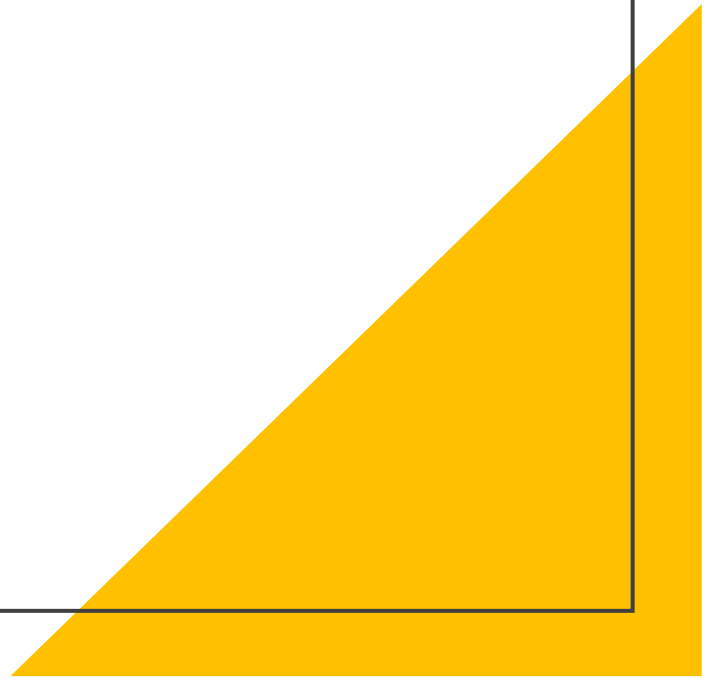# Introduction to AI with Azure Custom Vision

Presented by: Shaima Haque

Before we get started...Ensure you have the following installed

- Python
  - https://www.python.org/downloads/
- Git
  - https://git-scm.com/
- Visual Studio Code
  - https://code.visualstudio.com/

Enrolling with Azure for Students
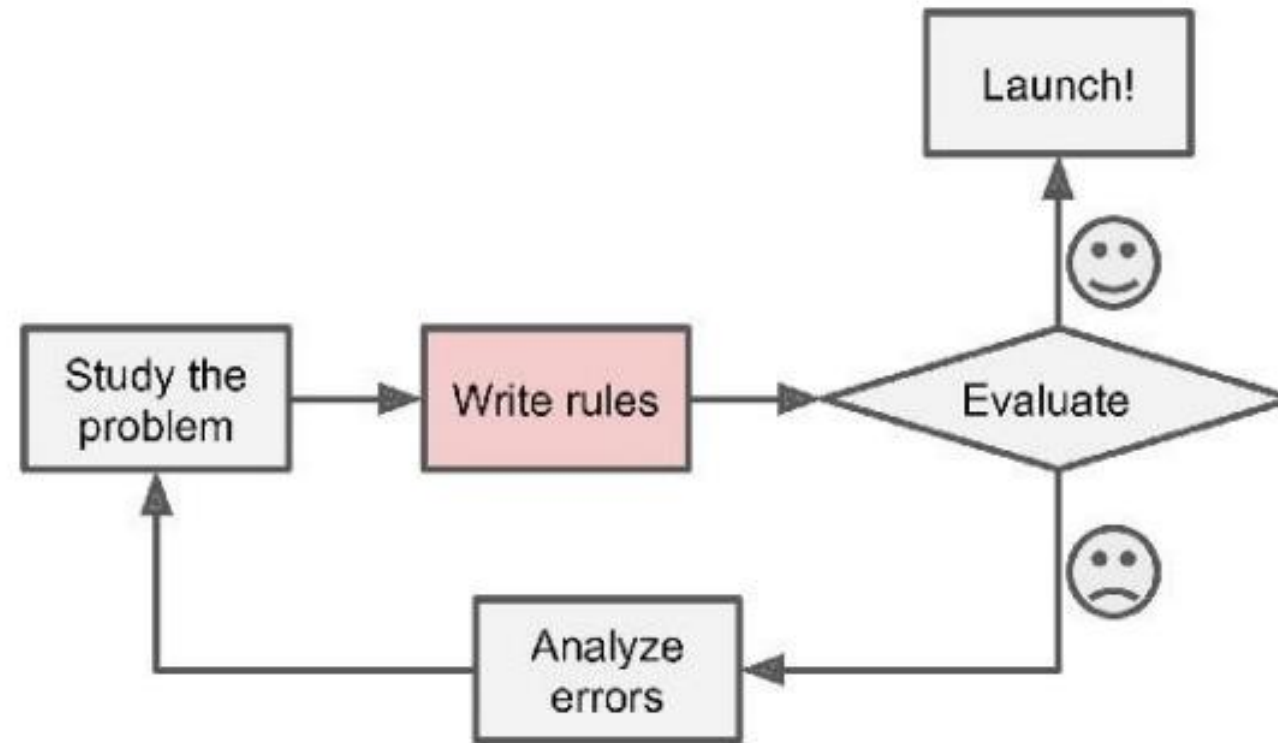
- https://azure.microsoft.com/free/students

- Use your college email id.

