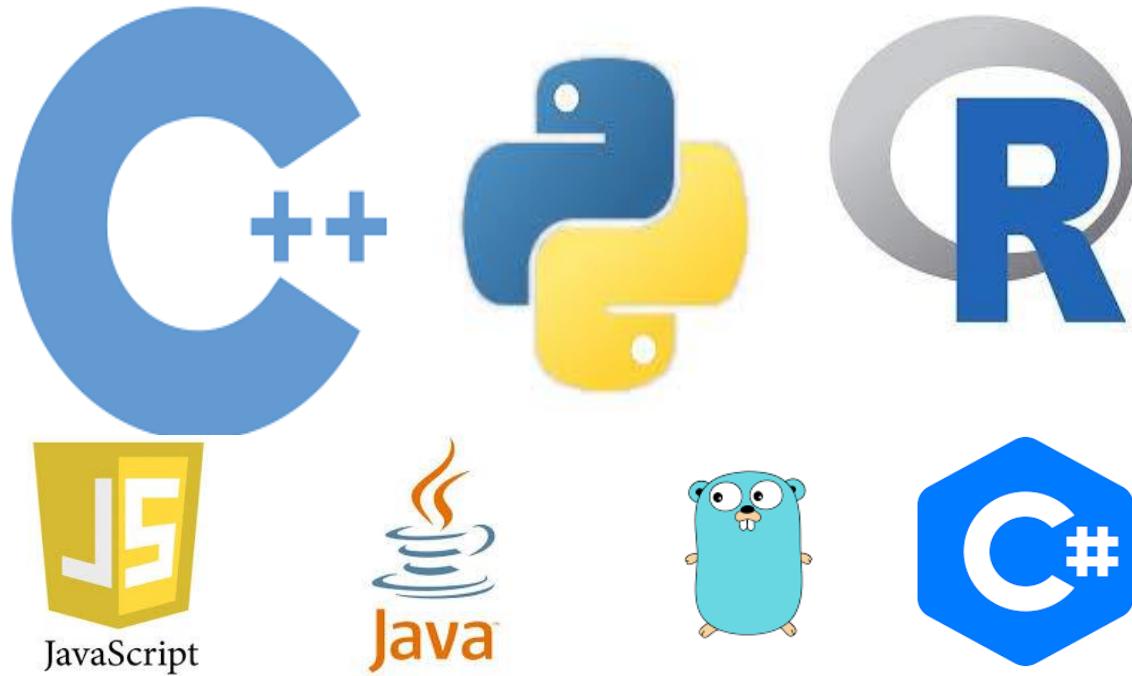
# 通过Python你可以

[aka.ms/ml01](http://aka.ms/ml01)



其他语言呢？

# 技术发展，机器学习是无分语言的



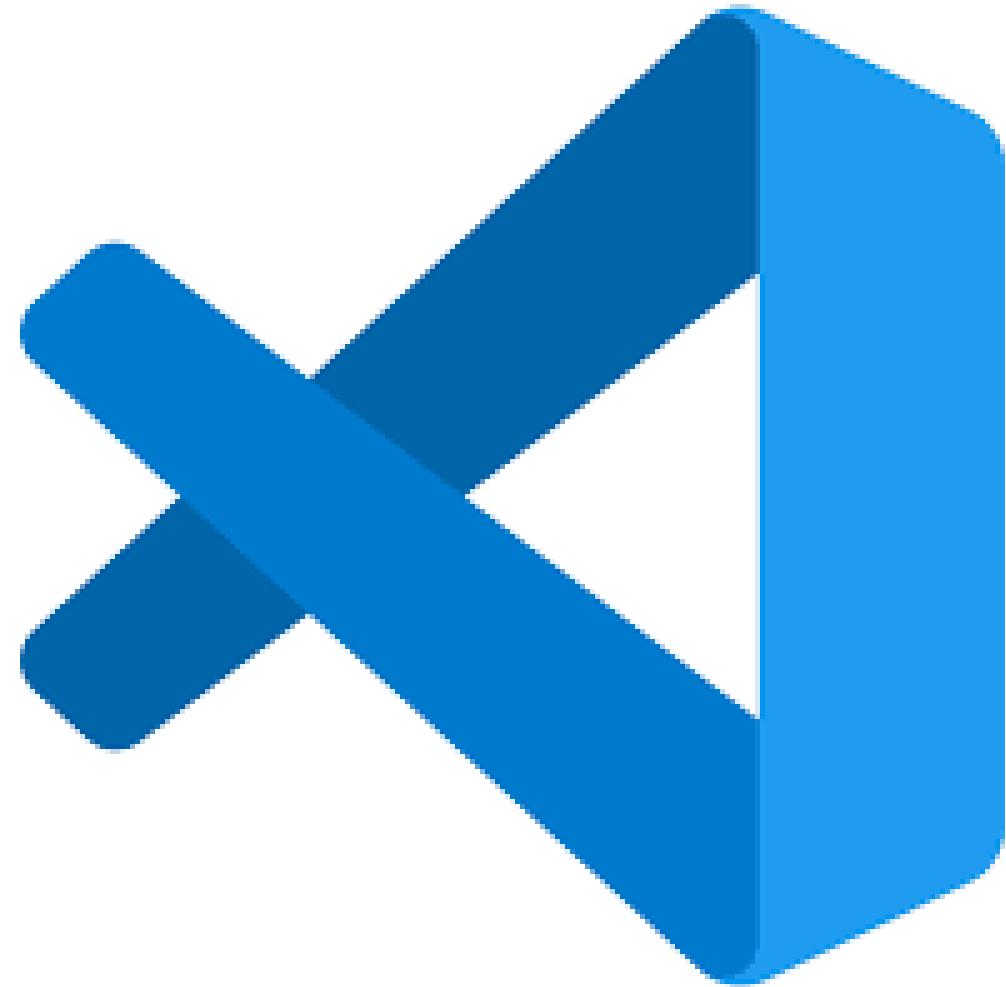
# .NET 程序员也可以成为一名数据科学家

<https://github.com/kinfey/HandsOnLab/tree/master/MLNetLab>

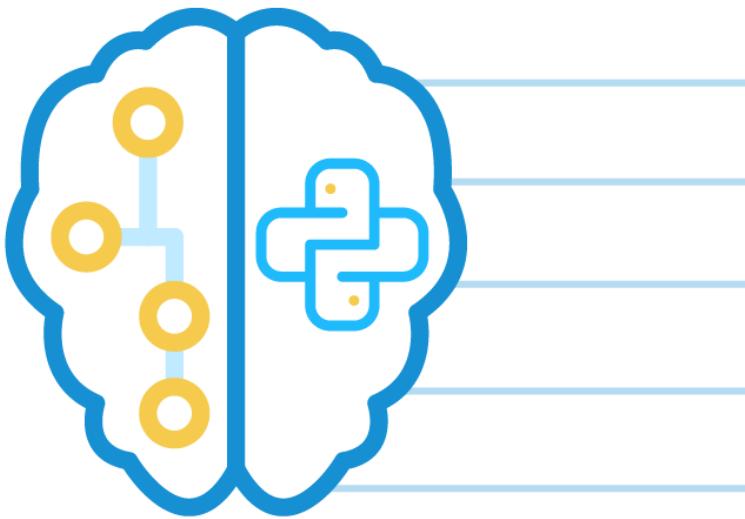


# 开发工具

The screenshot shows the Python extension page in the Visual Studio Code Marketplace. The extension is titled "Python v2021.9.1191016588" by Microsoft. It has 41,463,622 installs and a rating of 4.5 stars from 433 reviews. The description mentions IntelliSense (Pylance), Linting, Debugging (multi-threaded, remote), Jupyter Notebooks, code formatting, refactoring, unit tests, and more. A note indicates that the extension is enabled globally. Below the main title, there are tabs for "Details", "Feature Contributions", "Changelog", "Extension Pack", and "Runtime Status". The "Details" tab is selected. The "Python extension for Visual Studio Code" section describes it as a Visual Studio Code extension with support for the Python language. It mentions features like IntelliSense (Pylance), linting, debugging, code navigation, code formatting, refactoring, variable explorer, test explorer, and more. The "Installed extensions" section notes that the Python extension will automatically install Pylance and Jupyter. The sidebar on the right contains sections for "Categories" (Programming Languages, Debuggers, Linters, Formatters, Other, Data Science, Machine Learning, Notebooks) and "Resources" (Marketplace, Repository, License). A "More Info" link is also present.



