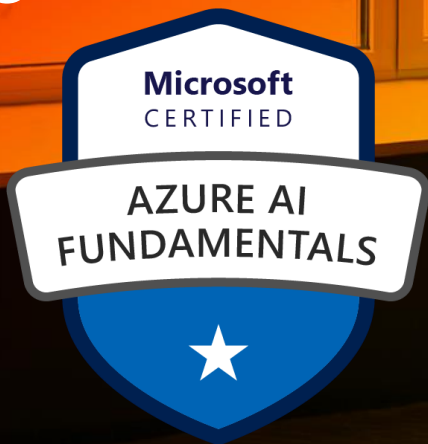


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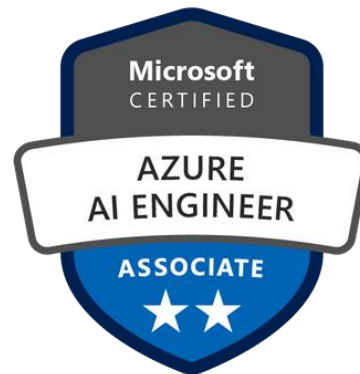


Reza Salehi

Cloud Consultant and Trainer



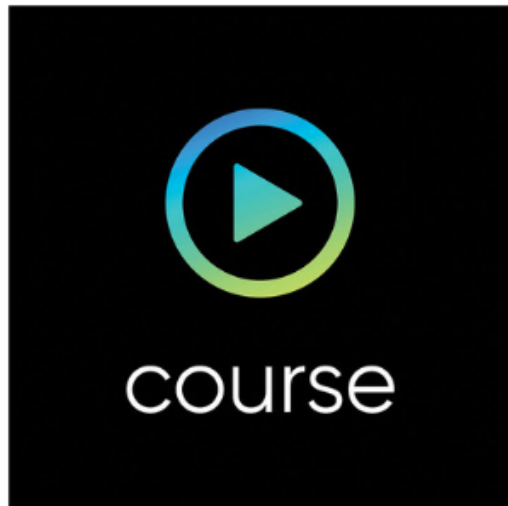
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Azure Cookbook

Recipes to Create and Maintain Cloud Solutions
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Reza Salehi



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>



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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

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4 Modules

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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](#)]
- 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 usecase
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

Using Cognitive Services Models

1. Provision an Azure Computer Vision service
2. Start using the service with the data in question
 - a. Microsoft has trained the models for you
 - b. These models can be customized if needed



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 Azure Tools and Services for Computer Vision Tasks

- Identify capabilities of the Computer Vision service [see [1](#) [2](#)]
- Identify capabilities of the Custom Vision service [see [1](#) [2](#) [3](#)]
- Identify capabilities of the Face service [see [1](#) [2](#)]
- Identify capabilities of the Form Recognizer service [see [1](#) [2](#)]



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](#)]



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 Azure Tools and Services for NLP Workloads

- Identify capabilities of the Language service [see [1](#)]
- Identify capabilities of the Speech service [see [1](#)]
- Identify capabilities of the Translator service [see [1](#)]



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]

