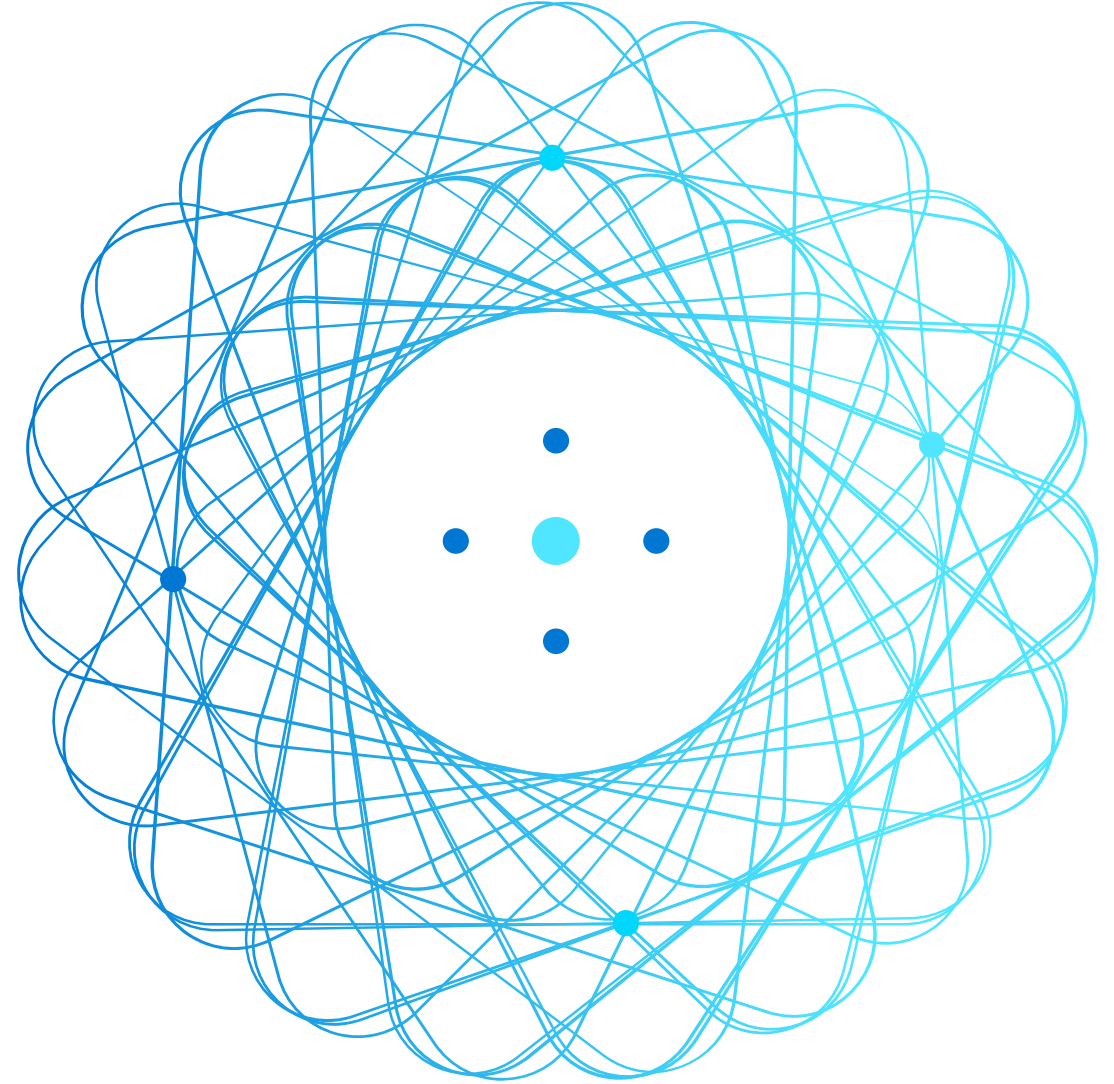


# Explore Fundamentals of Artificial Intelligence



# Agenda

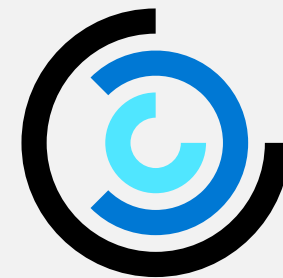


Introduction to Artificial Intelligence



Artificial Intelligence in Microsoft Azure

# Introduction to Artificial Intelligence








# 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



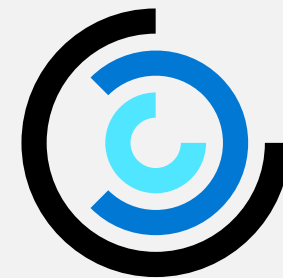
# Common Artificial Intelligence Workloads

