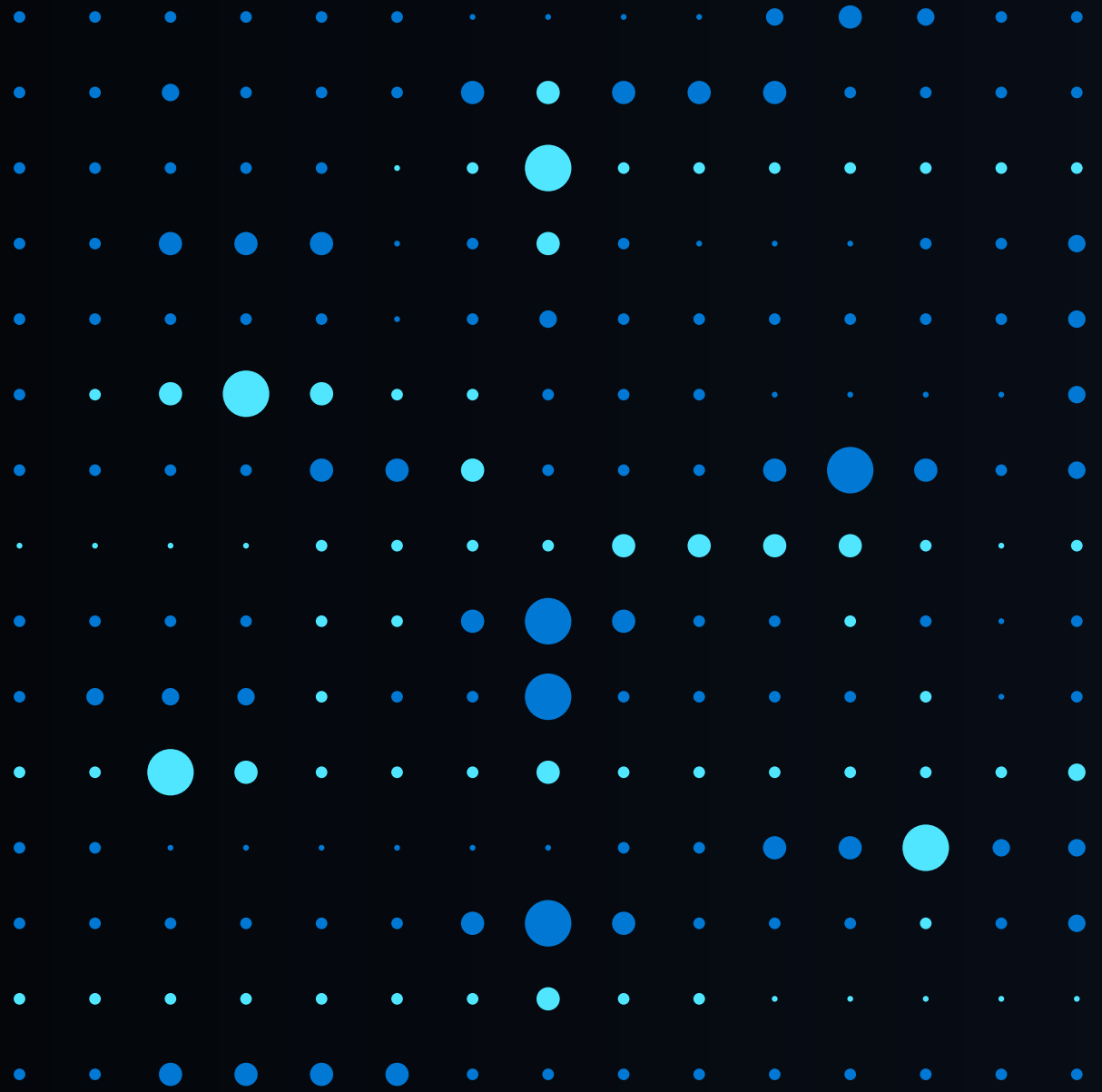
Microsoft

AI-900 Exam Prep

Presenter: John Deardurff
August 2025



Agenda

1. Exam Information
2. What is Artificial Intelligence?
3. What is Machine Learning?
4. What are Azure AI Services?
5. What is Generative AI?

Exam Basics

45 Questions

45 Minutes

700 Passing Score

Understand the skills measured by the exam

Study area	Percentage
Describe Artificial Intelligence workloads and considerations	15-20%
Describe fundamental principles of machine learning on Azure	15-20%
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	20-25%

Percentages indicate the relative weight of each area on the exam
The higher the percentage, the more questions you are likely to see in that area

AI-900 Exam Resources

Microsoft Certified: Azure AI Fundamentals
Microsoft Learn: Certification Page
Microsoft Learn Study Guide for Exam AI-900
Practice Assessment for AI-900

Microsoft Learn – Learning Paths
Introduction to AI in Azure
AI security fundamentals
Introduction to generative AI for Trainers

John Savill's Study Videos (2 Hours)
AI-900 - Study Cram v2 (Non-Generative AI)
AI-900 - Learning About Generative AI

Coursera (8 Hours)
Azure AI Fundamentals AI-900 Exam Prep

On-Demand Instructor-Led Training Series
AI-900: Fundamentals of Artificial Intelligence
AI-900: Fundamentals of Computer Vision
AI-900: Fundamentals of Natural Language
AI-900: Fundamentals of Document Intelligence
AI-900: Fundamentals of Generative AI

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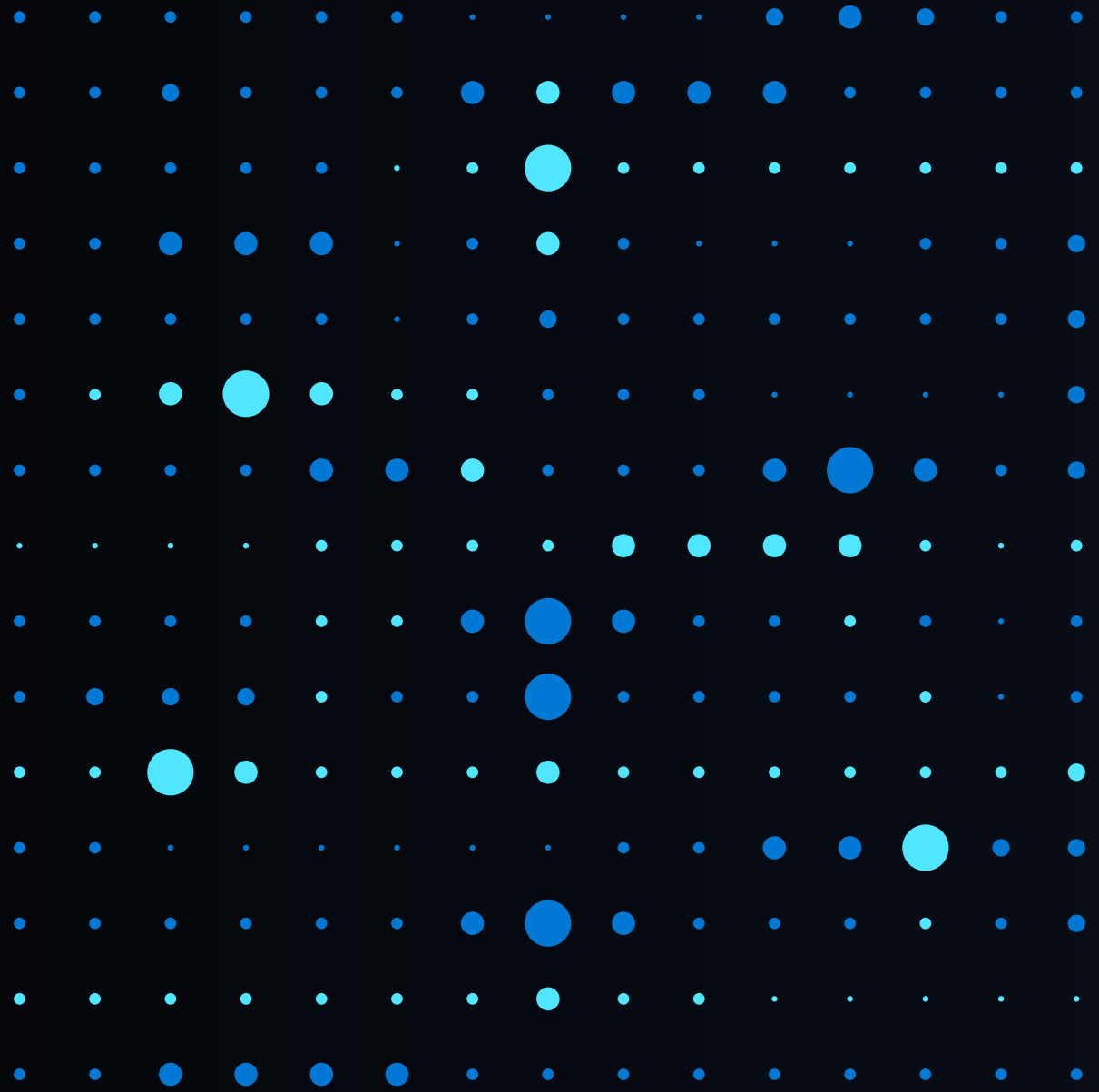
What is Artificial Intelligence?

