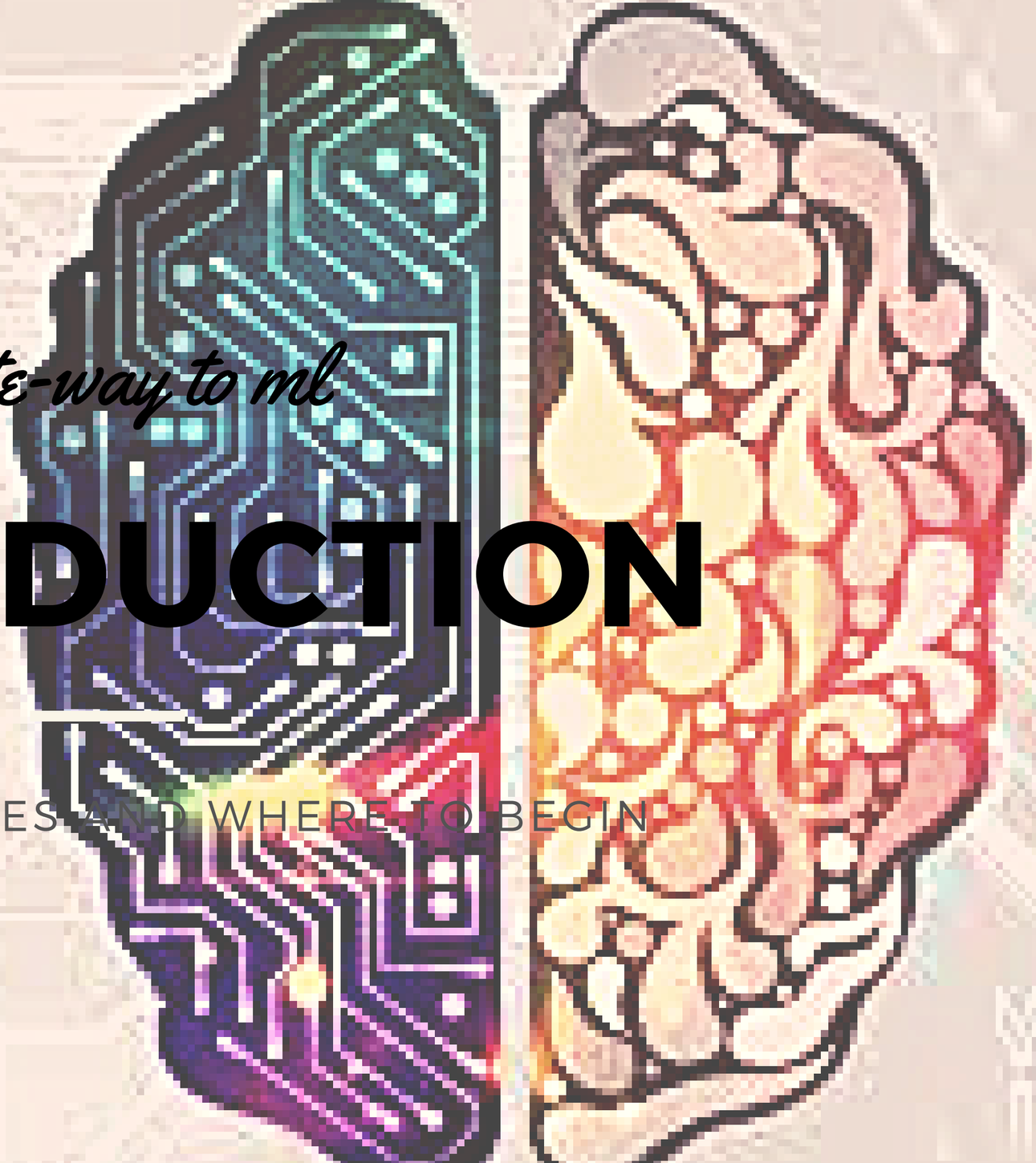