"Artificial Intelligence is computers doing things that we would normally think of as intelligent in humans."

Rick Barazza, Microsoft

Traditional Approach

Figure 1-1. The traditional approach

Image credits: Hands-On Machine Learning with Scikit-learn, Keras, and Tensorflow
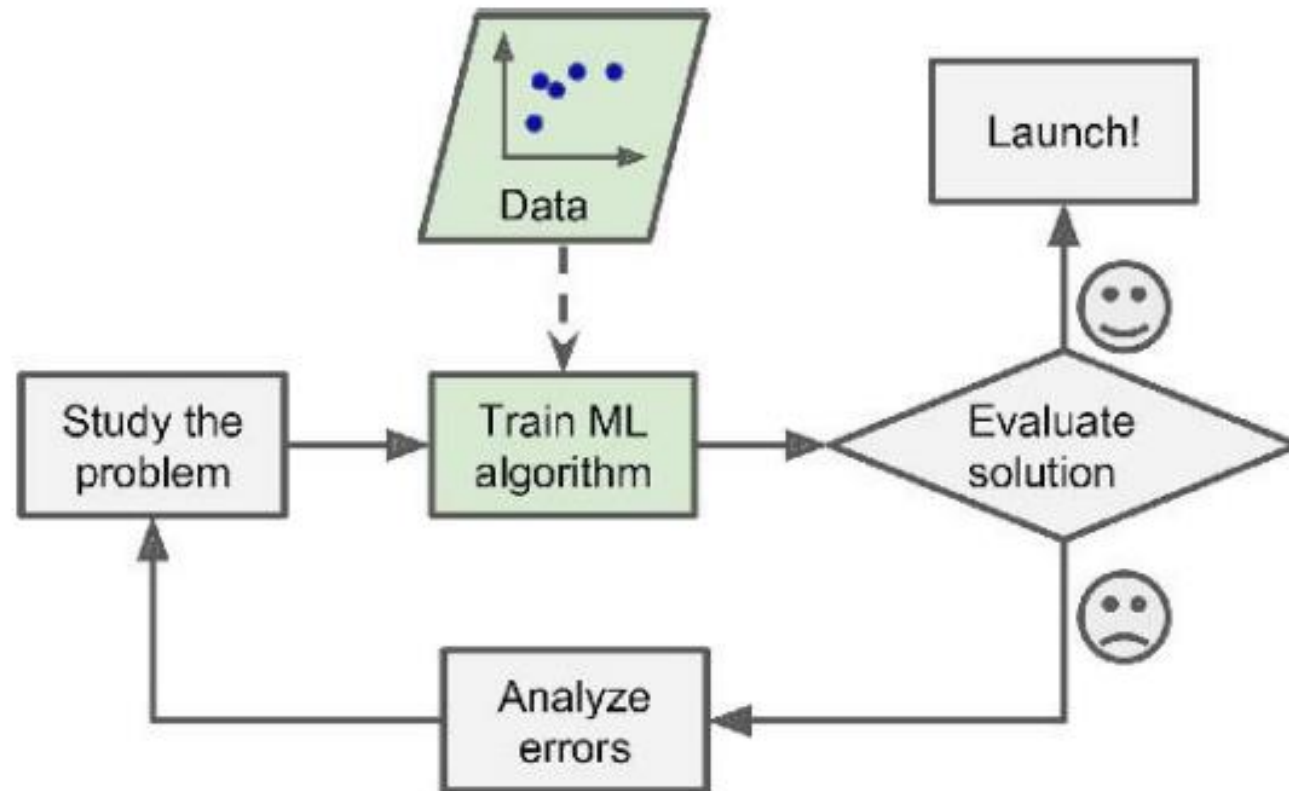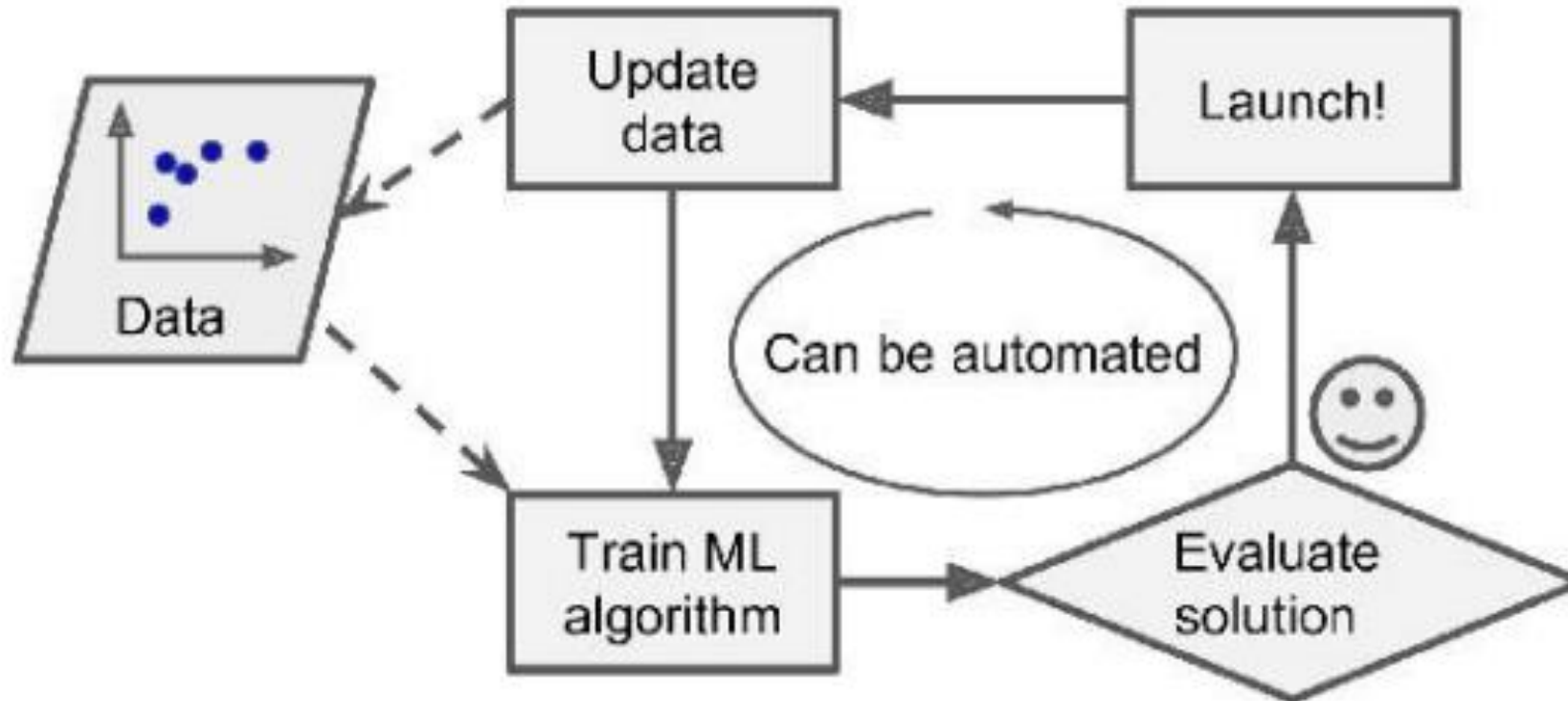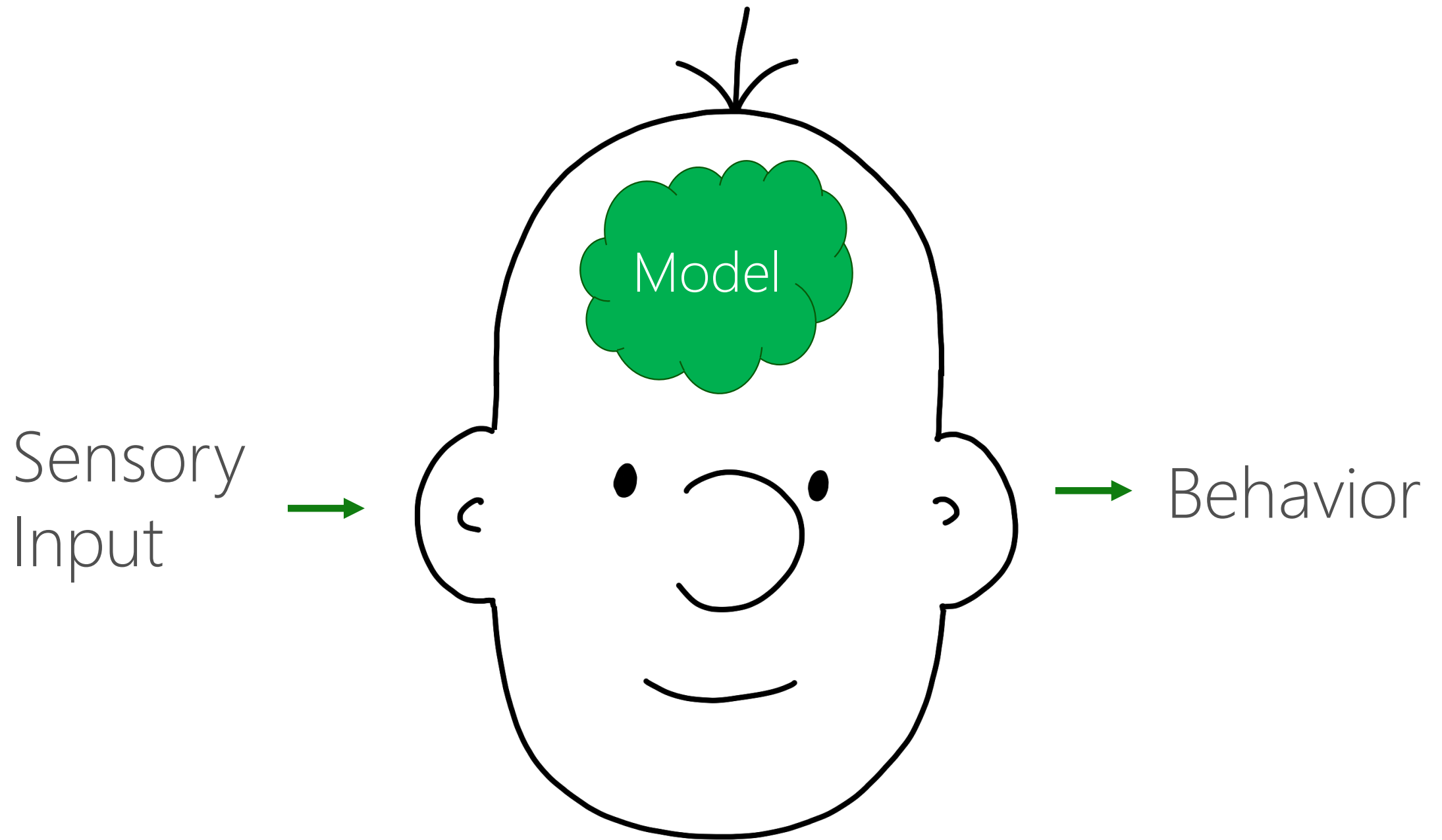
Machine Learning Approach