Describe Artificial Intelligence workloads and considerations



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

Identify features of common AI workloads

- Identify computer vision workloads
- Identify natural language processing workloads
- Identify document processing workloads
- Identify features of generative AI workloads

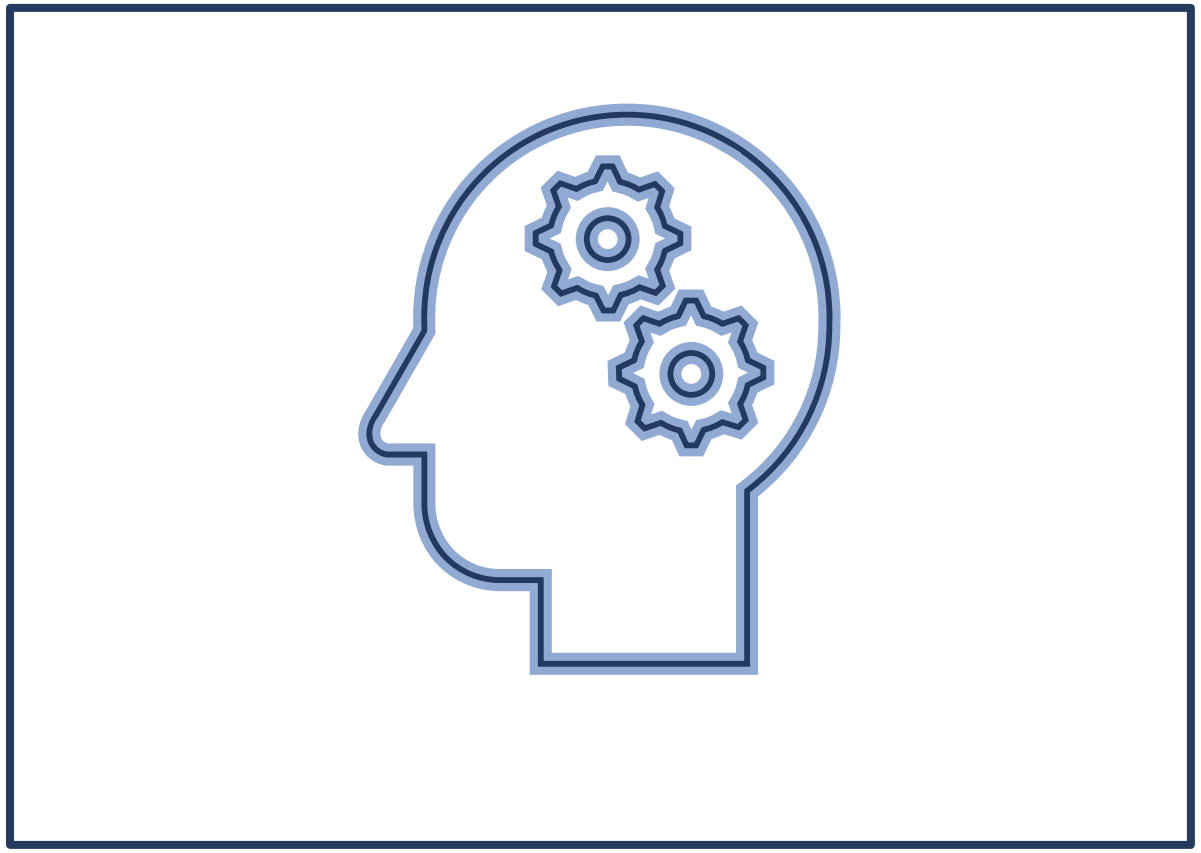
Identify guiding principles for responsible AI

- Describe considerations for fairness in an AI solution
- Describe considerations for reliability and safety in an AI solution
- Describe considerations for privacy and security in an AI solution
- Describe considerations for inclusiveness in an AI solution
- Describe considerations for transparency in an AI solution
- Describe considerations for accountability in an AI solution

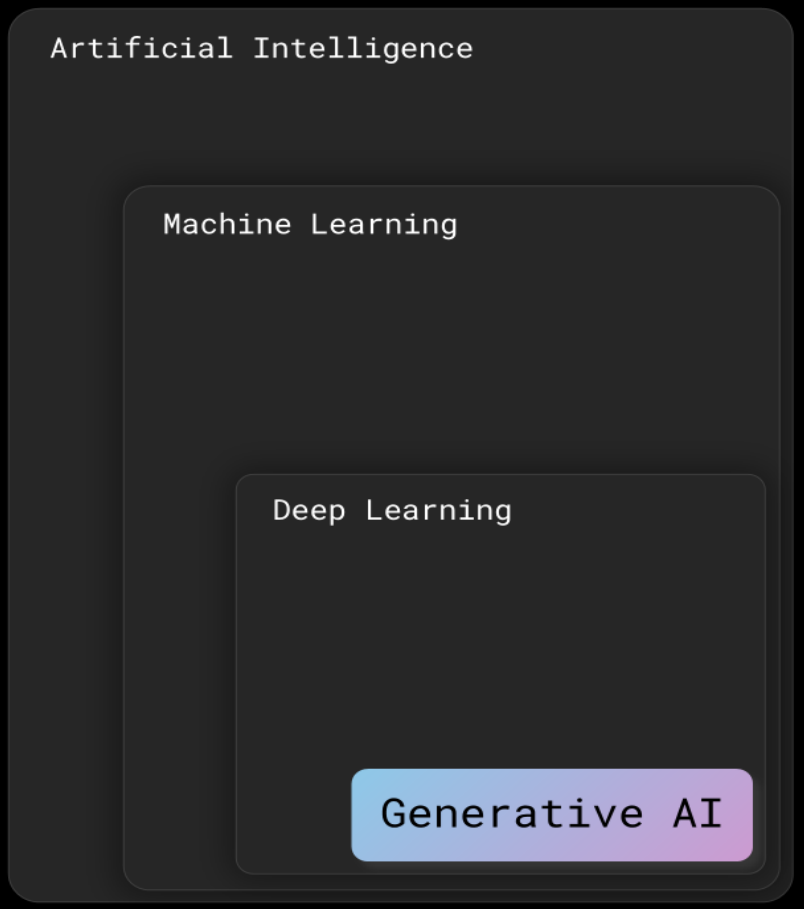
What is Artificial Intelligence?

Software that imitates human capabilities

- Predicting outcomes and recognizing patterns based on historic data.
- Recognizing abnormal events and making decisions.
- Interpreting visual input.
- Understanding language and engaging in conversations.
- Extracting information from sources to gain knowledge.



What is Artificial Intelligence?



AI is not new and has been around for decades

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

Common AI Workloads

	**Machine Learning**	**Predictive models** based on data and statistics – the foundation for AI.
	**Generative AI**	Capabilities within AI that **create original content** in a variety of formats including natural language, image, code, and more.
	**Natural Language Processing**	Capabilities within AI for a computer to **interpret written or spoken language** and respond appropriately.
	**Computer Vision**	Capabilities within AI to interpret the world visually **through cameras, video, and images.**
	**Information Extraction**	Capabilities within AI that deal with **managing, extracting, and processing** high volumes of data found in all types of content.

Principles of Responsible AI

	Challenge or Risk	Example
 **Fairness**	Bias can affect results.	A loan-approval model discriminates by gender due to bias in the data with which it was trained.
 **Reliability & safety**	Errors may cause harm.	An autonomous vehicle experiences a system failure and causes a collision.
 **Privacy & security**	Private data could be exposed.	A medical diagnostic bot is trained using sensitive patient data, which is stored insecurely.
 **Inclusiveness**	Solutions may not work for everyone.	A predictive app provides no audio output for visually impaired users.
 **Transparency**	Users must trust a complex system.	An AI-based financial tool makes investment recommendations – what are they based on?
 **Accountability**	Who's liable for AI-driven decisions?	An innocent person is convicted of a crime based on evidence from facial recognition – who's responsible?

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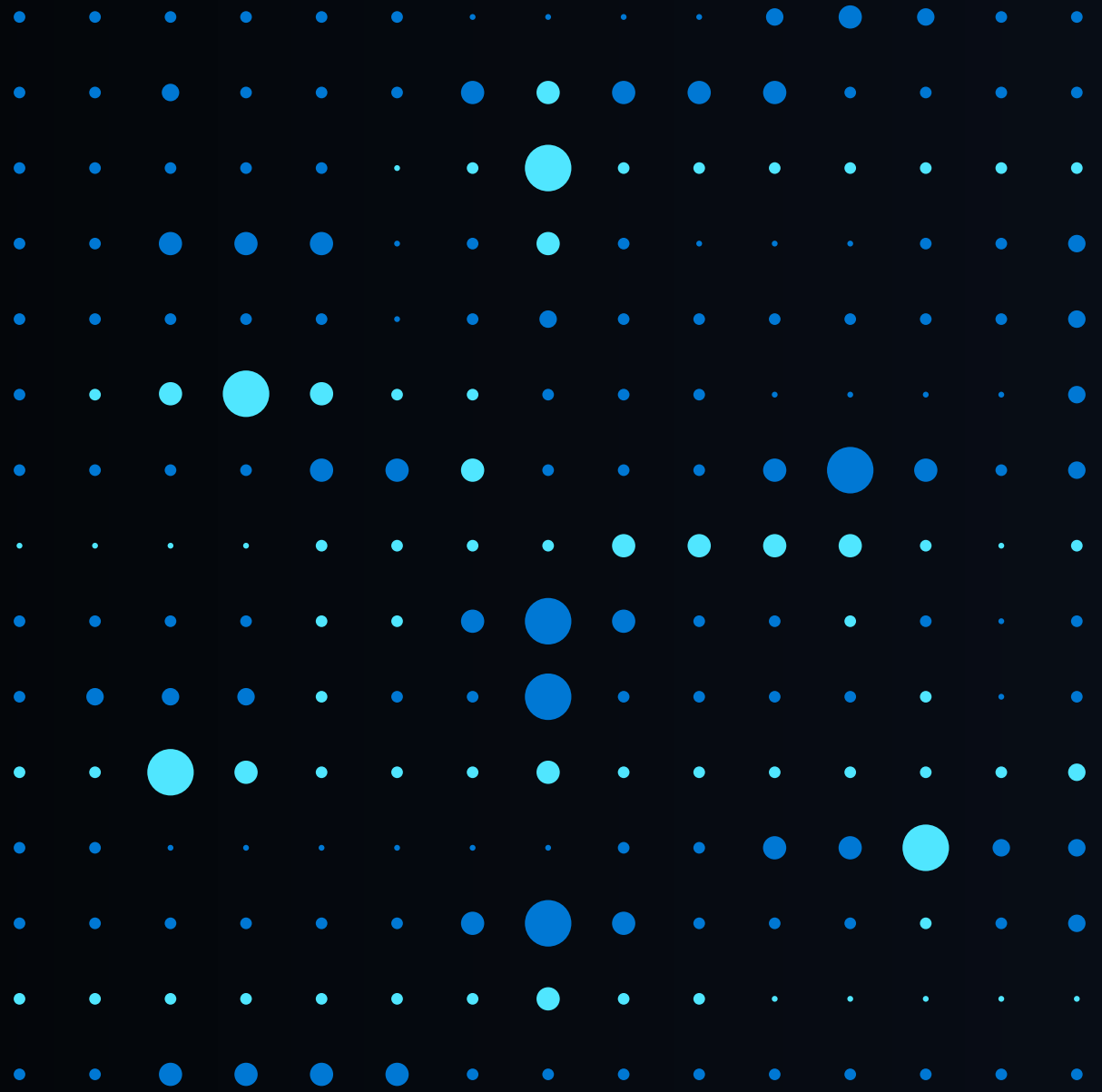
What is Machine Learning?