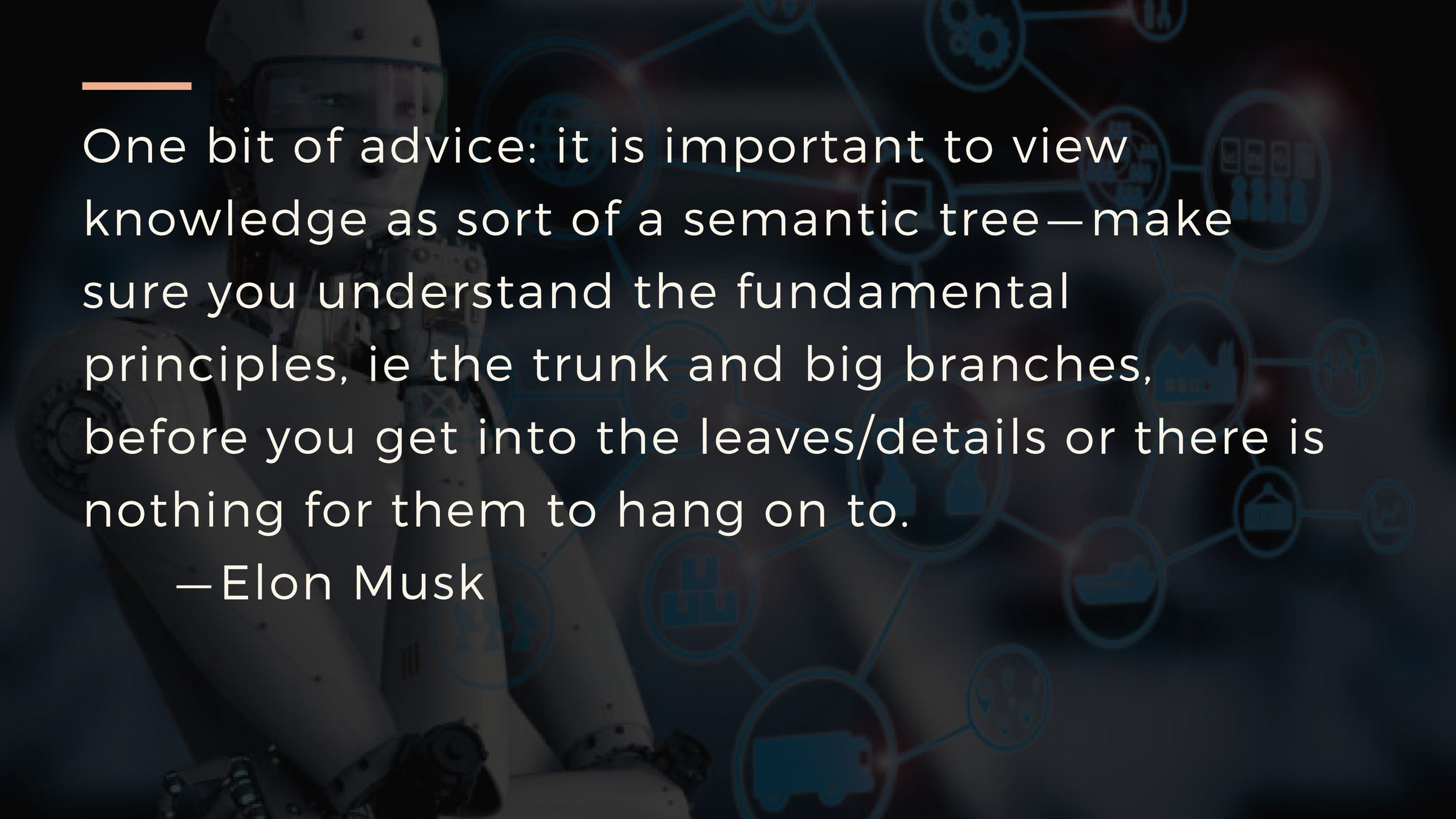
Gate-way to ml