Figure 1-2. Machine Learning approach

Image credits: Hands-On Machine Learning with Scikit-learn, Keras, and Tensorflow
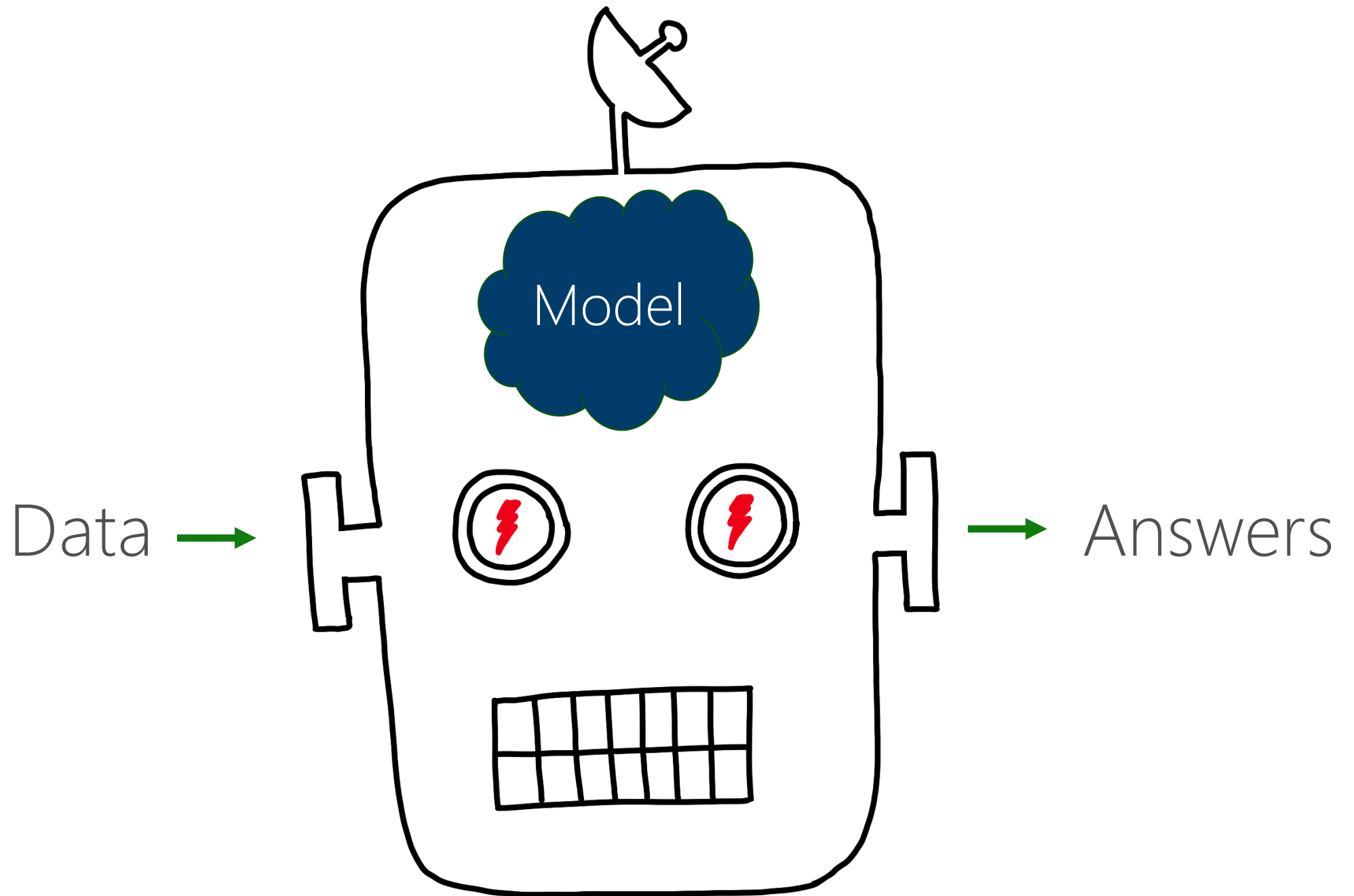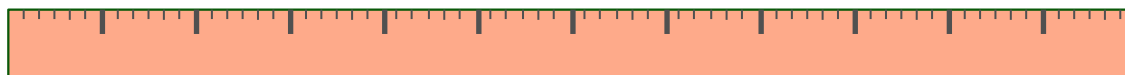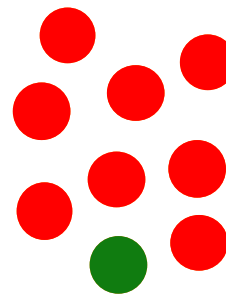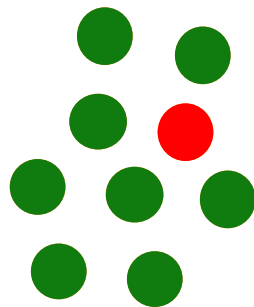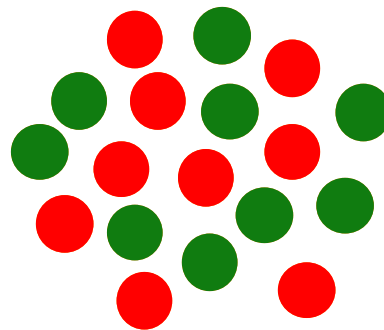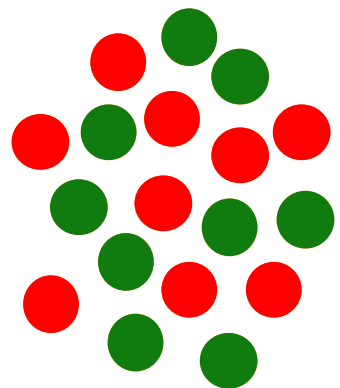
Machine Learning Approach

