Azure AI Fundamentals

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Guide

AI-900

Agenda

- Exam Overview
- Introduction to AI and ML
- Cognitive Services
- NLP
- Conversational AI
- Azure ML
- Responsible AI

Certification Levels

The AI-900 Exam

- Entry Level
  - No focus on coding or implementation
- Focus on AI principles
- Azure AI services
- 1 hour for 5x questions

You are developing a solution that uses the Text Analytics service.
You need to identify the main talking points in a collection of documents.
Which type of natural language processing should you use?

A. entity recognition
B. key phrase extraction
C. sentiment analysis
D. language detection

API Features	Answer Area	
Entity recognition	API Feature	Understand how upset a customer is based on the text contained in the support ticket.
Key phrase extraction	API Feature	Summarize important information from the support ticket.
Language detection	API Feature	Extract key dates from the support ticket.
Sentiment analysis		

Statements	Yes	No
Monitoring online service reviews for profanities is an example of natural language processing.	○	○
Identifying brand logos in an image is an example of natural languages processing.	○	○
Monitoring public news sites for negative mentions of a product is an example of natural language processing.	○	○

While presenting at a conference, your session is transcribed into subtitles for the audience. This is an example of [▼]

- sentiment analysis.
- speech recognition.
- speech synthesis.
- translation.

What should you focus

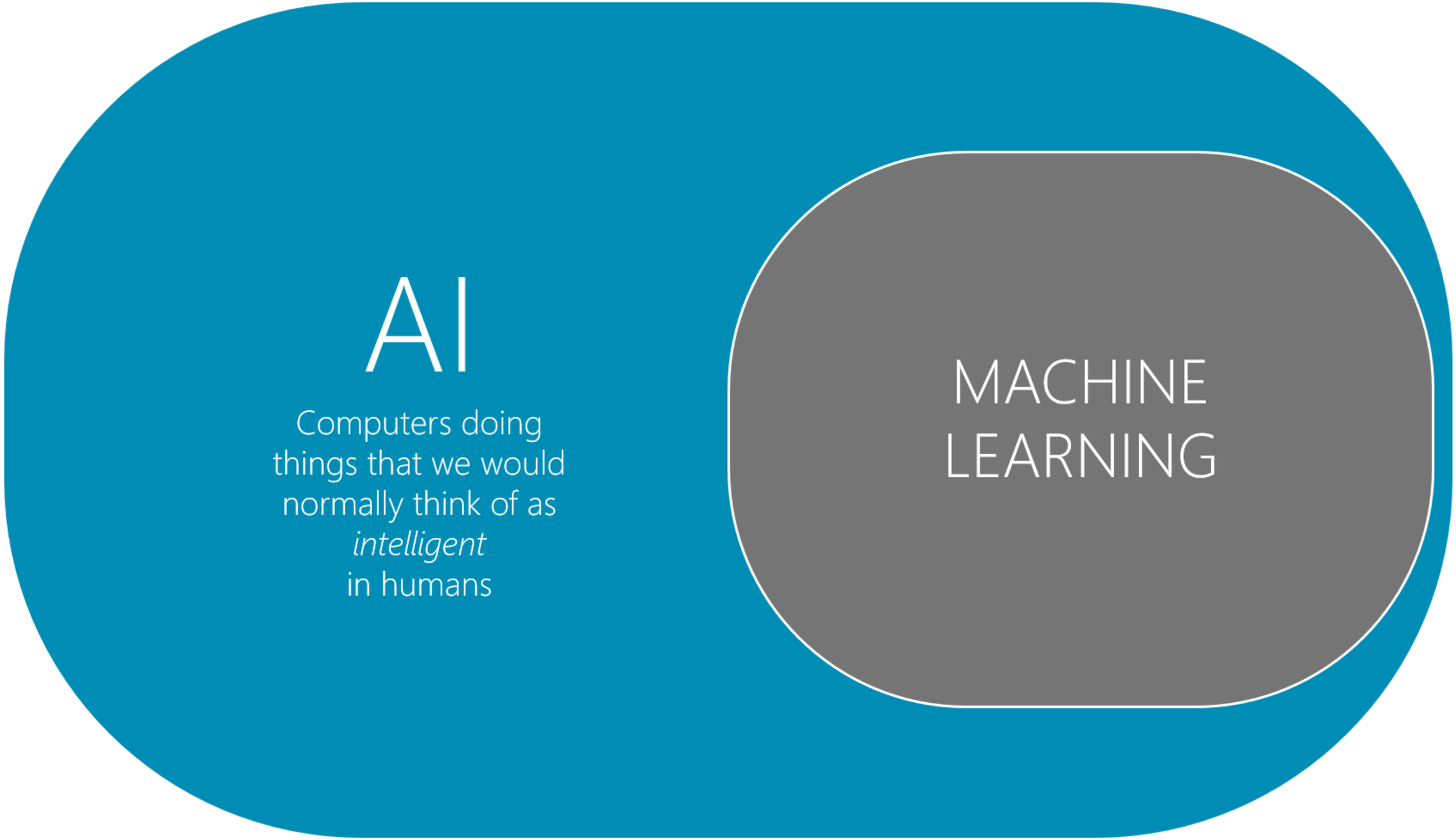
- Machine Learning
- Azure AI services
- Responsible AI
- https://aka.ms/ai900