MACHINE LEARNING

INTRODUCTION

BASIC TECHNIQUES AND WHERE TO BEGIN



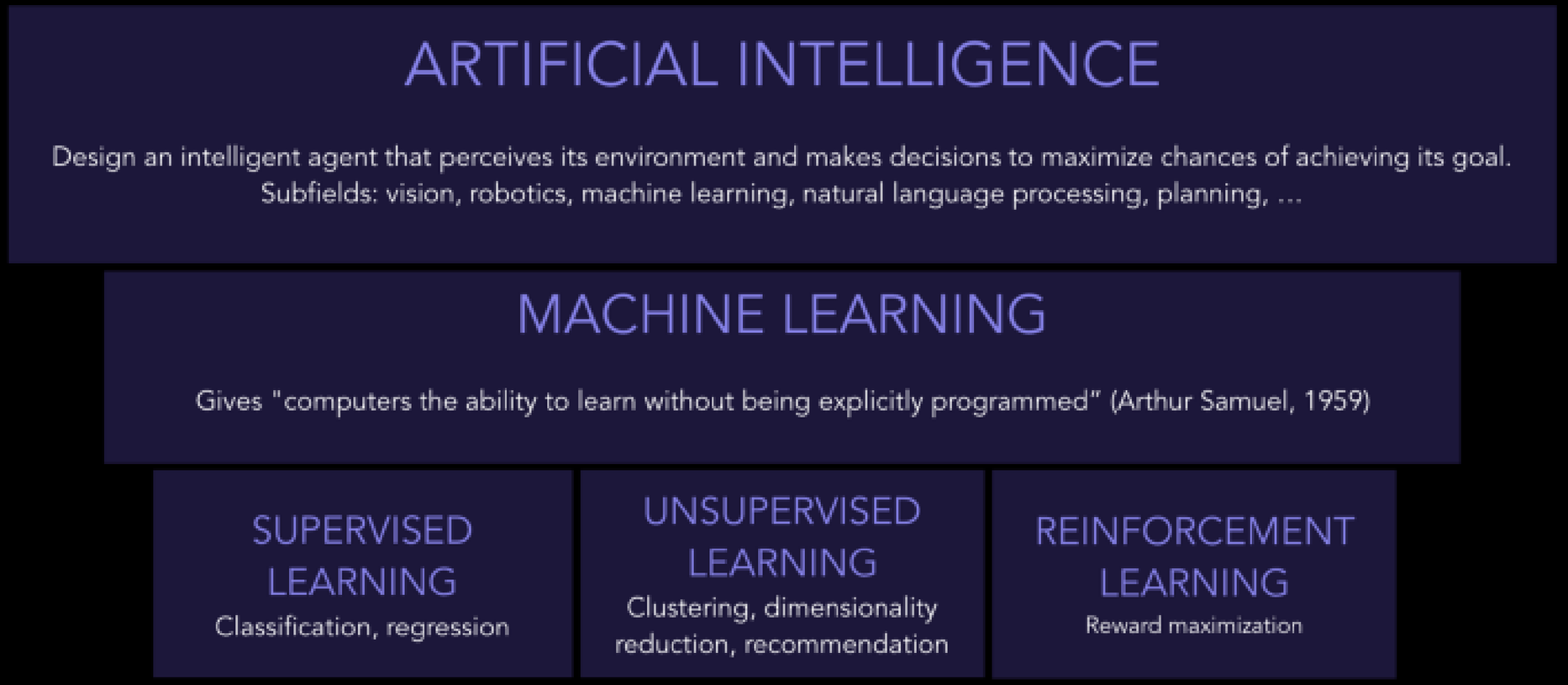


One bit of advice: it is important to view knowledge as sort of a semantic tree—make sure you understand the fundamental principles, ie the trunk and big branches, before you get into the leaves/details or there is nothing for them to hang on to.

