



Introduction to Artificial Intelligence and Cognitive Services for Office 365 Developers

Prashant G Bhojar MVP

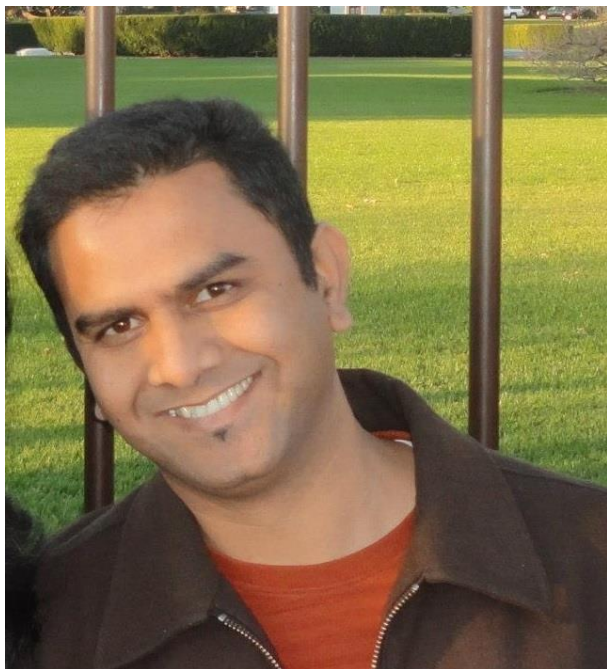
Global Azure Bootcamp Reston, VA, USA <https://www.eventbrite.com/e/2018-reston-global-azure-bootcamp-tickets-38538178730/>

21 April 2018

withum 
TECHNOLOGY SOLUTIONS AND SERVICES



Who AM I ?



Prashant G Bhoyar
(PGB)



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- Born and raised in India
- Came to United States of America in 2007 for studies
- University of Maryland College Park Alumni
- Co-Author of the book "[PowerShell for Office 365](#)"
- Technical Reviewer of the book "[Pro : SharePoint 2013 Administration](#)"
- Founder and Organizer of Artificial Intelligence and Machine Learning User Group
 - Monthly in person & online event
 - <https://www.meetup.com/ArtificialIntelligenceAndMachineLearning/>
- Organizer of SharePoint Saturday Baltimore (SPSBMORE)
 - <http://www.spsevents.org/city/baltimore/baltimoretecc>
- Organizer of SharePoint Saturday DC (SPSDC)
 - <http://www.spsevents.org/city/DC/summer2017>
- Founder and Organizer of DC-Metro Office 365 User Group
 - Monthly in person & online event
 - <http://www.meetup.com/DC-Metro-Office-365-User-Group/>
- Recipient of Antarctic Service Medal
- Microsoft MVP (Most Valuable Professional)
- Solution Architect at Withum Smith and Brown PC
 - <https://digital.withum.com>
 - Former Portal Solutions
 - Focus on Microsoft Solutions and Services

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About Withum Digital

450+
SharePoint and
Office 365
Implementations



16
16 years of
SharePoint
intranet
experience

withum
We deliver
Digital Workplace Products
and Solutions that help
organizations share what
they know and find what
they need by connecting
people, data, and content.

3
Microsoft
SharePoint MVPs
on staff

55
Full-time
employees,
consultants,
developers,
business analysts,
SMEs



<https://digital.withum.com>
<https://www.onewindowapp.com>
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Intranet-as-a-Service
Solution

Integrate Most Office 365
Workloads

All the Modern Intranet
Features

Built from the Ground Up
for Office 365

Deploy in less than 45 days

Our Solution

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5 years in the making backed by 14 years of SharePoint Intranet design and deployment expertise

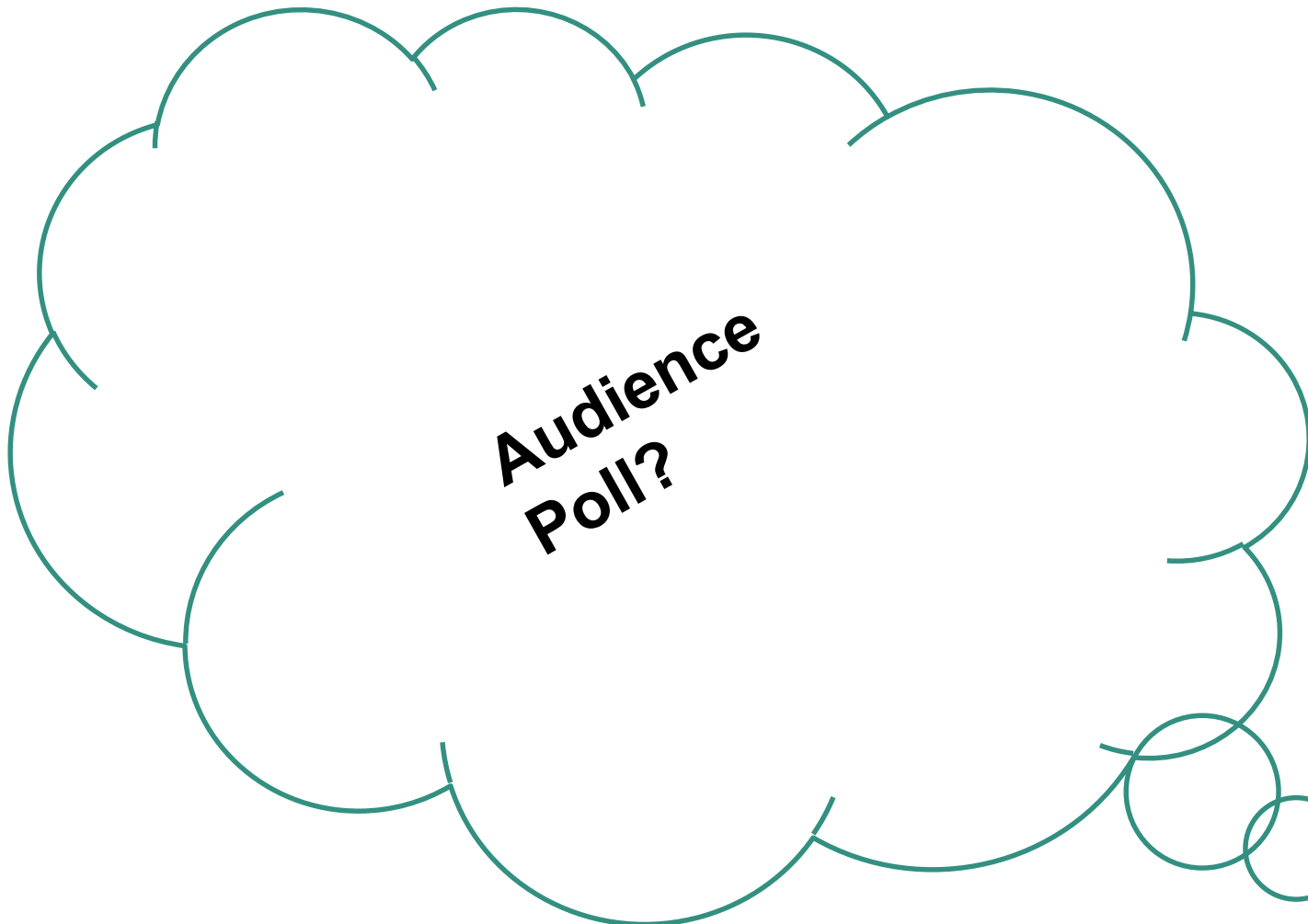


Agenda

- 100 Level Session
- Approach
- What is AI?
- What is Machine Learning?
- What is Microsoft Cognitive Services?
- How to get started?
- Demos
- Key Takeaways
- Q&A

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**Audience
Poll?**



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Audience Poll

- How many of you are IT pros?
- How many of you are Developers?
- How many of you are Power Users?
- How many of you are Data Scientist?
- How many of you are using AI and Cognitive Services?