# 机器学习框架



- NumPy
- Matplotlib
- Pandas
- Seaborn
- Scikit-learn
- OpenCV
- Keras
- spaCy
- TensorFlow
- PyTorch

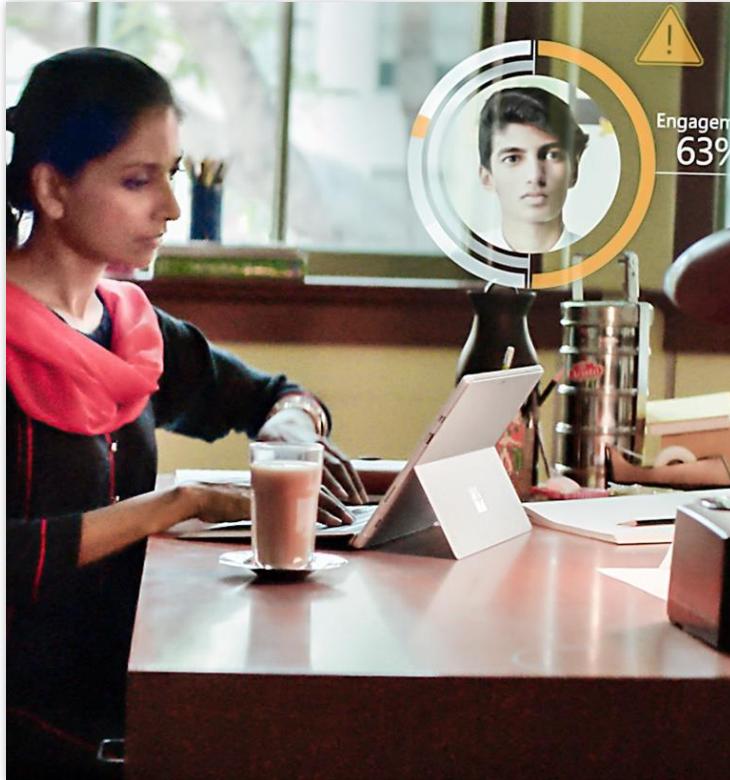
### 三. 如何做机器学习?



