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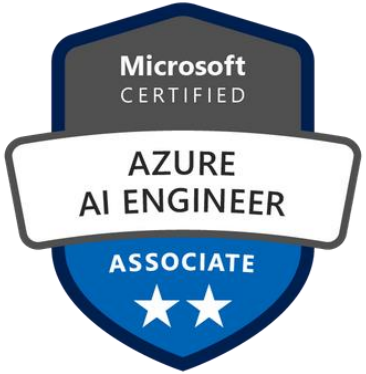
Microsoft Azure AI Fundamentals (AI-900) Crash Course

Reza Salehi

Cloud Consultant and Trainer

@zaalion



COURSE

Microsoft Azure Fundamentals (AZ-900) Certification Course

★★★★★ 1 review

By Reza Salehi

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TIME TO COMPLETE:
4h 37m

LEVEL:
Beginner

TOPICS:
Microsoft Azure

PUBLISHED BY:
O'Reilly Media, Inc.

PUBLICATION DATE:
October 2022

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https://learning.oreilly.com/videos/microsoft-azure-fundamentals/0636920797234/

Azure Cookbook

https://learning.oreilly.com/library/view/azure-cookbook/9781098135782/

https://www.amazon.ca/Azure-Cookbook-Recipes-Maintain-Solutions/dp/1098135792/

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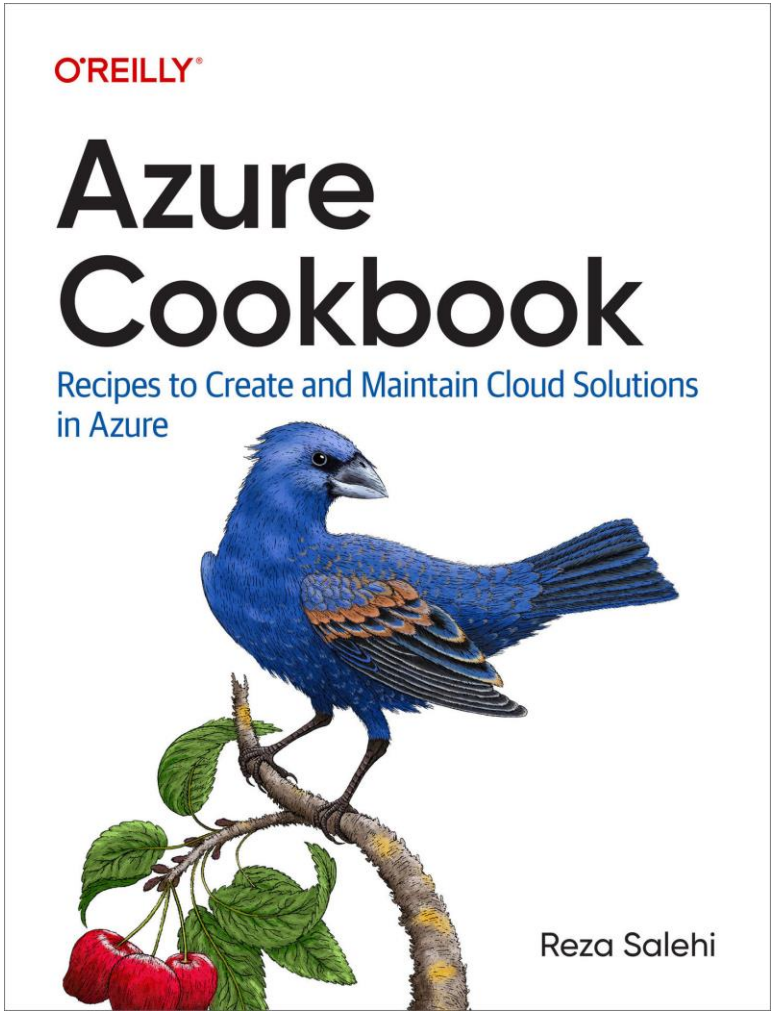

Course Overview

AI-900 Crash Course

- Describe Artificial Intelligence workloads and considerations (15-20%)
- Describe fundamental principles of machine learning on Azure (20-25%)
- Describe features of computer vision workloads on Azure (15–20%)
- Describe features of Natural Language Processing (NLP) workloads on Azure (15-20%)
- Describe features of generative AI workloads on Azure (15–20%)

Course Repository

https://github.com/zaalion/oreilly-ai-900

Congratulations, you passed!

You've renewed your Microsoft Certified: Azure Security Engineer Associate and have extended it by **one year**.

See your results

oreilly-ai-900 Public

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Demo	Oct 2023 updates
.gitignore	Updated slide deck
OReilly-Branded-RezaSalehi-AI-900.p...	Oct 2023 updates

Help people interested in this repository understand your project by adding a

Local Codespaces

Clone

HTTPS SSH GitHub CLI

https://github.com/zaalion/oreilly-ai-900.git

Use Git or checkout with SVN using the web URL.

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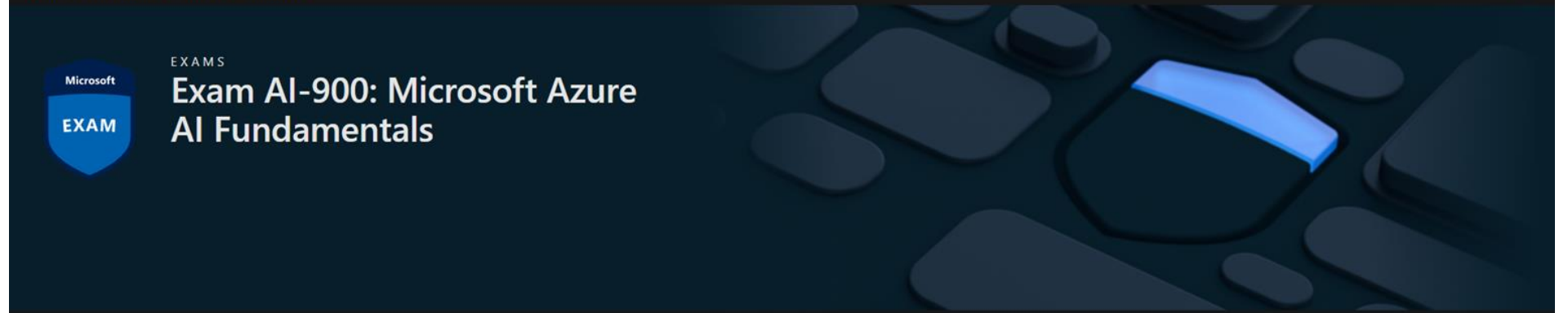

EXAMS

Exam AI-900: Microsoft Azure AI Fundamentals

This exam is an opportunity to demonstrate knowledge of machine learning (ML) and artificial intelligence (AI) concepts and related Microsoft Azure services. Candidates for this exam should have familiarity with Exam AI-900's self-paced or instructor-led learning material.

This exam is intended for candidates with both technical and non-technical backgrounds. Data science and software engineering experience are not required; however, awareness of cloud basics and client-server applications would be beneficial.

Azure AI Fundamentals can be used to prepare for other Azure role-based certifications like Azure Data Scientist Associate or Azure AI Engineer Associate, but it is not a prerequisite for any of them.

You may be eligible for ACE college credit if you pass this certification exam. See ACE college credit for certification exams for

Important

The English language version of this exam will be updated on November 2, 2023. Review the study guide linked in the "Tip" box for details on upcoming changes. If a localized version of this exam is available, it will be updated approximately eight weeks after this date. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of this exam are not updated on this schedule.

Passing score: 700. Learn more about exam scores.

Tip

- Review the **AI-900 study guide** to help you prepare for the exam
- Demo the exam experience by visiting our **exam sandbox**

Note

Cognitive Services has been renamed to Azure AI Services. Individual services have also been renamed. These changes will appear on the exam in late 2023. **Learn more about Azure AI services.**

Part of the requirements for: Microsoft Certified: Azure AI Fundamentals
Related exams: none
Go to Learn Profile

Two ways to prepare

Self-paced | Instructor-led

Items in this collection

LEARNING PATH

Microsoft Azure AI Fundamentals: Get started with artificial intelligence

2 Modules

Beginner • AI Engineer • Bot Service

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LEARNING PATH

Microsoft Azure AI Fundamentals: Explore visual tools for machine learning

4 Modules

Beginner • AI Engineer • Azure

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LEARNING PATH

Describe Artificial Intelligence workloads and considerations (15-20%)

Describe Artificial Intelligence workloads and considerations (15-20%)

- Identify features of common AI workloads
- Identify guiding principles for responsible AI

Identify Features of Common AI Workloads

- Identify features of data monitoring and anomaly detection workloads [see 1 2 3 4 5]
- Identify features of content moderation and personalization workloads
- Identify computer vision workloads [see 1 2 3 4 5 6 7]
- Identify natural language processing workloads [see 0 1 2 3 4 5]
- Identify knowledge mining workloads [see 1 2 3 4 5]
- Identify document intelligence workloads [see 1]
- Identify features of generative AI workloads

Identify Guiding Principles for Responsible AI

- Describe considerations for fairness in an AI solution [see 1 2 3]
- Describe considerations for reliability and safety in an AI solution [see 1]
- Describe considerations for privacy and security in an AI solution [see 1]
- Describe considerations for inclusiveness in an AI solution [see 1]
- Describe considerations for transparency in an AI solution [see 1]
- Describe considerations for accountability in an AI solution [see 1]

Describe Fundamental Principles of Machine Learning on Azure (20-25%)

Describe Fundamental Principles of Machine Learning on Azure (20-25%)

- Identify common machine learning techniques
- Describe core machine learning concepts
- Describe Azure Machine Learning capabilities

Identify Common Machine Learning Techniques

- Identify regression machine learning scenarios [see 1 2 3 4 5 6 7]
- Identify classification machine learning scenarios [see 1 2]
- Identify clustering machine learning scenarios [see 1 2]
- Identify features of deep learning techniques [see 1 2]

