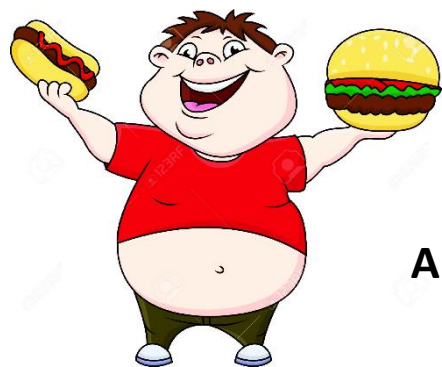


MACHINE LEARNING

LETS TEACH MACHINE HOW TO LEARN FROM DATA

AMIT MISHRA

Corporate Trainer & Consultant
Data Analyst – ML & AI
Blockchain Developer
Big Data Analytics Expert



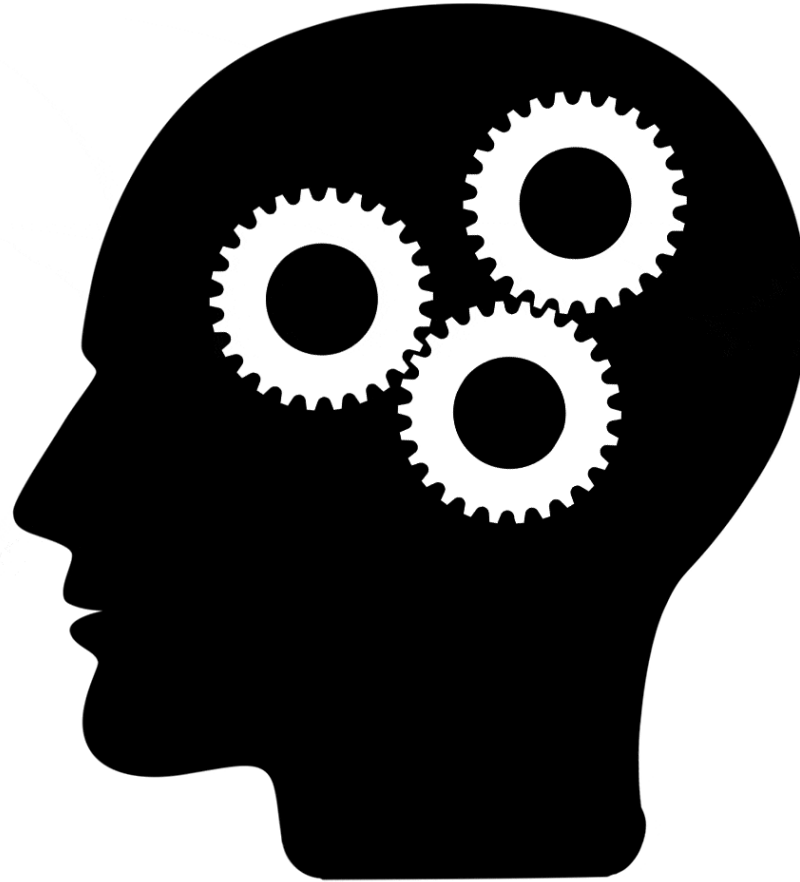
A Foody





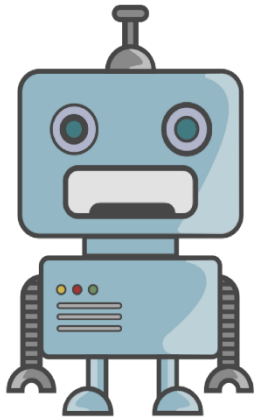
LOGIC

INPUT



OUTPUT

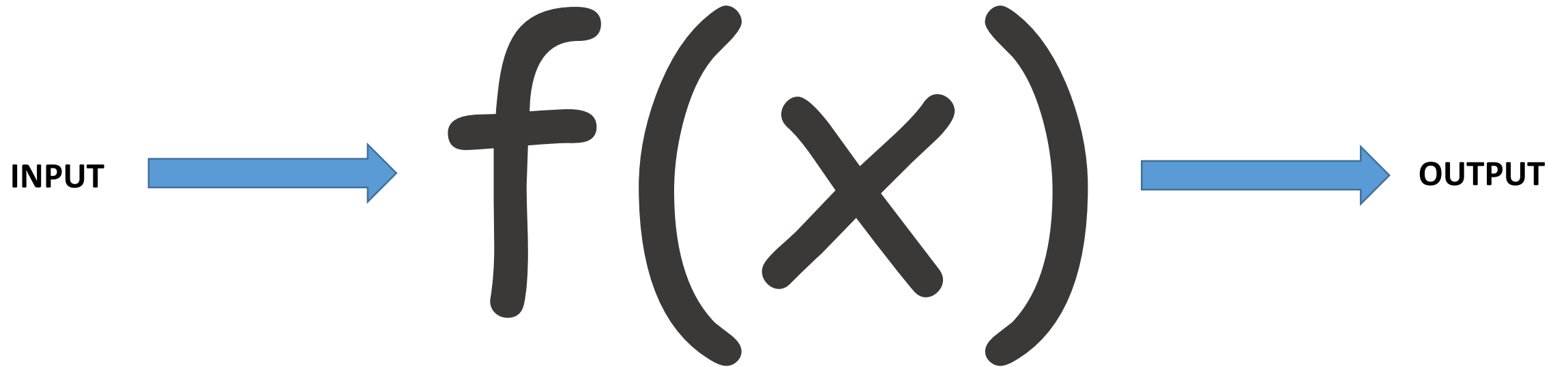