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

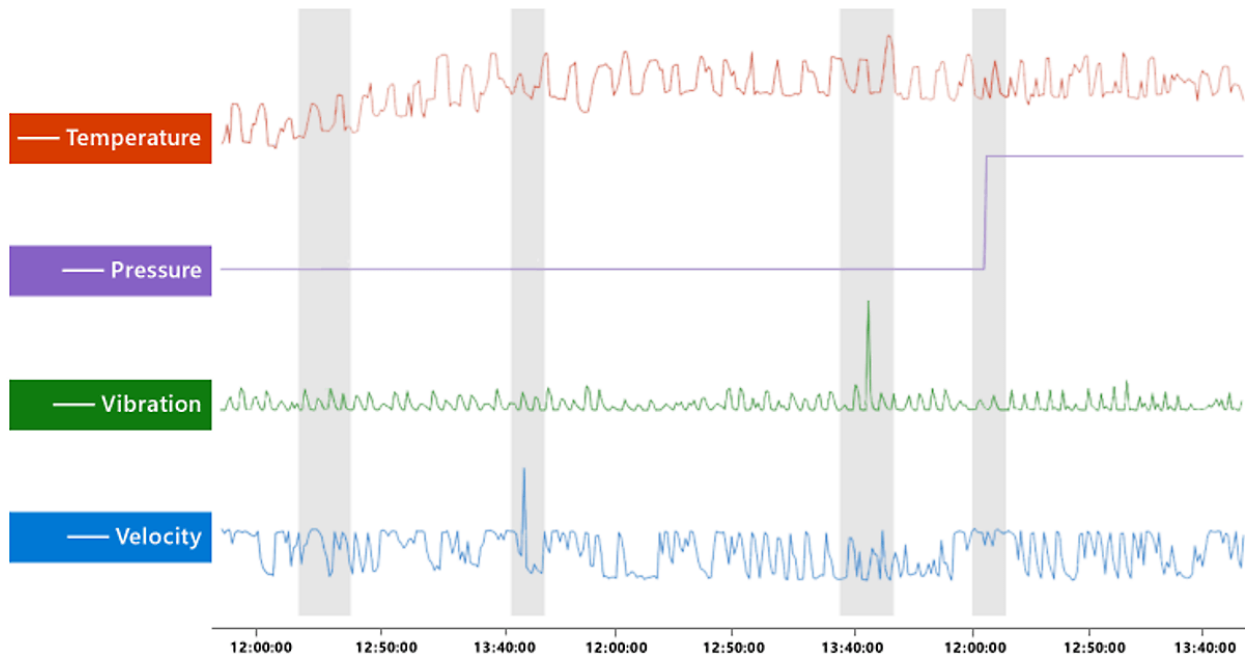


AI Workloads



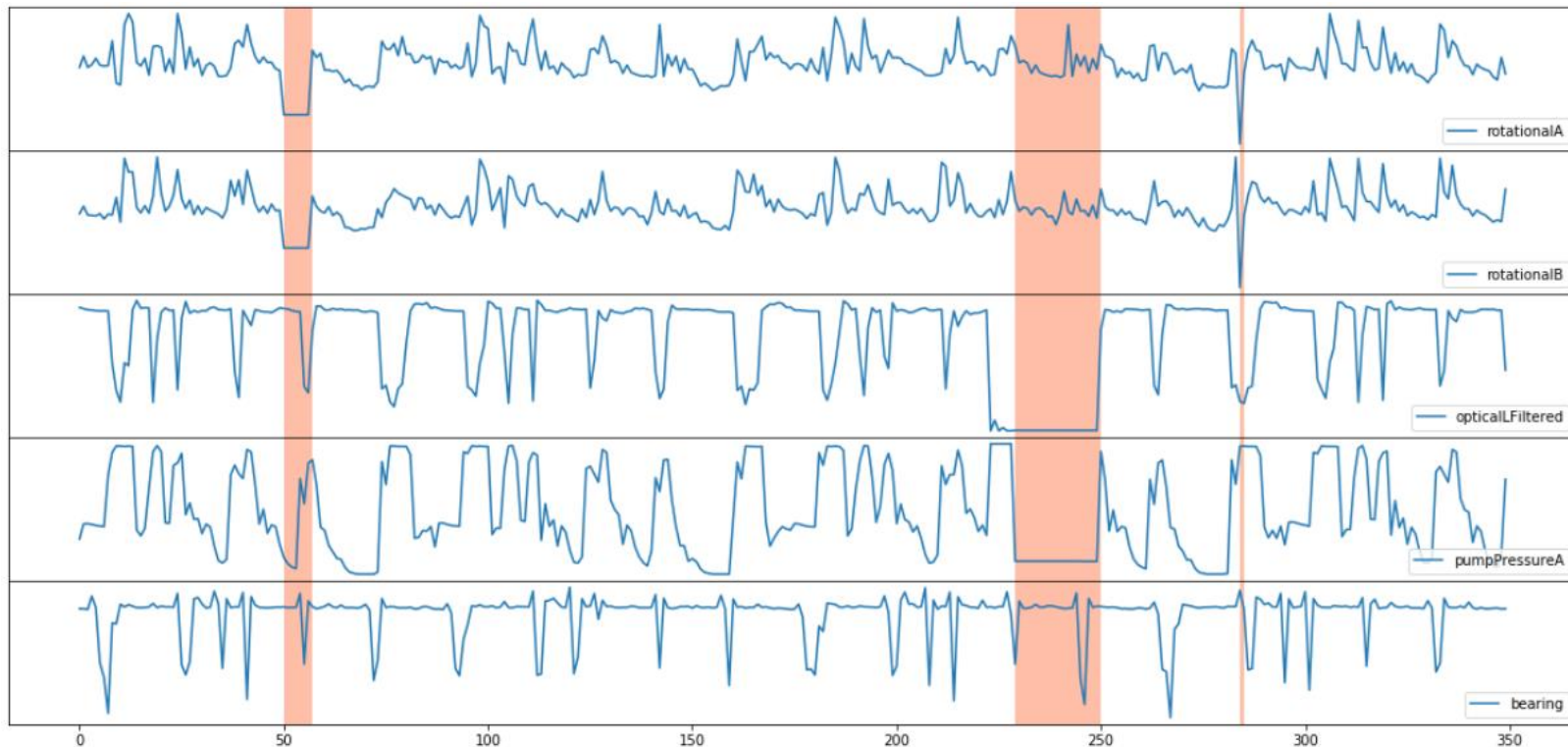


Anomaly Detection Workloads



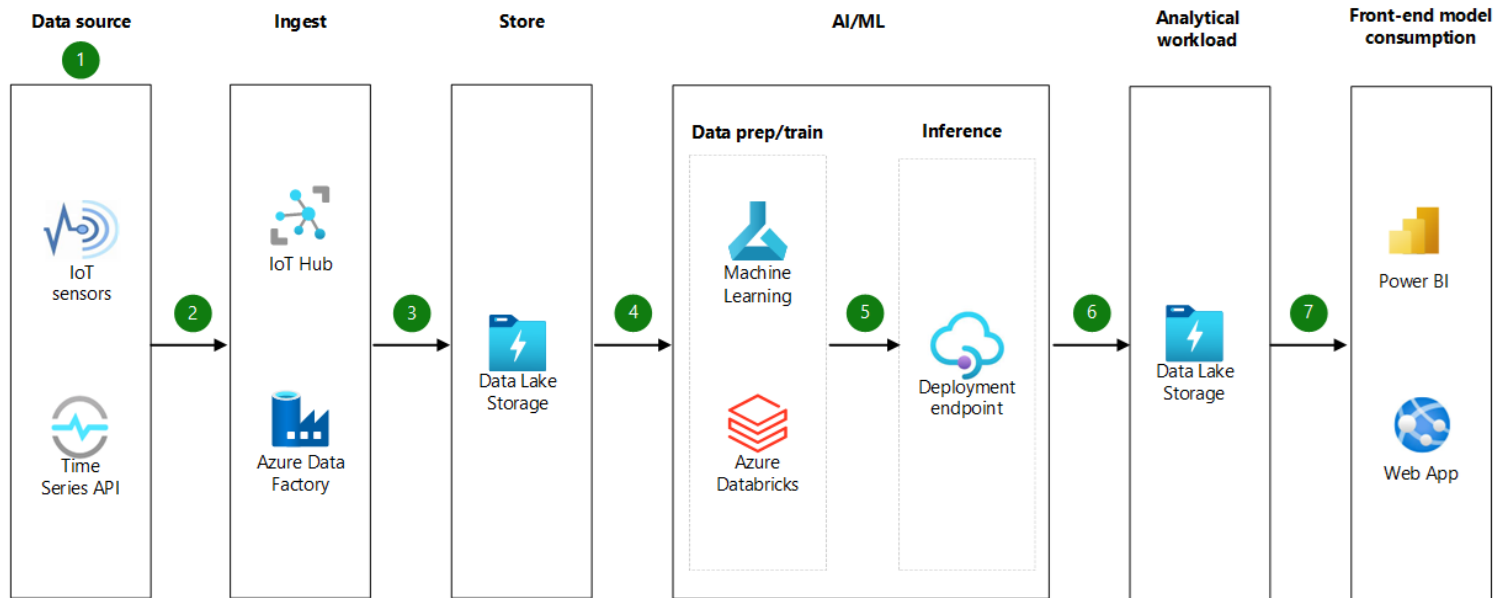