# 驱动AI的主要因素

AI drivers

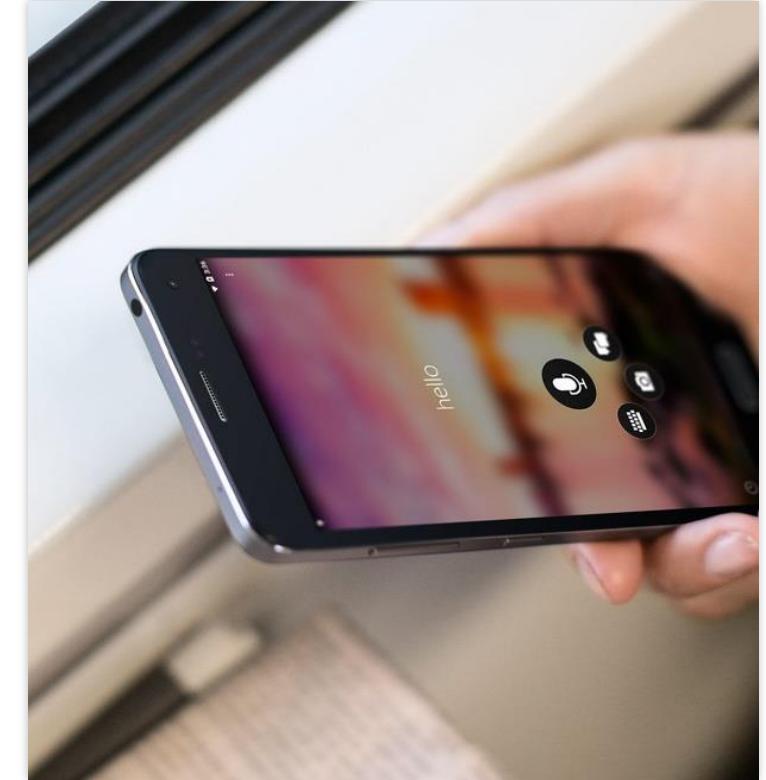
云 Cloud / Compute



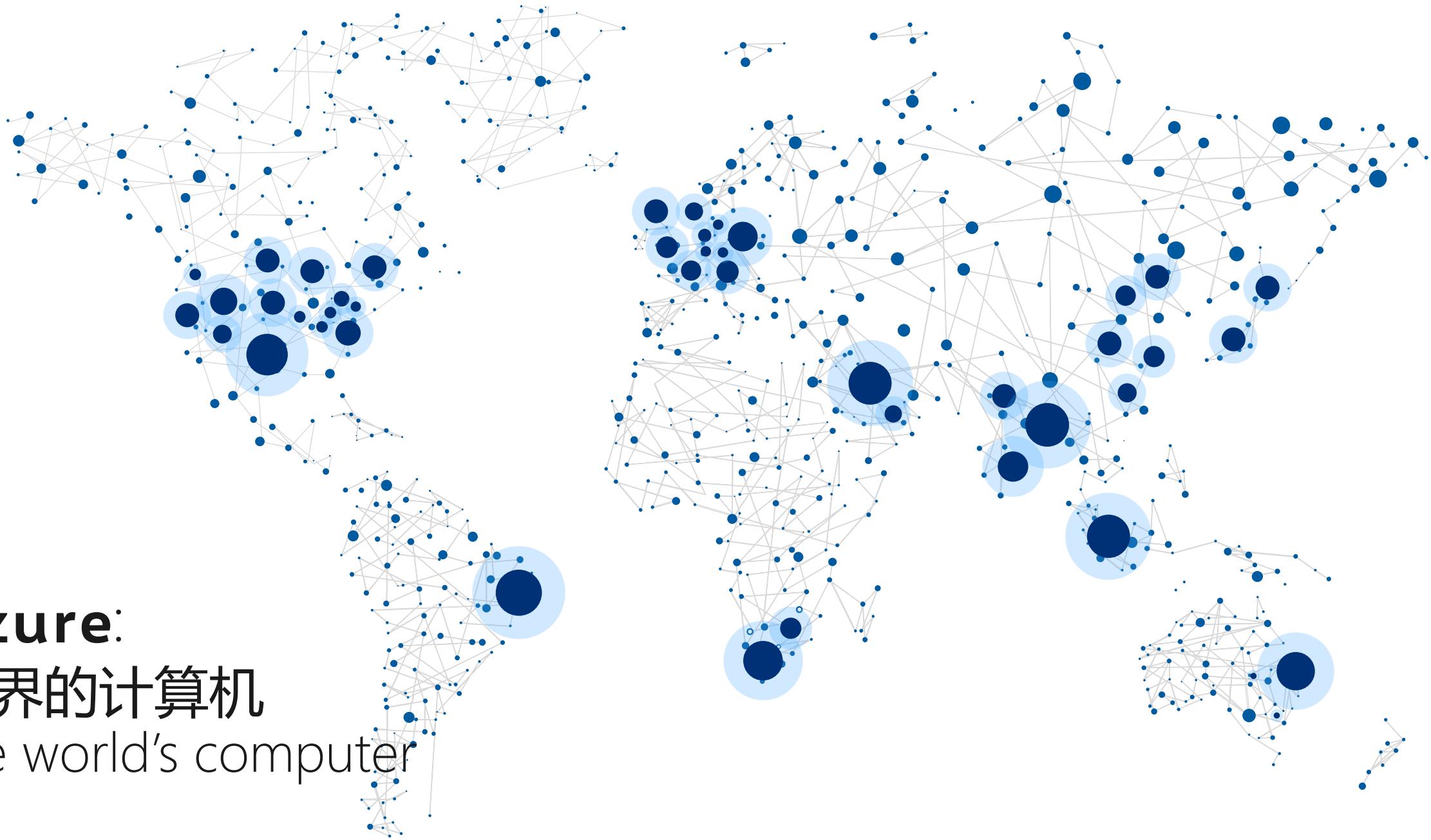
数据 Data



算法 Algorithms



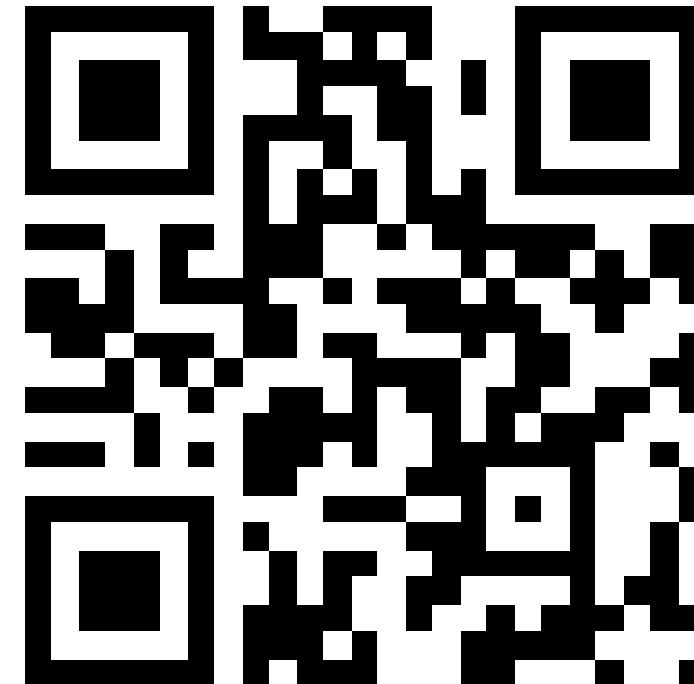
**Azure:**  
世界的计算机  
the world's computer



# 开通你的Azure 平台



<https://aka.ms/StudentGetAzure>

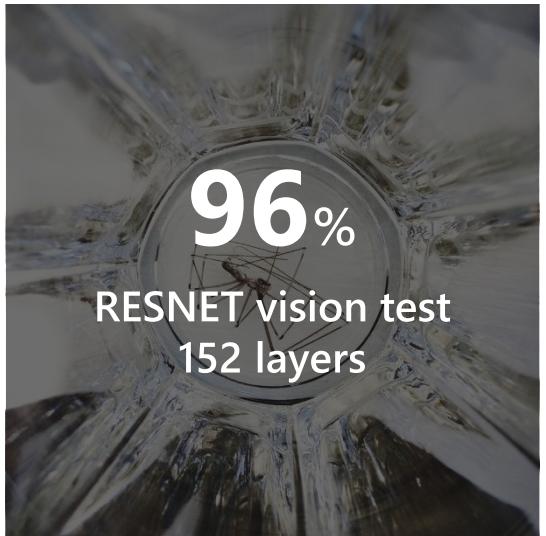


<https://aka.ms/FreeAzure>

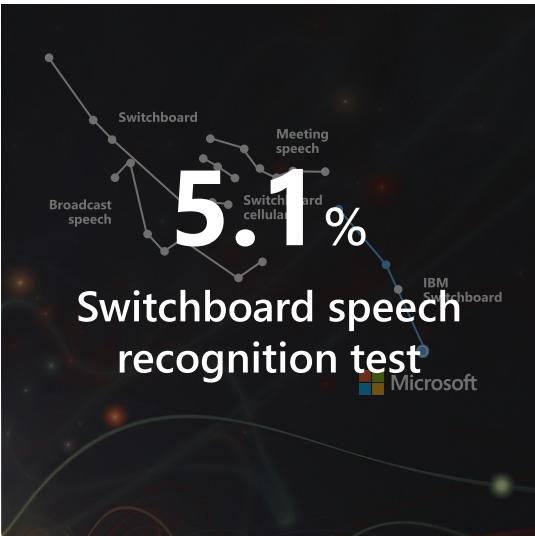
# 微软在人工智能领域的突破

Microsoft AI breakthroughs

视觉  
Vision



语音  
Speech



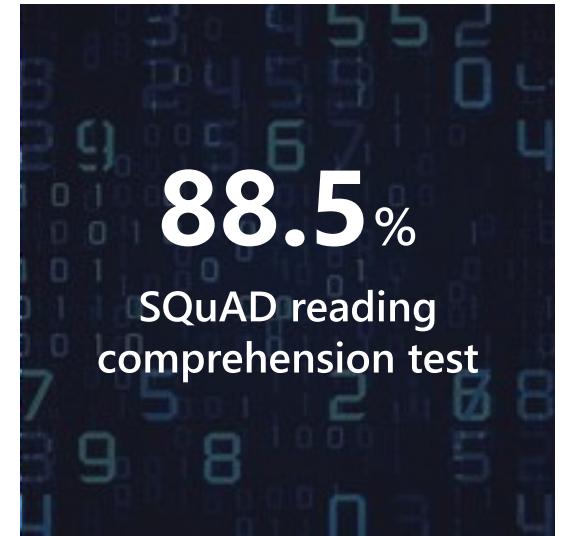
2016

Object recognition  
Human parity

语言  
Language



语言  
Language



2017

Speech recognition  
Human parity

March 2018

Machine translation  
Human parity

January 2018

Machine reading comprehension  
Human parity

# The Microsoft AI platform

*Cloud-powered AI for every developer*

## Services

### CUSTOM AI

Azure Machine Learning

### PRE-BUILT AI

Cognitive Services

### CONVERSATIONAL AI

Bot Framework

## Tools

### CODING & MANAGEMENT TOOLS

VS Tools  
for AI

Azure ML  
Studio

Azure ML  
Workbench

Others (PyCharm, Jupyter Notebooks...)

## Infrastructure

### AI ON DATA

Cosmos  
DB

SQL  
DB

SQL  
DW

Data  
Lake

Spark

DSVM

### AI COMPUTE

Batch  
AI

ACS

Edge

CPU, FPGA, GPU

### DEEP LEARNING FRAMEWORKS

3rd Party

Cognitive  
Toolkit

TensorFlow

Caffe

Others (Scikit-learn, MXNet, Keras,  
Chainer, Gluon...)