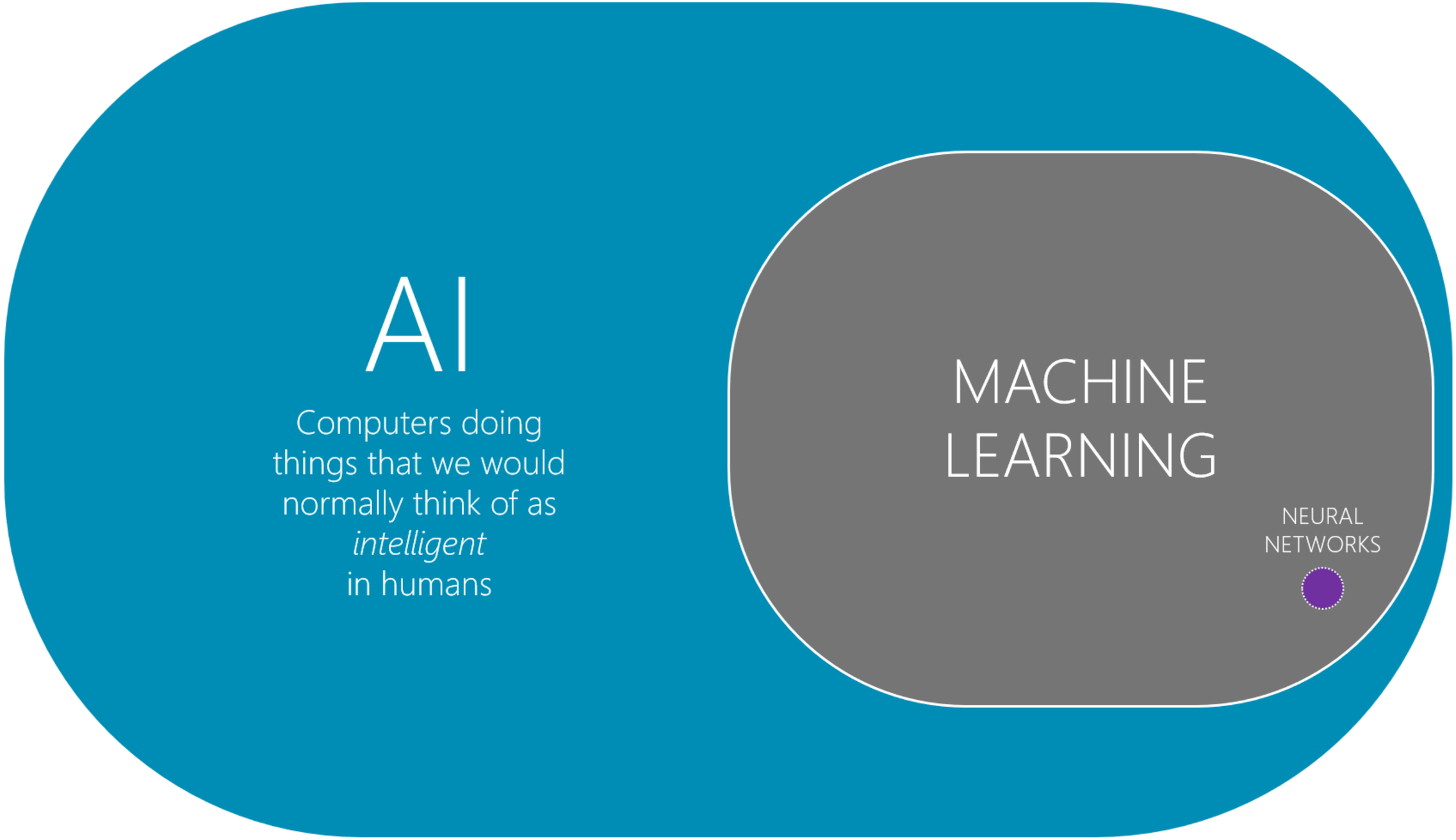
AI & ML

AI

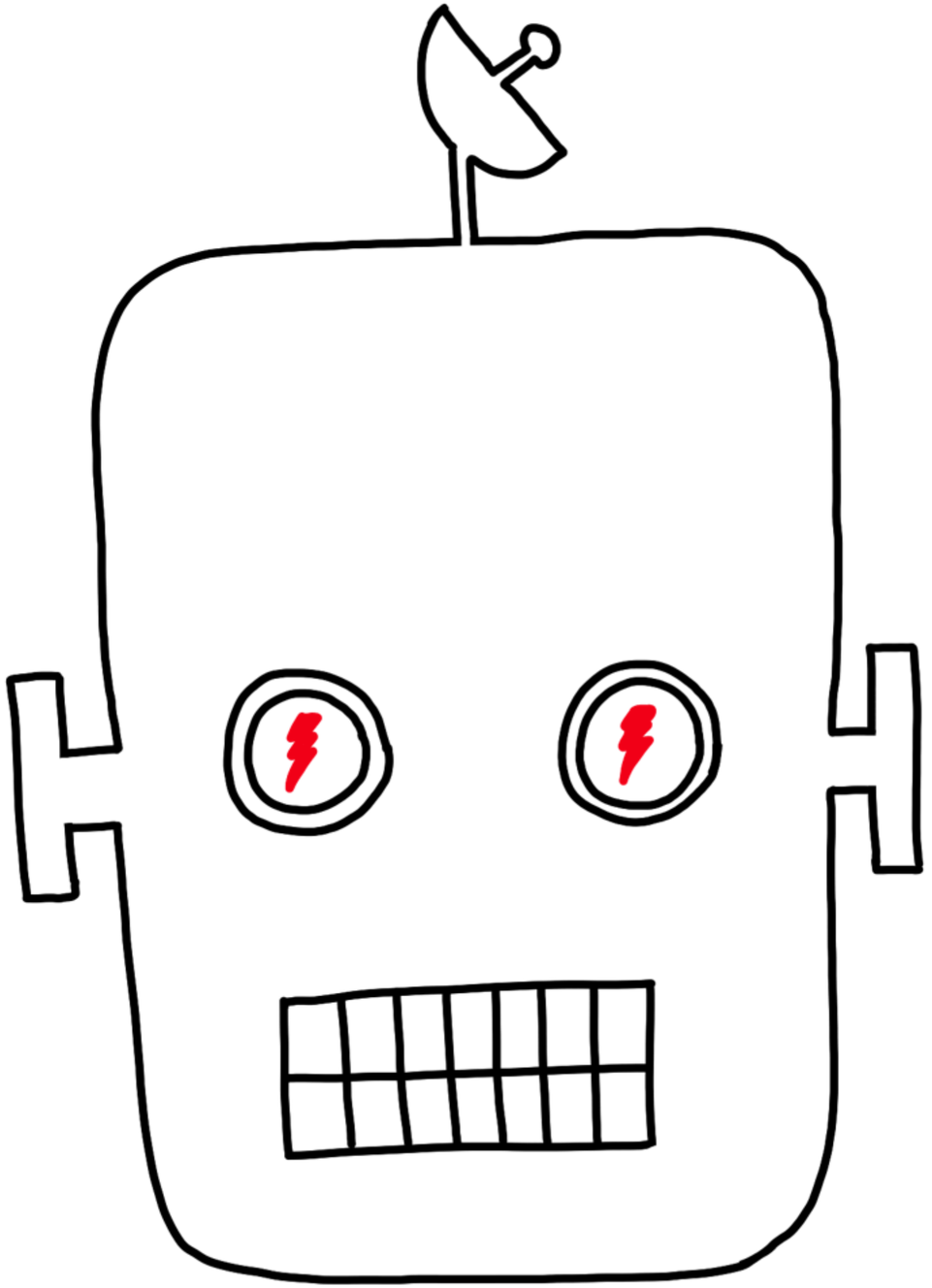
Computers doing
things that we would
normally think of as
intelligent
in humans