Anomaly Detection Workloads



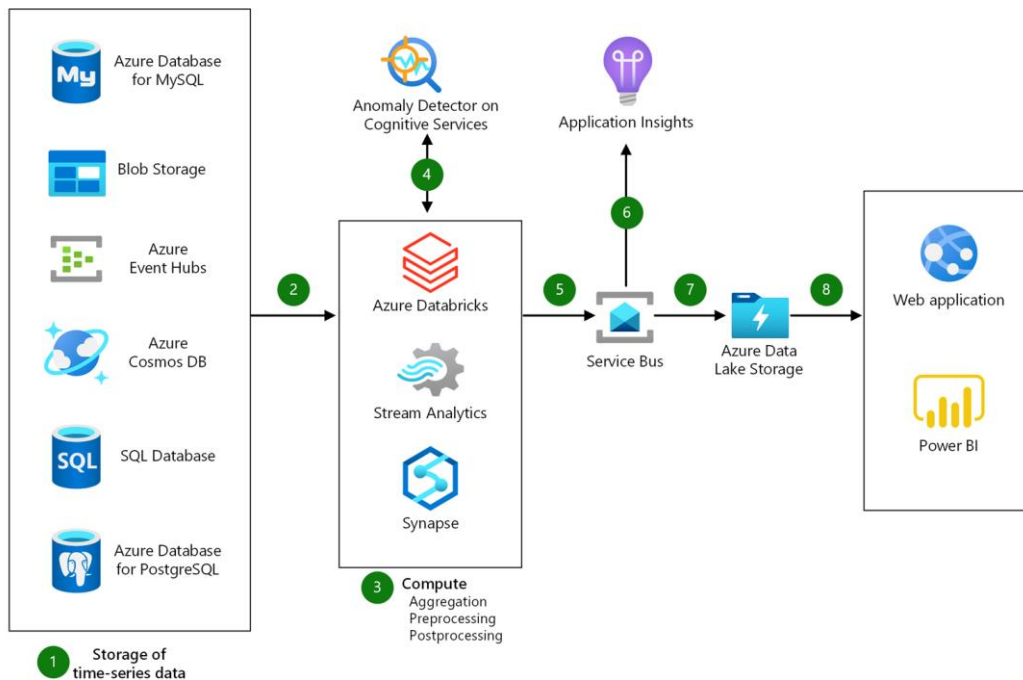


Anomaly Detection Workloads





Anomaly Detection Workloads



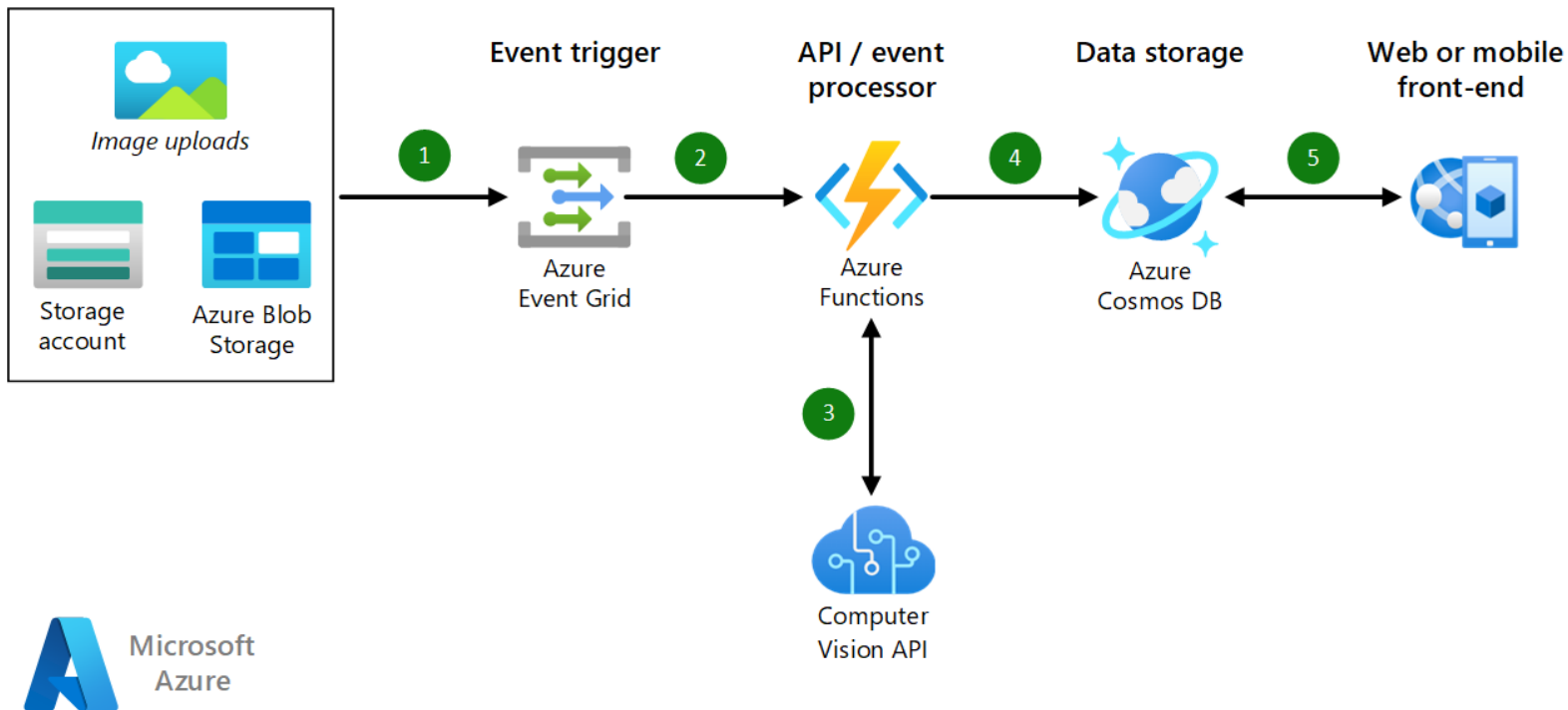


Computer Vision Workloads



