WHY LEARN AI

THE ROLE OF AI FOR GENERAL PROFESSIONALS

FROM ALL BACKGROUNDS

BRIEF INTRODUCTION TO AI

ARTIFICIAL INTELLIGENCE, OR AI, IS TECHNOLOGY THAT ENABLES COMPUTERS AND MACHINES TO SIMULATE HUMAN INTELLIGENCE AND PROBLEM-SOLVING CAPABILITIES.

SUCH AS RECOGNIZING SPEECH, MAKING DECISIONS, AND IDENTIFYING PATTERNS. AI IS AN UMBRELLA TERM THAT ENCOMPASSES A WIDE VARIETY OF TECHNOLOGIES, INCLUDING MACHINE LEARNING, DEEP LEARNING, AND NATURAL LANGUAGE PROCESSING (NLP).
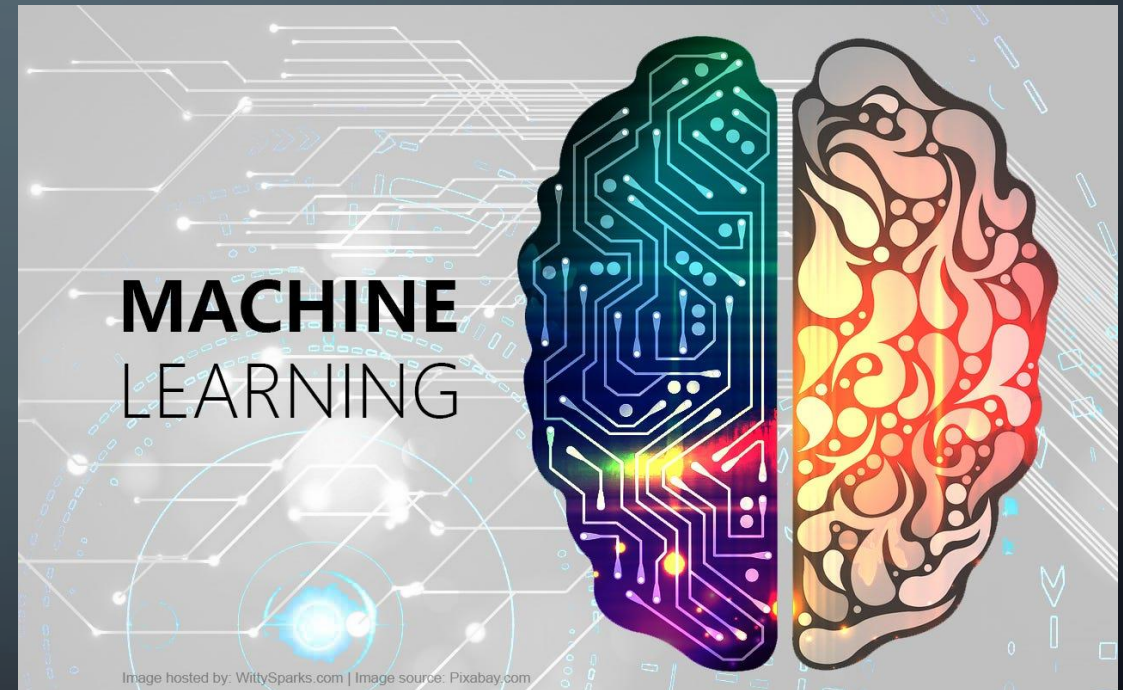
WHAT IS MACHINE LEARNING

MACHINE LEARNING IS A SUBFIELD OF ARTIFICIAL INTELLIGENCE THAT USES ALGORITHMS TRAINED ON DATA SETS TO CREATE MODELS THAT ENABLE MACHINES TO PERFORM TASKS.

SUCH AS CATEGORIZING IMAGES, ANALYZING DATA, OR PREDICTING PRICE.

TYPES OF MACHINE LEARNING

- Supervised Machine Learning

- Unsupervised Machine Learning

- Reinforcement Learning

- Deep Learning

- Neural Network

MACHINE LEARNING

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WHAT IS SUPERVISED LEARNING

SUPERVISED LEARNING IS THE TYPE OF MACHINE LEARNING IN WHICH MACHINES ARE TRAINED USING WELL "LABELLED" TRAINING DATA, AND ON BASIS OF THAT DATA, MACHINES PREDICT THE OUTPUT.