/Autonomous
/Sensing
/Communication
/Battery
/Navigation
/Mirrorless
/Ecology
Self-Driving
48
mph
Self-Driving
Mode

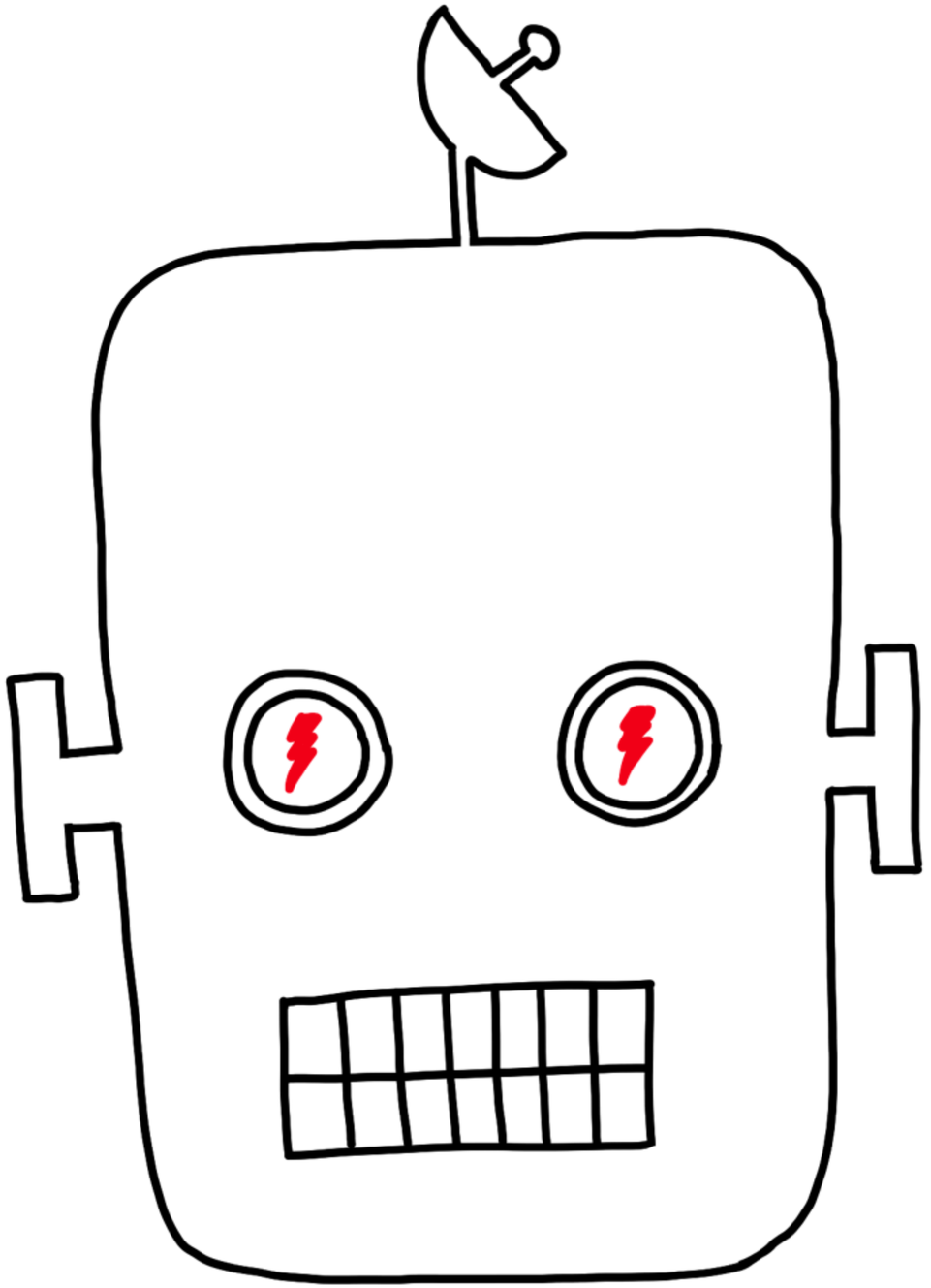

AI
Computers doing things that we would normally think of as *intelligent* in humans
MACHINE LEARNING