Describe fundamental principles of machine learning on Azure



Describe fundamental principles of machine learning on Azure (15-20%)

Identify common machine learning techniques

- Identify regression machine learning scenarios
- Identify classification machine learning scenarios
- Identify clustering machine learning scenarios
- Identify features of deep learning techniques
- Identify features of the Transformer architecture

Describe core machine learning concepts

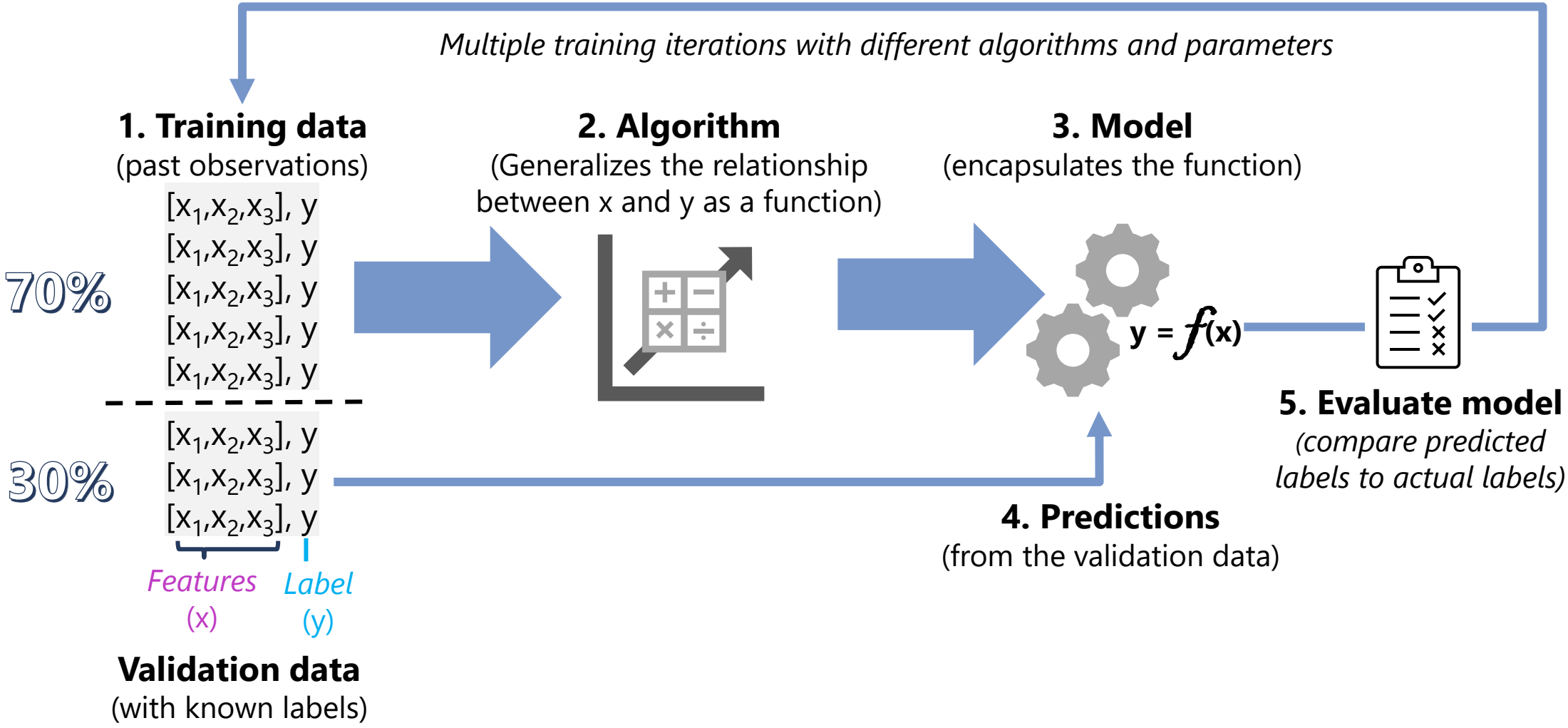
- Identify features and labels in a dataset for machine learning
- Describe how training and validation datasets are used in machine learning

Describe Azure Machine Learning capabilities

- Describe capabilities of automated machine learning
- Describe data and compute services for data science and machine learning
- Describe model management and deployment capabilities in Azure Machine Learning

What is Machine Learning?

Machine Learning is creating predictive models by finding relationships in data



Features and Labels

Scenario: Predicting Ice Cream Sales
Imagine you're trying to build a model that predicts how many ice creams you'll sell on a given day. The model learns patterns from this and starts predicting future sales based on new conditions.

Features: The input clues you give a training model

Temperature	Weather	Day	Holiday	People Nearby	Ice Creams Sold
85°F	Sunny	Sat	Yes	300	150
70°F	Cloudy	Tue	No	120	45
90°F	Sunny	Sun	No	400	180

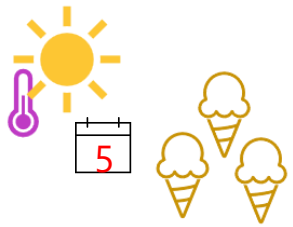
Label: The answer you want the model to predict
(Numeric = Regression, Text = Classification)

Types of Machine Learning

Machine Learning

Supervised machine learning
Training data includes known labels

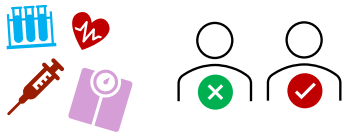
Regression
Label is a numeric value



Predict the number of ice creams sold based on day, season, and weather

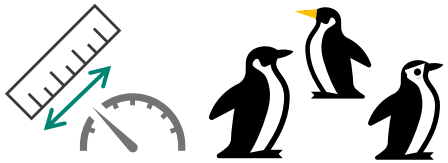
Classification
Label is a categorization (or *class*)

Binary classification
Label *is* or *is not* a class



Predict whether a patient is at-risk for diabetes based on clinical data

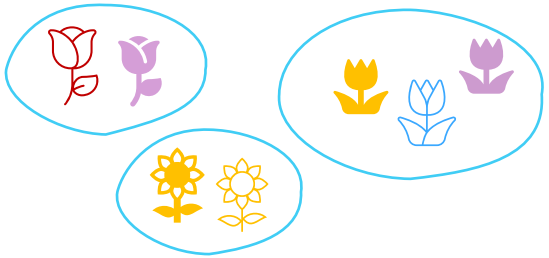
Multiclass classification
Label is one of multiple classes



Predict the species of a penguin based on its measurements

Unsupervised machine learning
Training data is unlabeled

Clustering
Similar items are grouped together



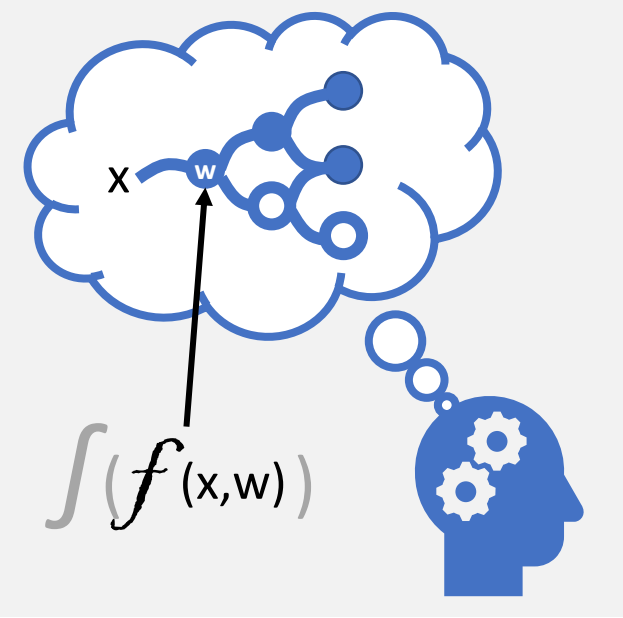
Separate plants into groups based on common characteristics

Deep Learning

Human neural network

- Neurons fire in response to electrochemical stimuli
- When fired, the signal is passed to connected neurons