—Elon Musk

The semantic tree: artificial intelligence and machine learning

Machine learning ⊆ artificial intelligence



Artificial intelligence

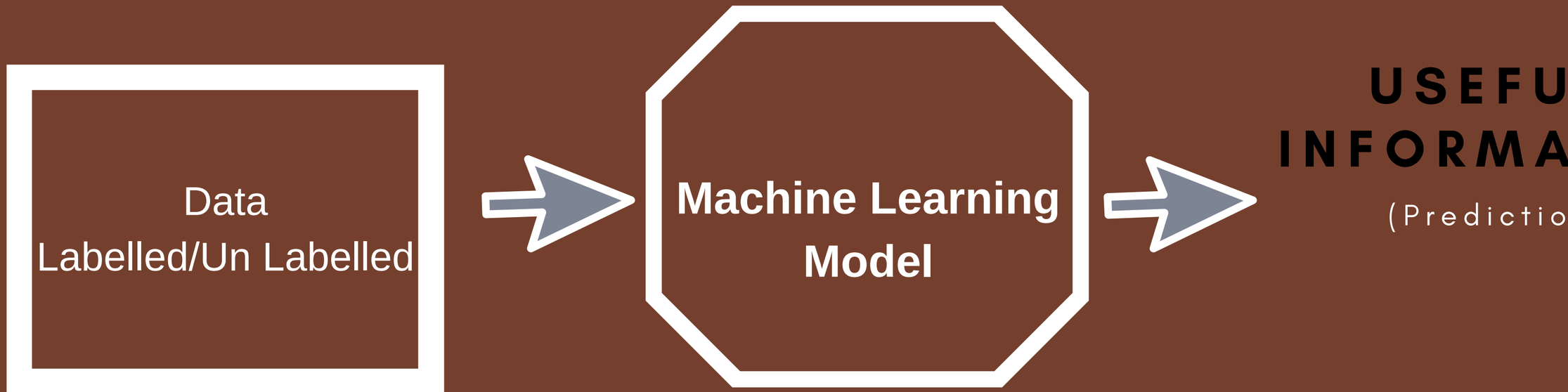
ARTIFICIAL INTELLIGENCE IS THE STUDY OF AGENTS THAT PERCEIVE THE WORLD AROUND THEM, FORM PLANS, AND MAKE DECISIONS TO ACHIEVE THEIR GOALS

MANY FIELDS FALL UNDER THE UMBRELLA OF AI, SUCH AS COMPUTER VISION, ROBOTICS, MACHINE LEARNING, AND NATURAL LANGUAGE PROCESSING.

GOOGLE ASSISTANT GOOGLE I/O

What is actually machine learning ??...

MACHINE LEARNING , THE BIG PICTURE



Machine learning the general division

1. SUPERVISED LEARNING
2. UN SUPERVISED LEARNING
3. REINFORCED LEARNING

SUPERVISED LEARNING

In supervised learning problems, we start with a data set containing training examples with associated correct labels.