# Azure 认知服务

Cognitive Services

## Use AI to solve business problems



### Vision

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



### Knowledge

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



### Language

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



### Speech

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



### 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.



### Anomaly Detection

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

# 为什么选择 Azure 认知服务？

## 简单

通过 REST API 自创  
易于添加：只需要  
几行代码



## 柔性

集成到所选的语言  
和平台  
在广泛的服务中找到适合你的  
应用的服务  
自带数据，打造  
自定义体验



## 经过考验

由来自 Microsoft Research、  
必应和 Azure 机器学习等  
领域的专家构建  
出色的文档、示例代码和社区  
支持



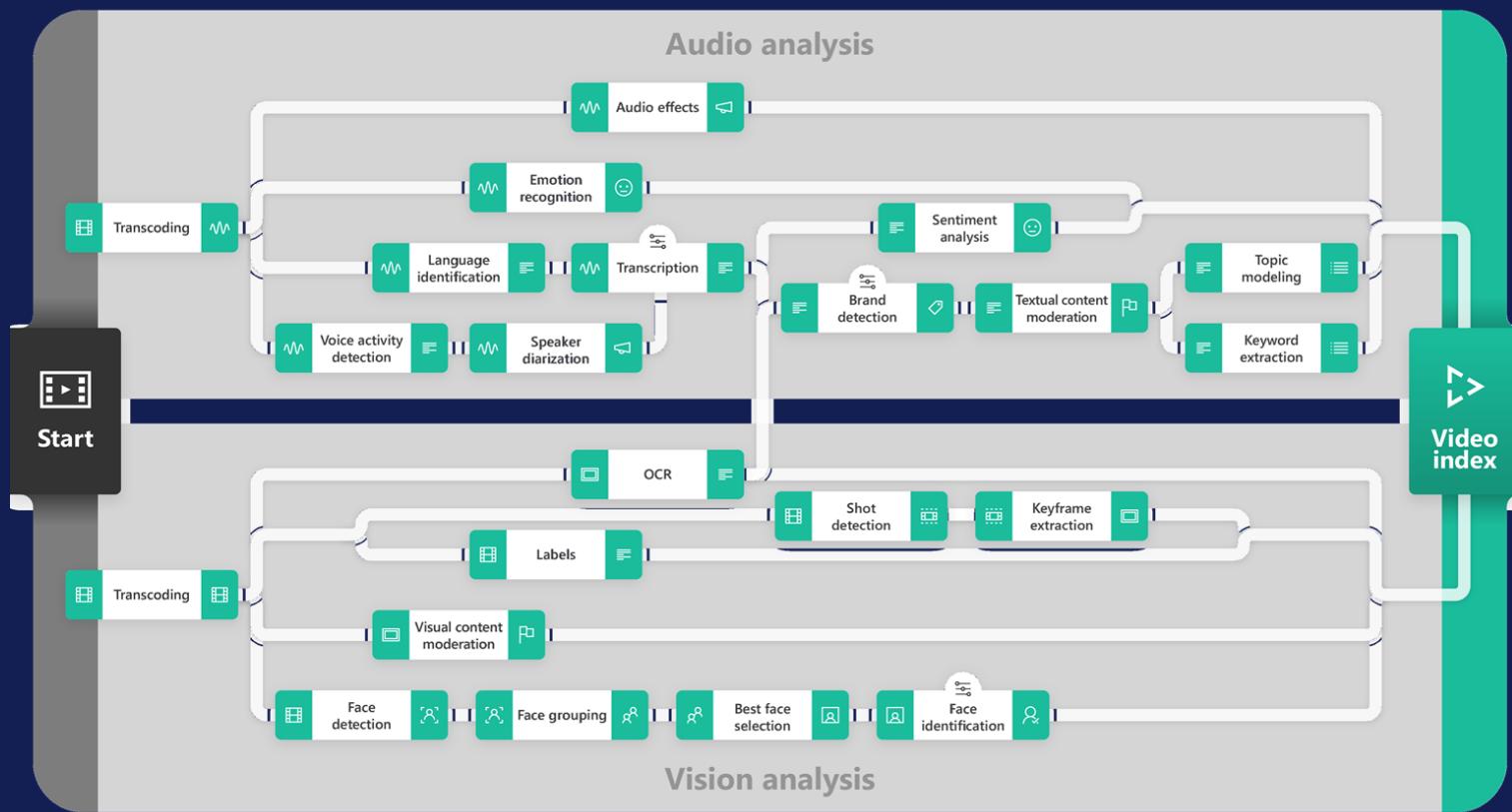
# 视频索引服务

一站式解决方案，通过丰富的机器学习算法，从视频和音频文件中提取见解。提供服务和平台。



- ✓ 一体化解决方案-无需ML管道集成
- ✓ 通过多渠道渠道获得更多见解
- ✓ 免费评估，不需要编码技能
- ✓ 通过令人愉快的可嵌入小部件实现数据可视化
- ✓ 通过REST API轻松连接到现有的infra
- ✓ 根据您的特定数据需要进行自定义
- ✓ 轻松连接到Azure媒体服务以满足所有媒体需求

Try it today at <http://videoindexer.ai/>



# 文本分析

从客户反馈和社交网络帖子中提取见解。

I had a wonderful trip to Seattle and enjoyed seeing the Space Needle!



**i LANGUAGES:**

English (confidence: 100 %)

**i KEY PHRASES:**

Seattle, wonderful trip, Space Needle

**i SENTIMENT:**

98 %

**i LINKED ENTITIES  
(PREVIEW):**

I had a wonderful trip to [Seattle](#) and enjoyed seeing  
[the Space Needle](#)!

# Text Analytics

Detect sentiment, key phrases, named entities and language from your text

[Try Text Analytics >](#)

Explore Text Analytics API: [Documentation](#) [API](#) [Pricing](#) [Portal](#) [Try Text Analytics API](#) [Stack Overflow](#)

## Extract information from your text. See it in action!

Use the demo below to experiment with the [Text Analytics API](#). Use our example or provide your own text in the input box below. Identify language, sentiment, key phrases, and entities (preview) in your text.

We went to Contoso Steakhouse located at midtown NYC last week for a dinner party, and we adore the spot! They provide marvelous food and they have a great menu. The chief cook happens to be the owner (I think his name is John Doe) and he is super nice, coming out of the kitchen and greeted us all. We enjoyed very much dining in the place! The Sirloin steak I ordered was tender and juicy, and the place was impeccably clean. You can even pre-order from their online menu at [www.contososteakhouse.com](http://www.contososteakhouse.com), call 312-555-0176 or send email to [order@contososteakhouse.com](mailto:order@contososteakhouse.com)! The only complaint I have is the food didn't come fast enough. Overall I highly recommend it!

Analyze

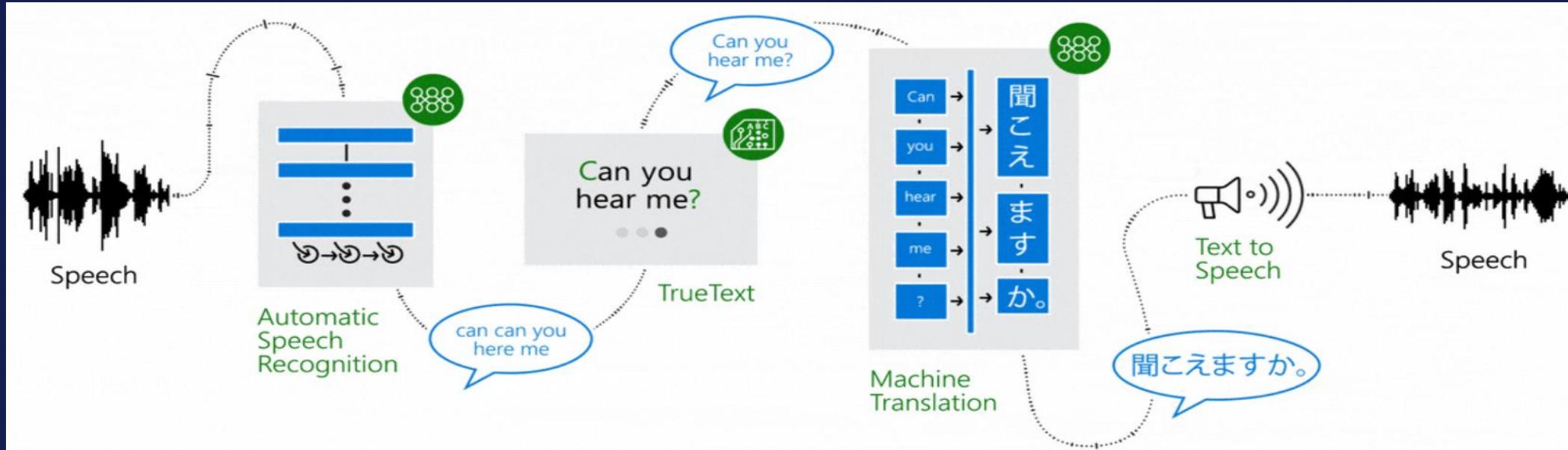


<https://azure.microsoft.com/en-us/services/cognitive-services/text-analytics/>

# 翻译

## 文本翻译— 翻译移动、桌面和web应用程序中的动态内容

- 自动检测语言
- 音译成不同的字母



超过60种语言支持: <https://docs.microsoft.com/en-us/azure/cognitive-services/Translator/language-support>

**Extend your application's reach**

Translate text in your mobile, desktop, and web applications to and from 60+ supported languages through the open REST interface of Translator API.