Figure 1-3. Automatically adapting to change

Image credits: Hands-On Machine Learning with Scikit-learn, Keras, and Tensorflow

Sensory Input → Model → Behavior
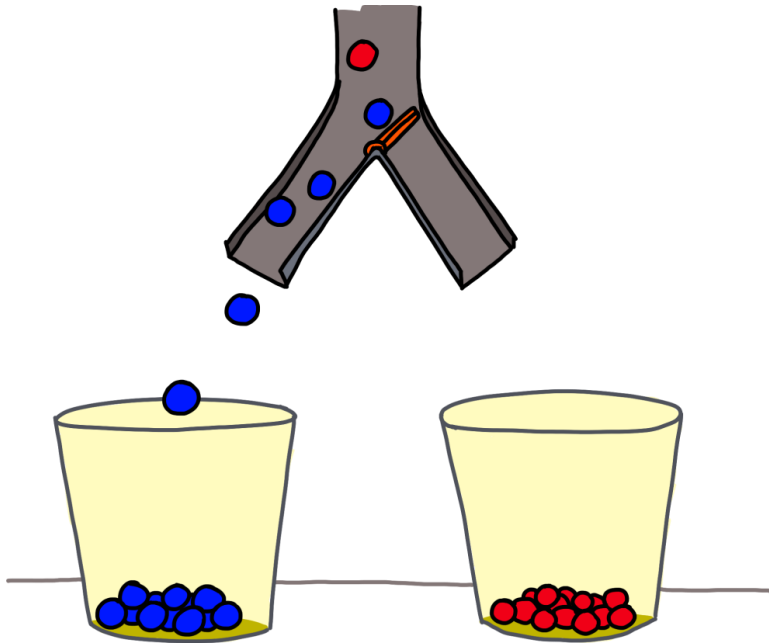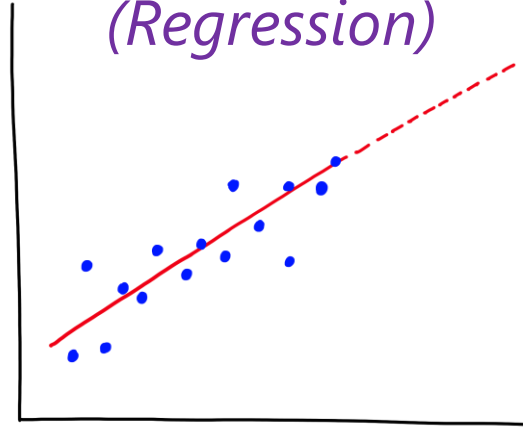
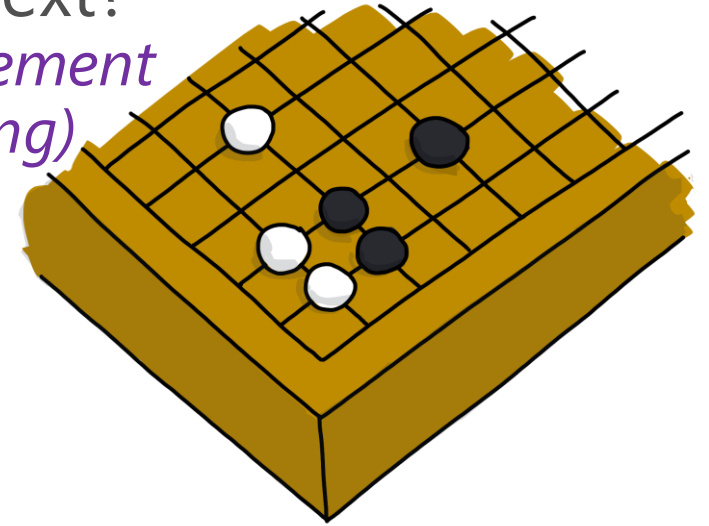Data → [robot with "Model"] → Answers