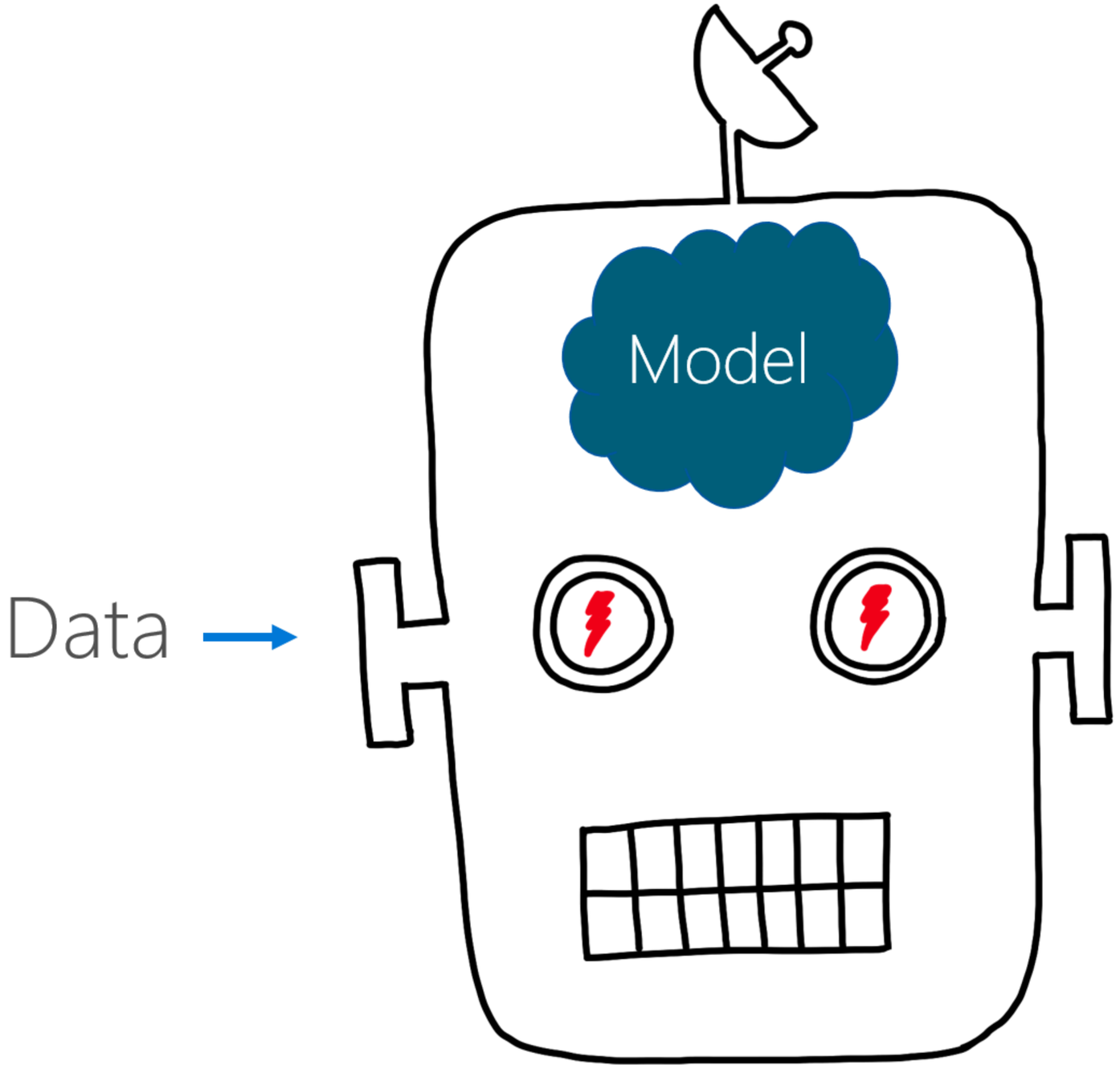

AI
Computers doing things that we would normally think of as *intelligent* in humans
MACHINE LEARNING
NEURAL NETWORKS