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Why this session?



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Why We Should invest time to learn AI?

- This is golden age for technical innovation
- The “New” Microsoft is launching lot of new services/products rapidly
- But the life span of new productions/services is decreasing
 - Access Services : <https://techcommunity.microsoft.com/t5/Office-Retirement-Blog/Updating-the-Access-Services-in-SharePoint-Roadmap/ba-p/57148>
- We need to spend some time doing research before investing time to learn/explore new product/services



Why We Should invest time to learn AI?

- Because of the advancements in the computation, the tech industry is focusing on using AI in business applications
- I think right now it is in the same state as mobile development was when iPhone 1 was first launched
- I think in next 2-3 year, AI & ML will be mainstream
- Amazon sold “Millions” of Alexa devices during this holiday season
 - <https://techcrunch.com/2017/11/28/amazon-sold-millions-of-alexa-devices-over-the-holiday-shopping-weekend/>
- You don't need to be a Data Scientist to use AI/Cognitive Services 😊
 - Analogy : JavaScript Frameworks

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Approach?



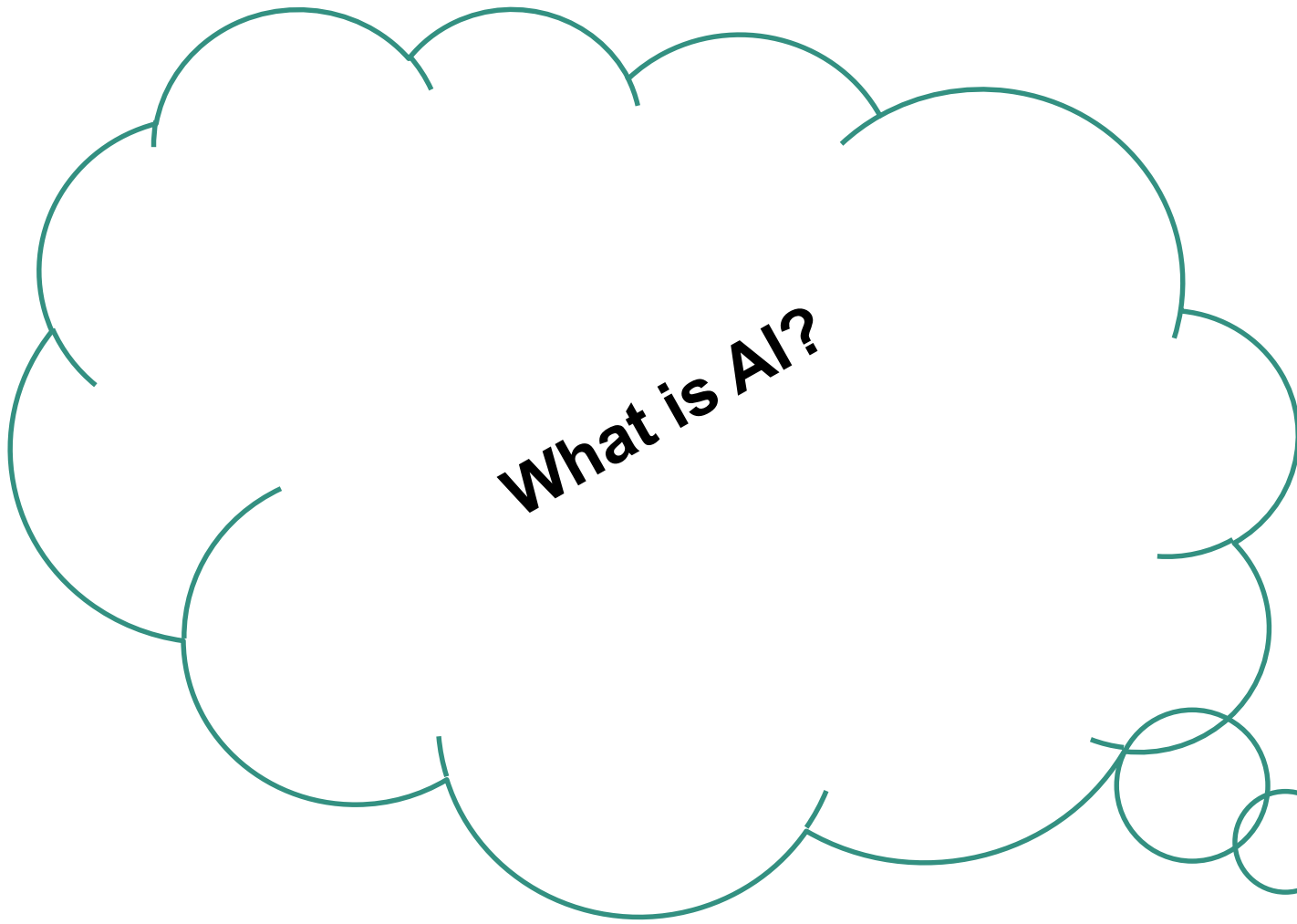
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Approach

- This session is geared towards Non-Data Scientist 😊
- Target Audience is Developers/IT Pros and Power Users



What is AI?



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What is AI?

“the effort to automate intellectual tasks normally performed by humans”

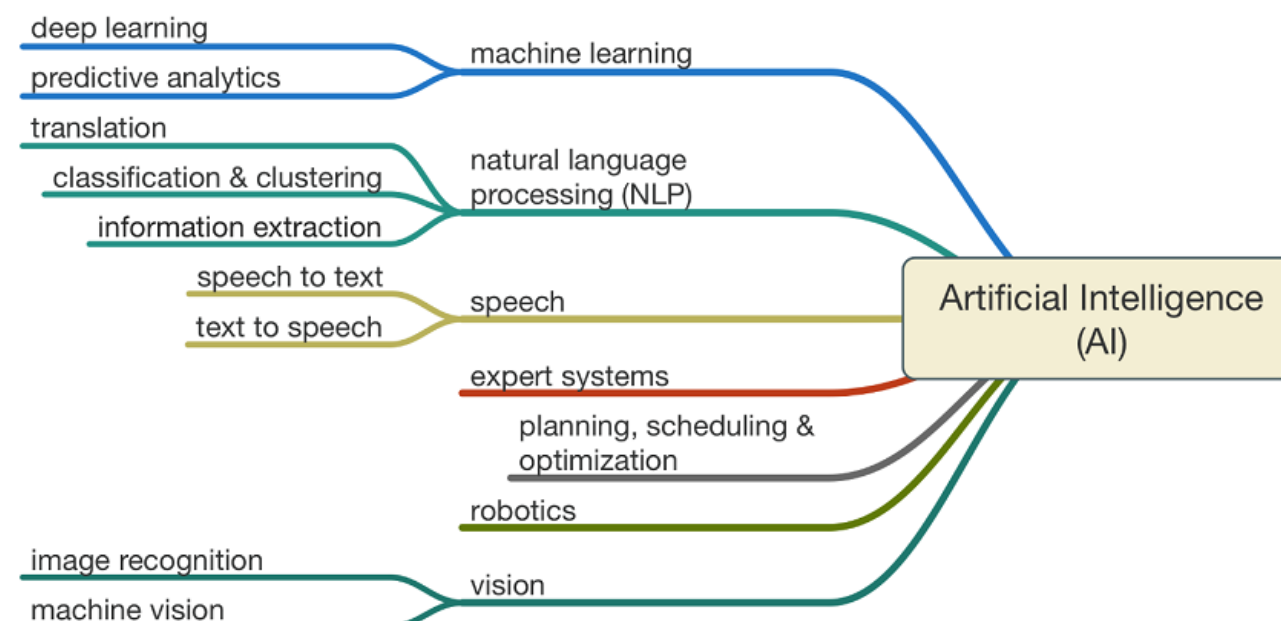
- Francois Chollet

AI Researcher @ Google

Author of the Keras deep learning package

AI Hierarchy:

1. Strong AI
 1. Science Fiction
2. Artificial General Intelligence (AGI)
 1. Example Jarvis in Iron Man
3. Weak AI
 - Specialized for specific tasks
 - **We're here now**



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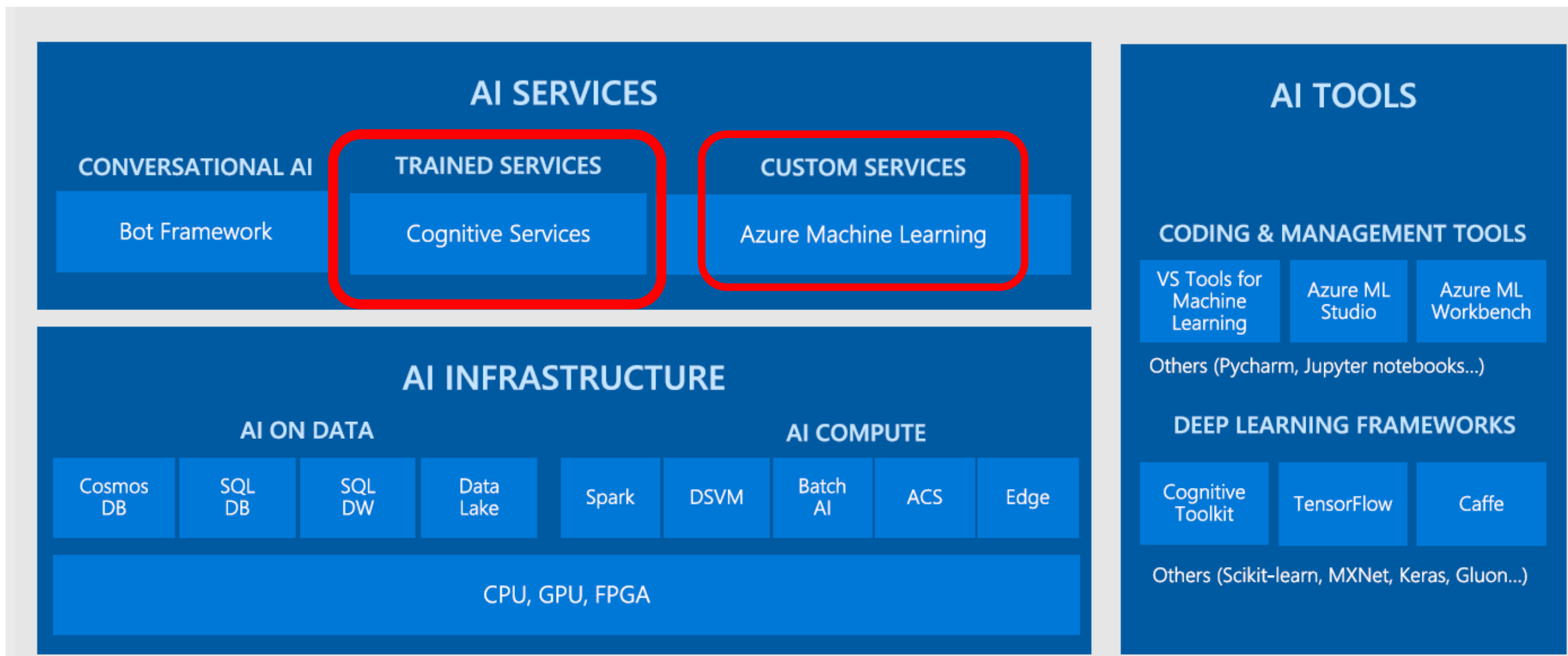


Making Data Science and AI accessible to every enterprise, data scientist, developer, information worker, consumer, and device anywhere in the world.





Microsoft AI Platform



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AI services

Bot framework

Accelerated development for conversational AI

Cognitive Services

Broad range of trained services with customization for any scenario

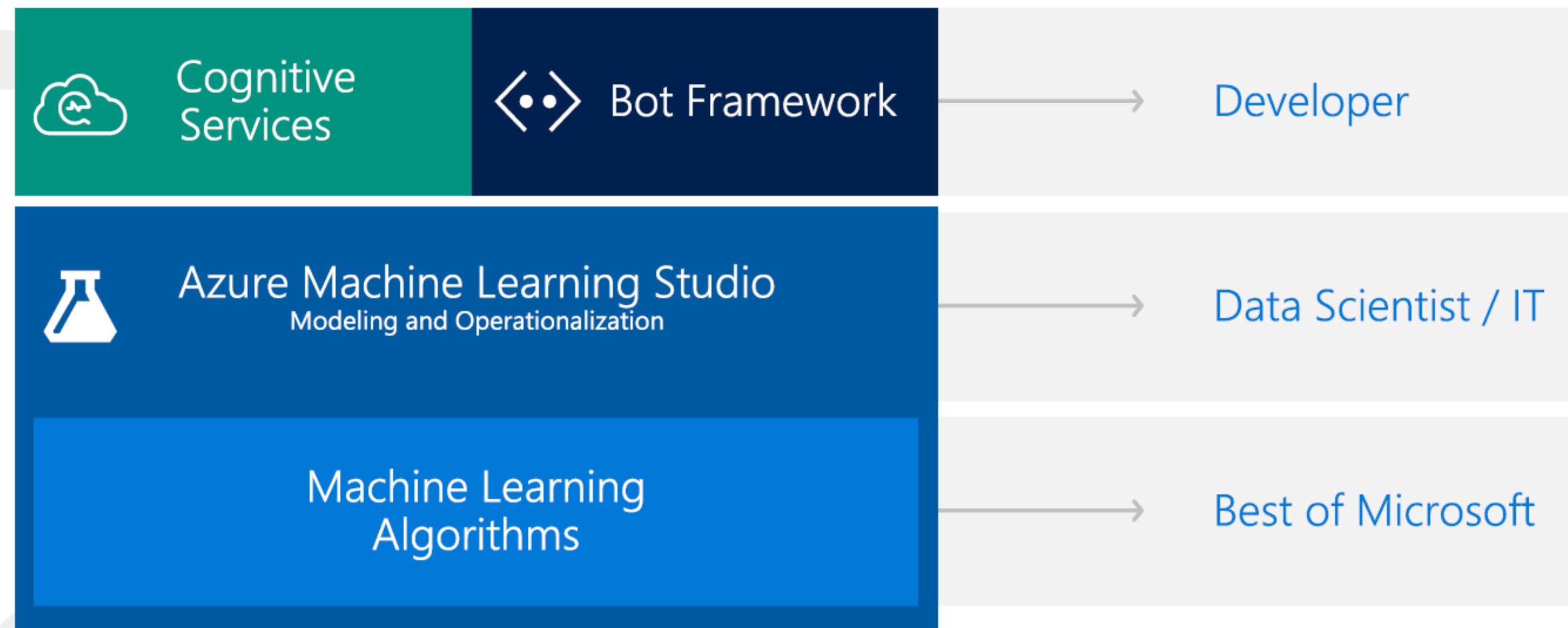
Azure Machine Learning

Experimentation and management services for creating AI models with productivity





Machine Learning services in the cloud



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Machine Learning & AI Portfolio