Describe Core Machine Learning Concepts

- Identify features and labels in a dataset for machine learning [see 1]
- Describe how training and validation datasets are used in machine learning [see 1 2]

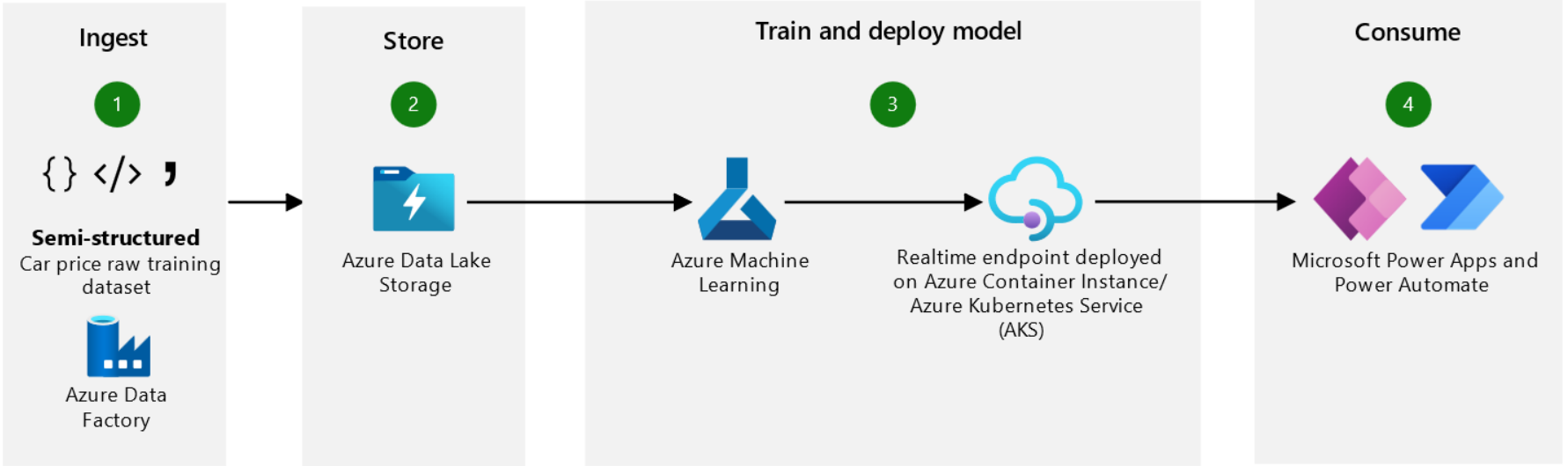
Describe Azure Machine Learning Capabilities

- Describe capabilities of Automated machine learning [see 1 2 3]
- Describe data and compute services for data science and machine learning
- Describe model management and deployment capabilities in Azure Machine Learning [see 1 2]

Creating Your Own ML Model

1. Collect training datasets; 1000+ cat and not-cat photos
2. Cleanup the collected training data
3. Choose the right ML model for your use case
4. Train the model and verify the result
5. Deploy the read-to-use model to your application
6. Start using the model with the data in question

Creating Your Own ML Model



Microsoft Azure

Describe Features of Computer Vision Workloads on Azure (15–20%)

Describe Features of Computer Vision Workloads on Azure (15–20%)

- Identify common types of computer vision solutions
- Identify Azure tools and services for computer vision tasks

Identify Common Types of Computer Vision Solutions

- Identify features of image classification solutions [see 1 2]
- Identify features of object detection solutions [see 1 2]
- Identify features of optical character recognition solutions [see 1 2]
- Identify features of facial detection and facial analysis solutions [see 1 2 3]

Identify Azure Tools and Services for Computer Vision Tasks

- Describe capabilities of the Azure AI Vision service [see 1 2]

  Describe capabilities of the Azure AI Face detection service [see 1 2]
- Describe capabilities of the Azure AI Video Indexer service [see 1 2]

Describe Features of Natural Language Processing (NLP) Workloads on Azure (15-20%)

Describe Features of Natural Language Processing (NLP) Workloads on Azure (15-20%)

- Identify features of common NLP workload scenarios
- Identify Azure tools and services for NLP workloads

Identify Features of Common NLP Workload Scenarios

- Identify features and uses for key phrase extraction [see 1 2]
- Identify features and uses for entity recognition [see 1]
- Identify features and uses for sentiment analysis [see 1]
- Identify features and uses for language modeling [see 1 2]
- Identify features and uses for speech recognition and synthesis [see 1 2]
- Identify features and uses for translation [see 1 2]

Identify Azure Tools and Services for NLP Workloads

- Describe capabilities of the Azure AI Language service [see 1]
- Describe capabilities of the Azure AI Speech service [see 1]
- Describe capabilities of the Azure AI Translator service [see 1]

Describe features of generative AI workloads on Azure (15–20%)

Describe features of generative AI workloads on Azure (15–20%)

- Identify features of generative AI solutions
- Identify capabilities of Azure OpenAI Service

Identify Features of Generative AI Solutions

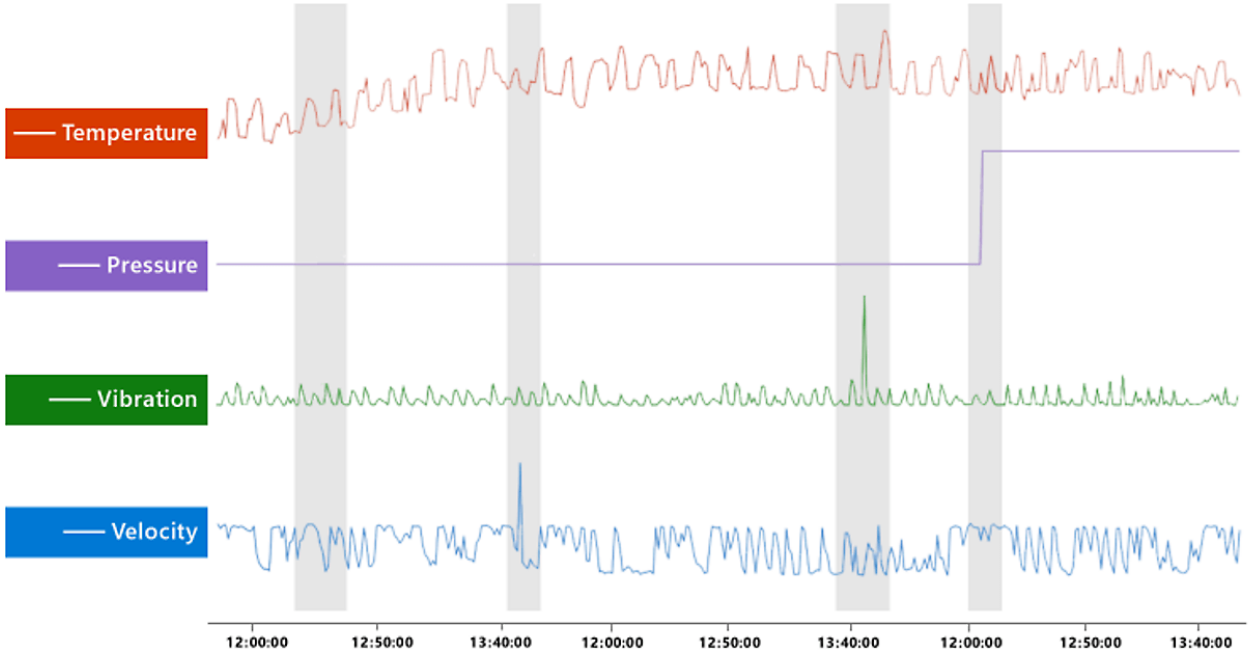
- Identify features of generative AI models [see 1]
- Identify common scenarios for generative AI [see 1 2]
- Identify responsible AI considerations for generative AI

Identify Capabilities of Azure OpenAI Service

- Describe natural language generation capabilities of Azure OpenAI Service
- Describe code generation capabilities of Azure OpenAI Service [see 1]
- Describe image generation capabilities of Azure OpenAI Service