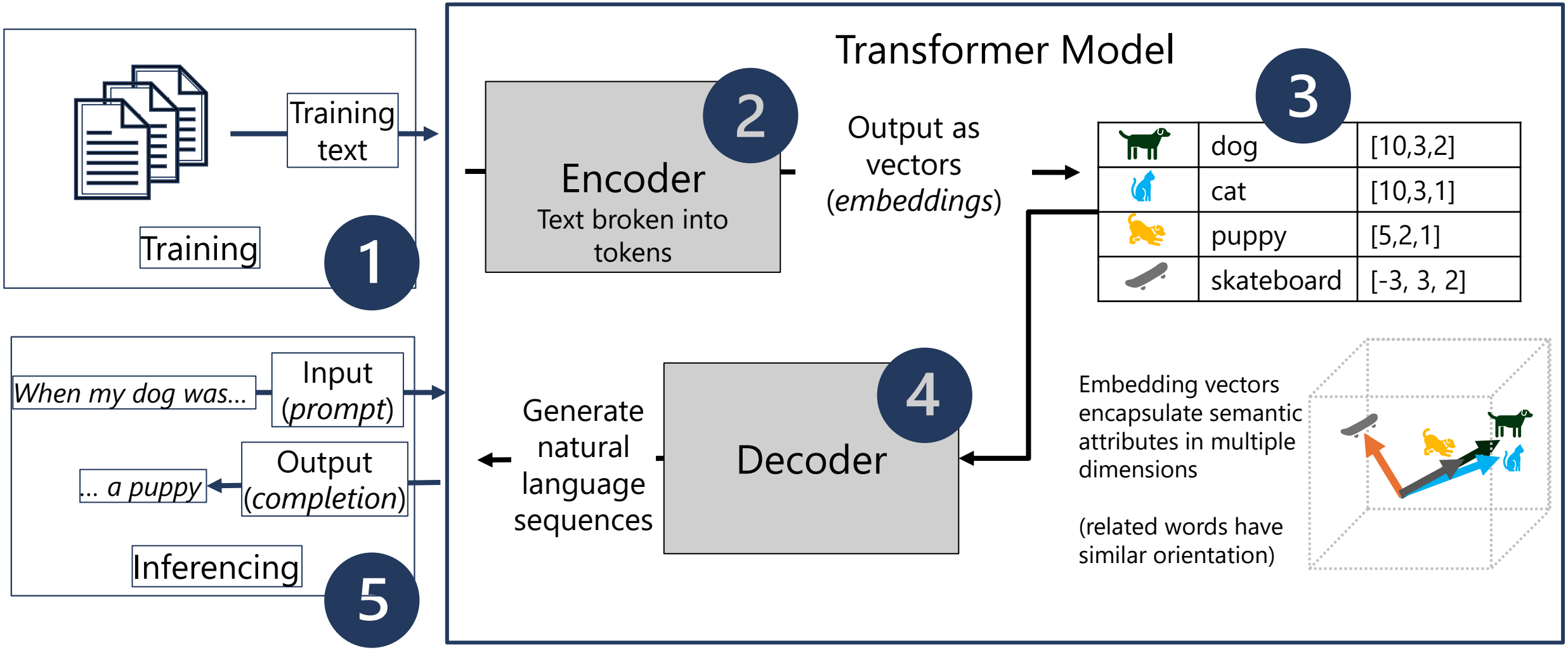
Artificial neural network



- Each neuron is a function that operates on an *input* value (x) and a *weight* (w)
- The function is wrapped in an *activation function* that determines whether to pass the output on

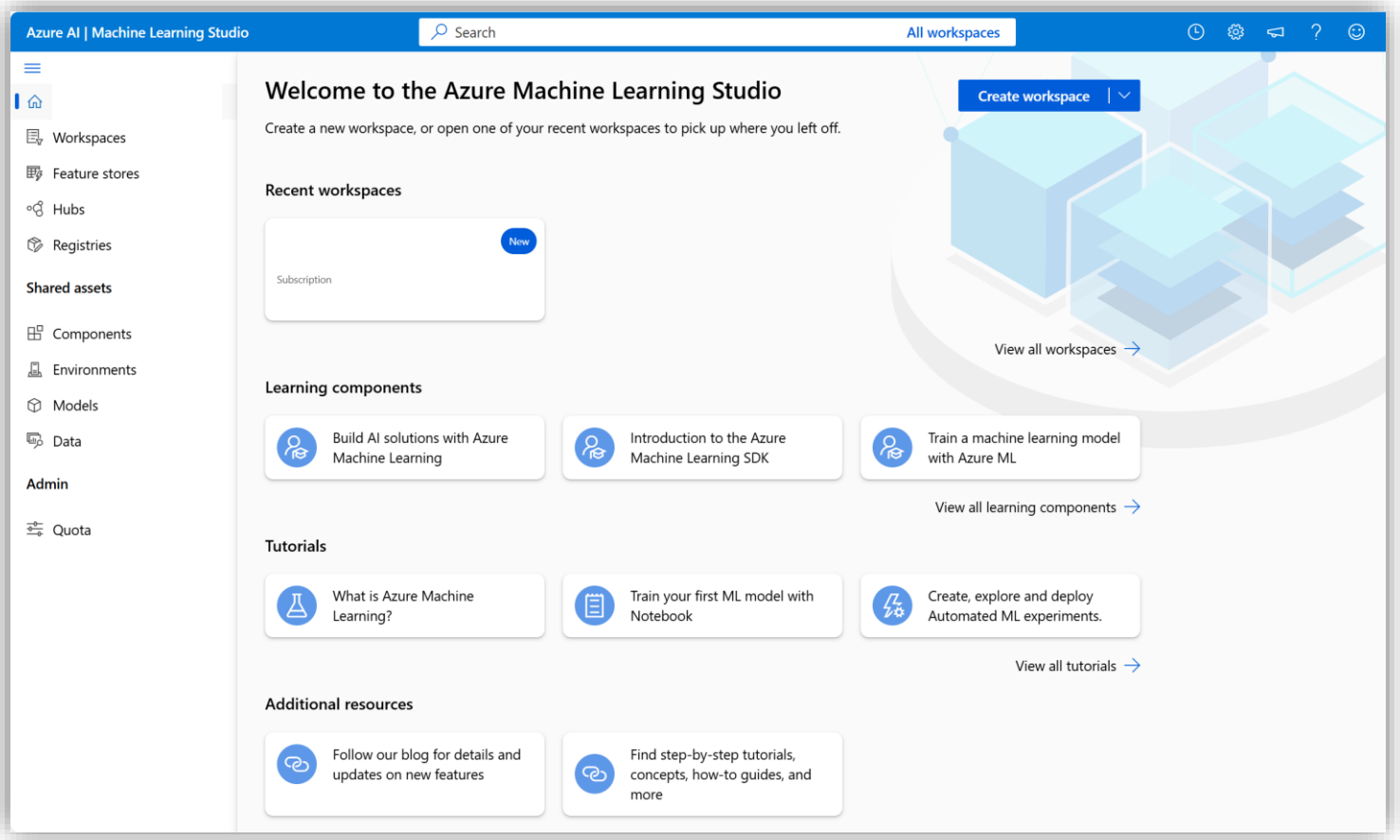
Deep Learning Transformer Example

A (very) high-level overview



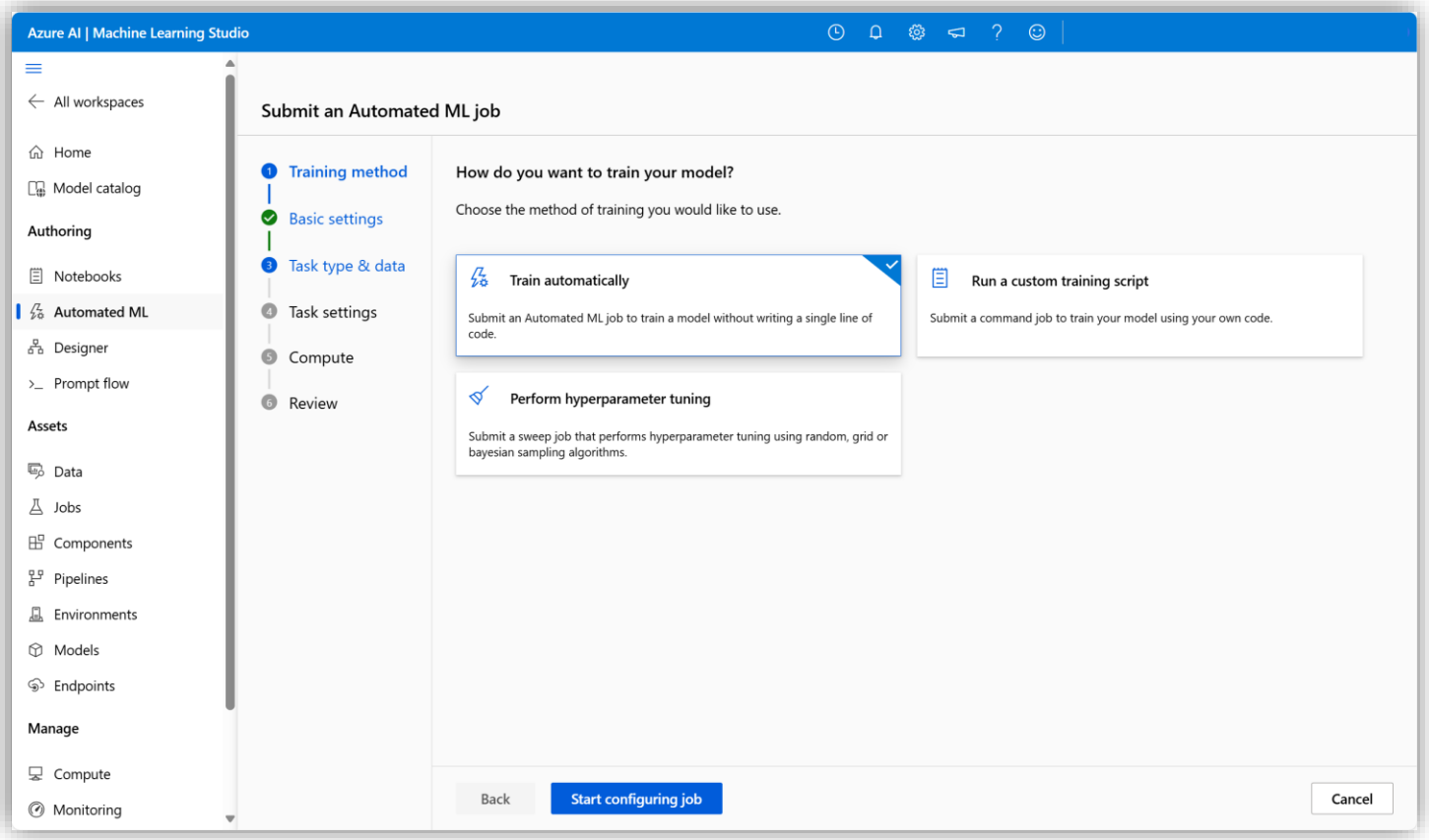
What is Azure Machine Learning?