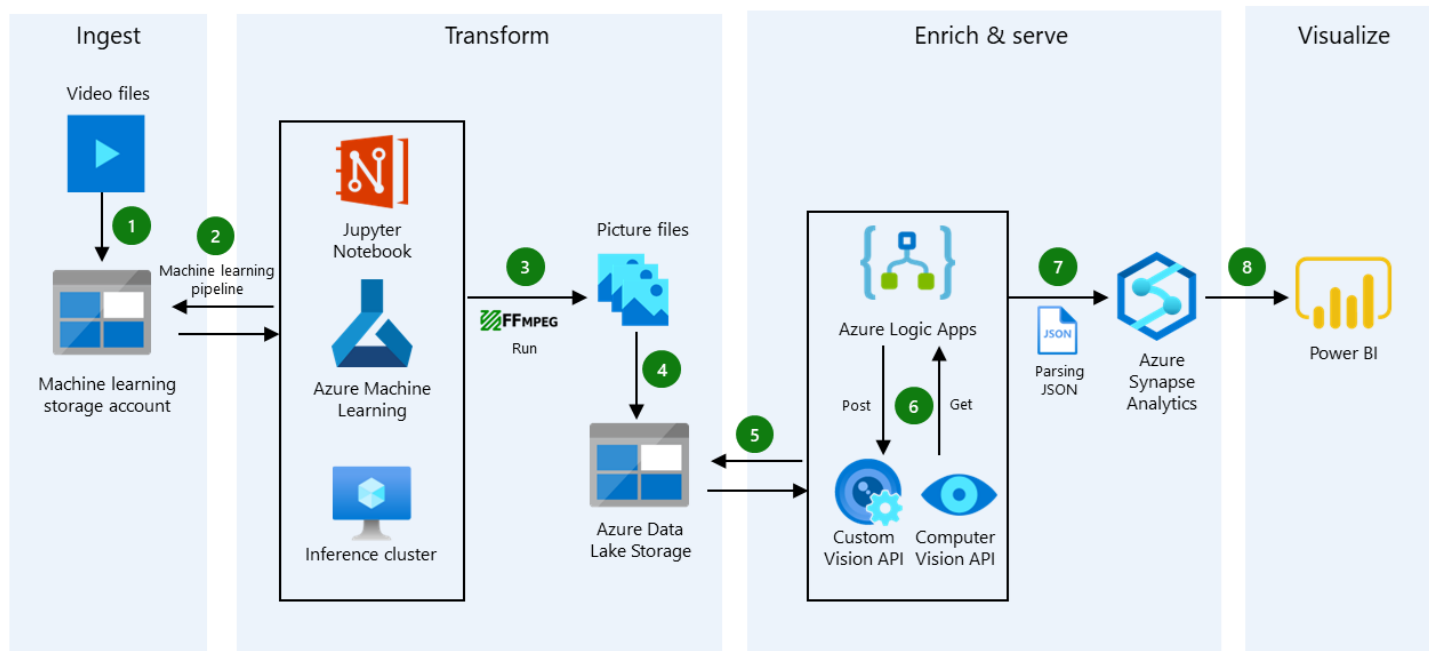


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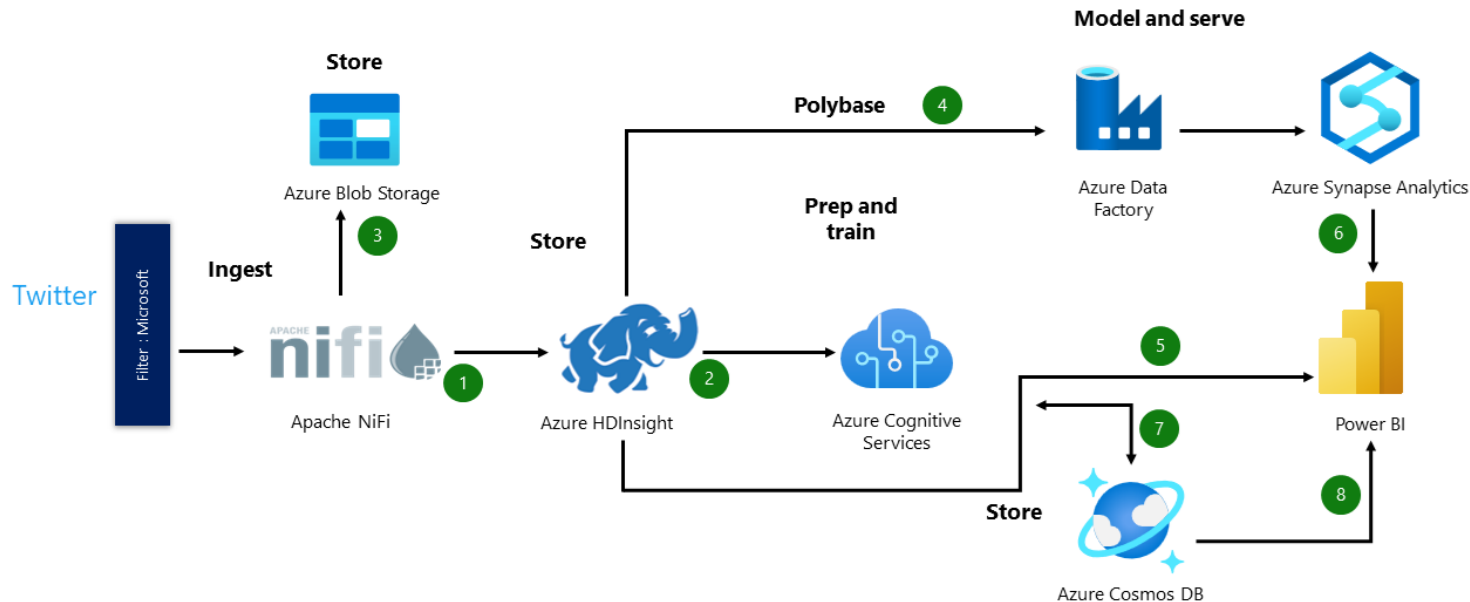


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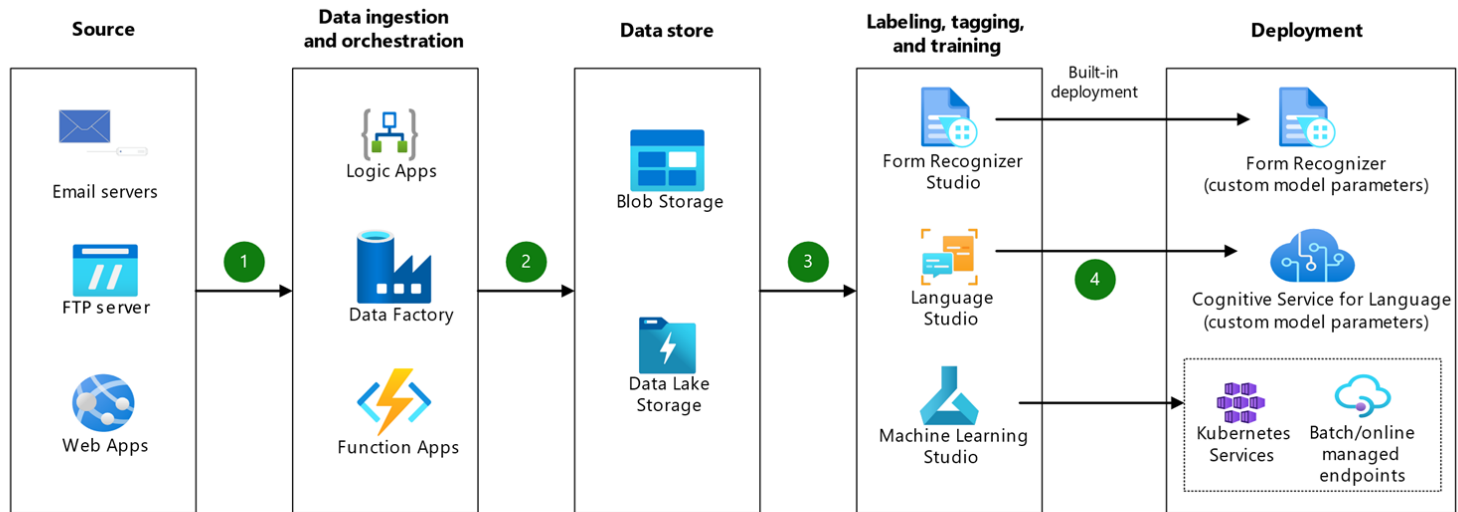