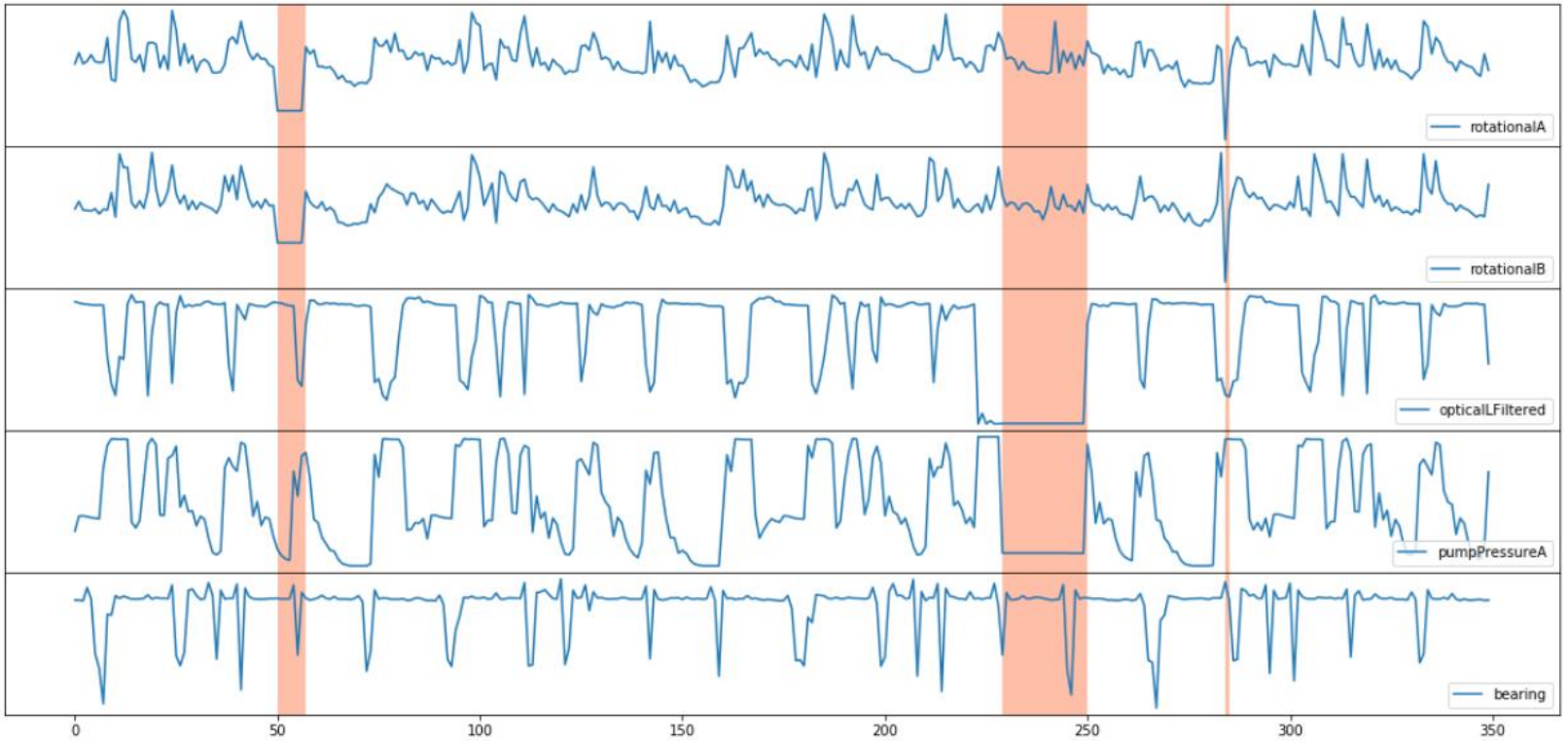
AI Workloads

Anomaly Detection Workloads



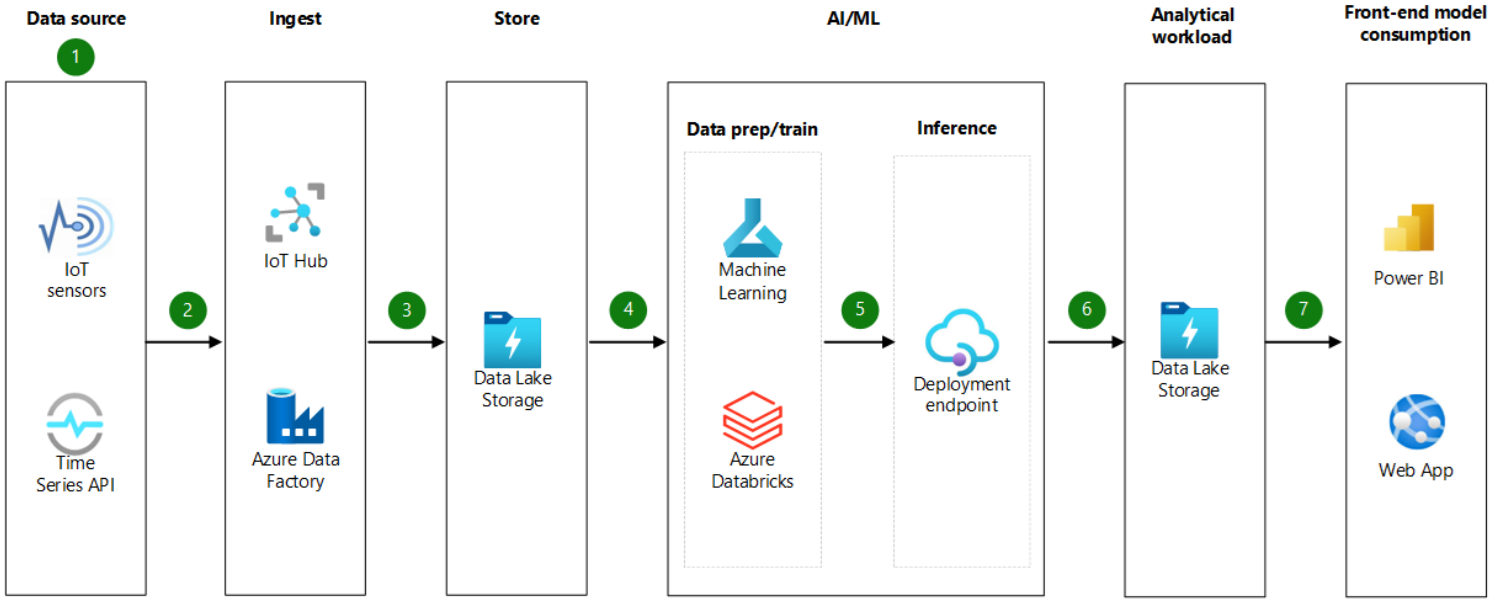
https://azure.microsoft.com/en-us/products/cognitive-services/anomaly-detector/

Anomaly Detection Workloads



https://learn.microsoft.com/en-us/azure/cognitive-services/anomaly-detector/overview

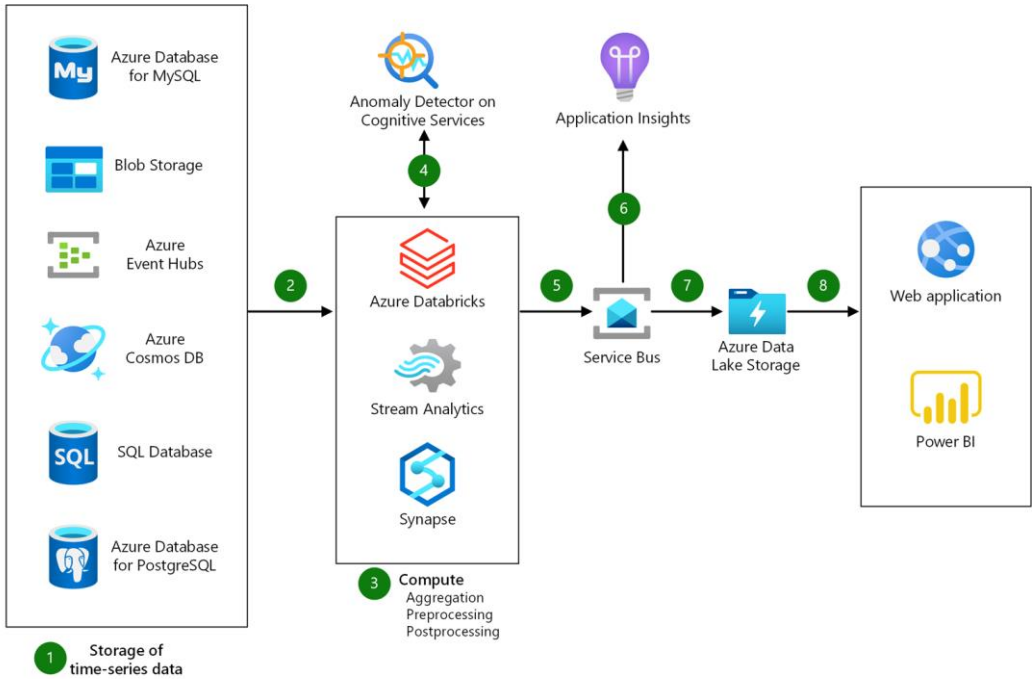
Anomaly Detection Workloads



Microsoft Azure

https://learn.microsoft.com/en-us/azure/architecture/example-scenario/ai/real-time-anomaly-detection-conveyor-belt