- Azure Machine Learning is a cloud-based platform for machine learning.
- Azure Machine Learning Studio is a user interface for accessing Azure Machine Learning capabilities.
- Machine learning models trained with Azure Machine Learning can be published as services.



What is Automated Machine Learning?

- Provides a step-by-step wizard that helps you run machine learning training jobs
- Can be used for many machine learning tasks, including regression, time-series forecasting, classification, computer vision, and natural language processing tasks
- Allows you to use your own datasets
- Trains ML models that can be deployed as services



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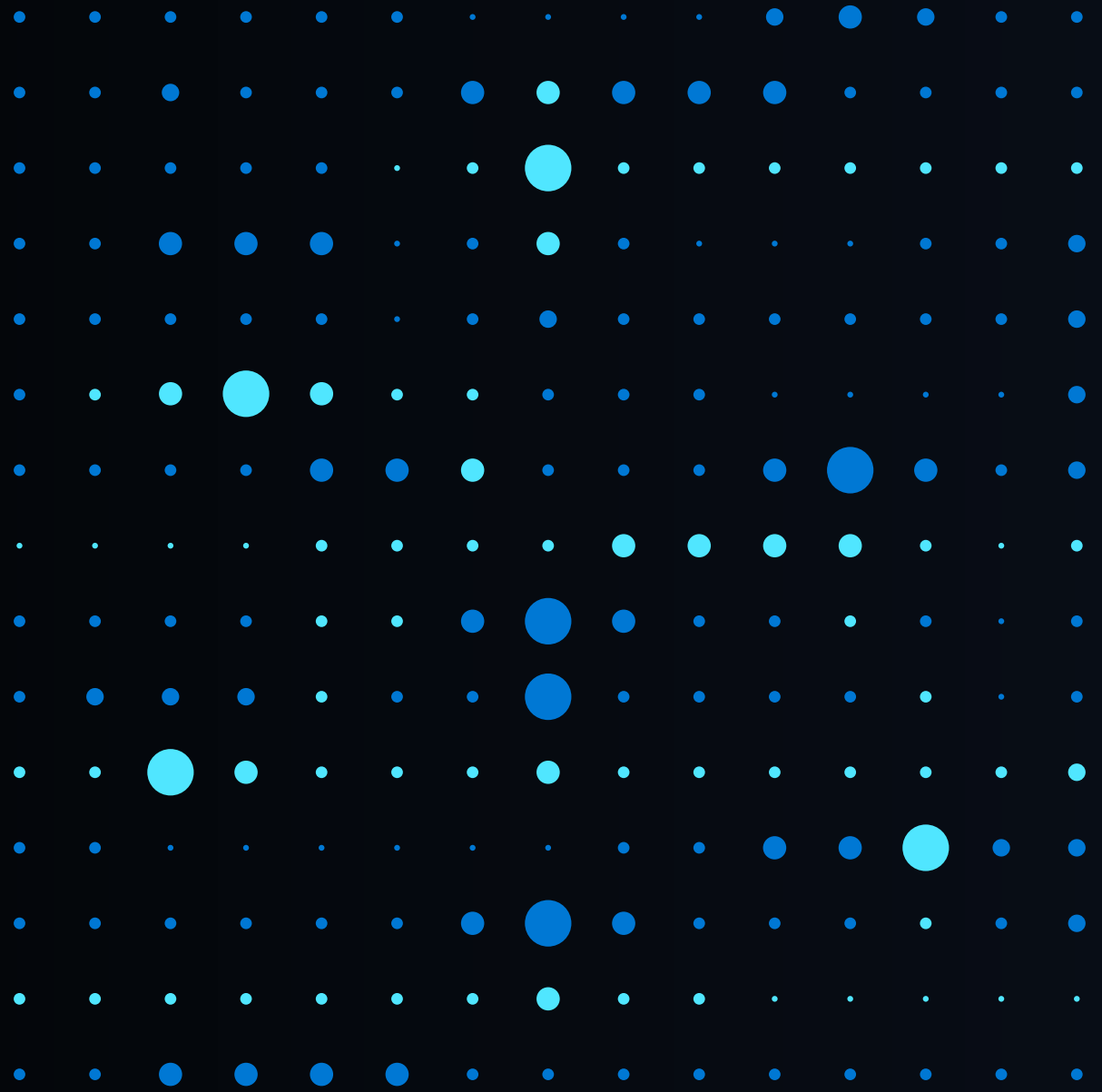
What are AI Services?

Describe features of Computer Vision workloads on Azure

Describe features of Natural Language Processing (NLP) workloads on Azure



Describe features of computer vision workloads on Azure (15–20%)

Identify common types of computer vision solution

- Identify features of image classification solutions
- Identify features of object detection solutions
- Identify features of optical character recognition solutions
- Identify features of facial detection and facial analysis solutions

Identify Azure tools and services for computer vision tasks

- Describe capabilities of the Azure AI Vision service
- Describe capabilities of the Azure AI Face detection service

Describe features of Natural Language Processing (NLP) workloads (15–20%)

Identify features of common NLP Workload Scenarios

- Identify features and uses for key phrase extraction
- Identify features and uses for entity recognition
- Identify features and uses for sentiment analysis
- Identify features and uses for language modeling
- Identify features and uses for speech recognition and synthesis
- Identify features and uses for translation

Identify Azure tools and services for NLP workloads

- Describe capabilities of the Azure AI Language service
- Describe capabilities of the Azure AI Speech service

AI Services in Microsoft Azure

Standalone resources for specific services

- Azure Machine Learning service
- Azure OpenAI in Foundry Models
- Azure AI Foundry Content service
- Azure AI Language service
- Azure AI Translator service
- Azure AI Speech service
- Azure AI Vision service
- Azure AI Face service
- Azure AI Document Intelligence service
- Azure AI Content Understanding service
- Azure AI Search service

Azure AI Services — *General Azure AI services resource for multiple services*

What is Azure AI Language?

Azure AI Language is a part of the Azure AI services offerings that can perform advanced natural language processing over unstructured text. The text analysis features include:

- **Named entity recognition** identifies people, places, events, and more. This feature can also be customized to extract custom categories.
- **Entity linking** identifies known entities together with a link to Wikipedia.
- **Personal identifying information (PII) detection** identifies personally sensitive information, including personal health information (PHI).
- **Language detection** identifies the language of the text and returns a language code such as "en" for English.
- **Sentiment analysis and opinion mining** identifies whether text is positive or negative. (Sentiment Score: 0.0 = Negative, 0.5 = Neutral, 1.0 = Positive)
- **Summarization** summarizes text by identifying the most important information.
- **Key phrase extraction** lists the main concepts from unstructured text.

Translation

Use the *text translation* capabilities of **Azure AI Translator** service to translate text from one language to others.

English → French
Have a good day → *Bonne journée*

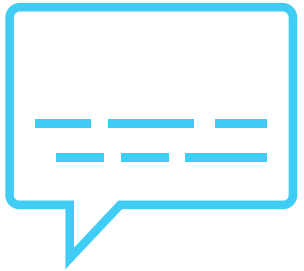
Use the *speech translation* capabilities of **Azure AI Speech** service to generate translated speech.