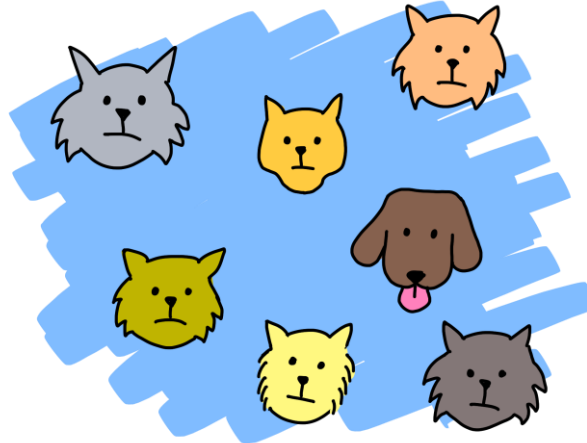Algorithms

Diseased?

Which category?
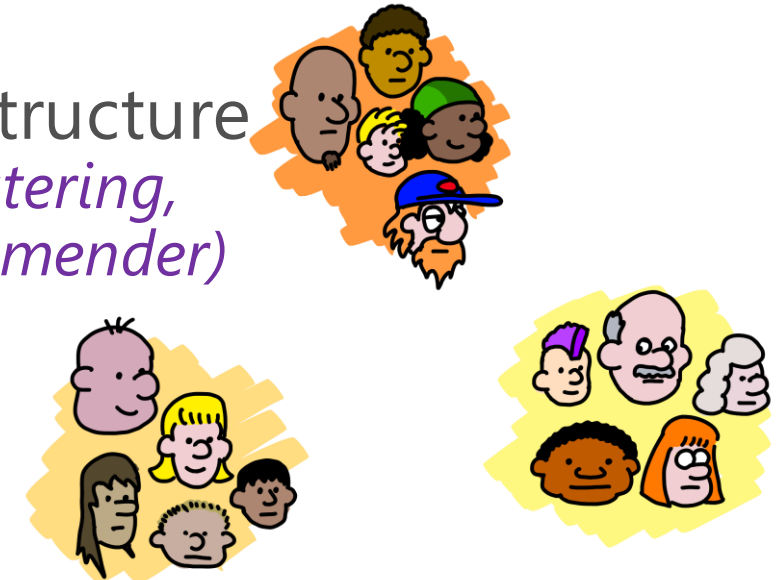*(Classification)*

Predict how much/many
(Regression)

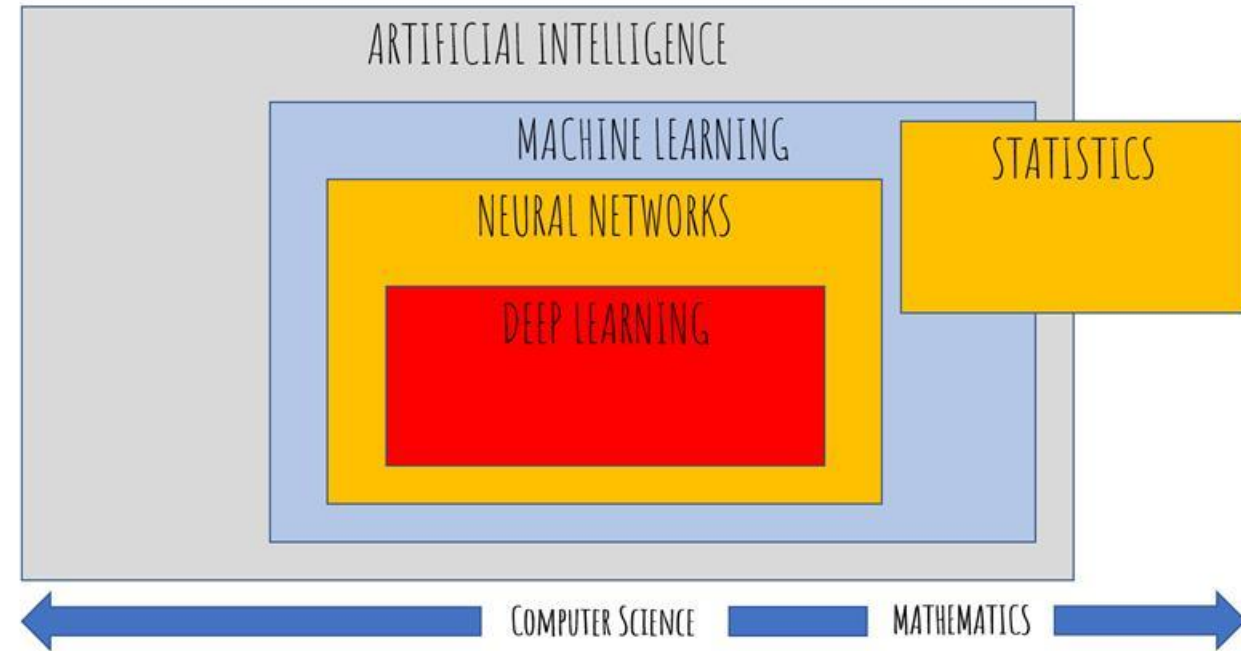What next?
(Reinforcement Learning)