	Machine Learning	Predictive models based on data and statistics – the foundation for AI
	Anomaly Detection	Systems that detect unusual patterns or events, enabling pre-emptive action
	Computer Vision	Applications that interpret visual input from cameras, images, or videos
	Natural Language Processing	Applications that can interpret written or spoken language, and engage in dialogs with human users
	Knowledge Mining	Extract information from data sources to create a searchable knowledge store

# 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	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?

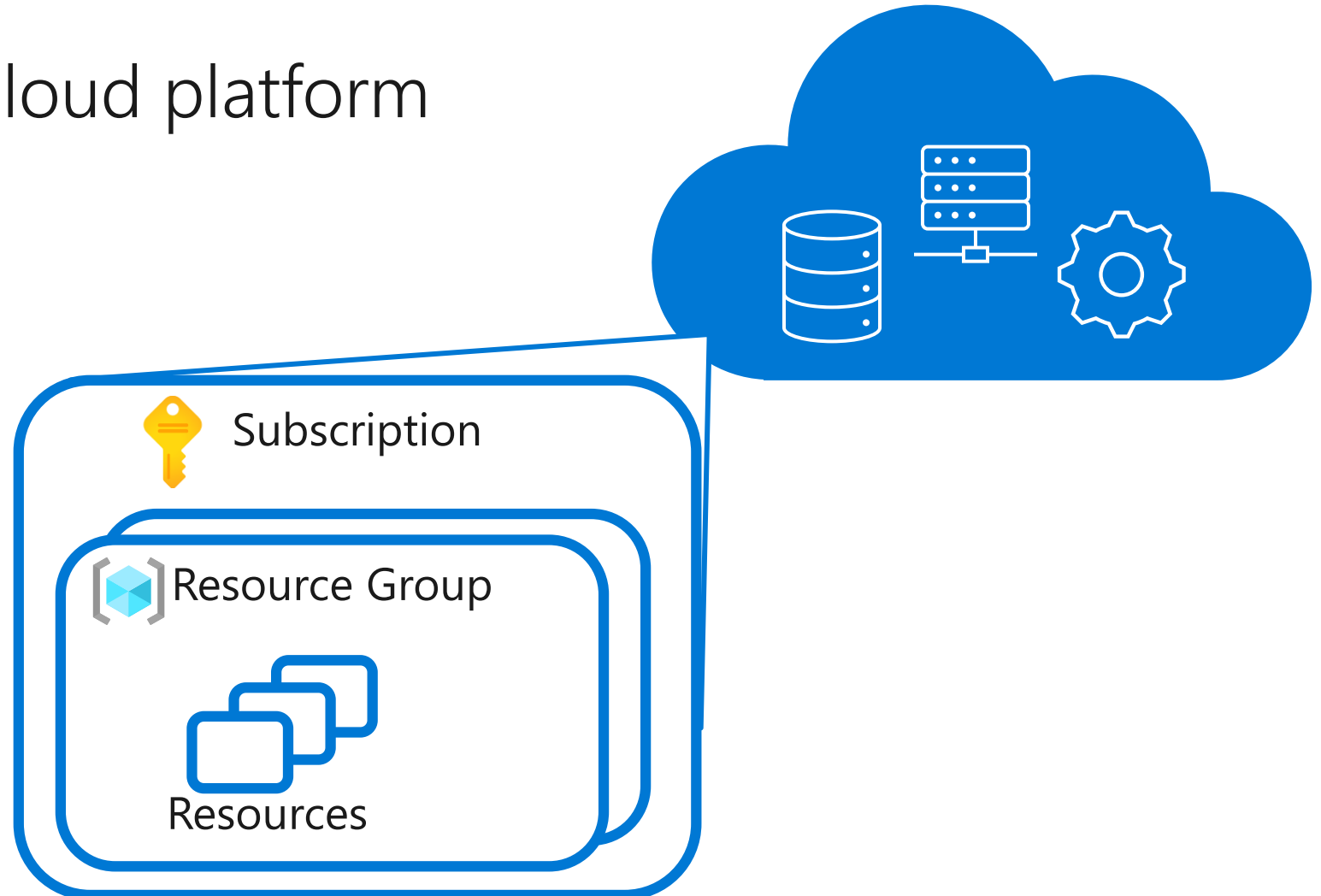
# Artificial Intelligence in Microsoft Azure