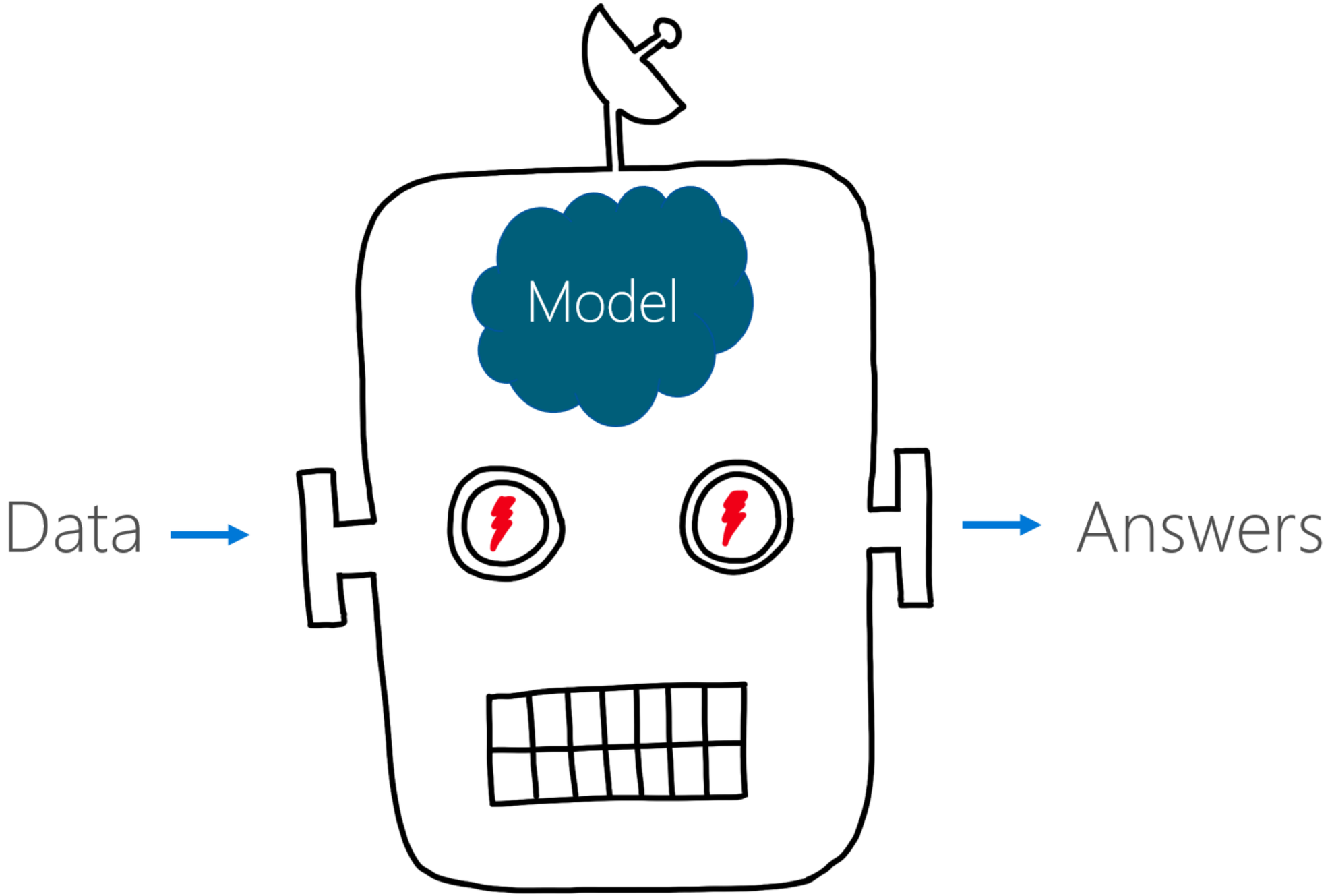
Machine Learning



Data




Model
Data


Model
Data
Answers

Demo

Machine Learning

Demo

Data & ML

Id	Name	Score					Faculty
		Math	Bio	Phy	Eng	Thai	
1	John	80	55	80	75	80	Engineer
2	Tom	70	70	70	70		Doctor
3	Marry	60	65	65	60	65	Teacher
4	Peter	40	60	60	50	90	Language
5	Jane	75	60	80	70		Nurse
6	Betty	65	80	80	65		Science
7	Mike	90	70	80	80		Engineer

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3	Marry	60	65	65	60	65	Teacher
4	Peter	40	60	60	50	90	Language
5	Jane	75	60	80	70		Nurse
6	Betty	65	80	80	65		Science
7	Mike	90	70	80	80		Engineer