Input audio (English) → Output audio (French)

Speech Recognition and Synthesis

Use the *speech-to-text* capabilities of the **Speech** service to transcribe audible speech to text

Use the *text-to-speech* capabilities of the **Speech** service to generate audible speech from text

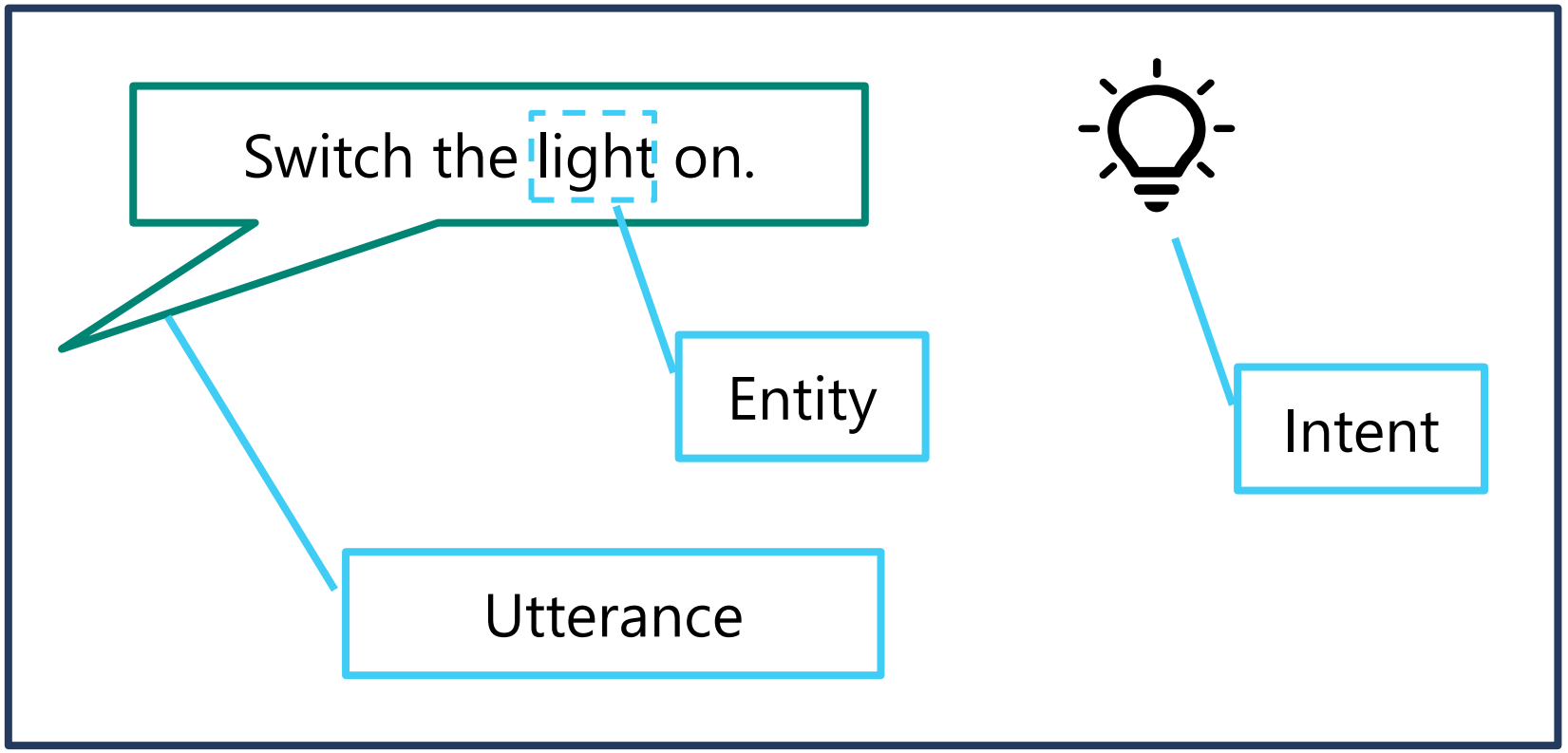


Conversational AI

Conversational AI describes solutions that enable a dialog between AI and a human.

Use Azure AI Language's Question Answering capabilities to define a *knowledge* base of question-and-answer pairs.

Use Azure AI Language's Conversational Language Understanding capabilities to create a language model that can interpret natural language commands.



Azure AI Options for Reading Text

Azure AI Vision Image Analysis

- Identify text and its location in scanned documents
- Find and read text in photographs
- Combine with other image analysis features to implement a digital asset management (DAM) solution

Azure AI Document Intelligence

- Design to support form processing by extracting fields and associated values from documents
- Use prebuilt models for common document types
- Create custom models for your specific requirements

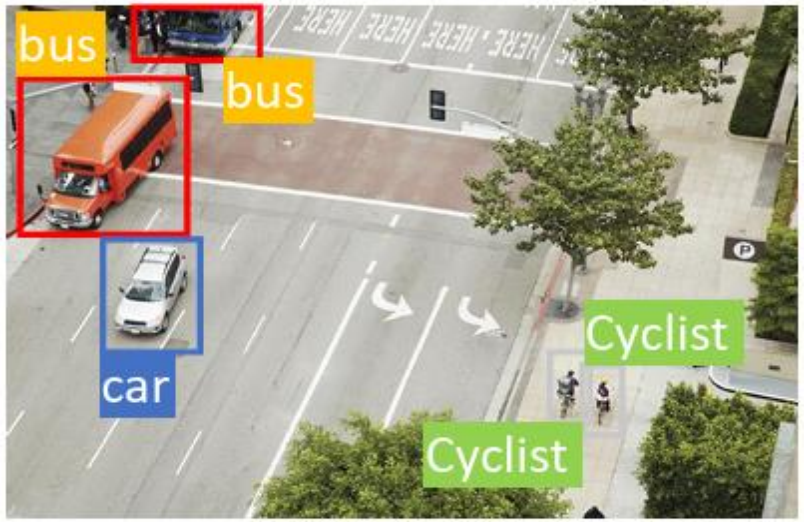
Azure AI Content Understanding

- Use multimodal content extraction capabilities to analyze documents, forms audio, video, and images.
- Create custom analyzers to extract specific content or fields tailored to business needs