A TRAINED BRAIN



A Naive Machine



To minimize the difference
between predicted output &
actual output



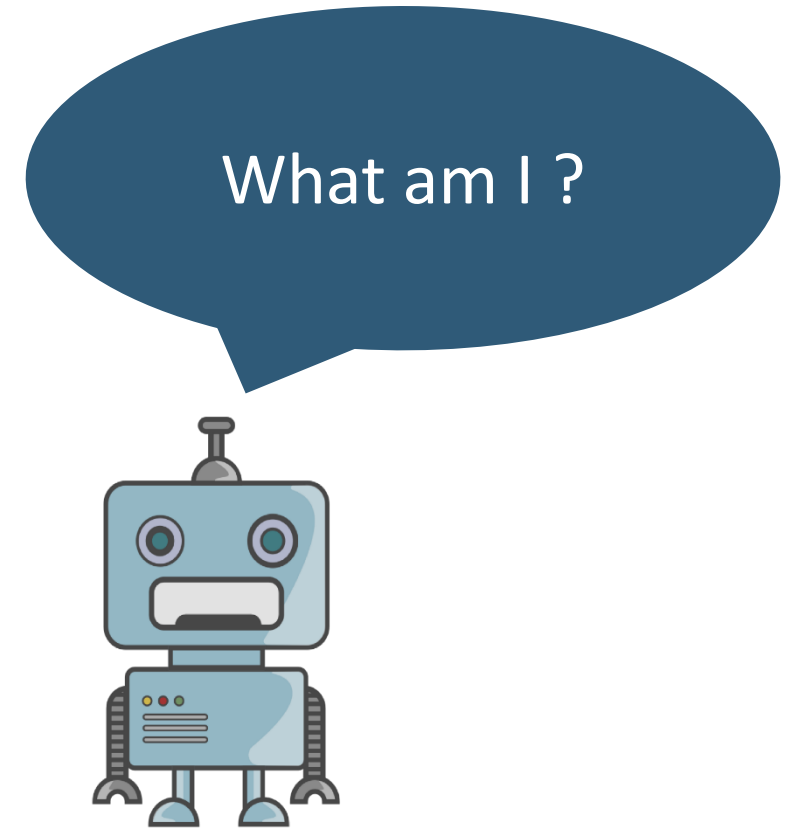
*What is $f(x)$ –
A Trained Statistical Function*

To minimize the difference
between predicted output &
actual output



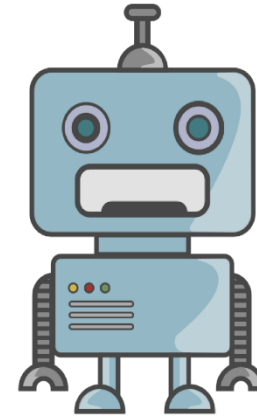
A Chosen Statistical Function

WHAT IS ARTIFICIAL INTELLIGENCE ?