**Automatically detect languages**

Easily and accurately detect the language of any text string, simplifying development processes and allowing you to quickly send for translation or serve localized content.

**Transliterate into different alphabets**

Display text in different alphabets to make it easier to read — Translate from Chinese characters to PinYin, display any of the [supported transliteration languages](#) in the Latin alphabet, and even show words written in the Latin alphabet in non-Latin characters such as Japanese, Hindi or Arabic.

**Look up words with the bilingual dictionary**

Find alternative translations for words from or to English and examples of the words in context to help your app users choose the most appropriate translation. Provide context for alternate word translations by giving examples of human translated sentences using the word.

**Add online and offline translation support into your Android app**

With the Microsoft Translator [local feature](#), easily add on- and offline neural translation to your Android apps. Instead of calling the cloud API directly, perform a simple call to the Translator app to easily integrate text translation capabilities to your app. The app will then use the Translator cloud service when connected to the Internet or offline packs when disconnected, all using your existing Azure subscription for billing.

**Build customized translation systems**

Customize Microsoft Translator neural translation models to improve translation quality. Use your existing human-translated content to [build a custom translation system](#) that can better handle your writing style and industry expressions and vocabulary.

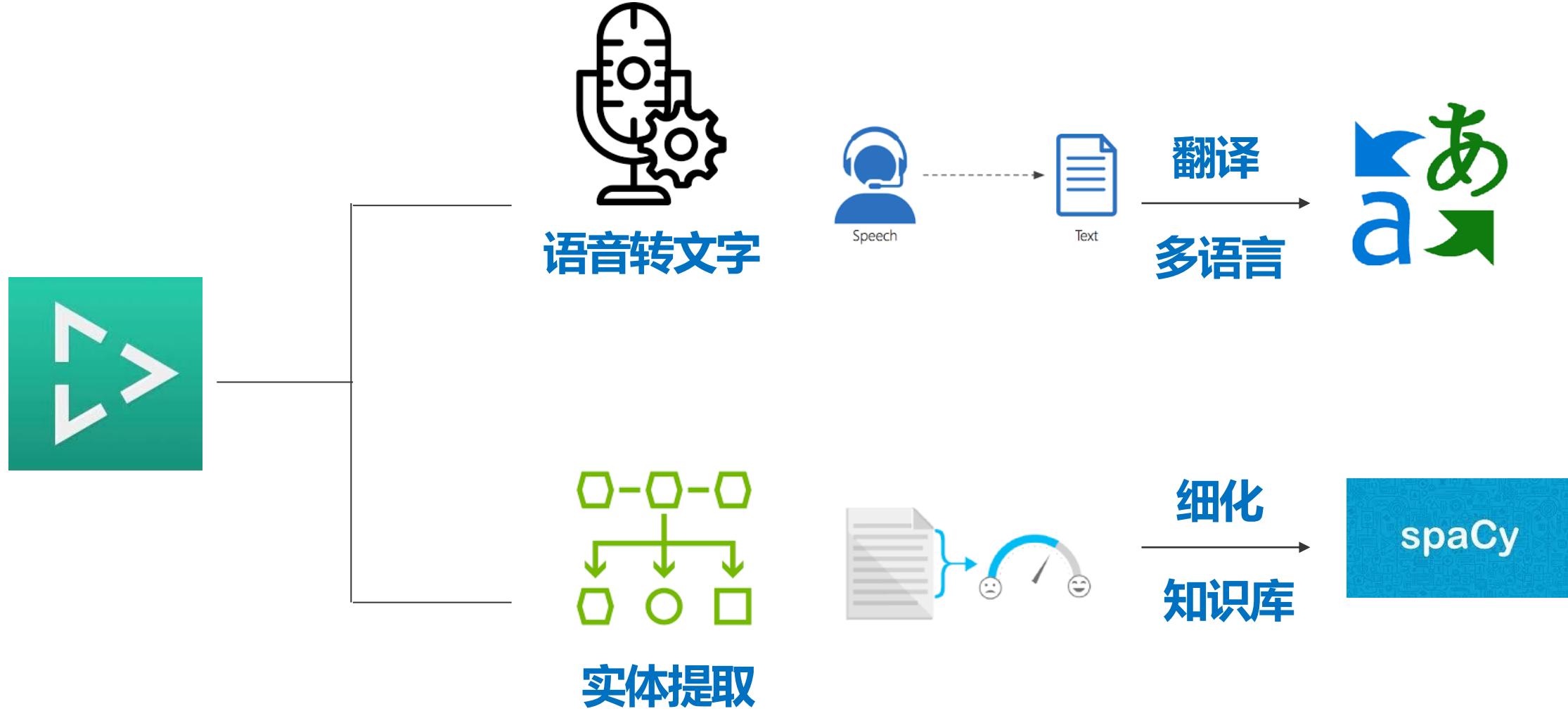
<https://azure.microsoft.com/en-us/services/cognitive-services/translator-text-api/>