Azure AI Vision Service

Image Classification

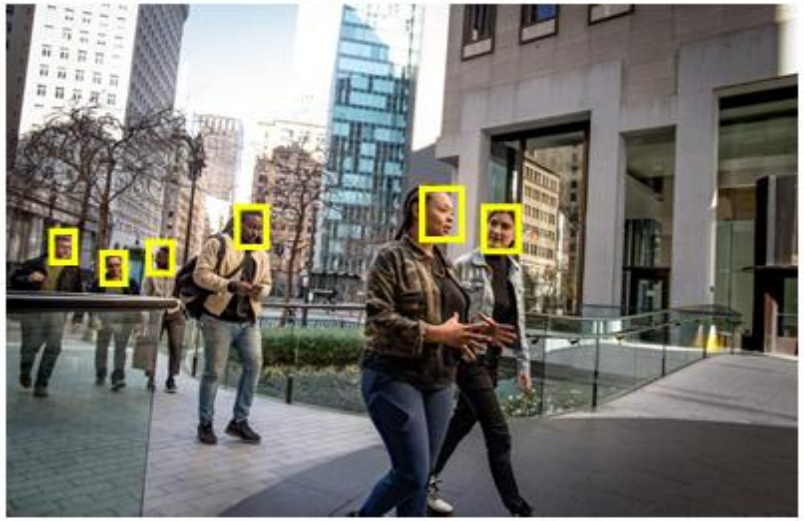
Object Detection



Semantic Segmentation

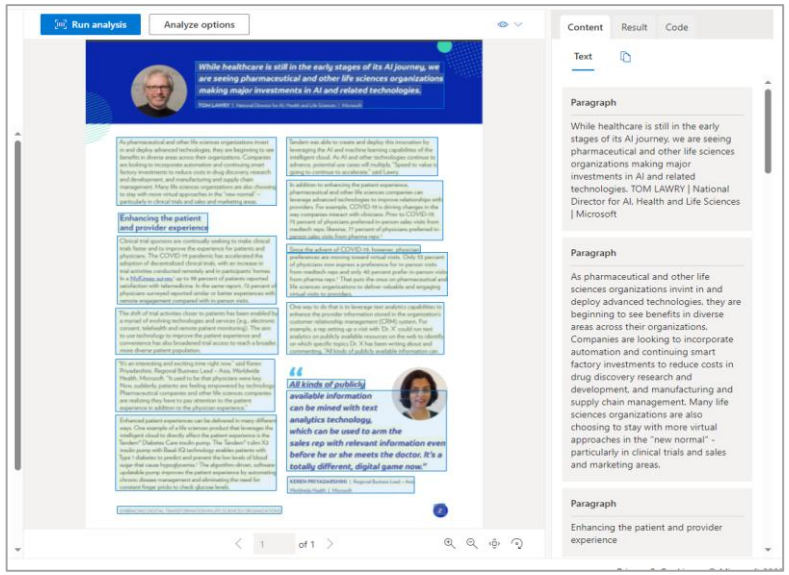
Image Analysis

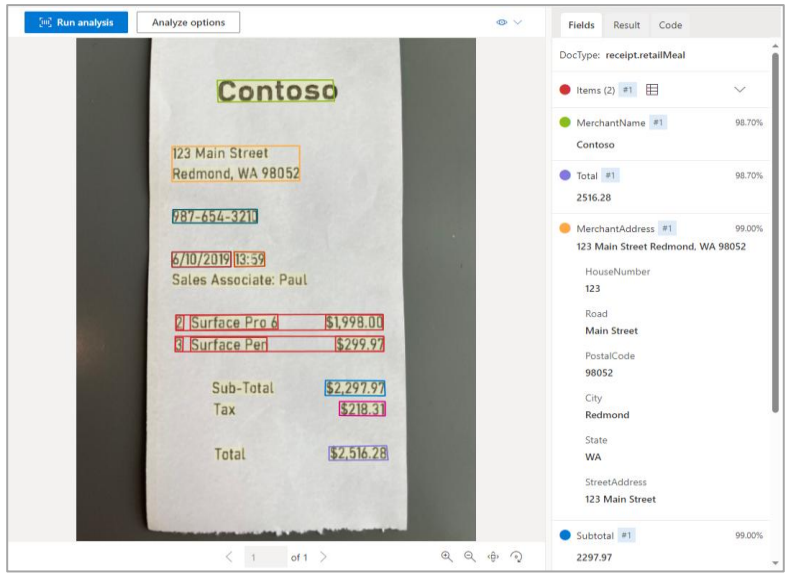
Face Detection & Recognition

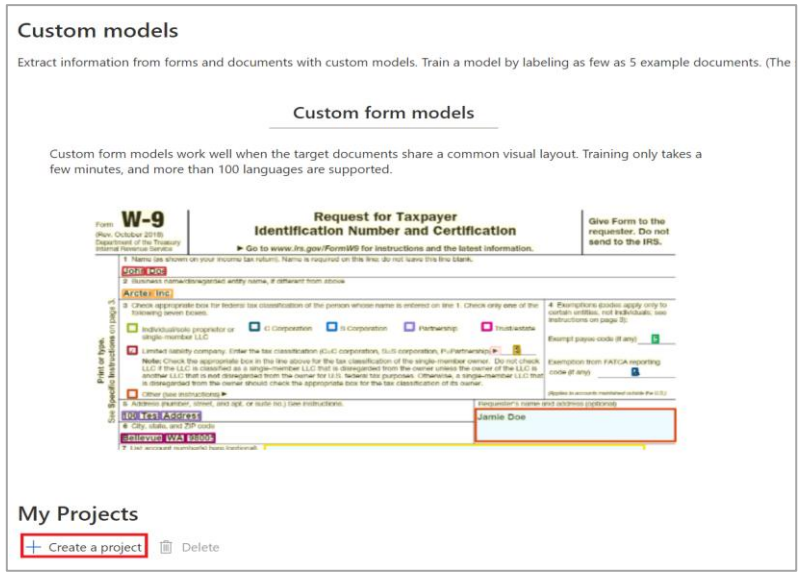


Optical Character Recognition

Azure AI Document Intelligence Service







Document Analysis

- Returns structured data representations.
- Regions of interest and relationships.
- Configure **Analyze options** for free and chargeable analysis

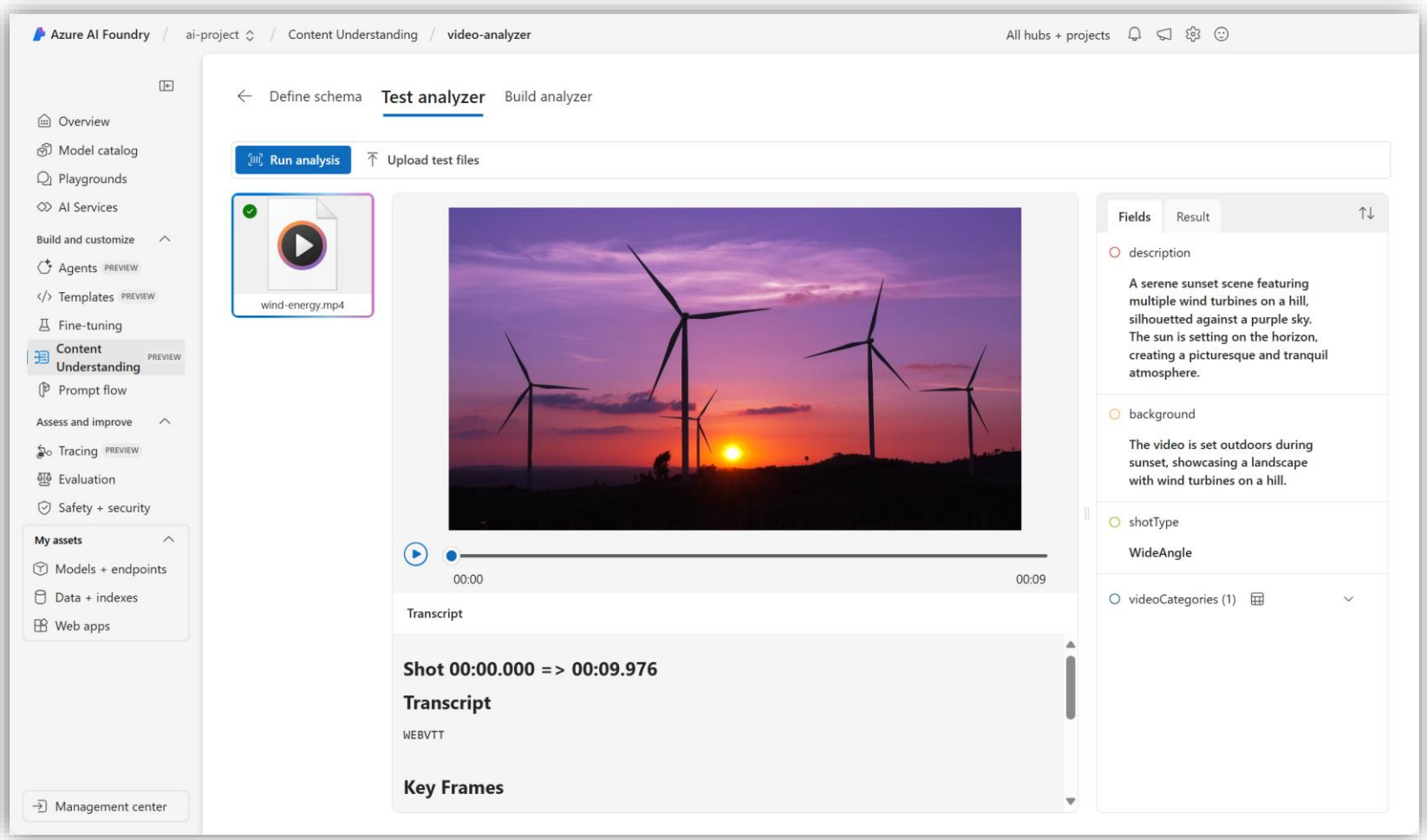
Prebuilt Models

- Train models with at least five sample data.
- Identify fields of interest to your organization.

Custom Models

- Invoices and IDs
- Receipts
- Extracts key-value pairs.

Azure AI Content Understanding service



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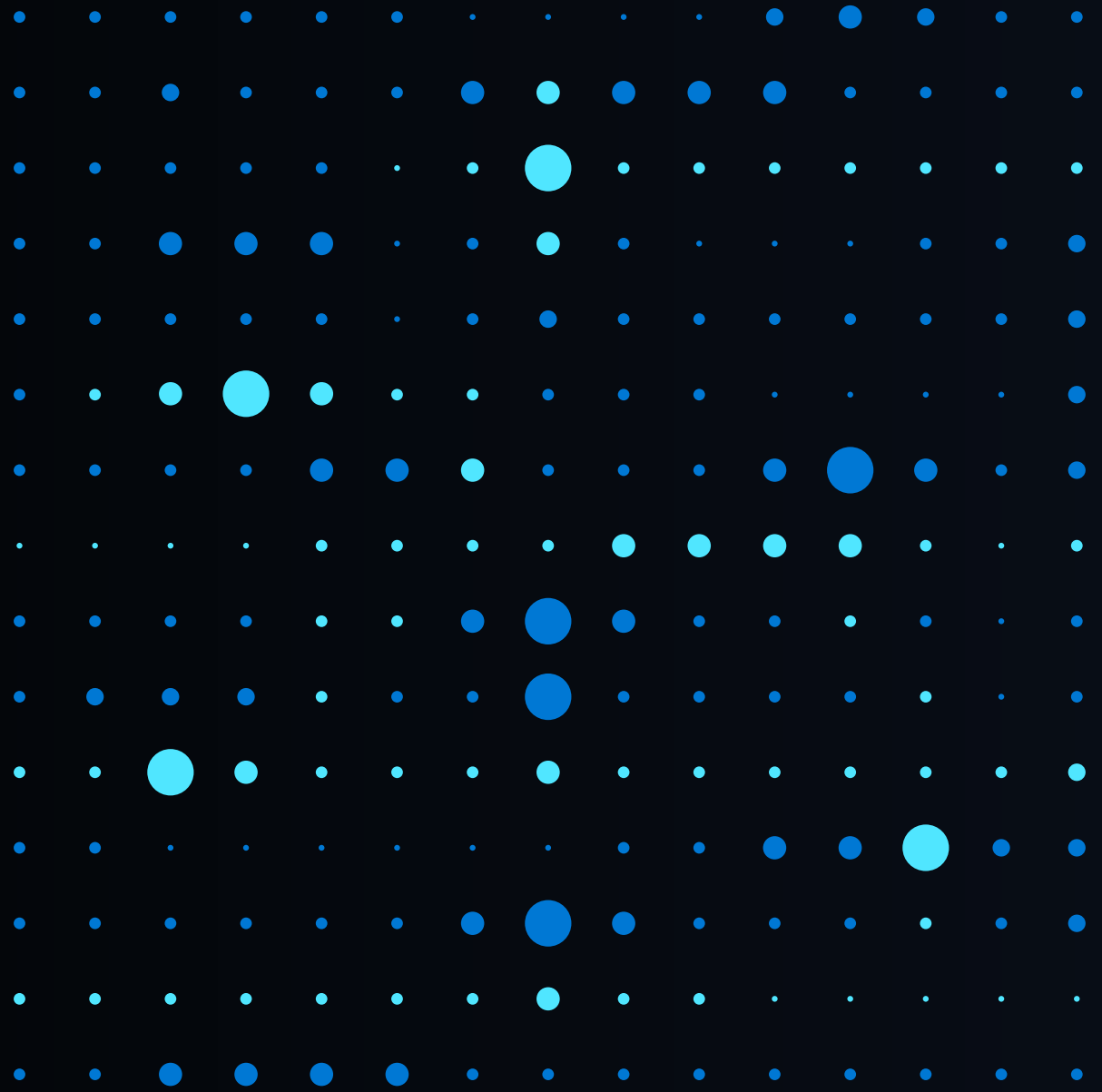
Introduction to generative AI concepts

Describe features of Generative AI workloads on Azure



Describe features of generative AI workloads on Azure (20–25%)