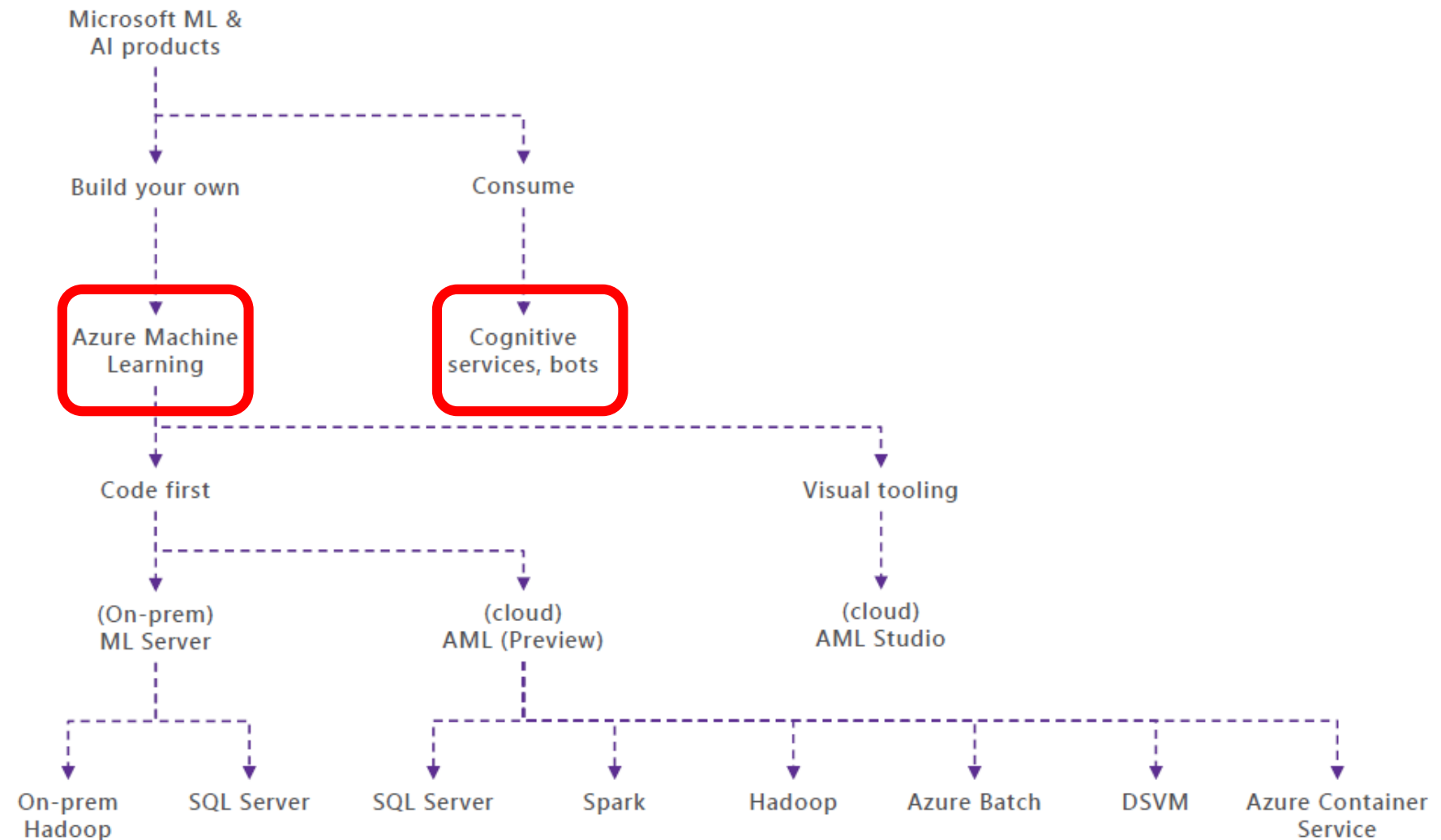
When to use what?

Build your own or consume pre-trained models?

Which experience do you want?

Deployment target

What engine(s) do you want to use?



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What is Machine Learning?



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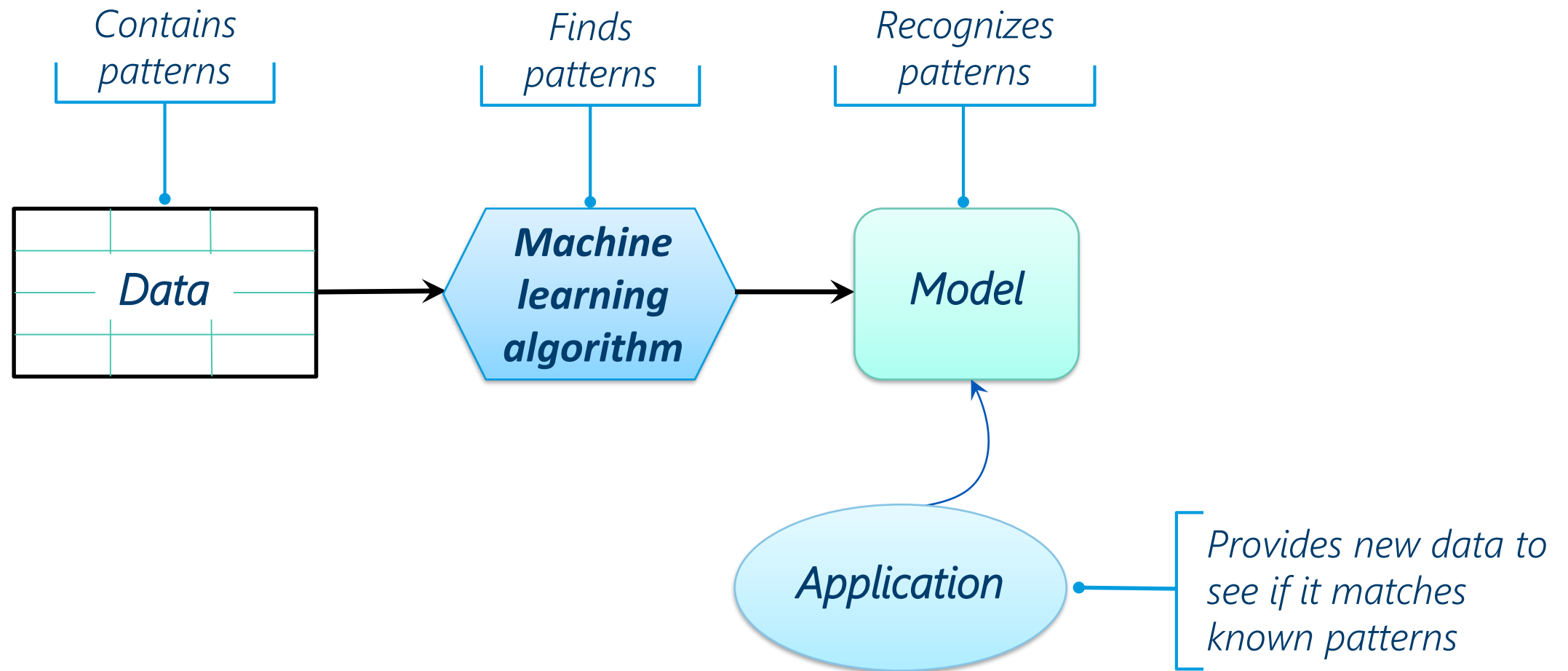
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What is Machine Learning?