# 示例

## 四. 机器学习场景示例



# 基于认知服务构建自己的VideoIndexer

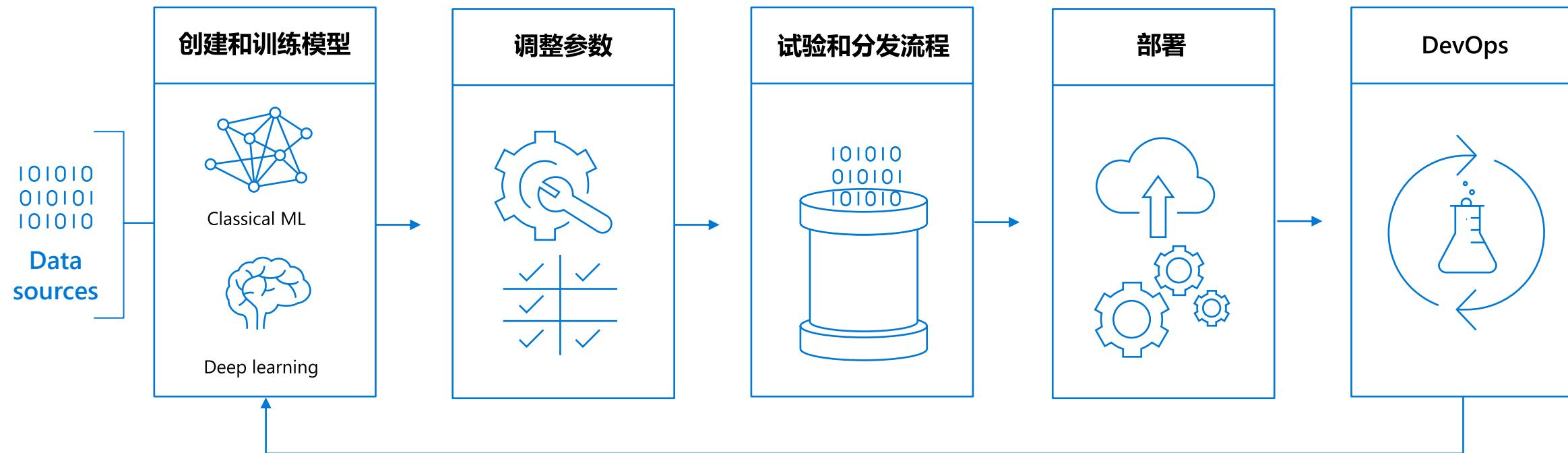


# 示例

# 四. 机器学习专业场景



# 构建AI项目的步骤





# Azure Machine Learning service

是一个提升生产力的AI开发平台



Boost your data science productivity



Increase your rate of experimentation



Deploy and manage your models everywhere



Built with your needs in mind

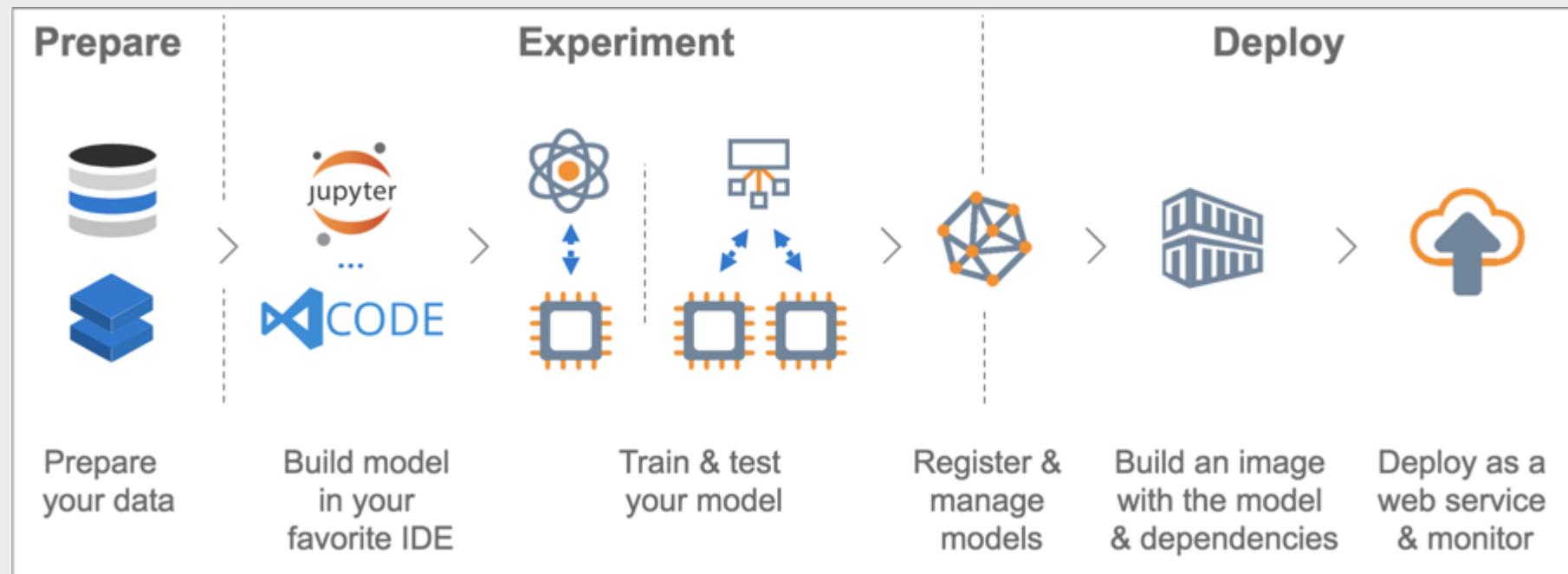
- Automated machine learning
- Managed compute
- Simple deployment
- DevOps for machine learning
- Support for open source frameworks
- Tool agnostic Python SDK



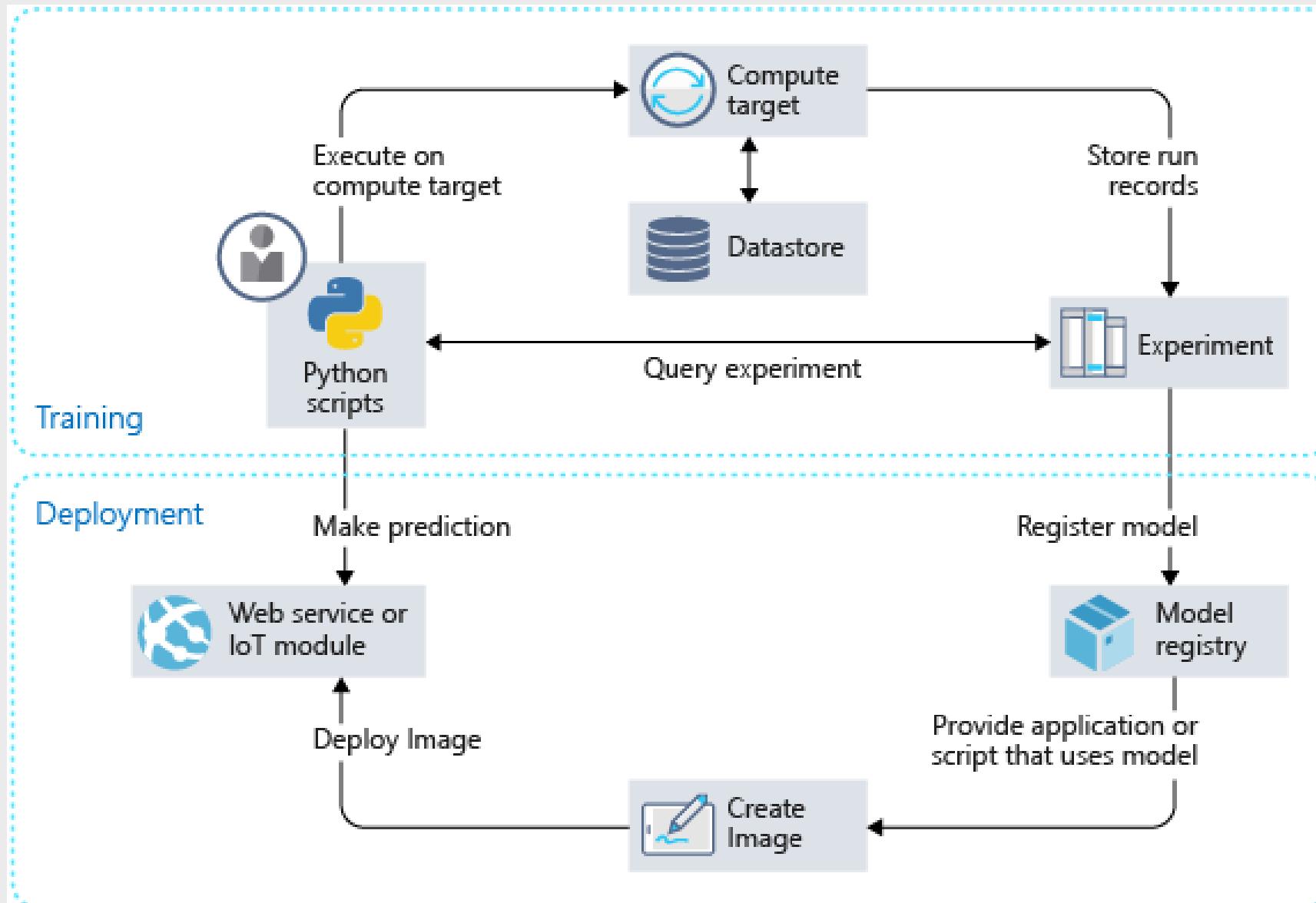
Seamlessly integrated with the Azure Portfolio

# Azure Machine Learning Service

Azure Machine Learning service provides a cloud-based environment you can use to prep data, train, test, deploy, manage, and track machine learning models.