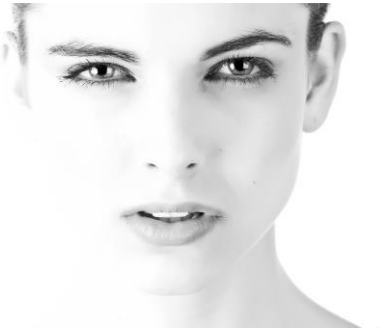
Anomaly Detection Workloads



Microsoft Azure

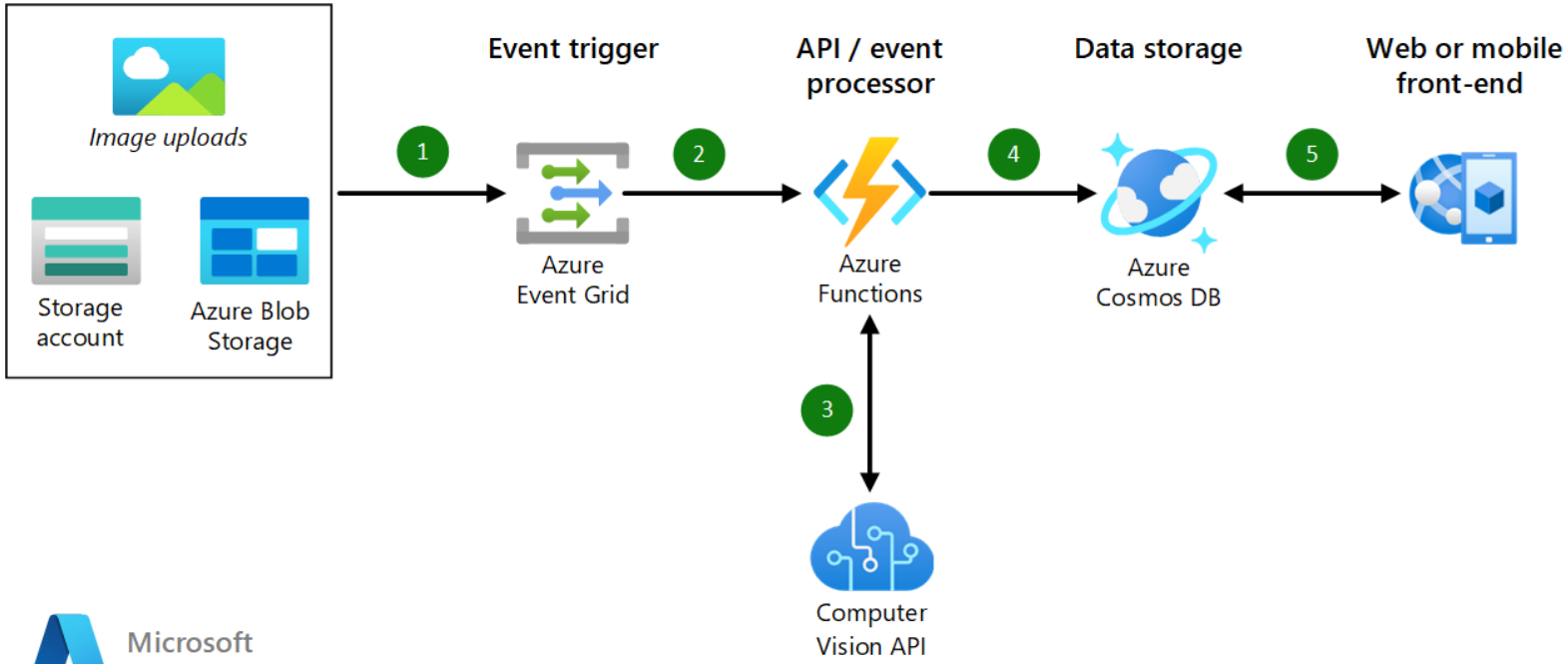
https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/anomaly-detector-process

Computer Vision Workloads



https://learn.microsoft.com/en-us/azure/cognitive-services/computer-vision/overview

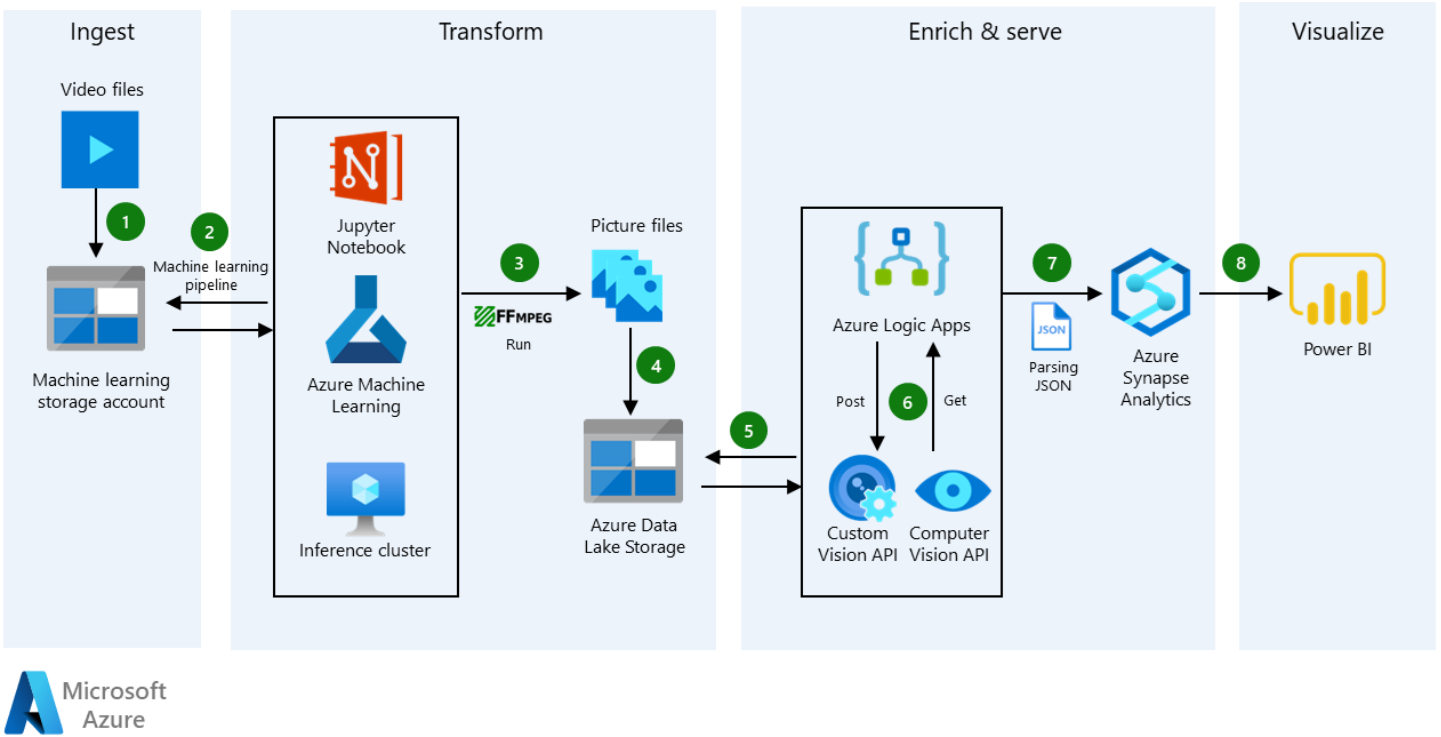
Computer Vision Workloads



Microsoft Azure

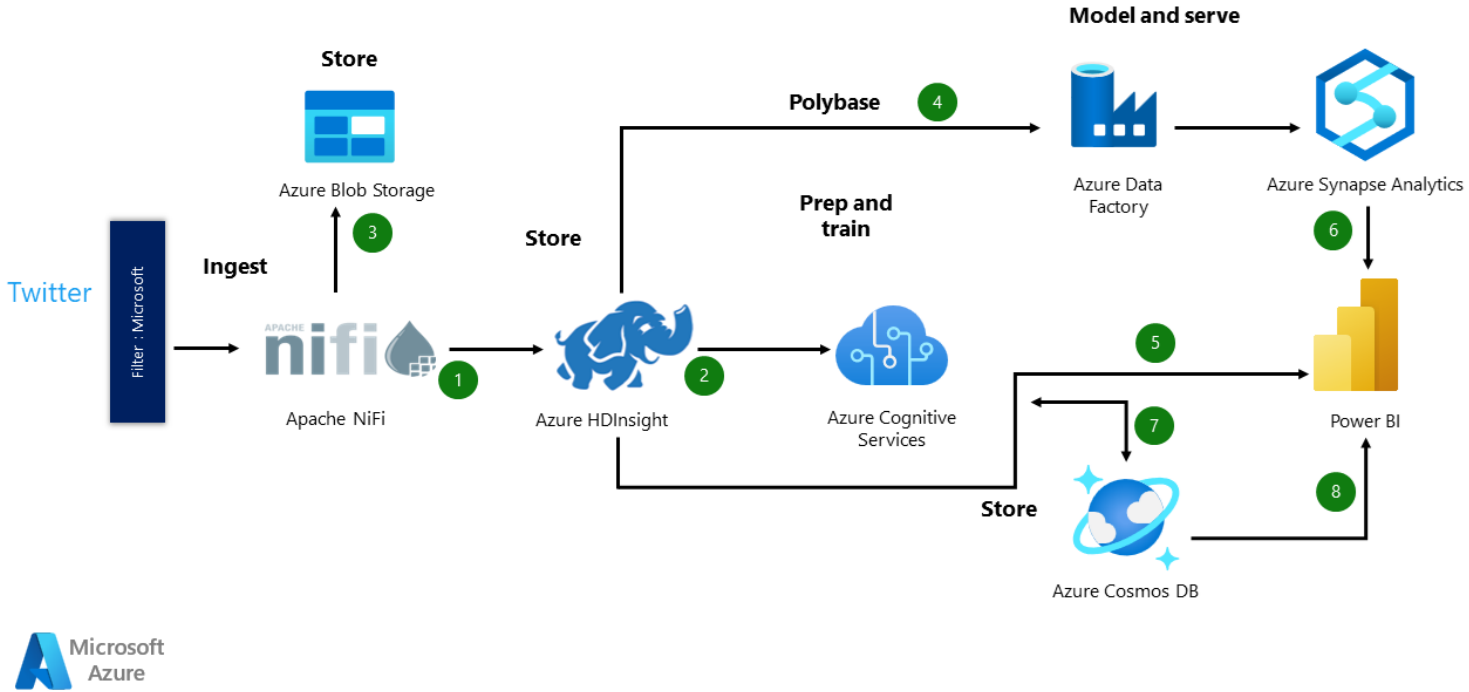
https://learn.microsoft.com/en-us/azure/architecture/example-scenario/ai/intelligent-apps-image-processing