- It examines large amounts of data looking for patterns, then generates code that lets you recognize those patterns in new data.
- Your applications can use this generated code to make better predictions.
- It can help you create smarter applications.

Machine Learning in a Nutshell

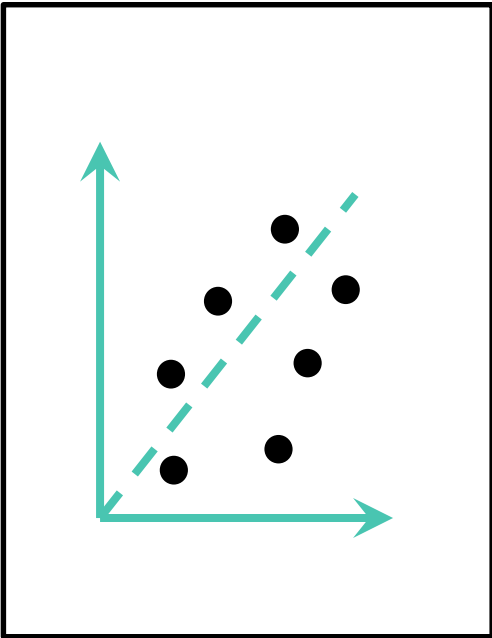


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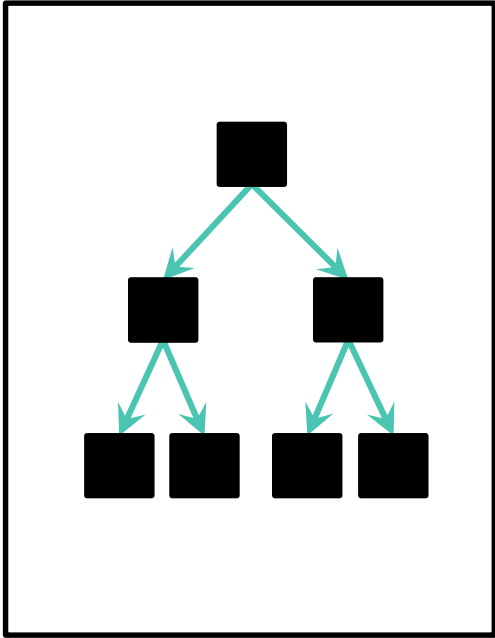
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Styles of Machine Learning Algorithms Examples

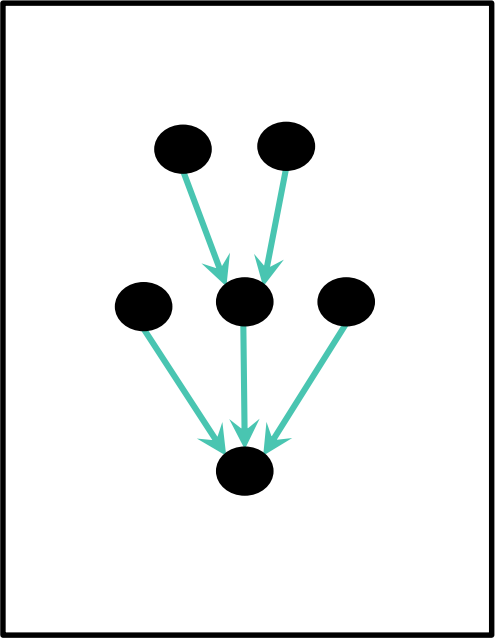
Deep learning
uses this



Regression
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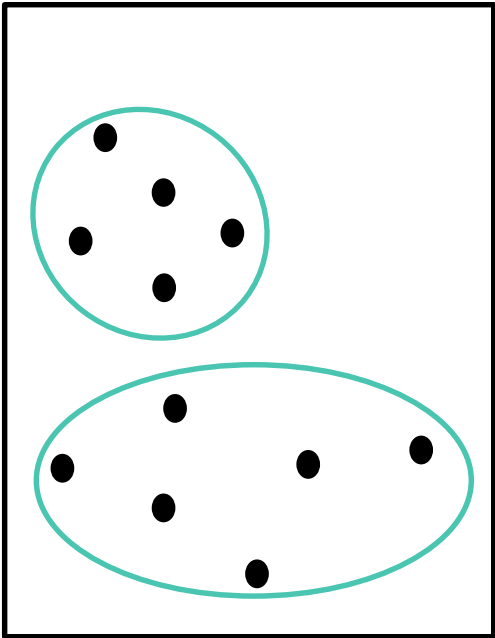
Decision tree