# Azure Machine Learning Service



# 强而有力的硬件设备

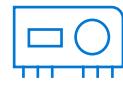
为深度学习加速



## CPUs

General purpose machine learning

D, F, L, M, H Series



## GPUs

Deep learning

N Series



## FPGAs

Specialized hardware accelerated deep learning

Project Brainwave

Optimized for flexibility

Optimized for performance



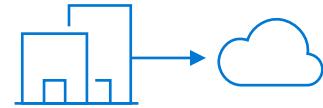
### FPGA NEW UPDATES:

Support for image classification and recognition scenarios  
ResNet 50, ResNet 152, VGG-16, SSD-VGG, DenseNet-121

# 集成多场景的Python SDK



Use your favorite IDEs, editors, notebooks,  
and frameworks



Flexibility of your local environment or  
curated cloud environment

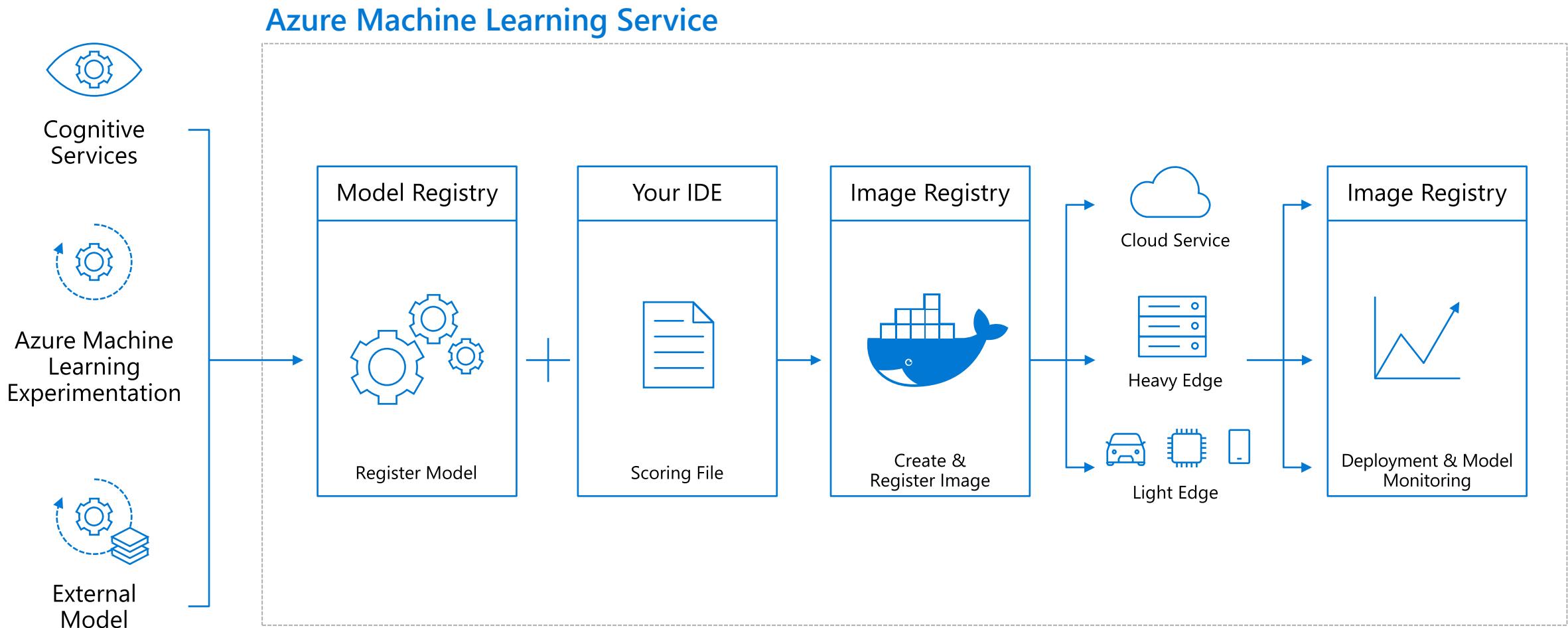


Integrate with other services like  
Azure Databricks



Get started quickly without any complex  
pre-requisites

# Deploy Azure ML models at scale



# Automated Machine Learning

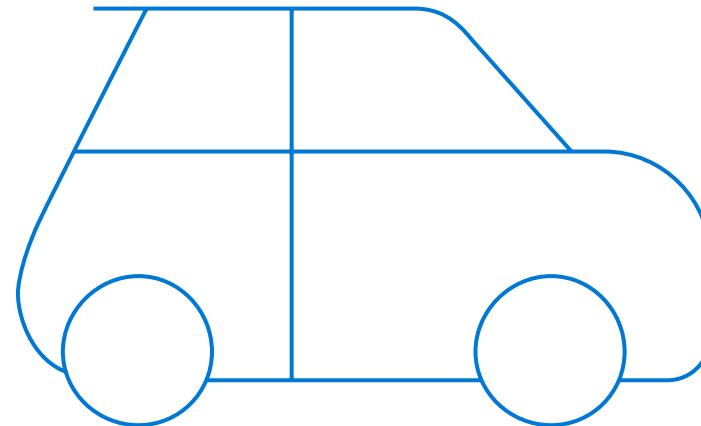
**Automated machine learning(自动化机器学习 )** 是自动化机器学习模型开发的耗时、迭代任务的过程

各行各业的数据科学家、分析师和开发人员可以使用AutoML完成：

1. 在没有广泛编程知识的情况下实施机器学习解决方案
2. 节省时间和资源
3. 利用数据科学最佳实践
4. 提供敏捷的问题解决

# Azure Machine Learning

Automated machine learning



估算一台车的价格?

# 模型创建相当费时

	Which features?	Which algorithm?	Which parameters?	
Mileage	Gradient Boosted	Parameter 1		
Condition	Nearest Neighbors	Parameter 2		
Car brand	SVM	Main Samples Split		
Year of make	Bayesian Regression	Main Samples Leaf		
Regulations	LGBM	Others		
...	...			

30%  
Model

# 模型创建相当费时

Which features?

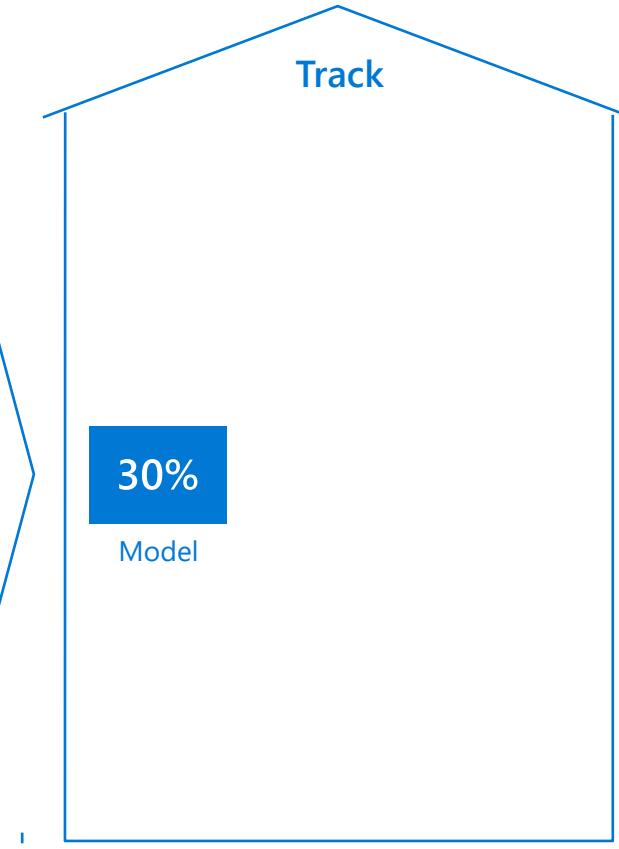
Mileage
Condition
Car brand
Year of make
Regulations
...