# Azure Basics

Scalable, reliable cloud platform

- Data storage
- Compute
- Services





# AI Services in Microsoft Azure



Azure Machine Learning

A platform for training, deploying, and managing machine learning models



Cognitive Services

A suite of services with four main pillars: Vision, Speech, Language, Decision



Azure Bot Service

A cloud-based platform for developing and managing conversational bots

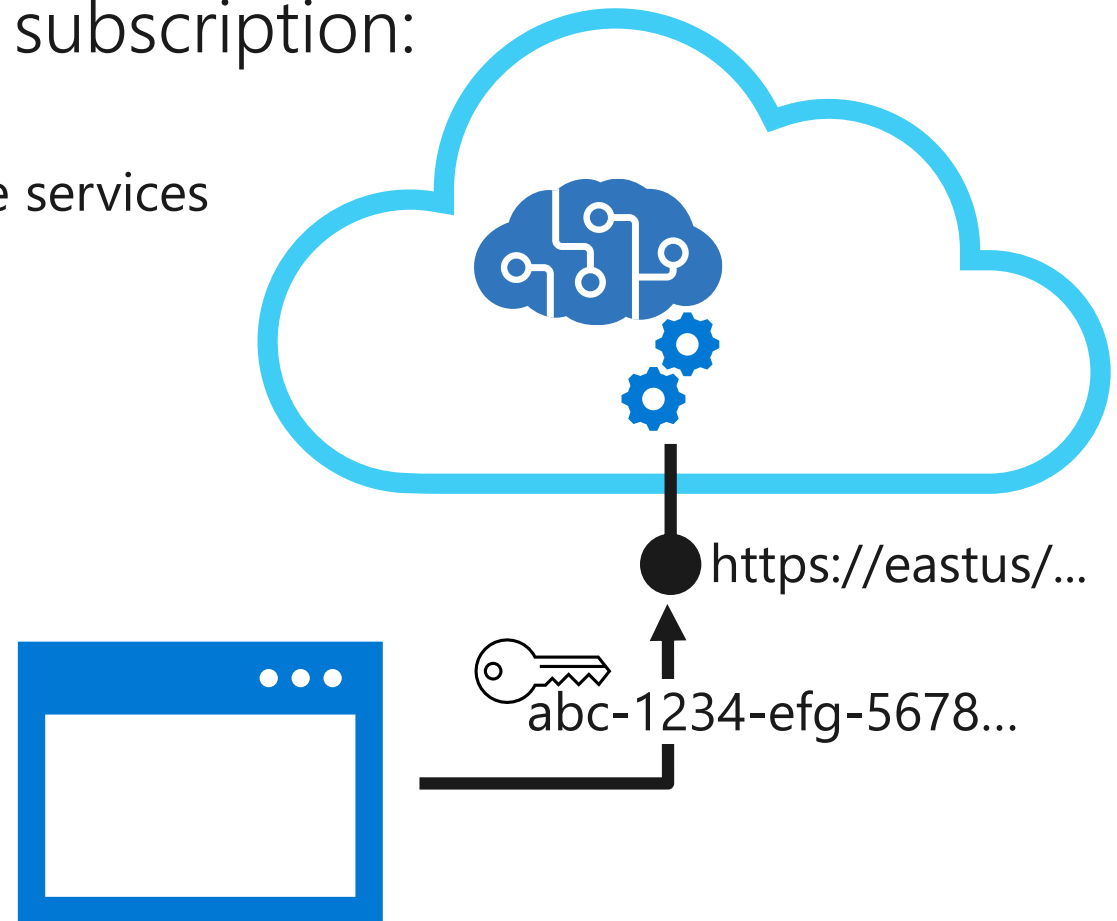


Azure Cognitive Search

Data extraction, enrichment, and indexing for intelligent search and knowledge mining

# Cognitive Services

- AI application resources in an Azure subscription:
  - Standalone resources for specific services
  - General *Cognitive Services* resource for multiple services
- Consumed by applications via:
  - A REST endpoint (`https://` address)
  - An authentication key or authorization token



# Lab: Explore Cognitive Services

In this lab, you will explore the Anomaly Detector cognitive service, which analyzes data over time to detect any unusual values.

1. **Start the virtual machine for this lab**  
or go to the exercise page at <https://aka.ms/ai900-anomaly-lab>
2. **Follow the instructions to complete the exercise**  
Use the Azure subscription provided for this lab



# Review



You want to create a model to predict sales of ice cream based on historic data that includes daily ice cream sales totals and weather measurements. Which Azure service should you use?

- Azure Machine Learning
- Azure Bot Service
- Cognitive Services



You are designing an AI application that uses images to detect cracks in car windshields and warn drivers when a windshield should be repaired or replaced. What AI workload is described?

- Computer Vision
- Anomaly Detection
- Natural Language Processing



A predictive app provides audio output for visually impaired users. Which principle of Responsible AI is reflected here?

- Transparency
- Inclusiveness
- Fairness

# Summary

## Introduction to Artificial Intelligence

- What is Artificial Intelligence?
- Common Artificial Intelligence Workloads
- Principles of Responsible AI

## Artificial Intelligence in Microsoft Azure

- Azure Basics
- AI Services in Microsoft Azure
- Cognitive Services



# References

Get started with AI on Azure

<https://aka.ms/learn-azure-ai>

Explore Anomaly Detector in Microsoft Azure

<https://aka.ms/anomaly-detector-intro>

Introduction to Azure Cognitive Search

<https://aka.ms/azure-search-intro>

Infographic: How does an Azure API work?

<https://aka.ms/api-infographic>