SUPERVISED LEARNING

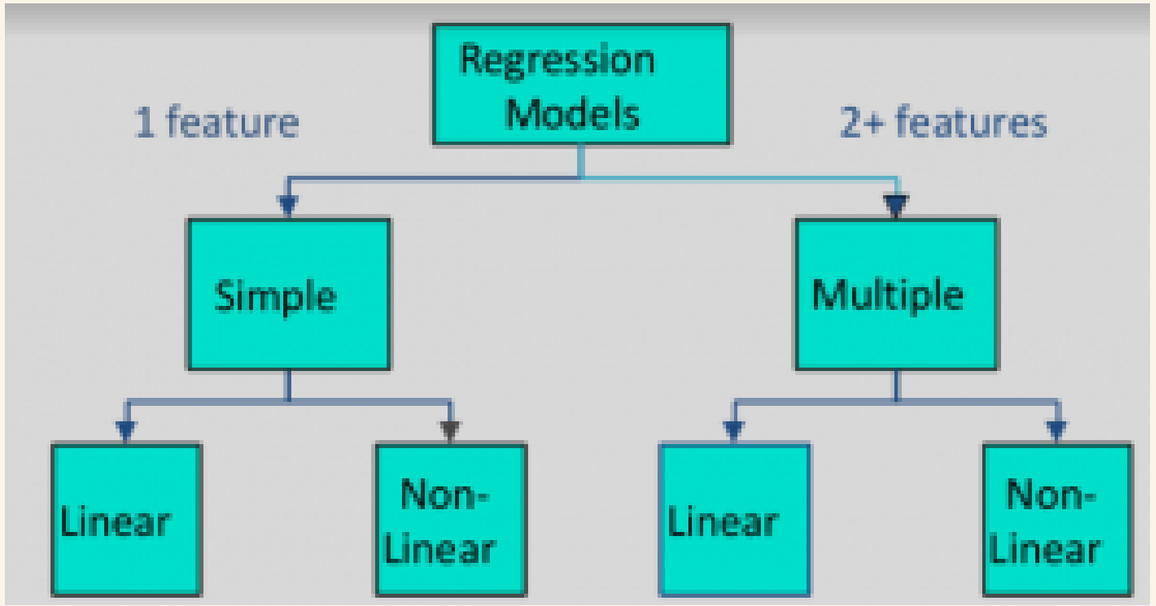
For example, when learning to classify handwritten digits, a supervised learning algorithm takes thousands of pictures of handwritten digits along with labels containing the correct number each image represents. The algorithm will then learn the relationship between the images and their associated numbers, and apply that learned relationship to classify completely new images (without labels) that the machine hasn’t seen before.