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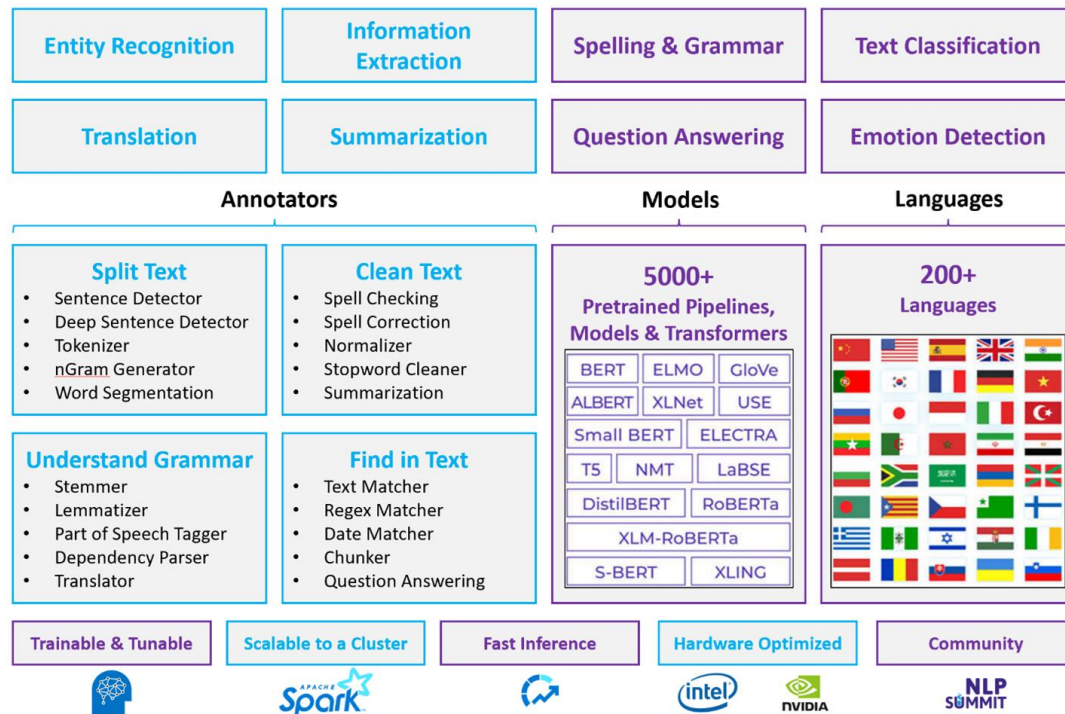


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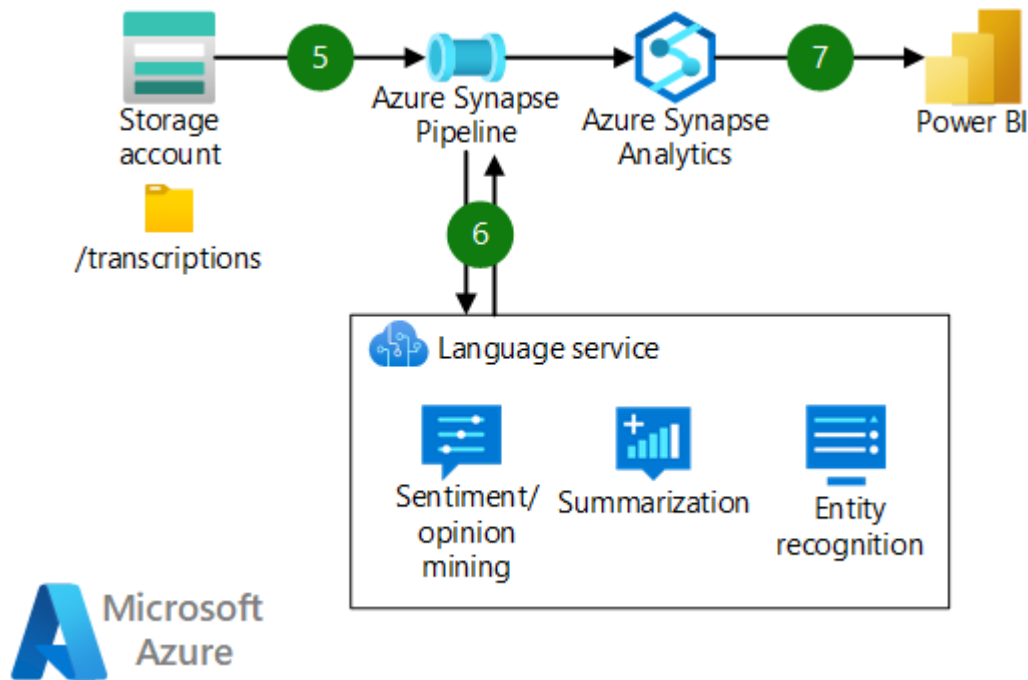