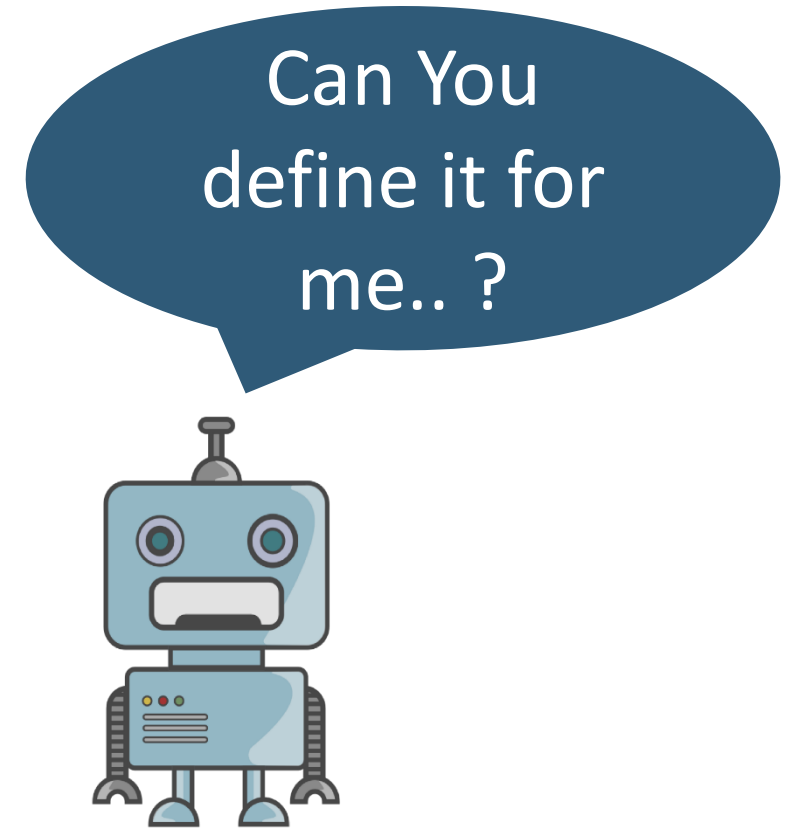


WHAT IS ARTIFICIAL INTELLIGENCE ?

You are an
example of A.I. ?

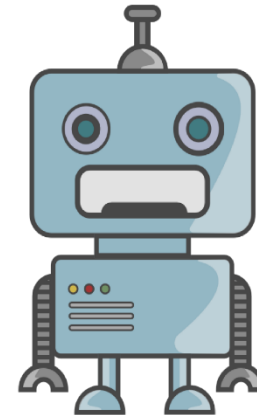


WHAT IS ARTIFICIAL INTELLIGENCE ?



WHAT IS ARTIFICIAL INTELLIGENCE ?

Yes of course.. Artificial Intelligence is a branch of computer science dedicated to creating intelligent machines that work and react like a human brain.