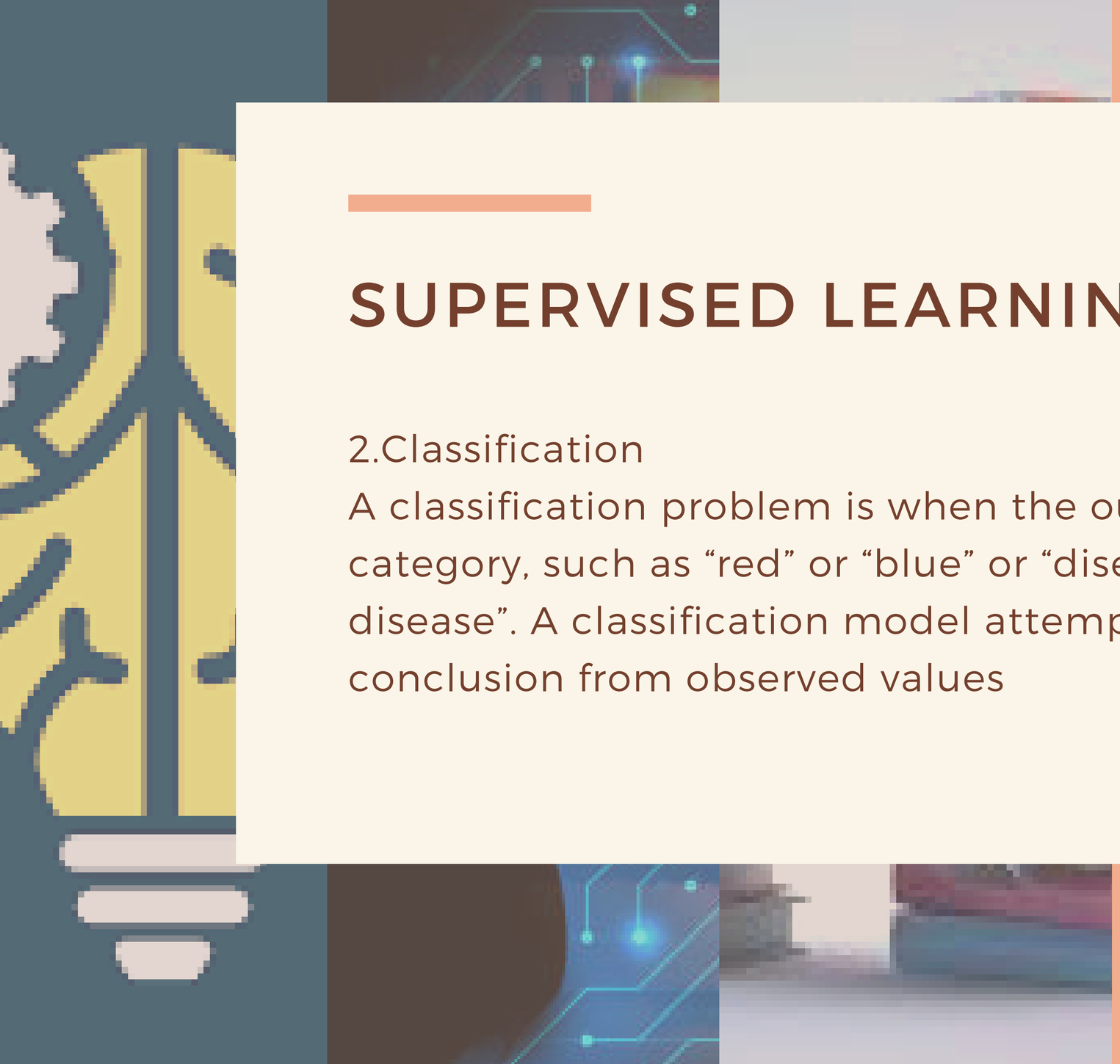
SUPERVISED LEARNING

1.Regression
A regression problem is when the output variable is a real or continuous value, such as “salary” or “weight”.

Predicting age of a person
Predicting whether stock price of a company will increase tomorrow
Predicting whether a document is related to sighting of UFOs

REGRESSION


Regression Models
1 feature
2+ features
Simple
Multiple
Linear
Non-Linear
Linear
Non-Linear



SUPERVISED LEARNING

2.Classification

A classification problem is when the output variable is a category, such as “red” or “blue” or “disease” and “no disease”. A classification model attempts to draw some conclusion from observed values

CLASSIFICATION

For example, when filtering emails “spam” or “not spam”, when looking at transaction data, “fraudulent”, or “authorized”. In short Classification either predicts categorical class labels or classifies data (construct a model) based on the training set and the values (class labels) in classifying attributes and uses it in classifying new data.

UN SUPERVISED LEARNING

In un supervised learning problems, we start with a data set containing training examples with out associated correct labels.