Natural Language Processing Workloads



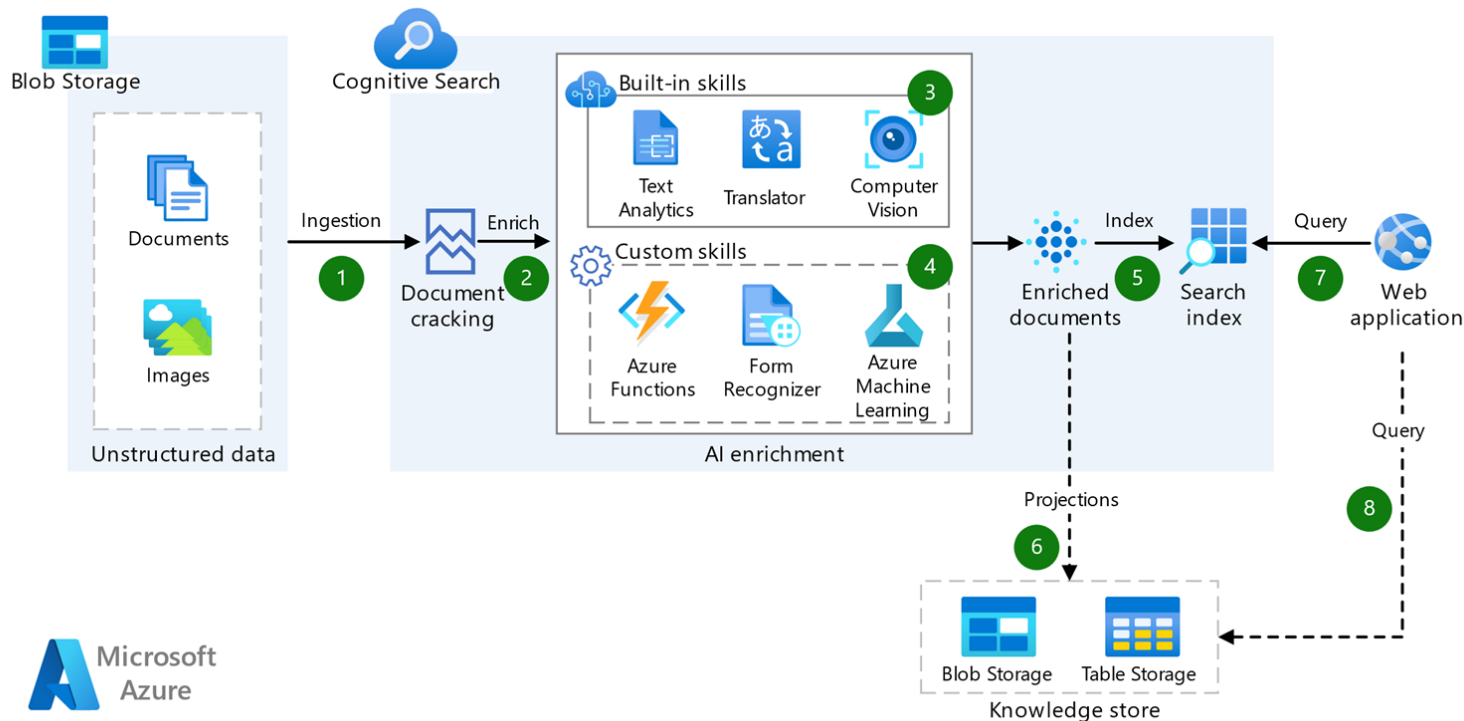


Natural Language Processing Workloads





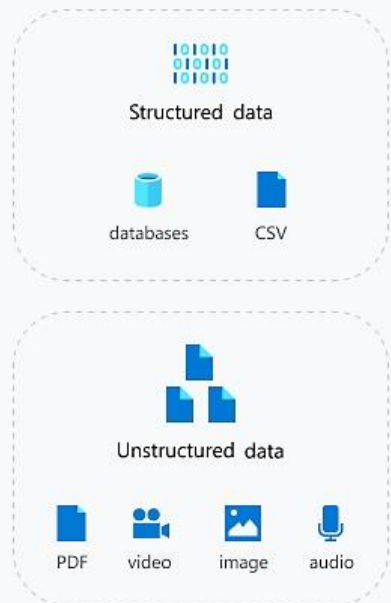
Natural Language Processing Workloads





Knowledge Mining Workloads

INGEST



ENRICH

All models
(Cognitive Services)



Vision



Language



Speech

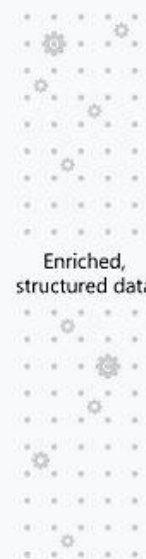


Decision



Search

EXPLORE





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.

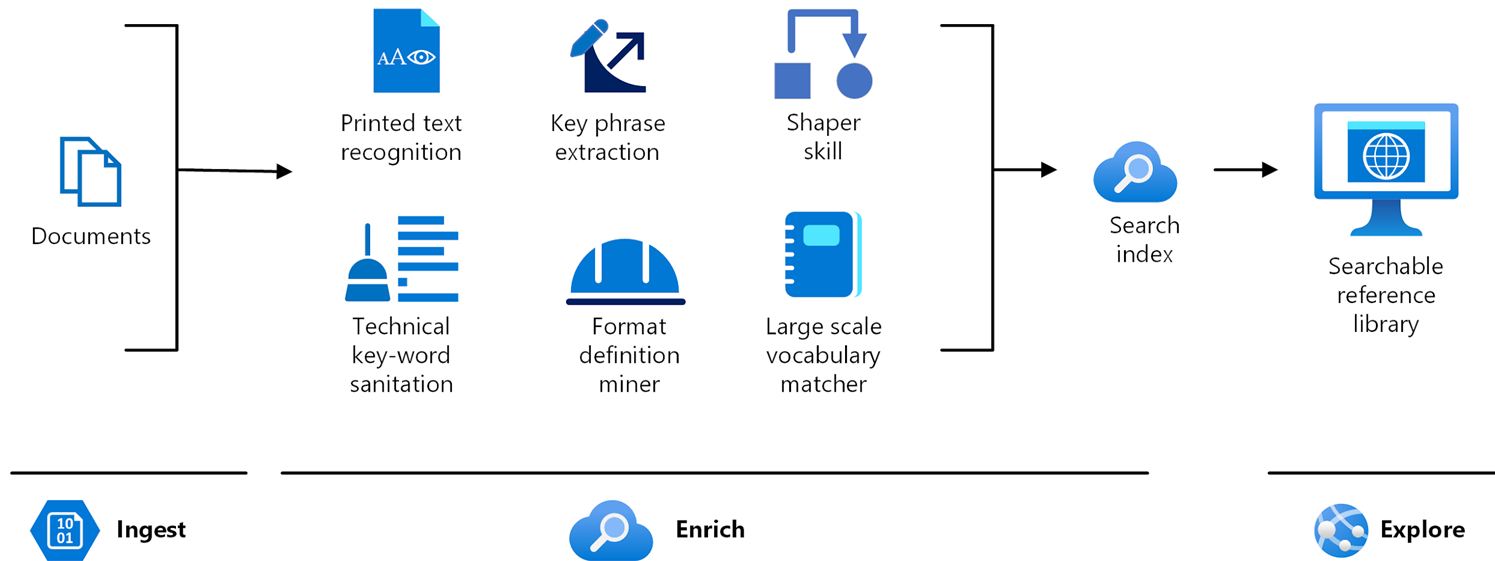


[Azure Bot Services](#)