Neural network

$$P(A|B) = \frac{P(A) P(B|A)}{P(B)}$$

Bayesian



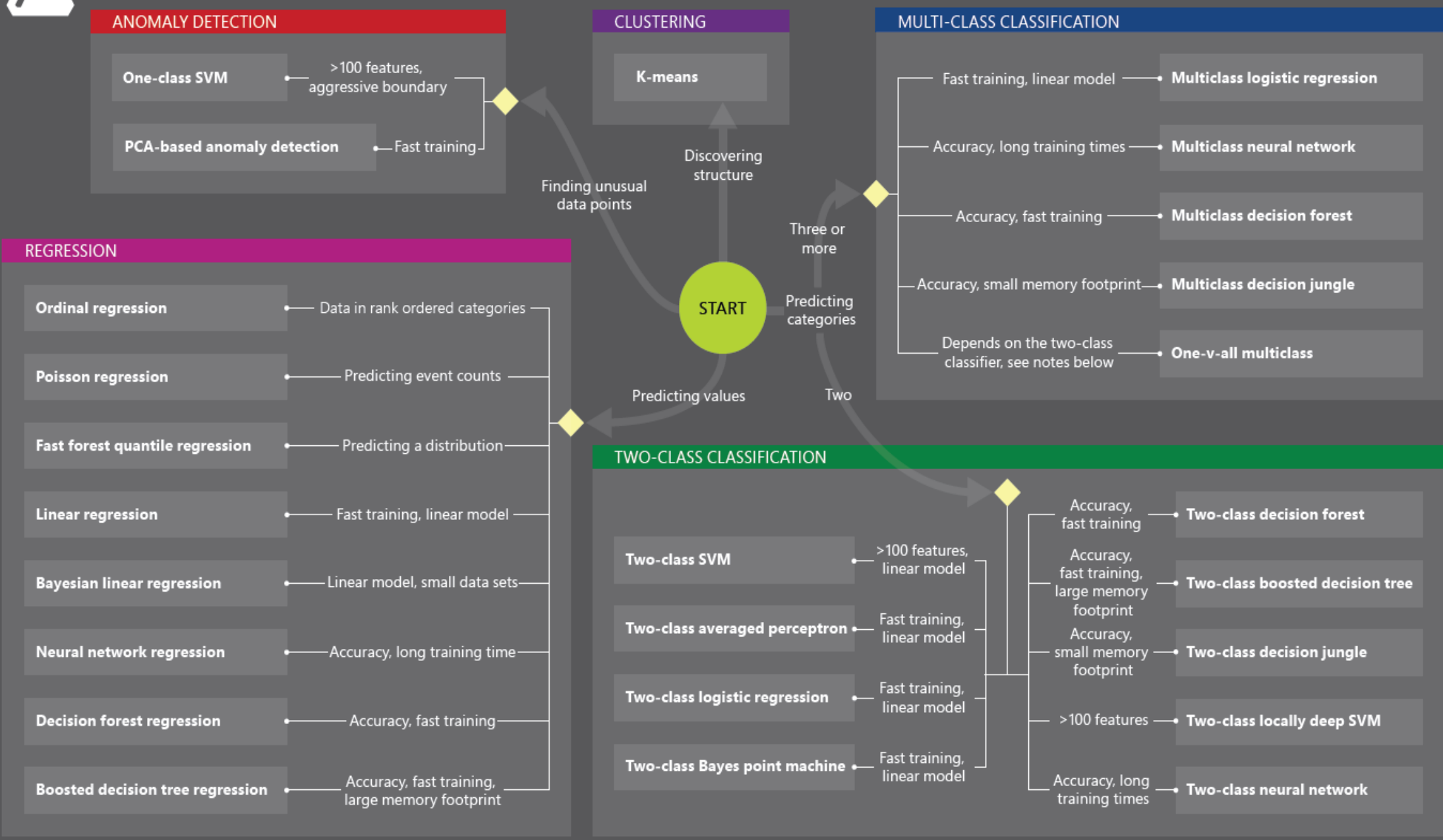
K-means

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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.



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Source : <https://docs.microsoft.com/en-us/azure/machine-learning/studio/algorithm-cheat-sheet>

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Microsoft Cognitive Services

Give your apps
a human side

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Vision

Computer Vision | Content Moderator | Emotion | Face | Video | Video Indexer | Custom Vision Service



Speech

Bing Speech | Custom Speech Service | Speaker Recognition



Language

Bing Spell Check | Language Understanding | Linguistic Analysis | Text Analytics | Translator Text & Speech | Web Language Model



Knowledge

Academic Knowledge | Entity Linking | Knowledge Exploration | Recommendations | QnA Maker | Custom Decision Service



Search

Bing Autosuggest | Bing Image Search | Bing News Search | Bing Video Search | Bing Web Search | Bing Custom Search



Labs

Project Prague | Project Cuzco | Project Johannesburg | Project Nanjing | Project Abu Dhabi | Project Wollongong

Why Microsoft Cognitive Services?

Easy

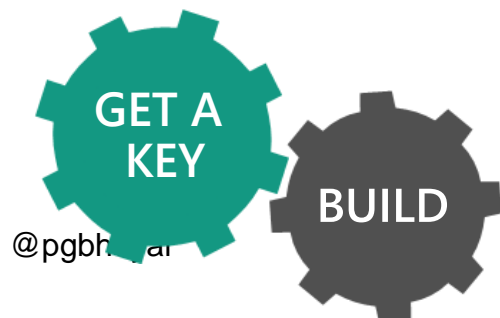
Roll your own with REST APIs
Simple to add: just a few lines of code required

Flexible

Integrate into the language and platform of your choice
Breadth of offerings helps you find the right API for your app

Tested

Built by experts in their field from Microsoft Research, Bing, and Azure Machine Learning
Quality documentation, sample code, and community support





Microsoft Cognitive Services: Where can we use them?

- Any application that can consume REST Based APIs
 - Developers
 - JavaScript Application
 - Console Application
 - .NET Applications
 - Java Based Applications
 - iOS Applications
 - Node.JS applications
 - Logic Apps
 - Power Users/No Code
 - Microsoft Flow
 - SharePoint Designer 2013

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AI-ML: Practical Applications

- Spam & Fraud Detection
- Decision Engines: Approval or Disapproval
- Recommendation Engines: Which one to choose
- Predictive Maintenance
- Optical Character Recognition (OCR)
- Natural Language Processing
- Machine Translation
- Autonomous Systems (Robotics)

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AI-ML: Practical Applications

- Recommendation Engines :
 - Training Needs,
 - Resourcing Needs,
 - Process Improvements
- Text Analysis
 - Product Reviews
 - Case / Document Classification
 - Social Media Analytics
 - Intellectual Property
 - Plagiarism Check
 - Sentiment Analysis

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Text Analytics API

- Analyze unstructured text for tasks
 - Language detection
 - Key phrase extraction
 - **Sentiment Analysis**
- Sentiment analysis is the process of detecting whether a piece of Writing is positive, negative or neutral
- Return a numeric score between 0 and 1
 - Negative 0...1 Positive sentiment
- Advanced natural language processing
 - <https://azure.microsoft.com/en-us/services/cognitive-services/text-analytics/>

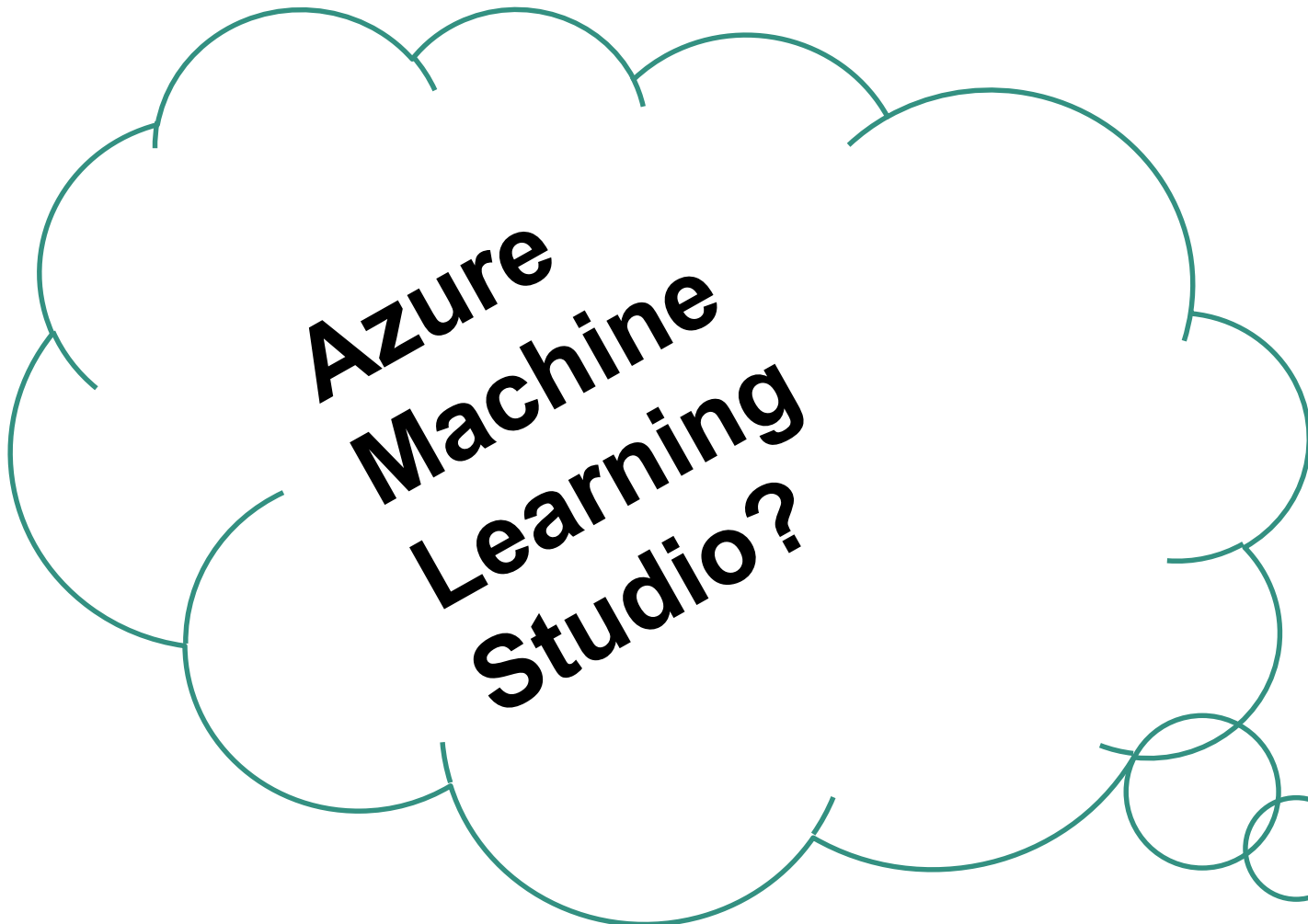
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Application Design