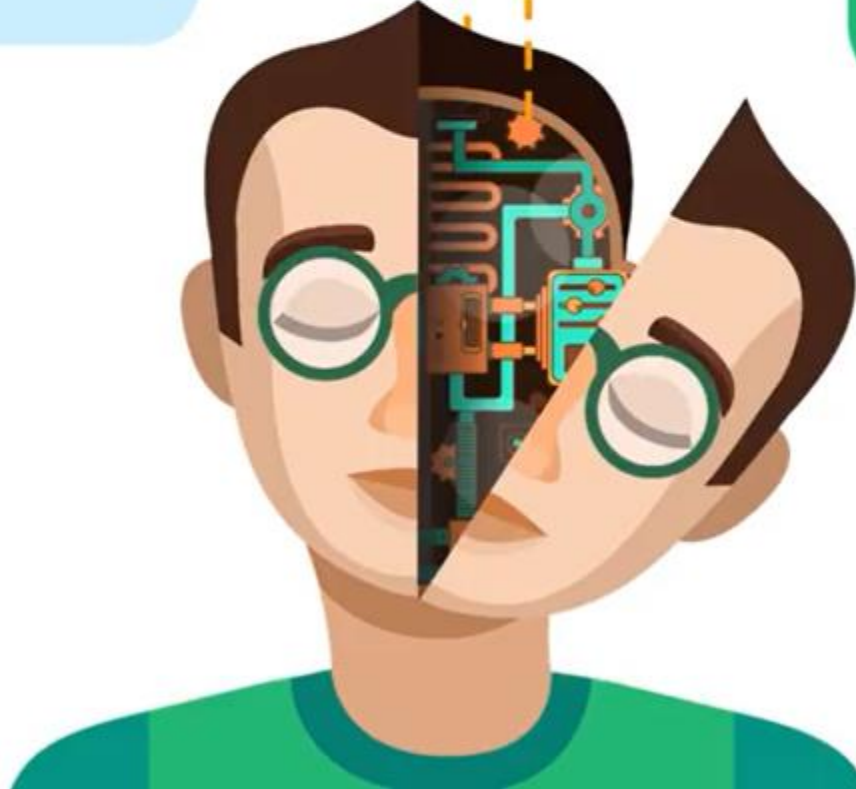


DEEP LEARNING

DEEP LEARNING PROVIDES ARTIFICIAL INTELLIGENCE THE ABILITY TO MIMIC A HUMAN BRAIN'S NEURAL NETWORK. IT CAN MAKE SENSE OF PATTERNS, NOISE AND SOURCES OF CONFUSION IN THE DATA

MACHINE LEARNING

MACHINE LEARNING PROVIDES ARTIFICIAL INTELLIGENCE WITH THE ABILITY TO 'LEARN'. THIS IS ACHIEVED BY USING ALGORITHMS THAT DISCOVER PATTERNS AND GENERATE INSIGHTS FROM THE DATA THEY ARE EXPOSED TO



In other words **Artificial Intelligence** defined as ...

The theory and development of Computer systems able to perform tasks that normally require human intelligence.

Machine Learning

A field of computer science that uses statistical techniques to give computer systems the ability to “learn” (e.g. progressively improve performance on a specific task) with data, without being explicitly programmed.

Deep Learning

Deep Structured Learning or Hierarchical Learning is a part of a broader family of machine learning methods based on learning data representations as opposed to task-specific algorithms.

WHY IS AI & ML ARE TRENDING ONLY NOW?

1. More Data
2. Computing Power
- 3. Ready Algorithms Implementations**
 - a. Because of Better Software Development Approach
4. New Technologies
 - a. Cloud Computing
 - b. Big Data