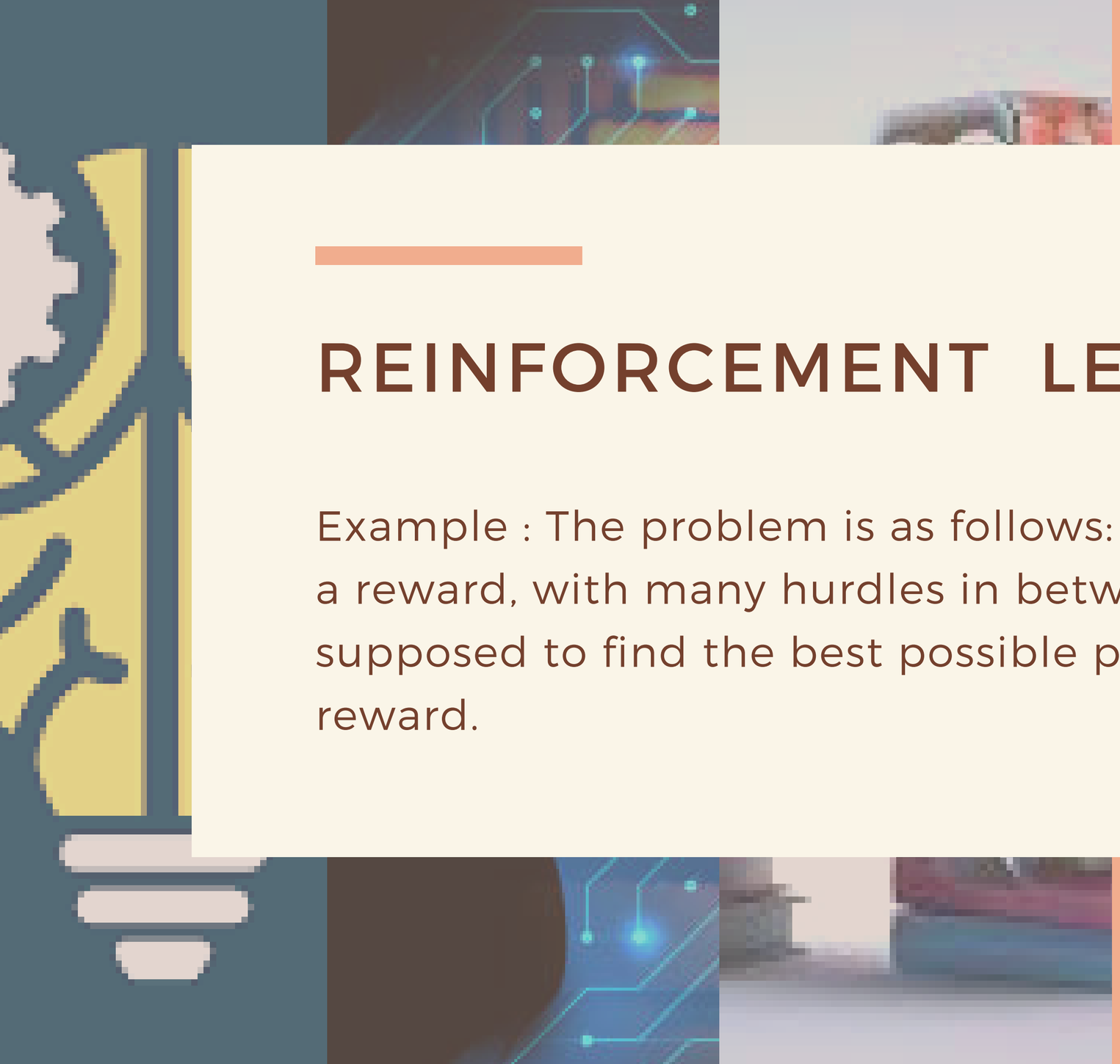
UN SUPERVISED LEARNING

1.Clustering: A clustering problem is where you want to discover the inherent groupings in the data, such as grouping customers by purchasing behavior.

2.Association: An association rule learning problem is where you want to discover rules that describe large portions of your data, such as people that buy X also tend to buy Y.

REINFORCEMENT LEARNING

Reinforcement is about taking suitable action to maximize reward in a particular situation. It is employed by various software and machines to find the best possible behavior or path it should take in a specific situation.



REINFORCEMENT LEARNING

Example : The problem is as follows: We have an agent and a reward, with many hurdles in between. The agent is supposed to find the best possible path to reach the reward.

ALGORITHM PREDICTION

HOUSE PRICE PROBLEM

predicting price of house based on its features like no of rooms frontage accessibility et.

SPAM FILTER IN TRUE CALLER

Filtering out and blocking calls based on user input.

PRODUCT RECOMMENDATION

Given a purchase history for a customer and a large inventory of products, identify those products in which that customer will be interested and likely to purchase.

ALGORITHM PREDICTION

MEDICAL DIAGNOSIS

Given the symptoms exhibited in a patient and a database of anonymized patient records, predict whether the patient is likely to have an illness.

STOCK TRADING

Given the current and past price movements for a stock, determine whether the stock should be bought, held or sold.

FACE DETECTION

Given a digital photo album of many hundreds of digital photographs, identify those photos that include a given person.

next hands on section :

PYTHON CRASH COURSE