Computer Vision Workloads



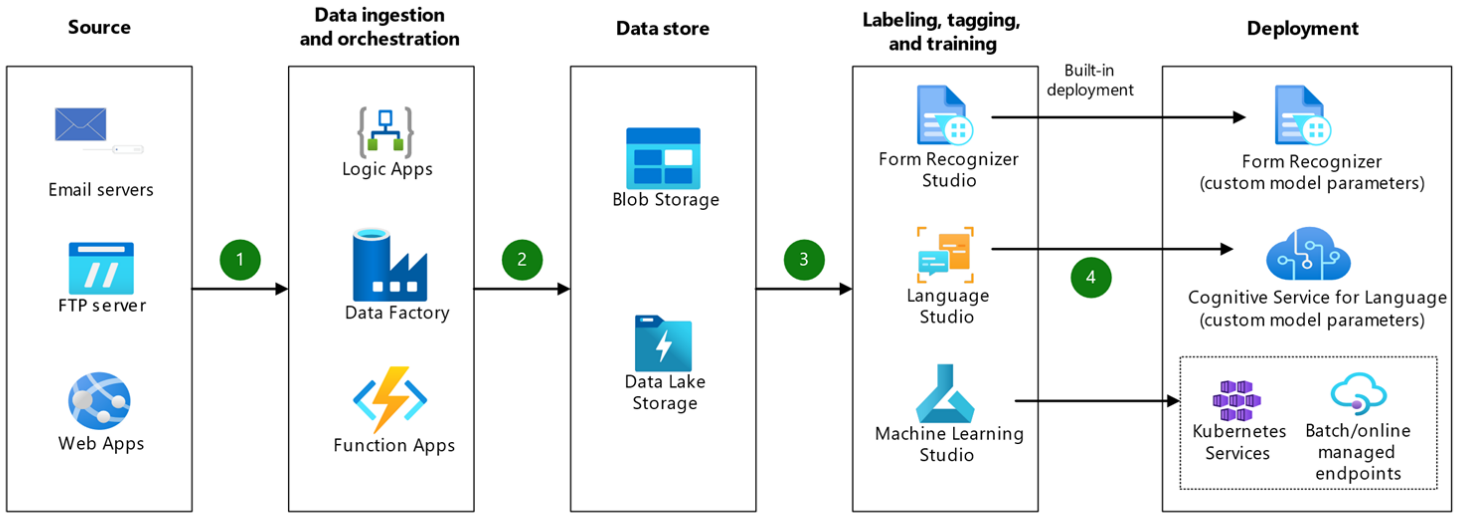
https://learn.microsoft.com/en-us/azure/architecture/example-scenario/ai/analyze-video-computer-vision-machine-learning

Computer Vision Workloads



https://learn.microsoft.com/en-us/azure/architecture/example-scenario/ai/nifi-sentiment-analysis-face-recognition

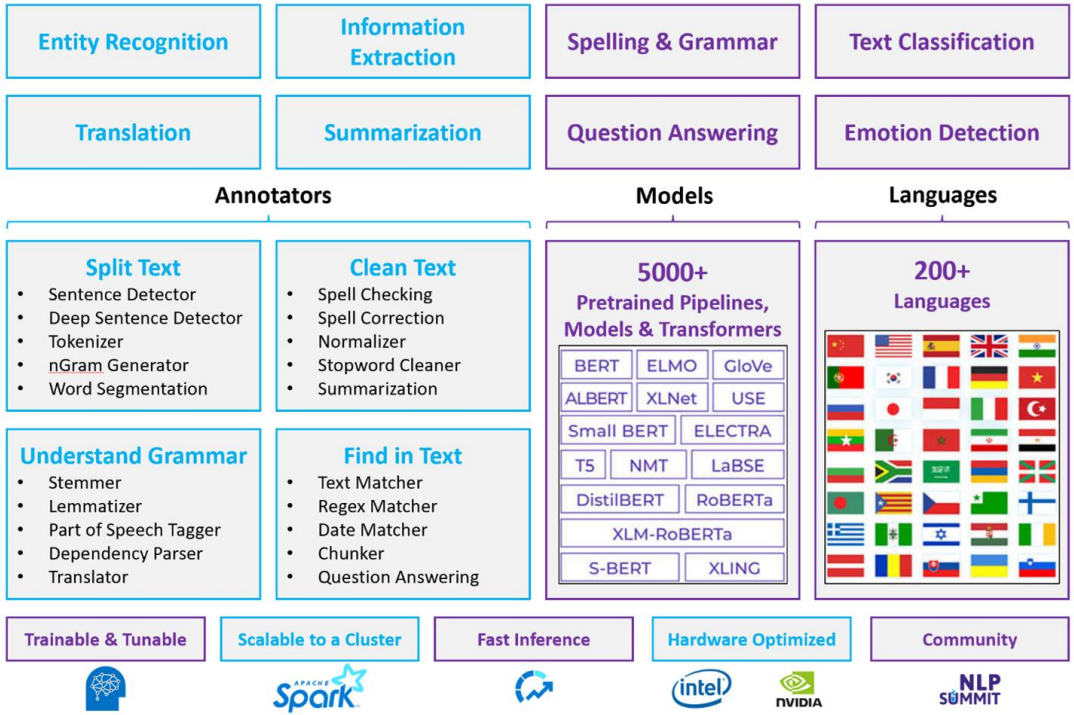
Computer Vision Workloads



Microsoft Azure

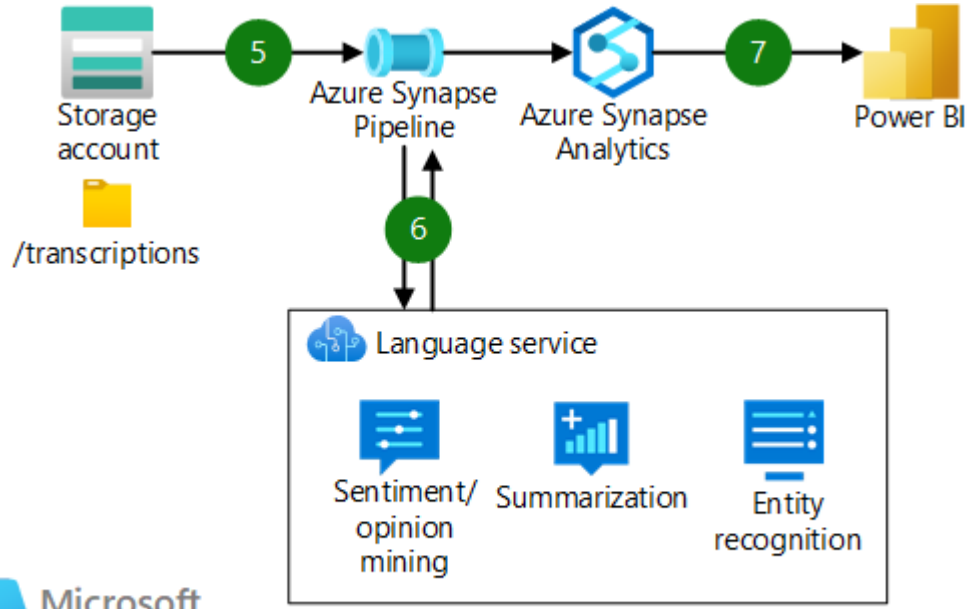
https://learn.microsoft.com/en-us/azure/architecture/example-scenario/document-processing/build-deploy-custom-models

Natural Language Processing Workloads



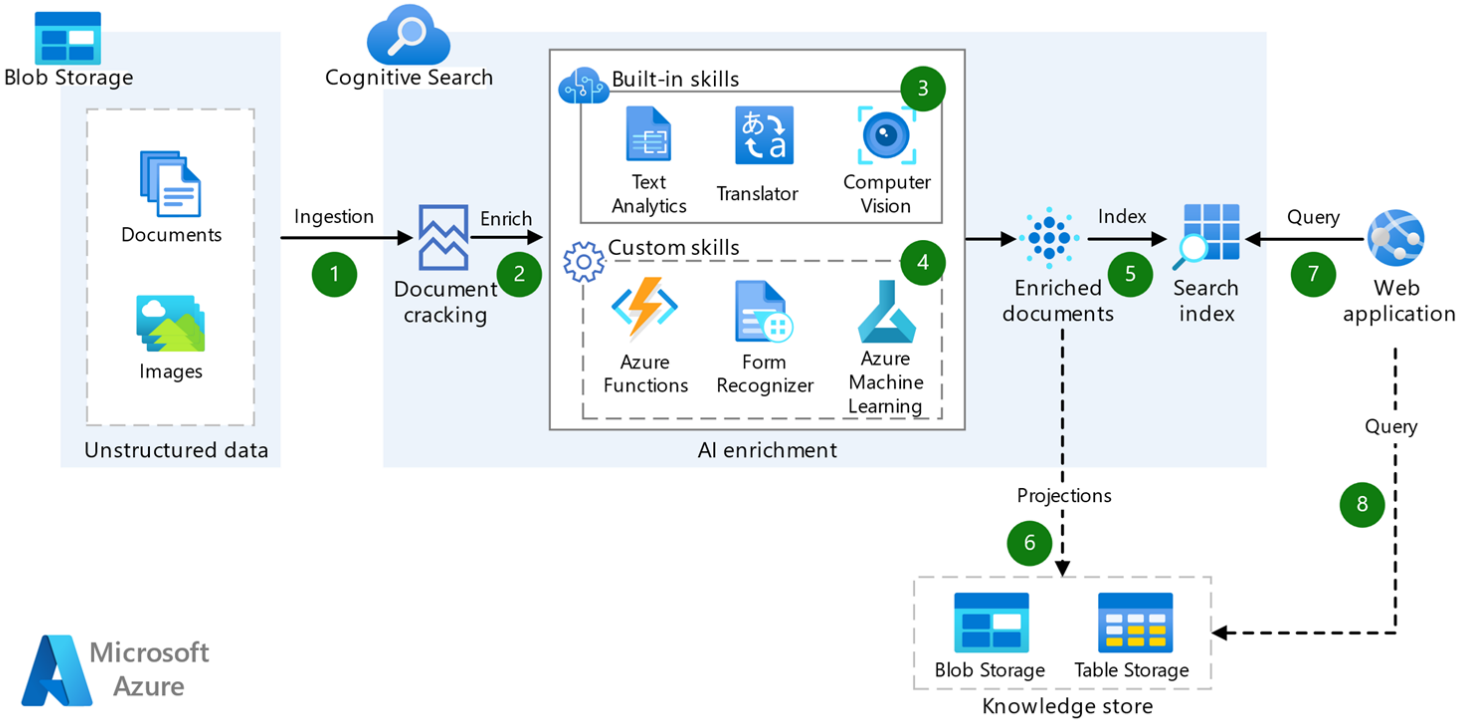
https://learn.microsoft.com/en-us/azure/architecture/data-guide/technology-choices/natural-language-processing