- SharePoint User Enters the comments
- Analyze the text to obtain the sentiment score using Cognitive Services
 - (If you launch a new intranet, you can find out about the reviews)
- Use the results in reports/dashboards



**Azure
Machine
Learning
Studio?**



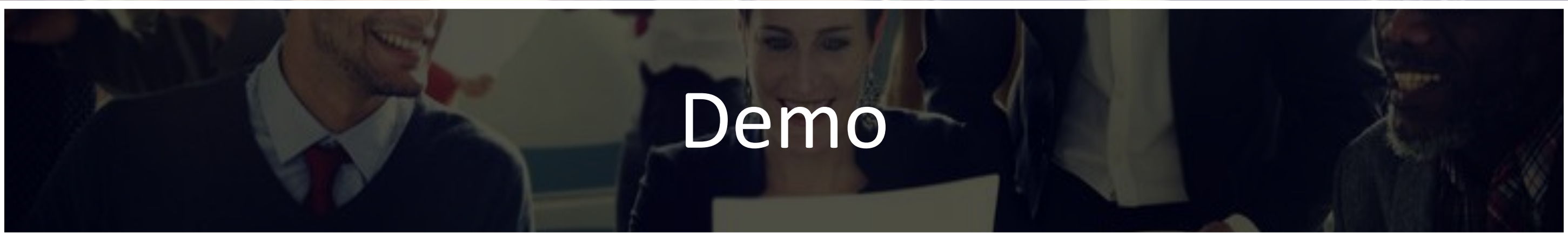
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What is Azure Machine Learning Studio?

- A fully-managed cloud service that enables you to easily build, deploy, and share predictive analytics solutions.
- It has everything you need to create complete predictive analytics solutions in the cloud, from a large algorithm library, to a studio for building models, to an easy way to deploy your model as a web service
- Quickly create, test, operationalize, and manage predictive models
- **Publish as Web Service**