Which algorithm?

Gradient Boosted
Nearest Neighbors
SGD
Bayesian Regression
LGBM
...

Which parameters?

Neighbors
Weights
Min Samples Split
Min Samples Leaf
ZYX



Iterate

# 模型创建相当费时

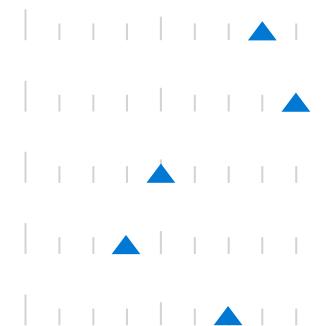
Which features?



Which algorithm?



Which parameters?



Iterate

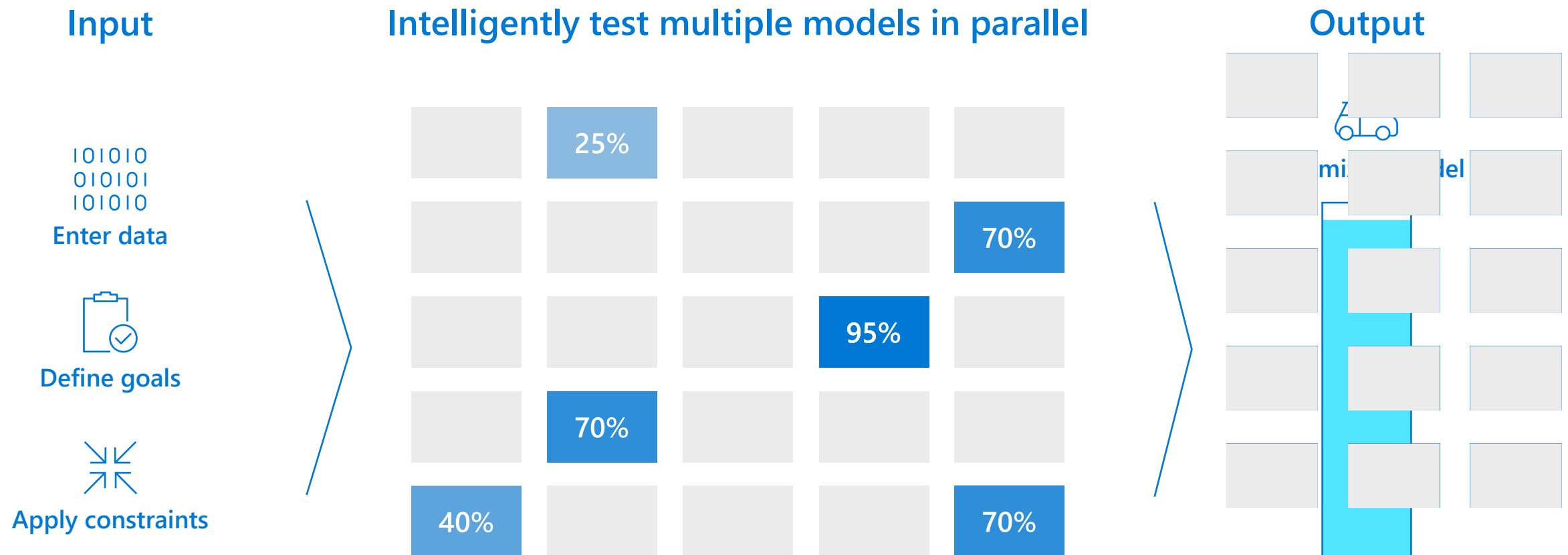
Track

30%

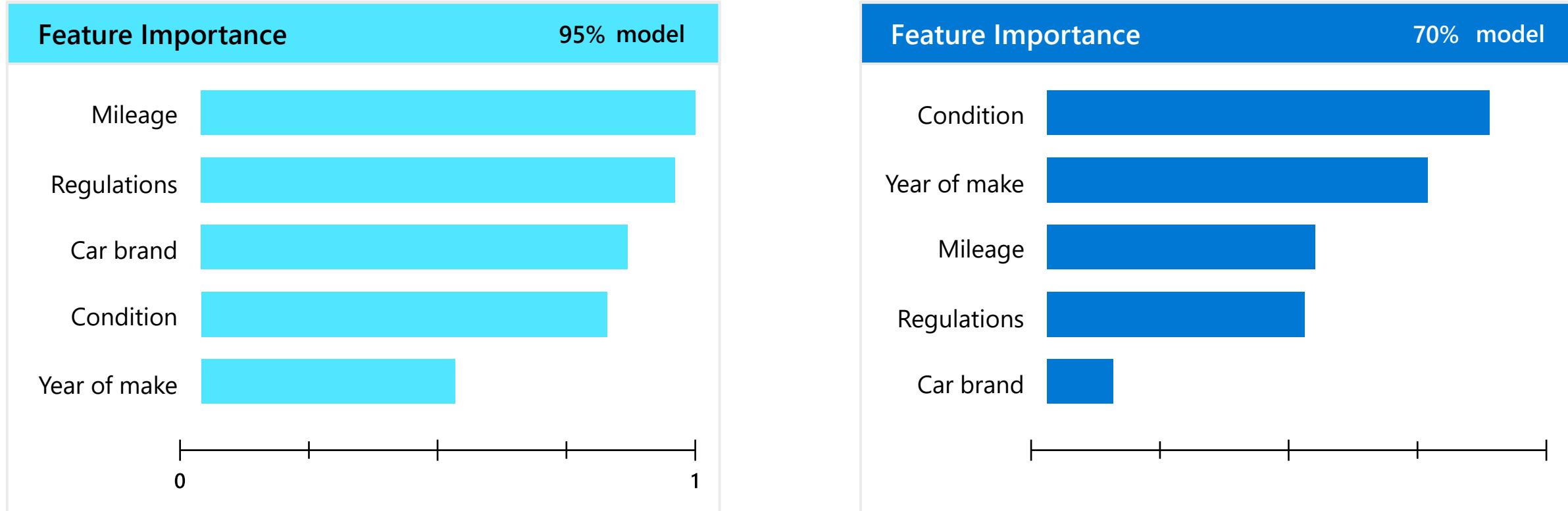
15%



# Automated Machine Learning 加速模型训练



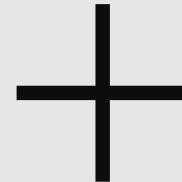
# Understand the inner workings of ML by analyzing feature importance



不是单一的迭代创建模型，而且可以针对每次训练的模型进行分析，让你更快速找到最佳模型

# Azure Machine Learning service

Azure Cloud  
Services



Python  
SDK

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帮助你完成:

- ✓ 数据准备
- ✓ 编译模型
- ✓ 训练模型

- ✓ 管理模型
- ✓ 跟踪训练
- ✓ 部署模型

# 关于Azure 机器学习服务相关资源

<https://www.bilibili.com/video/BV1ML411t7bP>

<https://github.com/kinfey/HandsOnLab/tree/master/ComputerVisionAzureMLab>



# 六. 小结



# 学习模块推荐



利用 Azure 认知服务  
创建计算机视觉解决方案

<https://aka.ms/cv01>



了解自然语言处理功能

<https://aka.ms/nlp01>



通过 Azure 机器学习  
构建和运行机器学习解决方案

<https://aka.ms/azueml02>



# Reactor

## Thank You!