Natural Language Processing Workloads



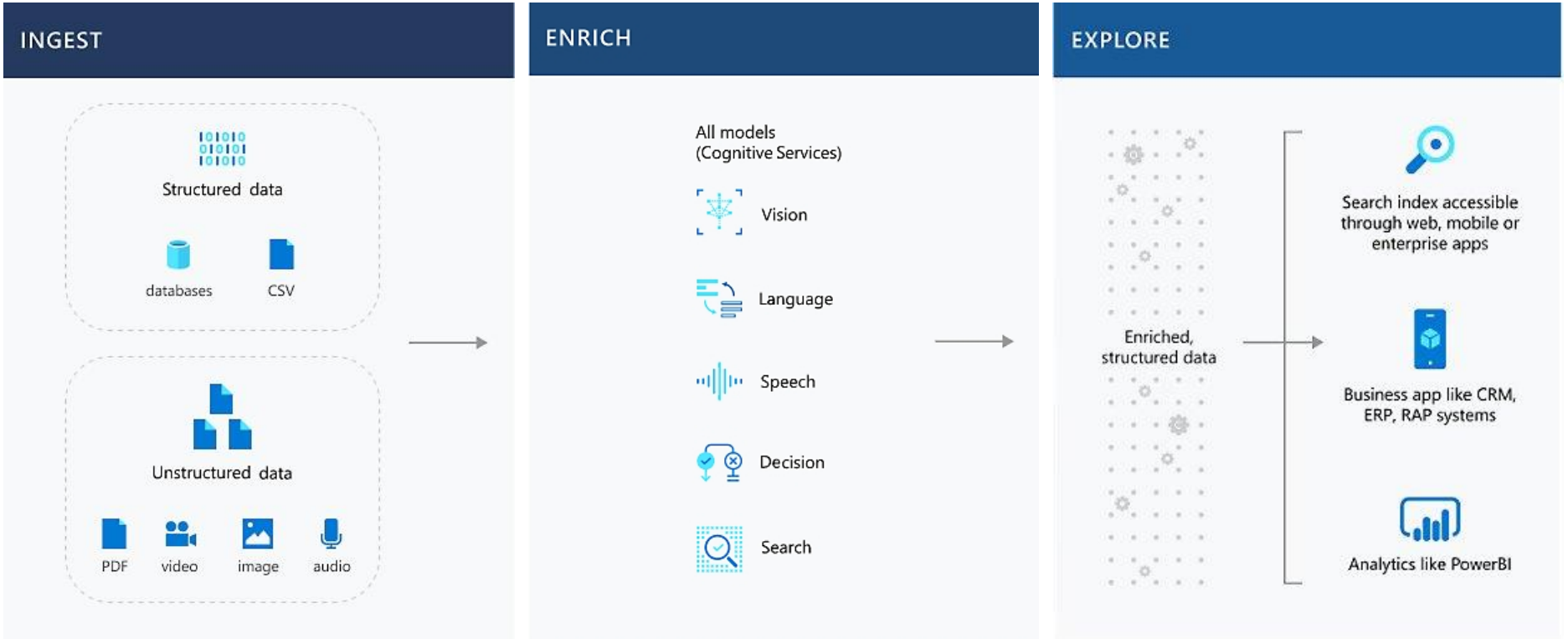
https://learn.microsoft.com/en-us/azure/architecture/example-scenario/ai/speech-to-text-transcription-analytics

Natural Language Processing Workloads



https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/cognitive-search-with-skillsets

Knowledge Mining Workloads



https://azure.microsoft.com/en-us/solutions/knowledge-mining

Knowledge Mining Workloads

Azure Cognitive Search

Identify and explore relevant content with the only cloud search service with built-in AI capabilities.

Azure Cognitive Services

Employ cognition capabilities to expand understanding across content types.

Azure Machine Learning

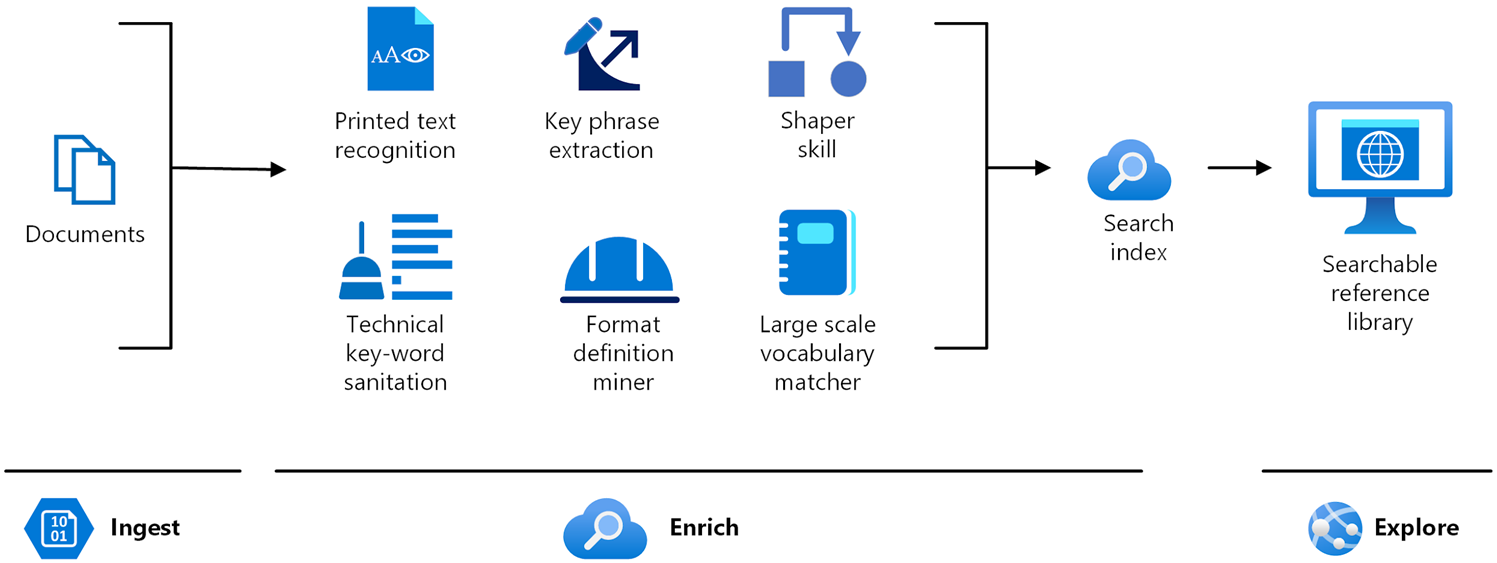
Apply machine learning models as custom skills for specific requirements like industry-specific regulations.

Azure Bot Services

Design interactive experiences that enable users to extract information from their data via bot interface.