Is it weird?
(Anomaly)

Data structure
(Clustering, Recommender)

5 questions courtesy Brandon Rohrer

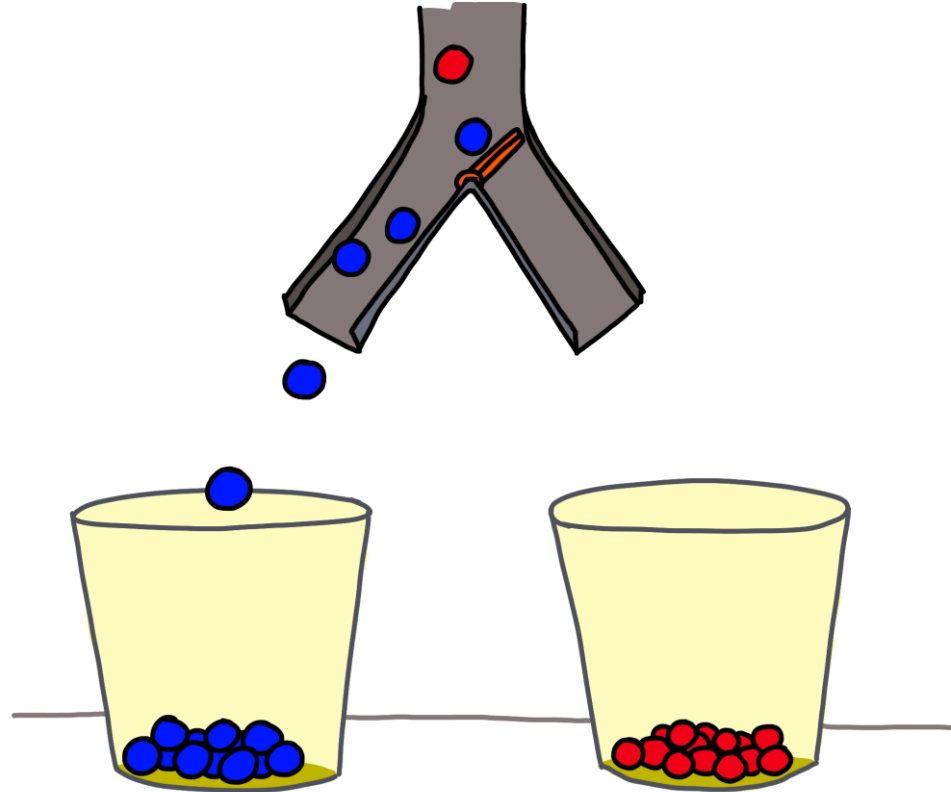It's all enabled by machine learning...

What's the difference?

- The overall field of AI includes ML, the use of neural networks and deep learning.
- Machine Learning is a subset of AI, and it often involves creating models either built from scratch or built using pre-trained models
- These fields encompass both computer science and mathematics in varying degrees

Which category?
(Classification)