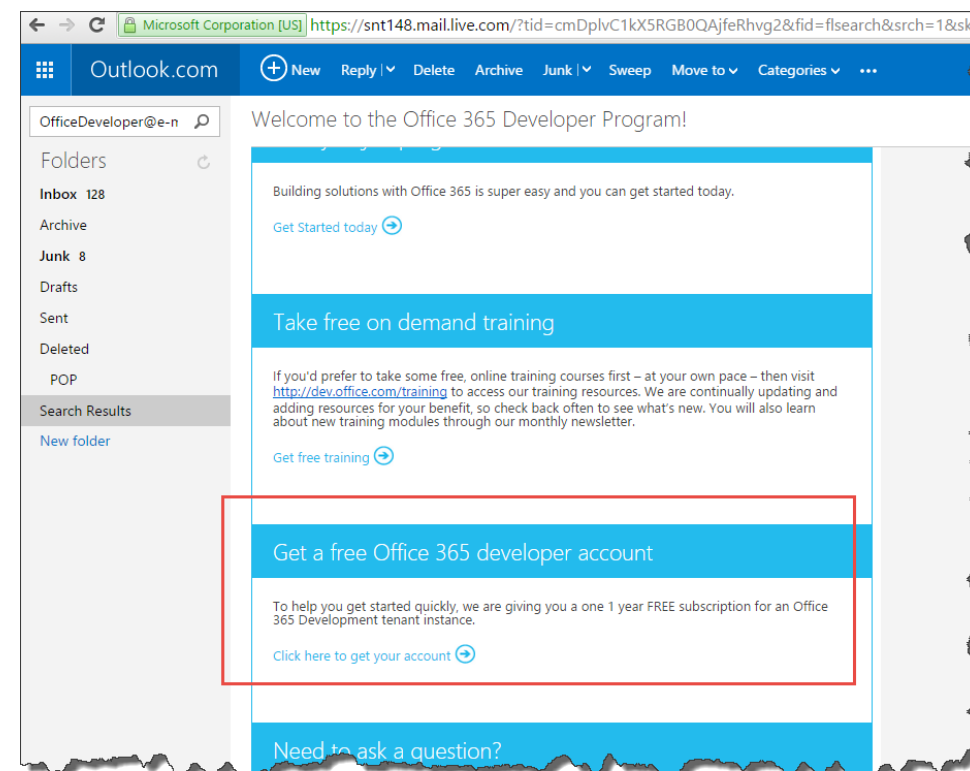


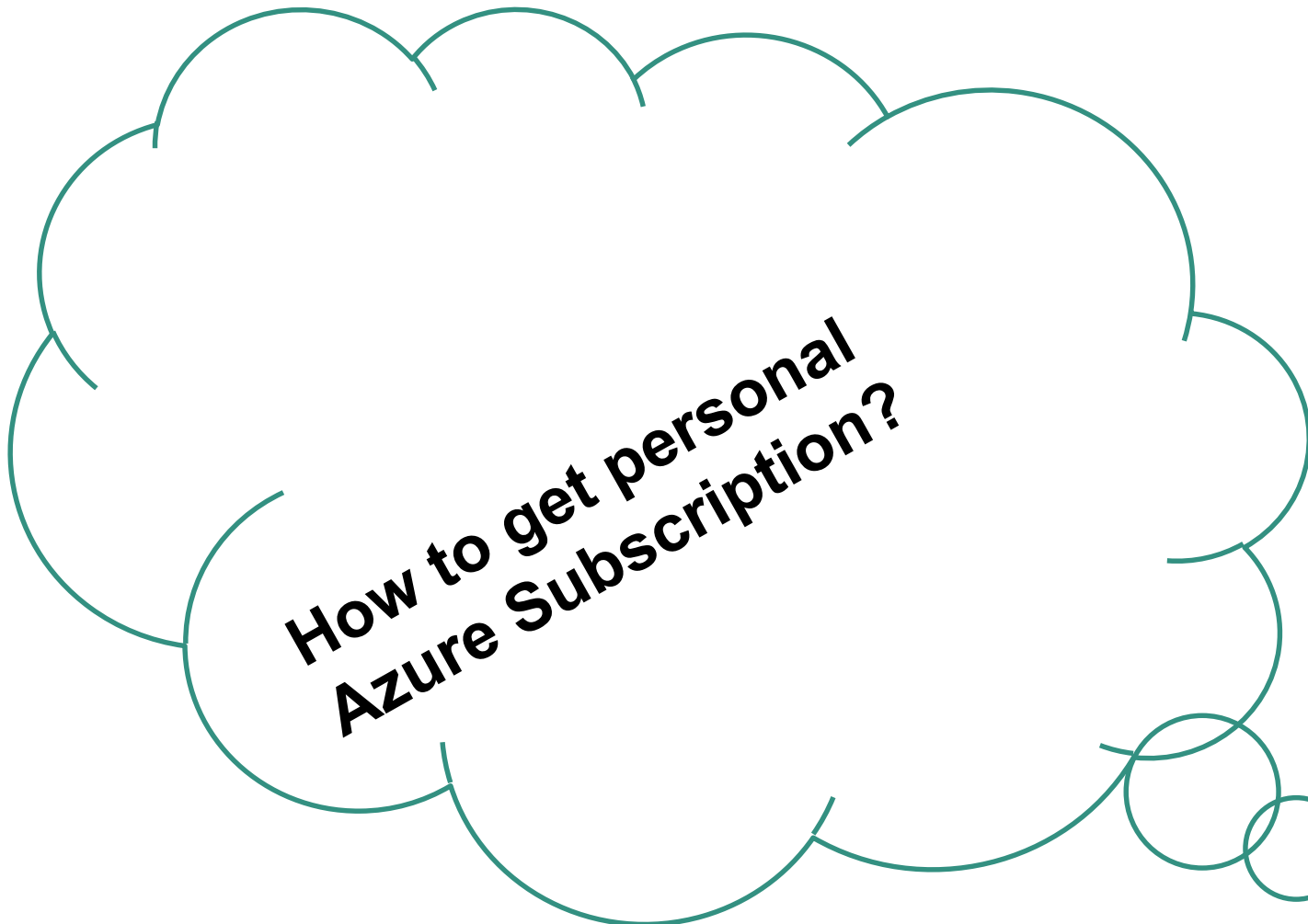


How to get personal Office 365 Developer Tenant?

- Sign up for Office 365 Developer Program at <http://dev.office.com/>
 - Get 1 year of Office 365 subscription for free
 - Excellent for personal development use
- 1 Month Trial
 - <https://products.office.com/en-us/business/compare-office-365-for-business-plans>

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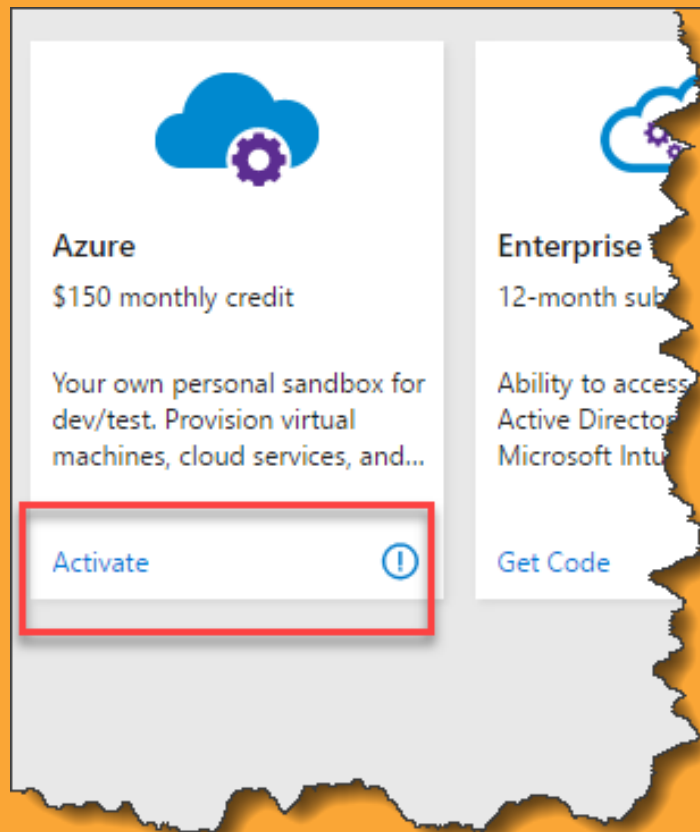
**How to get personal
Azure Subscription?**



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How to get personal Azure Subscription?



- If you have MSDN Enterprise subscription
 - You can get \$150/month Azure credits for free
- Sign Up for Free trial :
<https://azure.microsoft.com/>
 - Credit Card is required
- Microsoft Imagine
 - Former Dreamspark
 - No credit card required
 - Valid .edu account from participating school/institution
 - Limited feature sets

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Recap

- Approach
- What is AI?
- What is Machine Learning?
- Microsoft Cognitive Services
- Azure Machine Learning Studio
- How to get started?

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Key Takeaways

- Hopefully the contents we covered today made you to explore Cognitive Services and Azure Machine Learning Studio and you will go home and play with it 😊
 - <https://azure.microsoft.com/en-us/services/cognitive-services/?v=18.06>
 - <https://studio.azureml.net/>
- Sign up for Developer Program using <https://dev.office.com/>
- Spend some time doing research before investing time to learn/explore new product/services

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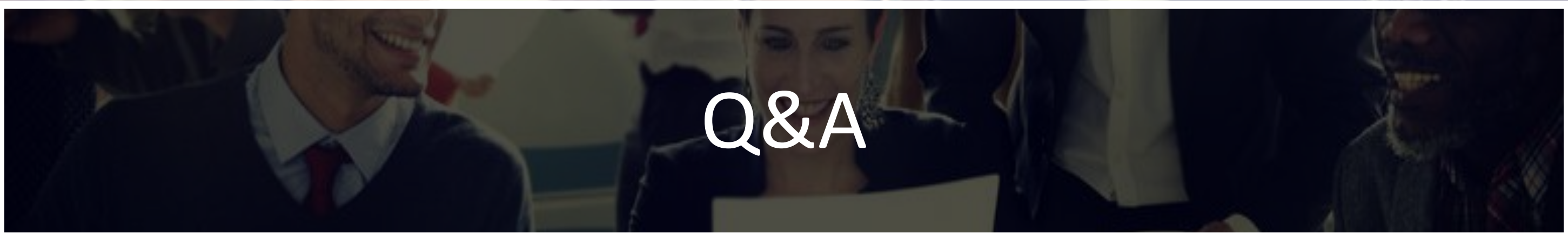


References

- <https://studio.azureml.net/>
- <https://docs.microsoft.com/en-us/azure/#pivot=products&panel=ai>
- <https://docs.microsoft.com/en-us/azure/machine-learning/studio/algorithm-cheat-sheet>

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Thank You

Organizers, Sponsors and *You* for Making this Possible.

Questions? Feedback? Contact me:

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