https://azure.microsoft.com/en-us/solutions/knowledge-mining

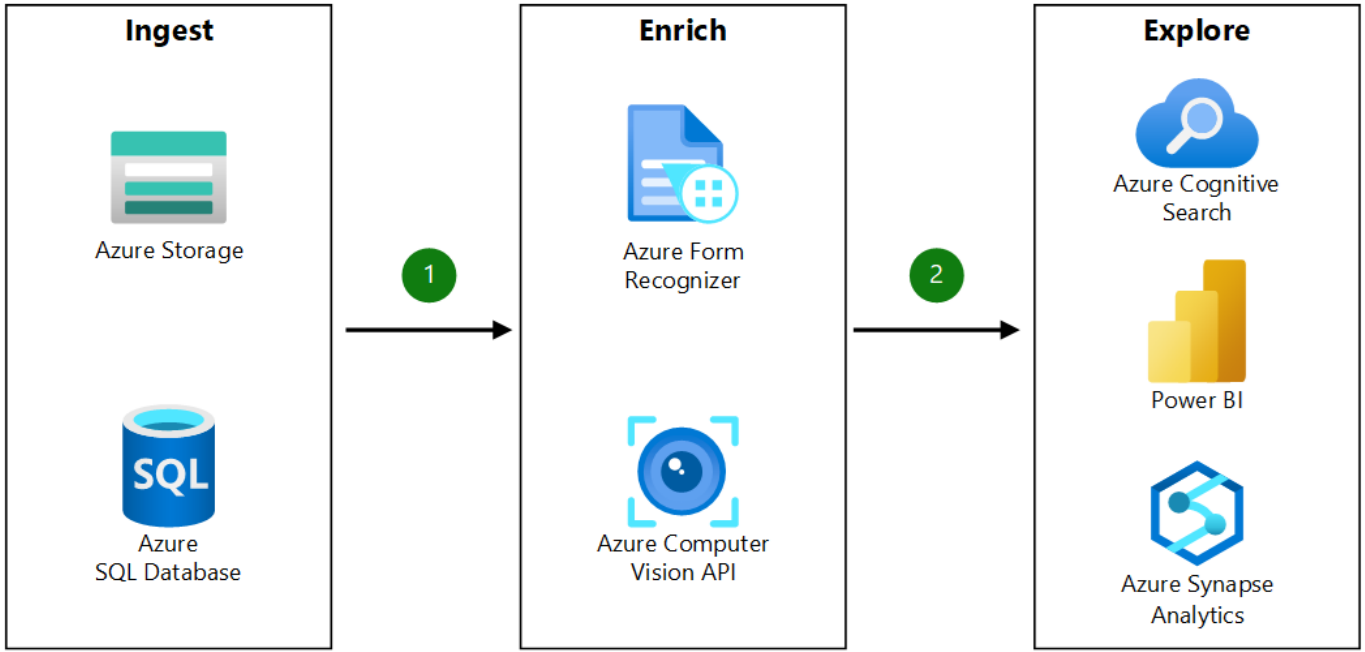
Knowledge Mining Workloads



Microsoft Azure

https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/content-research

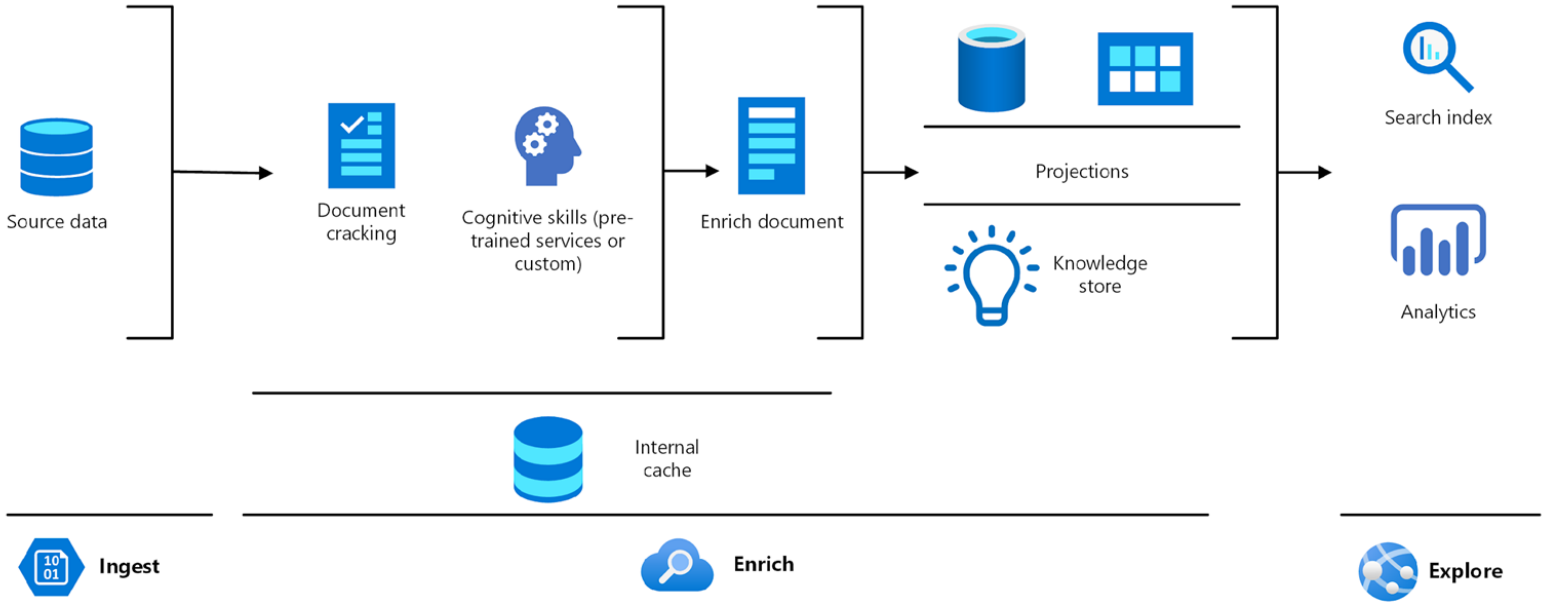
Knowledge Mining Workloads



Microsoft Azure

https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/business-process-management

Knowledge Mining Workloads

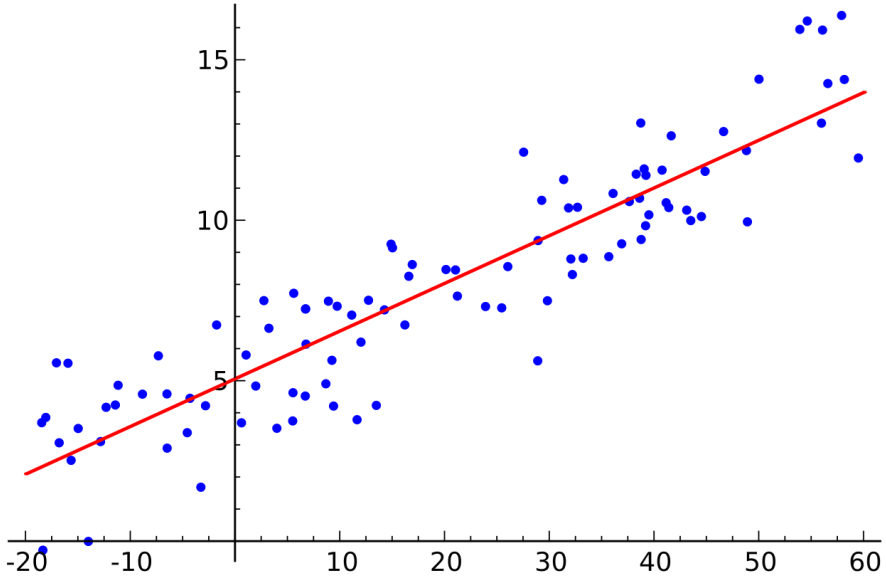


Microsoft Azure

https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/customer-feedback-and-analytics

Regression Machine Learning

- Estimate missing data
- Estimate future data (prediction)



https://en.wikipedia.org/wiki/Regression_analysis

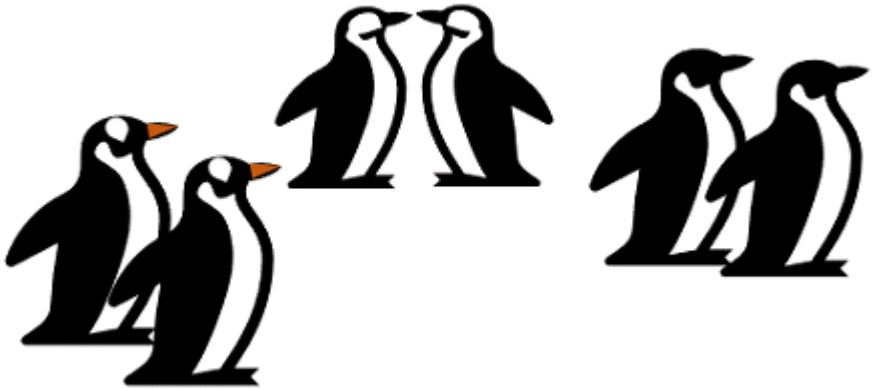
Classification Machine Learning

- Group images into categories

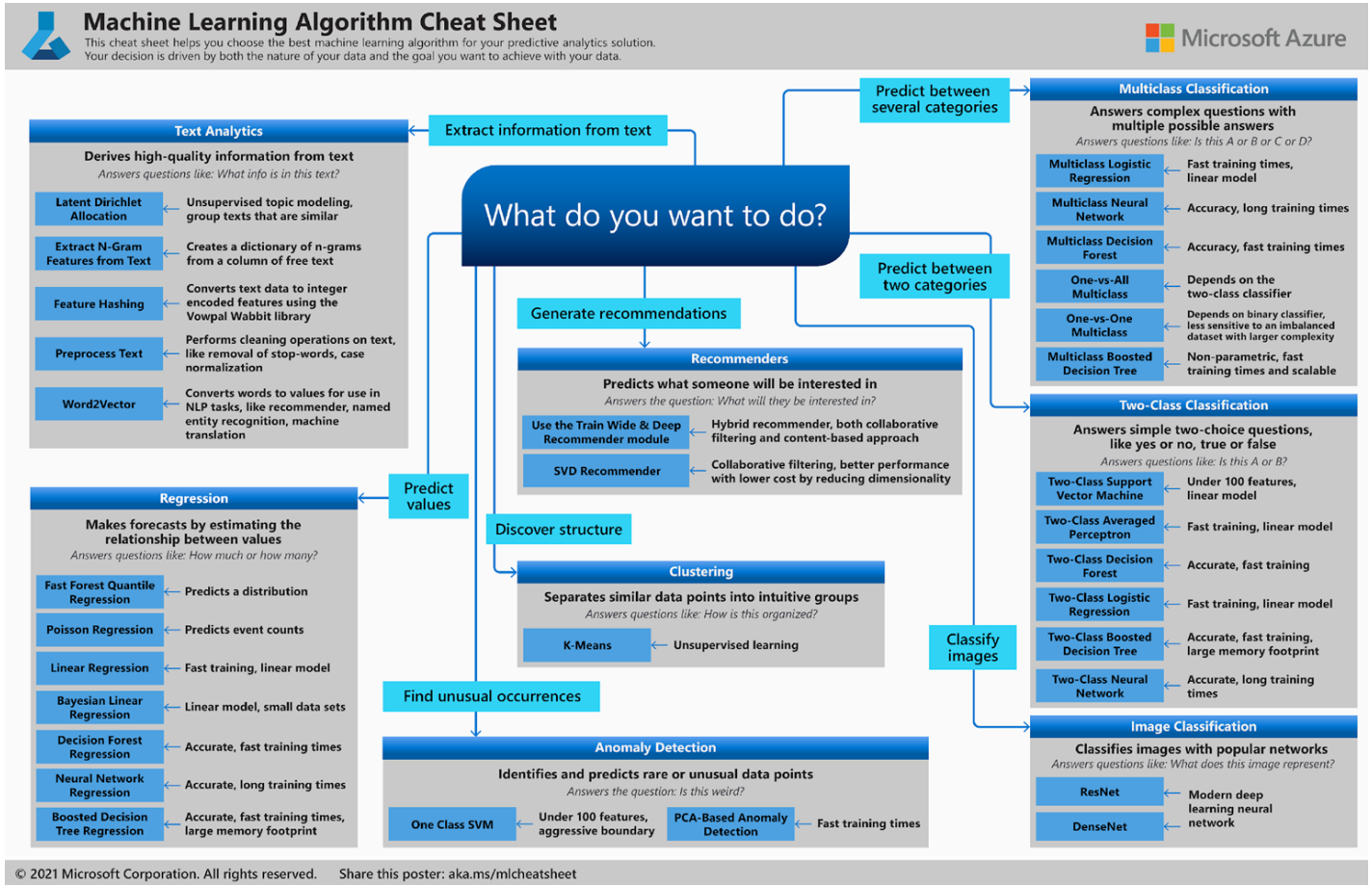
https://learn.microsoft.com/en-us/training/modules/create-classification-model-azure-machine-learning-designer/classification-scenarios