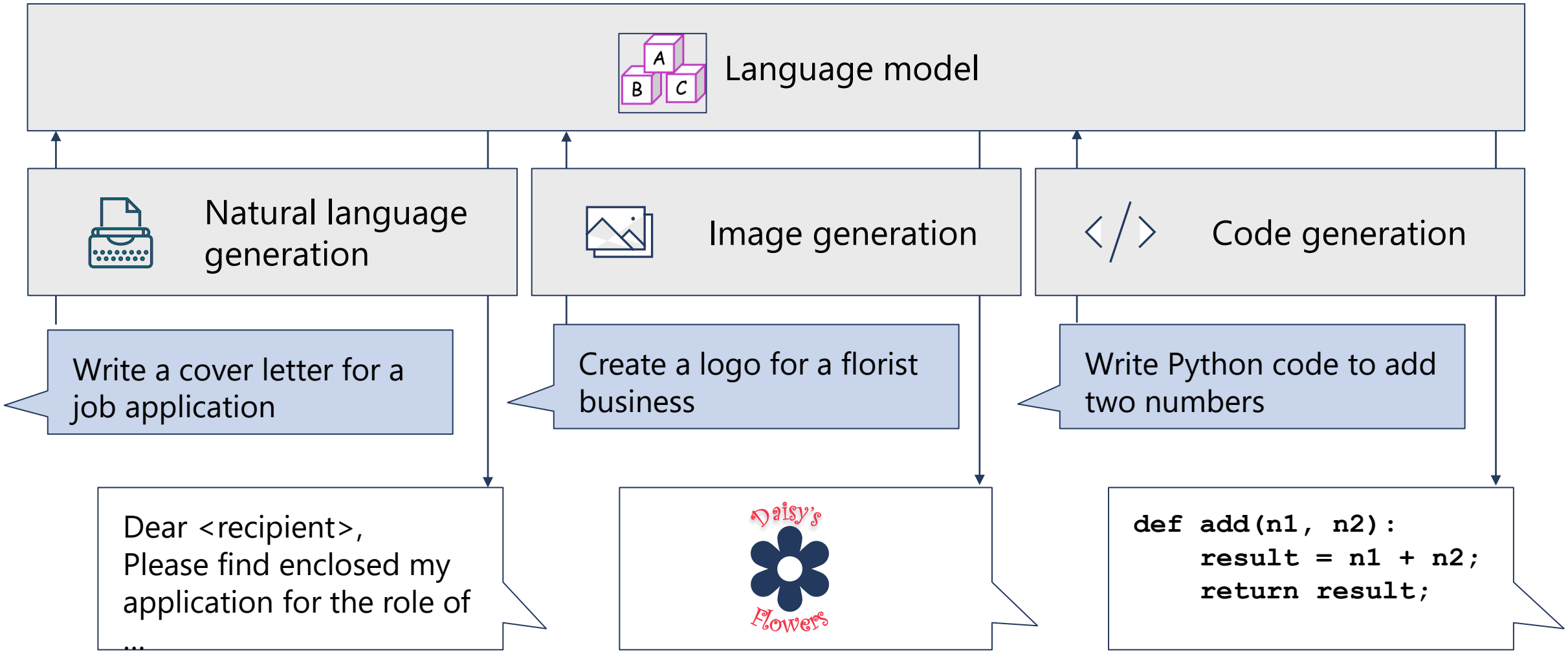
Identify features of generative AI solutions

- Identify features of generative AI models
- Identify common scenarios for generative AI
- Identify responsible AI considerations for generative AI

Identify generative AI services and capabilities in Microsoft Azure

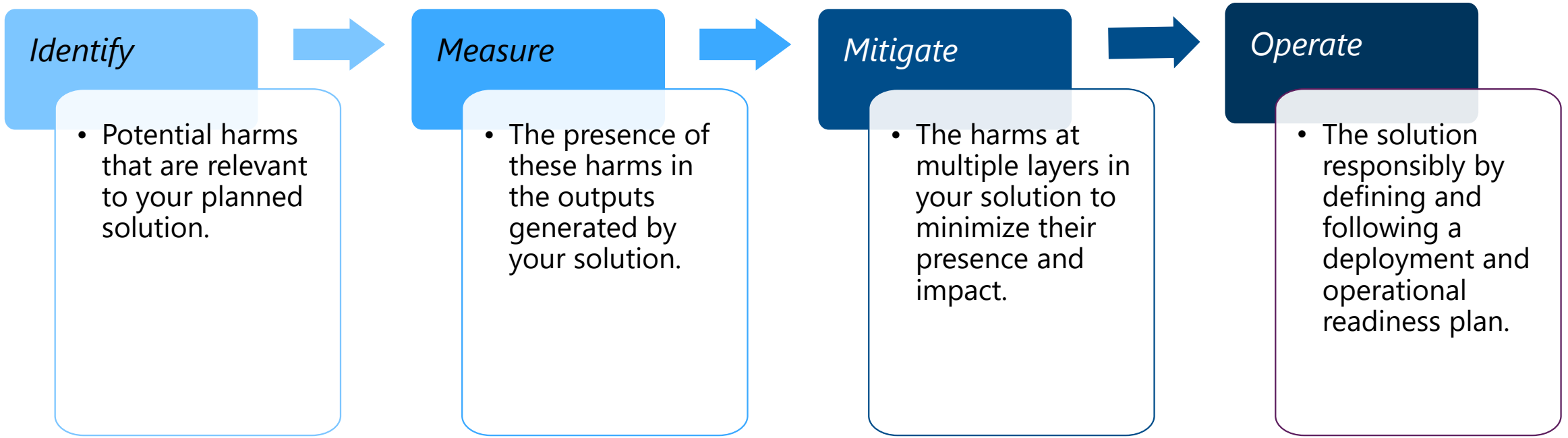
- Describe features and capabilities of Azure AI Foundry
- Describe features and capabilities of Azure OpenAI service
- Describe features and capabilities of Azure AI Foundry model catalog

What is Generative AI?

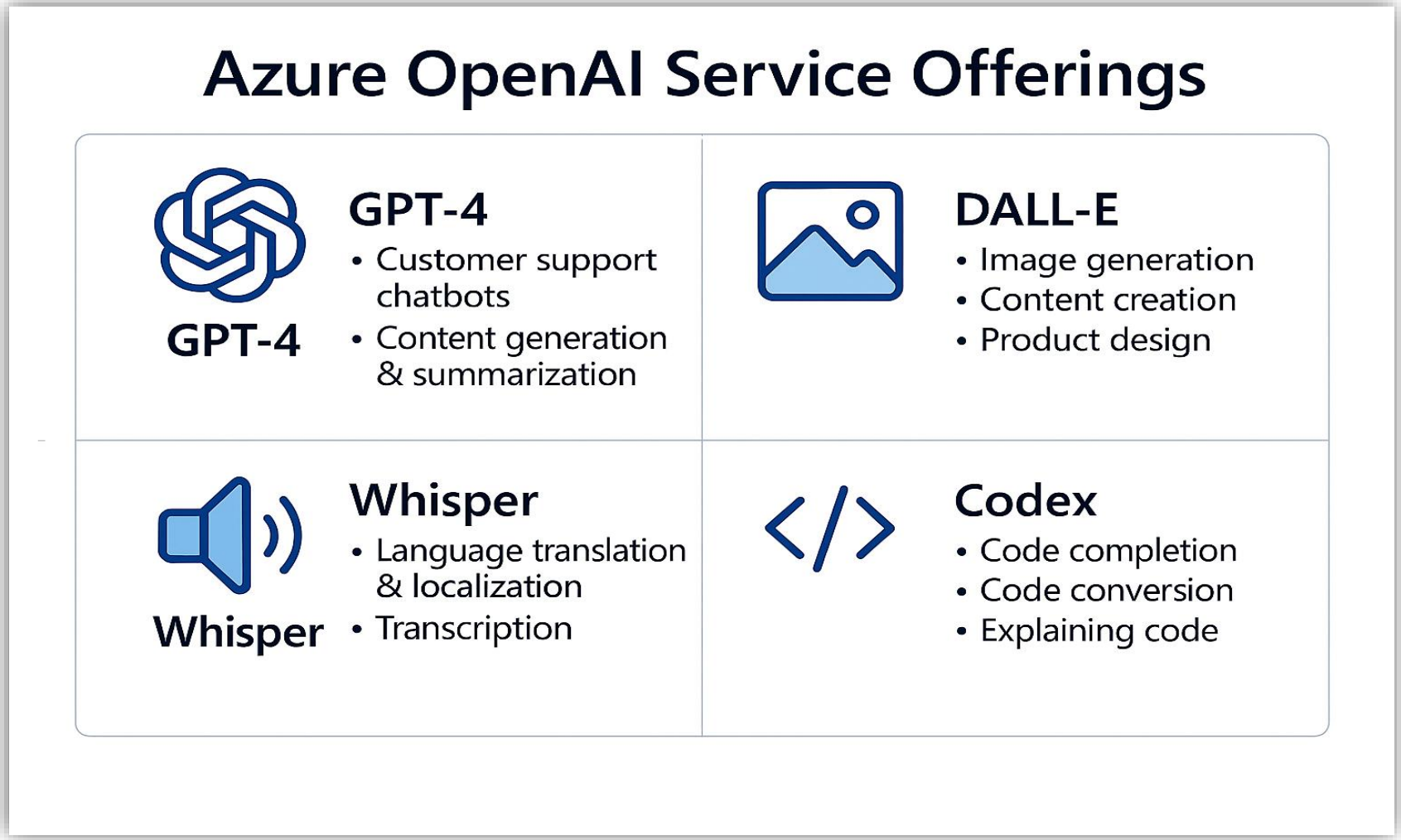


Plan a Responsible Generative AI Solution

Four stage process to develop and implement a plan for responsible AI are:



Azure OpenAI Core Services




Q & A

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Thank you!