Introducing Custom Vision
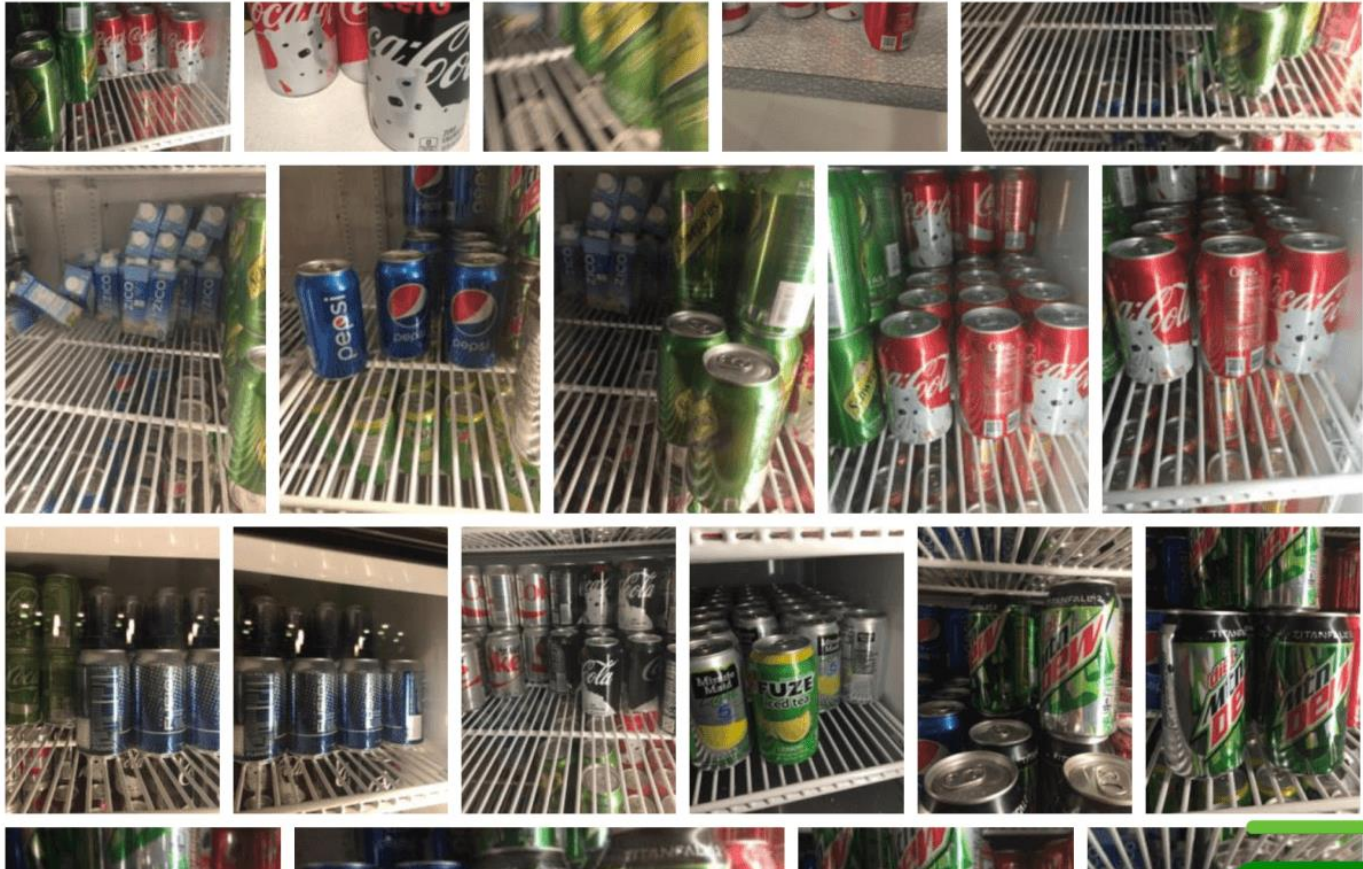
Your own custom vision model, in 3 steps
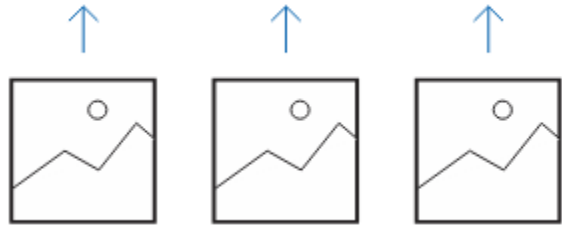
Upload and label
your images

Train the model

89%   93%   91%

Evaluate the results

Exercise - Creating a Custom Vision Model

Probability and AI

No model is perfect. The probability indicates how correct the model believes its answer is.

All models represent a "closed universe"

Your model will always try to match the image to what it knows.

There is always some level of uncertainty

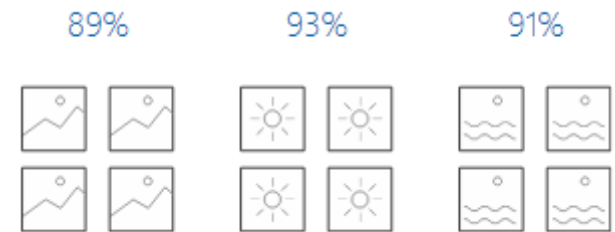All models will make mistakes and not be 100%. A probability score above 80% is commonly acceptable.

Improving accuracy

The best way to improve the model is to increase the number and diversity of images used to train. This includes different angles, settings, and lighting.

Performing a prediction

After the model is trained, you can make predictions to determine which classification matches the image
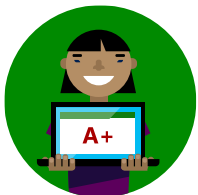
Install the required packages

Azure Custom Vision has an SDK available in Python for making predictions.

Load the appropriate key values

To call your model you need its ID, name, and the key (password).

Perform the prediction

Use the SDK to upload the image to the model and perform the prediction.

Exercise - Using a Custom Vision Model

What's next?

Learn about [object detection](#)
Creating custom models with [TensorFlow](#)

Please tell us how you liked this workshop by filling out this survey:

[https://aka.ms/workshopomatic-feedback](#)