Clustering Machine Learning

- Grouping unlabeled examples



https://learn.microsoft.com/en-us/training/modules/create-clustering-model-azure-machine-learning-designer/2-clustering-scenarios



https://learn.microsoft.com/en-us/azure/machine-learning/algorithm-cheat-sheet

Approach	Use Cases	Example Algorithms	Real-World Scenarios
Regression	Predicting a continuous outcome	Linear Regression, Ridge Regression, Lasso Regression	Sales forecasting, demand prediction, financial modeling
Classification	Assigning a label to input data	Logistic Regression, Decision Trees, Support Vector Machines	Email spam detection, sentiment analysis in customer feedback, image recognition in autonomous vehicles
Clustering	Grouping similar data points	K-Means, Hierarchical Clustering, DBSCAN	Customer segmentation for targeted marketing, anomaly detection in network security, organizing news articles into topics
Deep Learning	Complex hierarchical feature learning	Neural Networks, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN)	Image and speech recognition, natural language processing, self-driving cars

https://learn.microsoft.com/en-us/azure/machine-learning/algorithm-cheat-sheet

The Exam

AI-900 Exam FAQ

- Number of Questions: between 40 and 60
- Duration: 120 minutes
- Questions
  - See the exam sandbox
- There are no hands-on labs
- Pass Score: 700 (on a scale of 1-1000)

AI-900

- Exam AI-900
- Skills measured
- Exam Sandbox

Schedule exam

Exam AI-900: Microsoft Azure AI Fundamentals

United States

Languages: English, Japanese, Chinese (Simplified), Korean, German, French, Spanish, Portuguese (Brazil), Russian, Indonesian (Indonesia), Arabic (Saudi Arabia), Chinese (Traditional), Italian
Retirement date: none

$99 USD*

Price based on the country or region in which the exam is proctored.

Prove that you can describe the following: AI workloads and considerations; fundamental principles of machine learning on Azure; features of computer vision workloads on Azure; and features of Natural Language Processing (NLP) workloads on Azure.

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Use a personal computer that has a reliable webcam and internet connection.

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Description	Details	Price	Actions
[redacted]		165.00	Remove

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It’s time to test your system

Order #: 0064-8802-7606

Your appointment is confirmed! An order confirmation containing important exam day information has been sent to: zaalion@gmail.com

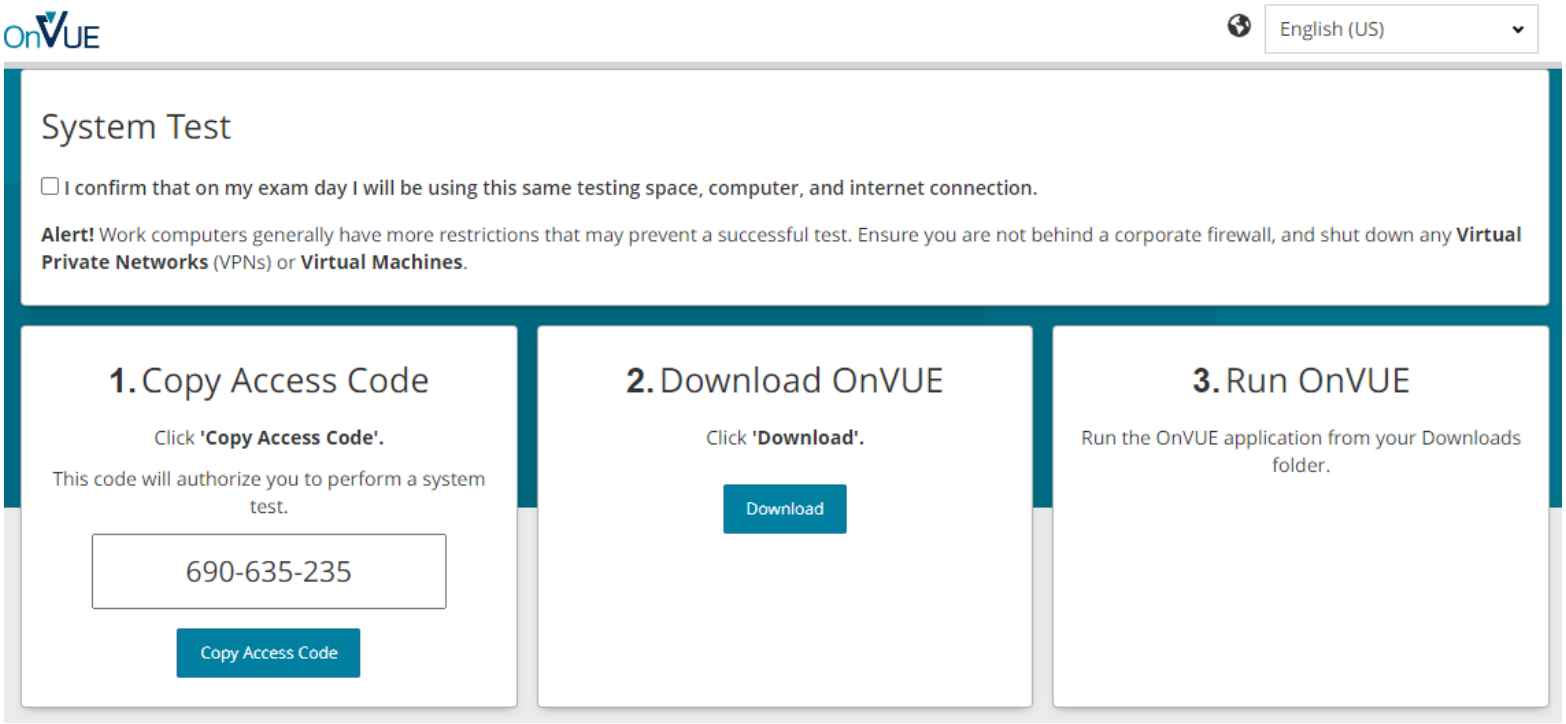
What's next?

Run a system test

We need to verify that the computer and internet connection you plan to use on exam day meet the minimum requirements for online testing. It’ll just take 5 minutes to run:

- Equipment and internet connection checks
- Exam simulation

Description	Details	Order Information	Price
[redacted]			165.00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English (US)
System Test
I confirm that on my exam day I will be using this same testing space, computer, and internet connection.
Alert! Work computers generally have more restrictions that may prevent a successful test. Ensure you are not behind a corporate firewall, and shut down any Virtual Private Networks (VPNs) or Virtual Machines.
1. Copy Access Code
Click 'Copy Access Code'.
This code will authorize you to perform a system test.
690-635-235
Copy Access Code
2. Download OnVUE
Click 'Download'.
Download
3. Run OnVUE
Run the OnVUE application from your Downloads folder.

Course Repository

https://github.com/zaalion/oreilly-ai-900

COURSE

Microsoft Azure Fundamentals (AZ-900) Certification Course

★★★★★ 1 review

By Reza Salehi

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TIME TO COMPLETE:
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LEVEL:
Beginner

TOPICS:
Microsoft Azure

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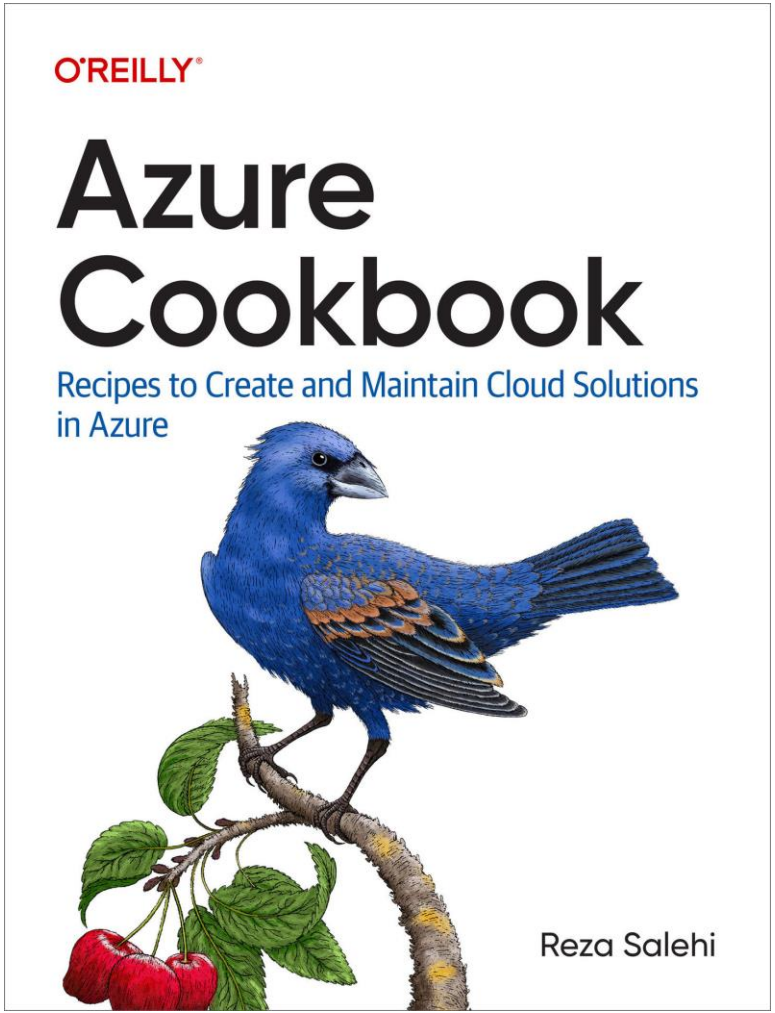

Thank you!

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