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

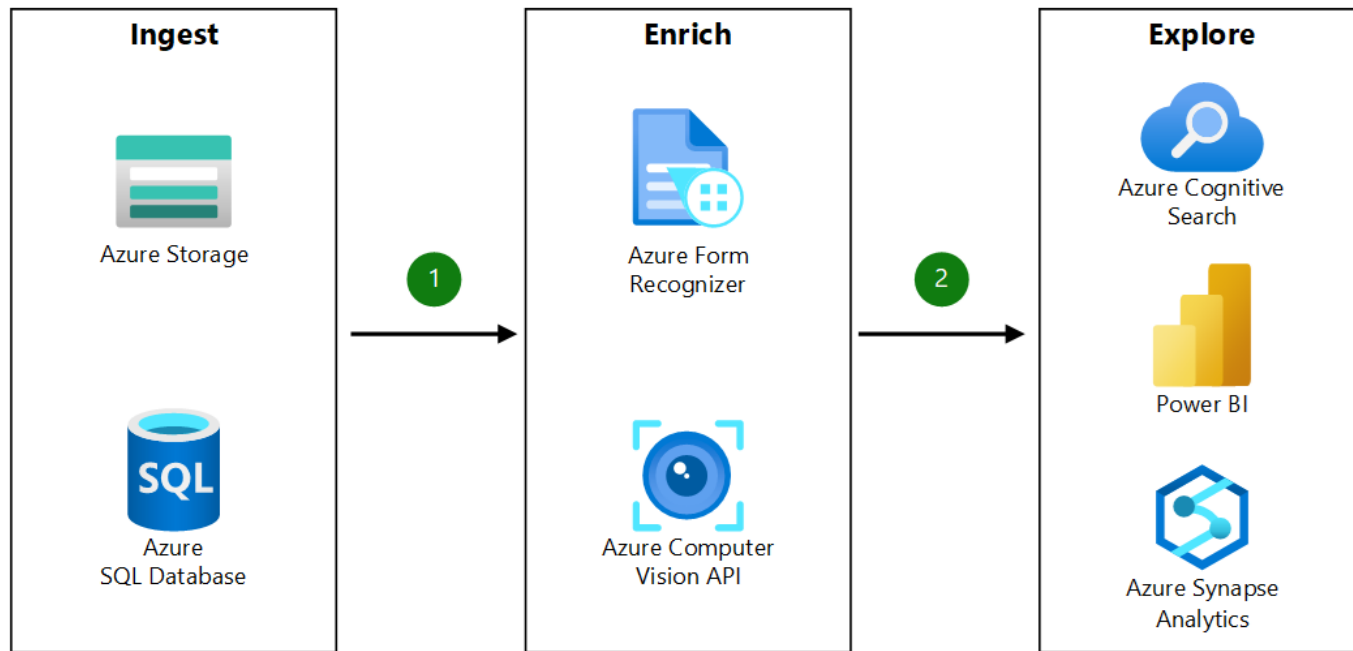


Knowledge Mining Workloads



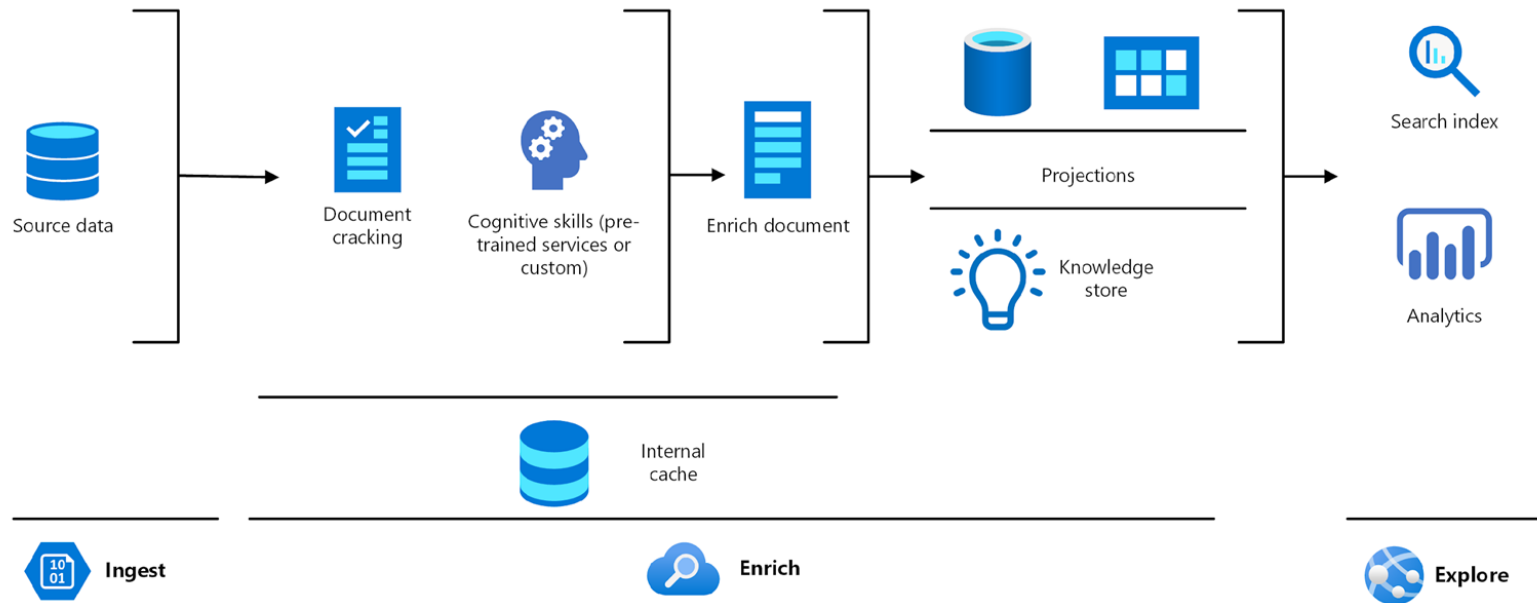


Knowledge Mining Workloads





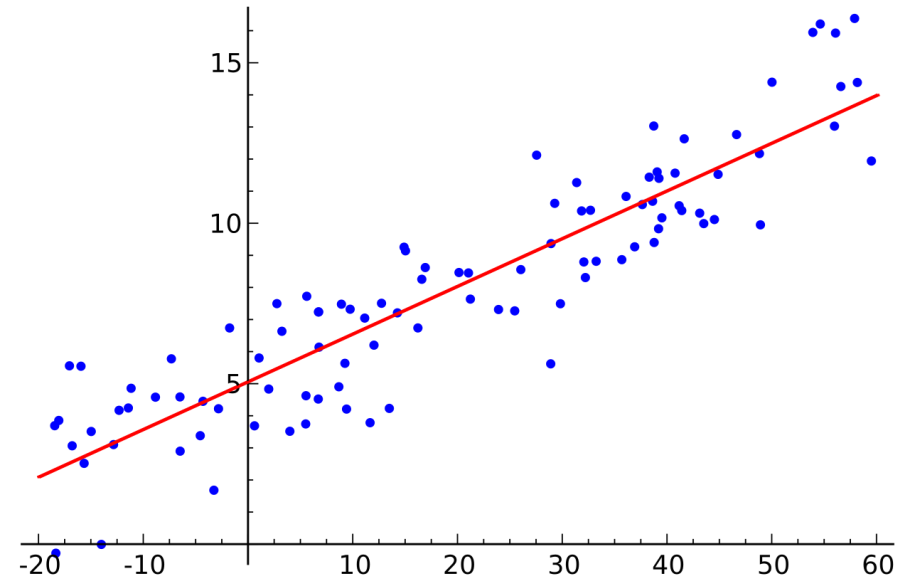
Knowledge Mining Workloads





Regression Machine Learning

- Estimate missing data
- Estimate future data (prediction)