- Feature
  - Math Score
  - Bio Score
  - Phy Score
  - Eng Score
  - Thai Score
- Label
  - Faculty

Id	Name	Score					Faculty
		Math	Bio	Phy	Eng	Thai	
1	John	80	55	80	75	80	Engineer
2	Tom	70	70	70	70		Doctor
3	Marry	60	65	65	60	65	Teacher
4	Peter	40	60	60	50	90	Language
5	Jane	75	60	80	70		Nurse
6	Betty	65	80	80	65		Science
7	Mike	90	70	80	80		Engineer

- Train Model
- ML Algorithms
- Evaluate
- Dataset
  - Training
  - Validation/Evaluation/Test

ML Keywords

- Model
- Data Preparation
  - Feature Selection
  - Feature Engineering
  - Split
- Training
- Scoring / Evaluation
- Algorithms

Quiz

- Feature Engineering
- Feature Selection
- Model Deployment
- Model Training

- Splitting Date of Birth into month and year fields
- Picking engine and year to train a car pricing model

Quiz: Answer

- Splitting Date of Birth into month and year fields
  - Feature Engineering
- Picking engine and year to train a car pricing model
  - Feature Selection

Quiz

You need to create a training dataset and validation dataset from existing dataset. Which module in Azure ML should we use?

- Select columns
- Add rows
- Train model
- Split data

ML Algorithms

ML Algorithms

- Regression
- Classification
- Clustering
- Anomaly Detection
- Reinforcement

Quiz

- Regression
- Classification
- Clustering
- Reinforcement

- Predict people income
- Predict whether a student will pass the final exam

Quiz: Answer

- Predict people income
  - Regression
- Predict whether a student will pass the final exam
  - Classification

Break

10 mins

Cognitive Services

Cognitive Services

- Vision
  - Computer Vision
  - Custom Vision
  - Face
  - Form Recognizer
- Speech
- Language
- https://aidemos.microsoft.com/
- https://azure.microsoft.com/en-us/services/cognitive-services/#api

Demo

Computer Vision

Demo

Custom Vision

Quiz

- Computer Vision
- Anomaly Detection
- Clustering
- Regression

- Identify handwritten letters.
- Identify a fraudulent credit card payment.
- Forecast the next moth's sales.

Quiz

- Identify handwritten letters.
  - Computer Vision
- Identify a fraudulent credit card payment.
  - Anomaly Detection
- Forecast the next moth's sales.
  - Regression

NLP

Natural Language Processing

NLP

- Text Analytics
- Translator
- LUIS
  - Language Understanding Intelligent Service
- https://azure.microsoft.com/en-us/services/cognitive-services/#api

Demo

NLP

Quiz

Your website has a chatbot to assist customers. You need to detect when a customer is upset based on what the customer types in the chatbot. Which type of AI workload should you use?

- Anomaly detection
- Semantic segmentation
- Regression
- Natural Language Processing

Quiz

You are developing a natural language processing solution in Azure. The solution will analyze customer reviews and determine how positive or negative each review is. This is an example of which type of natural language processing workload?

- Language detection
- Sentiment analysis
- Key phrase extraction
- Entity recognition

Conversational AI

Conversational AI

- The Bot Framework
- Azure Bot Service
- QnA Maker
- https://azure.microsoft.com/en-us/services/cognitive-services/#api

Demo

nversatior AI

Quiz

Which two scenarios are examples of a conversational AI workload? Each correct answer presents a complete solution.

- a telephone answering service that has a pre-recorder message
- a chatbot that provides users with the ability to find answers on a website by themselves
- telephone voice menus to reduce the load on human resources
- a service that creates frequently asked questions (FAQ) documents by crawling public websites

Break2

10 mins

Azure ML

Azure ML

- Azure Machine Learning designer
- Azure Machine Learning notebook
- Automated ML
- https://docs.microsoft.com/en-us/learn/paths/create-no-code-predictive-models-azure-machine-learning/

Quiz

Which two components can you drag onto a canvas in Azure Machine Learning designer? Each correct answer presents a complete solution.

- dataset
- compute
- pipeline
- module

Responsible AI

Responsible AI

- Fairness
- Reliability and Safety
- Privacy and Security
- Inclusiveness
- Transparency
- Accountability
- https://docs.microsoft.com/en-us/learn/modules/get-started-ai-fundamentals/7-understand-responsible-ai

Welcome

Questions ?