Data Science in PYTHON

1. RAW Data Collection

- a. BeautifulSoup library
- b. Streaming source – Kafka, Flume

2. Data Presentation & Cleanup

- a. Pandas library

3. Data Visualization

- a. Matplotlib and Seaborn library

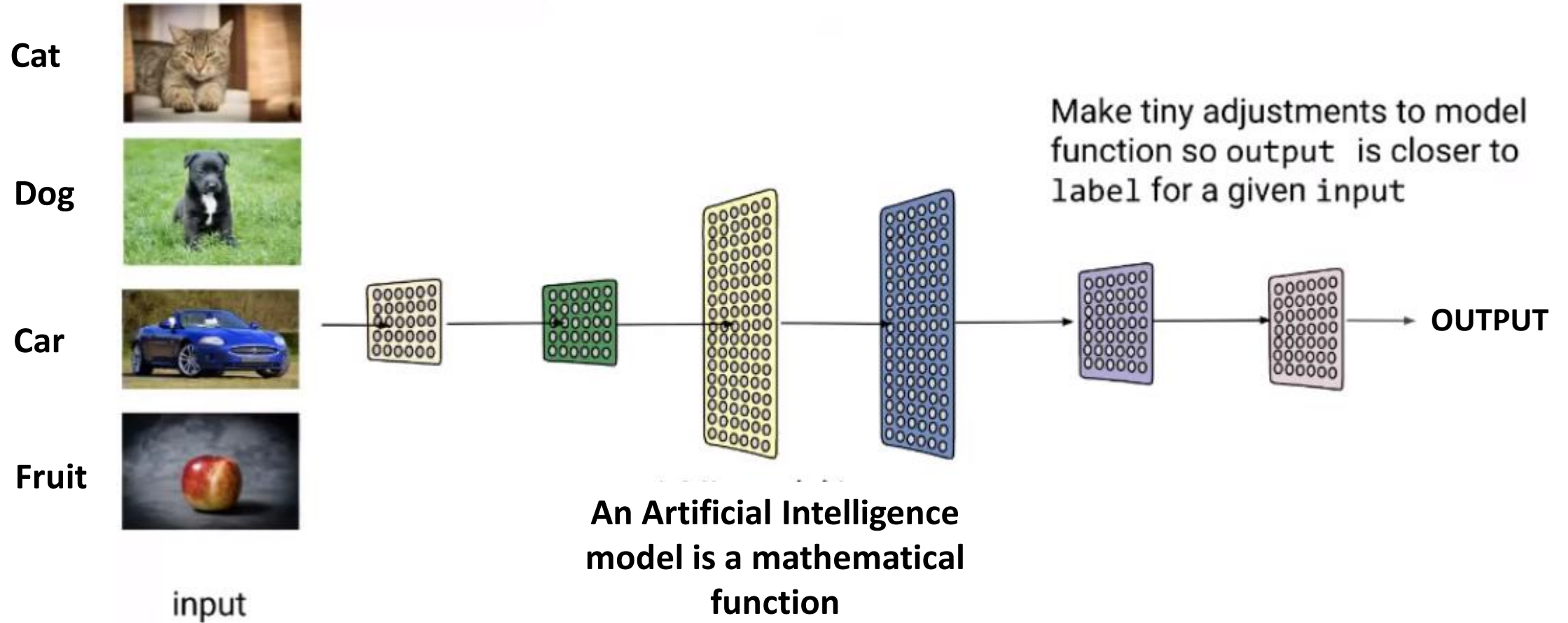
4. ML Modeling

- a. Tensorflow/SkLearn library

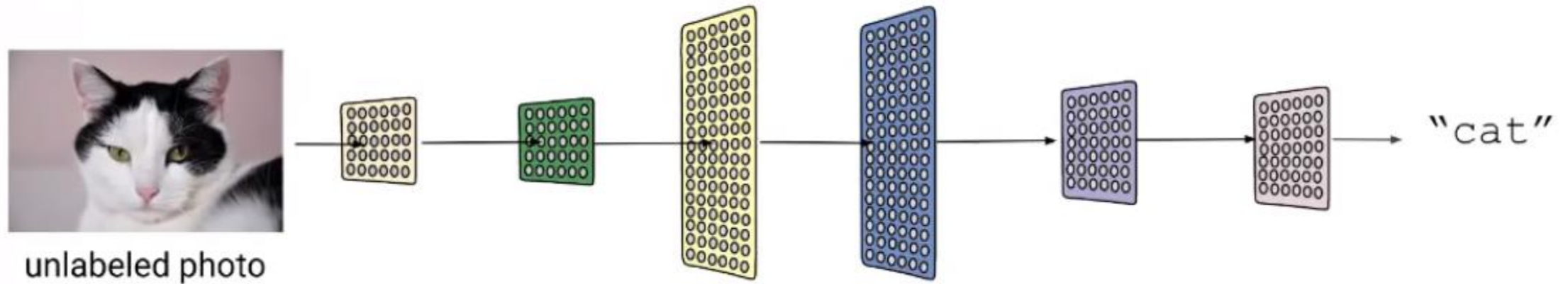
5. Deployment & BI Reports

- a. Tensorflow Serving

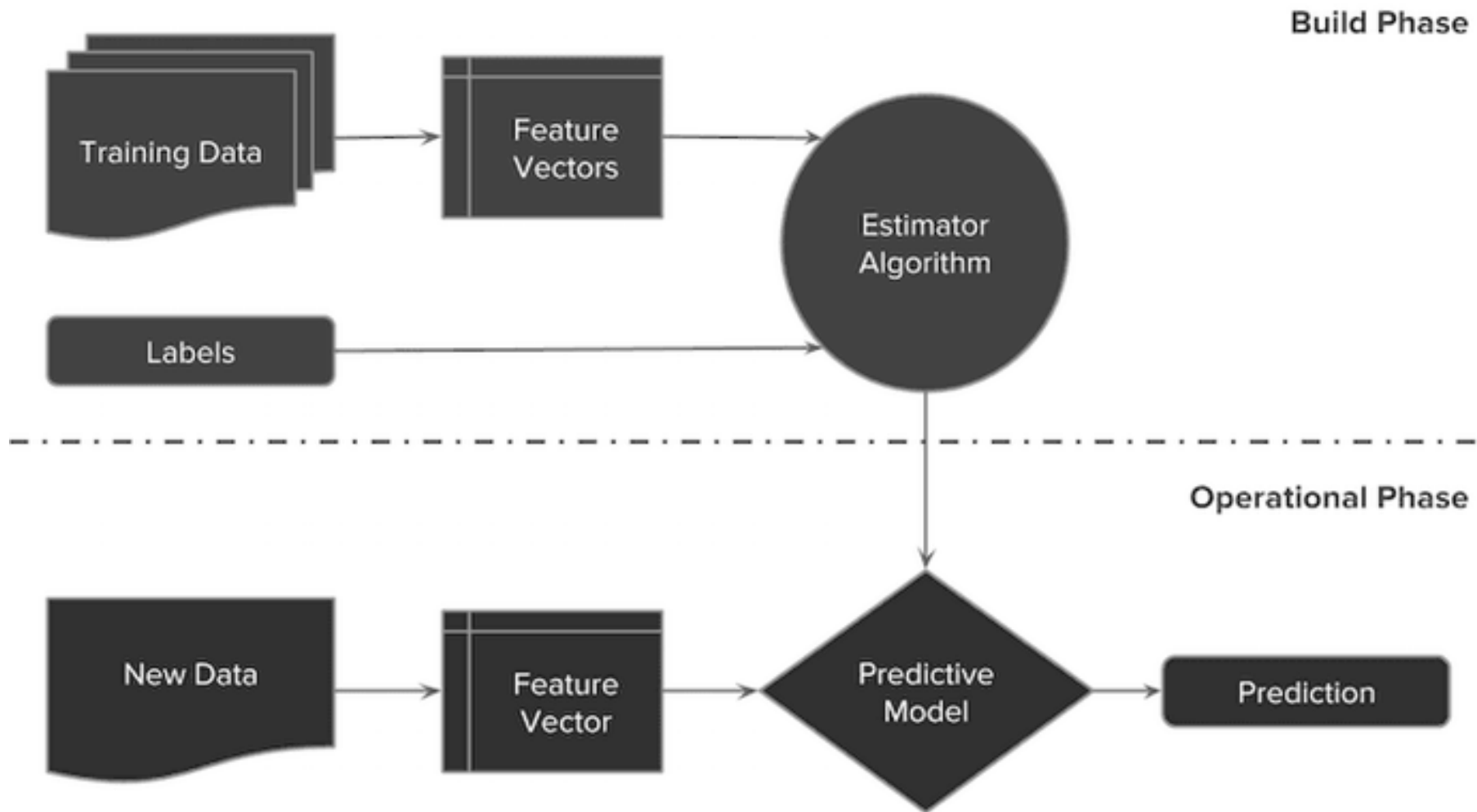
Stage 1. Train A Model with Examples Datasets (Training)



Stage 2. Predict with the Trained Model



Machine Learning Flow



Machine Learning Lifecycle

1

Define ML use cases

Define Specific ML use cases for the Project.

2

Data Exploration

Perform exploratory data analysis to understand the data

3

Select Algorithm

Choose the right ML Algorithm for the Task

4

Data Pipeline & feature engineering
Create the right features from raw data for the ML Task.

5

Build ML Model

Develop the first iteration of the ML Model.

10

Monitor Model

9

Operationalize Model

8

Plan for Deployment

7

Present Results
Present Results of the model in a way that demonstrates its value to stakeholders.

6

Iterate ML Model
Refine the ML Model to improve

USE CASES

AI AND MACHINE LEARNING USE CASES

Ever had conversation with messenger about a product online ...

CHATBOTS

Adding an extra pair of eyes and ears in car repairs