Classification Machine Learning

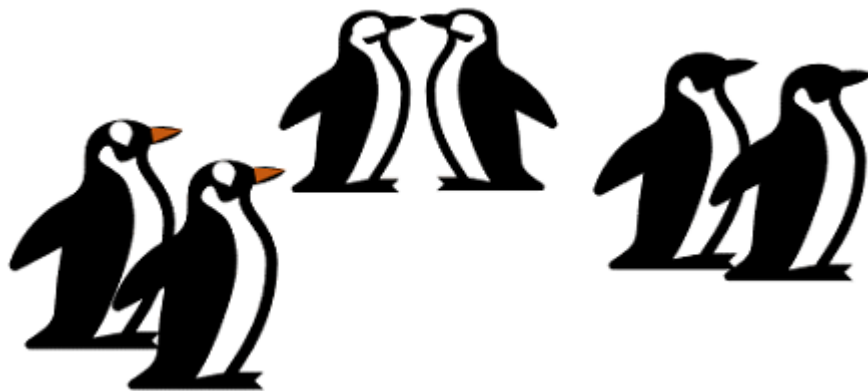
- Group images into categories





Clustering Machine Learning

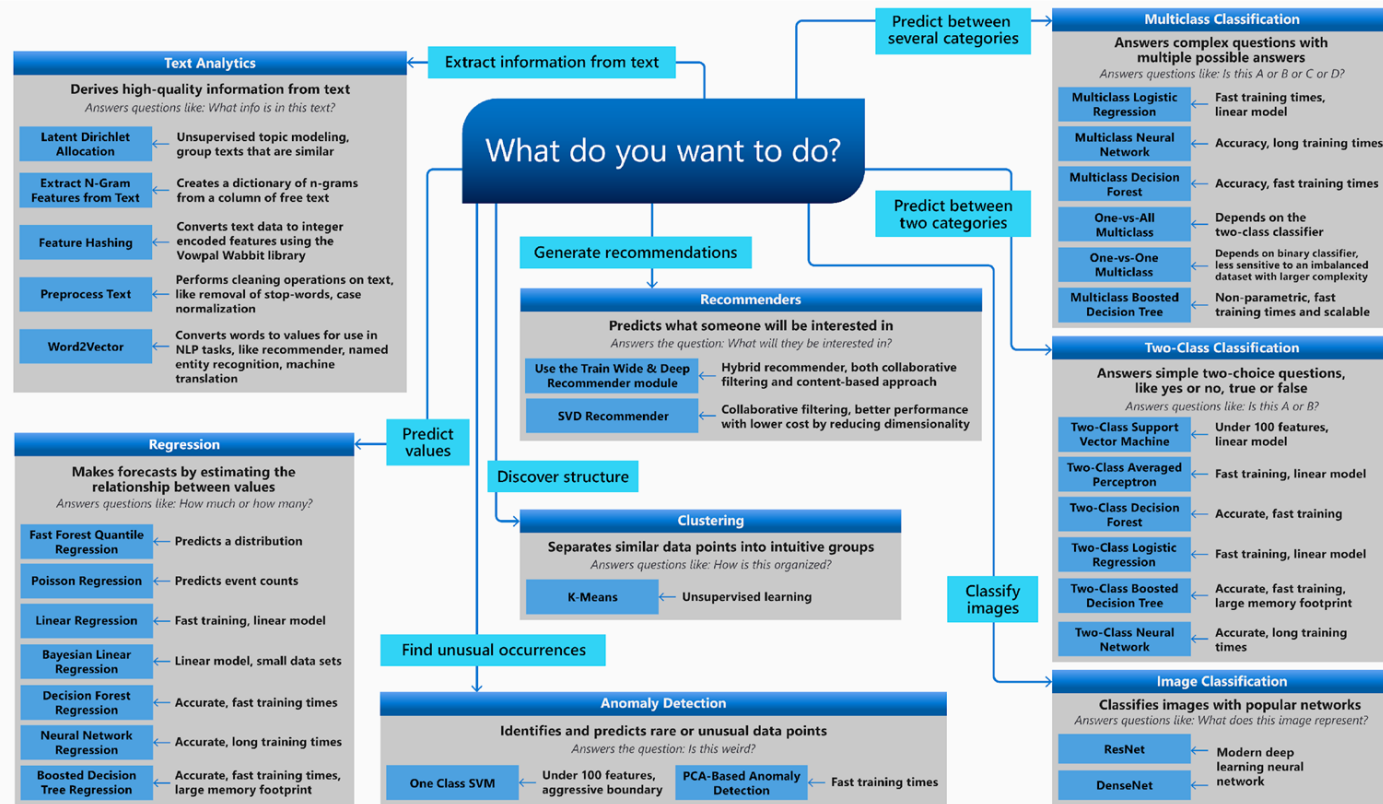
- Grouping unlabeled examples





Machine Learning Algorithm Cheat Sheet

This cheat sheet helps you choose the best machine learning algorithm for your predictive analytics solution. Your decision is driven by both the nature of your data and the goal you want to achieve with your data.





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

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Exam AI-900: Microsoft Azure AI Fundamentals

United States



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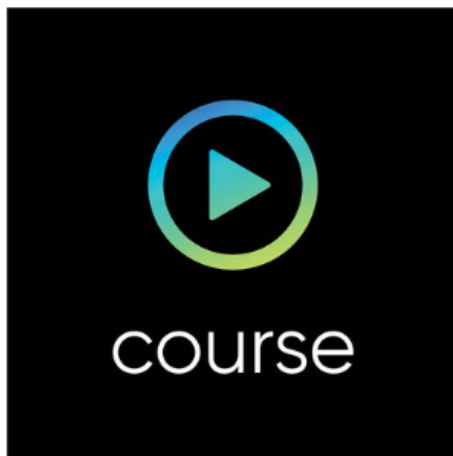


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