(automobile industry) ...

AUGMENTED REALITY

Fact Checks! Spotting Fake News, Reporting Articles ...

AI IN JOURNALISM

You Healthy! Patient diagnoses and treatment ...

AI IN HEALTHCARE

Hospitality, Hotel Selection, Customer Behavior, Recommendations,
All five stars!! ...

AI IN TOURISM

You're Hired! Skills based job search and resume shortlisting and interview selection ...

AI IN JOB HIRING(HR)

Happy Clients! Service improvising by speech analytics, sentiment analysis, text analytics, NLP ...

AI IN CUSTOMER SERVICE

Solid Investment, Fraud Detection ...

AI IN BANKING

SUPERVISED LEARNING

AI AND MACHINE LEARNING USE CASES

Supervised learning is when input variables (X) called Features and output variable (Y) called label or a class use an algorithm to learn the mapping function from the input to output.

$$Y = f(X)$$

The goal is to approximate the mapping function so well that when you have new input data (X) that you can predict the output variables (Y) for that data.

UNSUPERVISED LEARNING

AI AND MACHINE LEARNING USE CASES

Unsupervised Learning is when only have input data (X) and no corresponding output variables.

The goal for unsupervised learning is to model the underlying structure or distribution in the data in order to learn more about the data.

Algorithms are left to their own devices to discover and present the interesting structure in the data.