THE "LABELLED" DATA MEANS SOME INPUT DATA IS ALREADY TAGGED WITH THE CORRECT OUTPUT.

IN SUPERVISED LEARNING, MODELS ARE TRAINED USING LABELLED DATASET, WHERE THE MODEL LEARNS ABOUT EACH TYPE OF DATA. ONCE THE TRAINING PROCESS IS COMPLETED, THE MODEL IS TESTED ON THE BASIS OF TEST DATA (A SUBSET OF THE TRAINING SET), AND THEN IT PREDICTS THE OUTPUT.
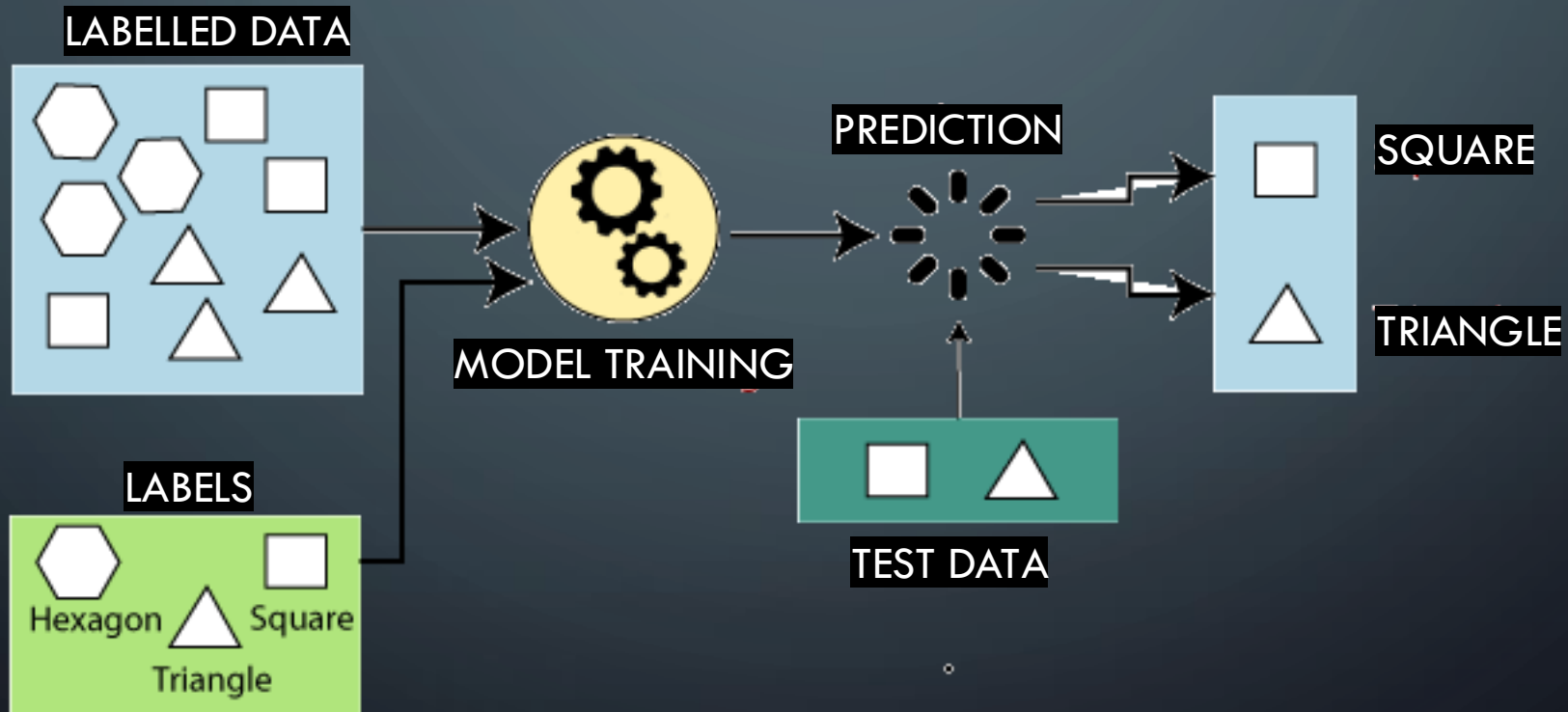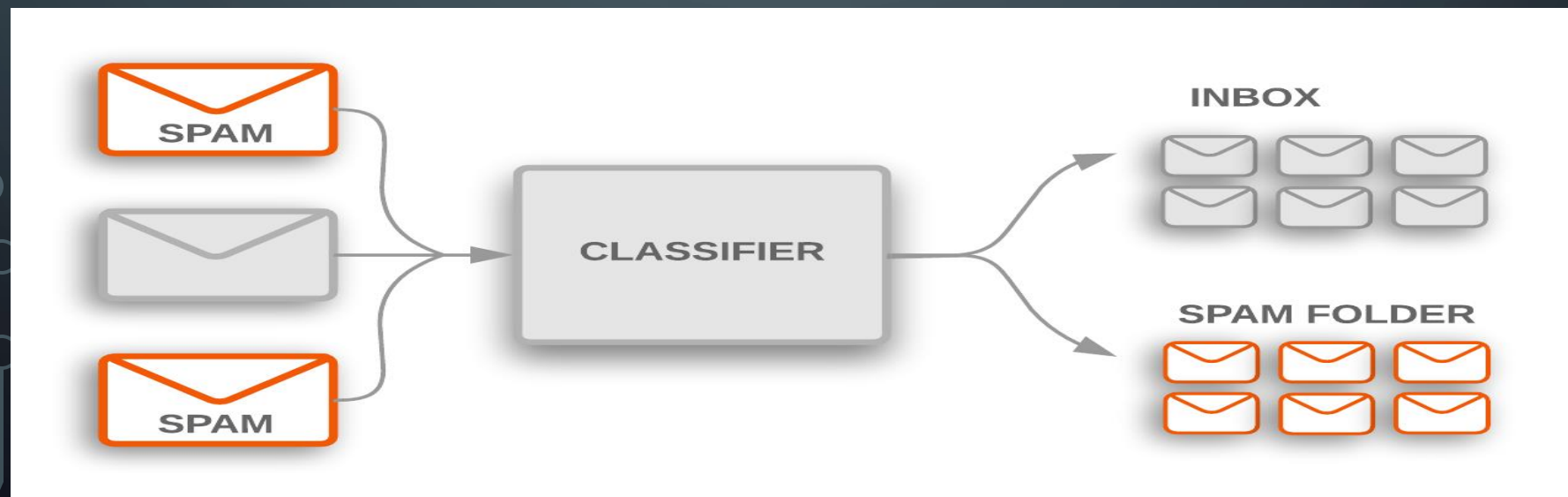
TYPES OF SUPERVISED LEARNING

REGRESSION – A REGRESSION MODEL PREDICTS CONTINUOUS VALUES.

CLASSIFICATION – A CLASSIFICATION MODEL PREDICTS DISCRETE VALUES.

| housingMedianAge	totalRooms	totalBedrooms	medianHouseValue
15	5	3	66900
19	6	4	80100
17	10	5	85700

WHAT IS UNSUPERVISED LEARNING

UNSUPERVISED LEARNING IS A TYPE OF MACHINE LEARNING IN WHICH MODELS ARE TRAINED USING UNLABELED DATASET AND ARE ALLOWED TO ACT ON THAT DATA.

THE "UNLABELED" DATA MEANS NO INPUT DATA IS TAGGED.

IN UNSUPERVISED LEARNING, IT FINDS OUT THE HIDDEN PATTERNS FROM THE DATA AND THEN APPLY SUITABLE ALGORITHM TO IT.
ONCE IT APPLIES THE SUITABLE ALGORITHM, THE ALGORITHM DIVIDES THE DATA OBJECTS INTO GROUPS ACCORDING TO THE SIMILARITIES AND DIFFERENCE BETWEEN THE OBJECTS.
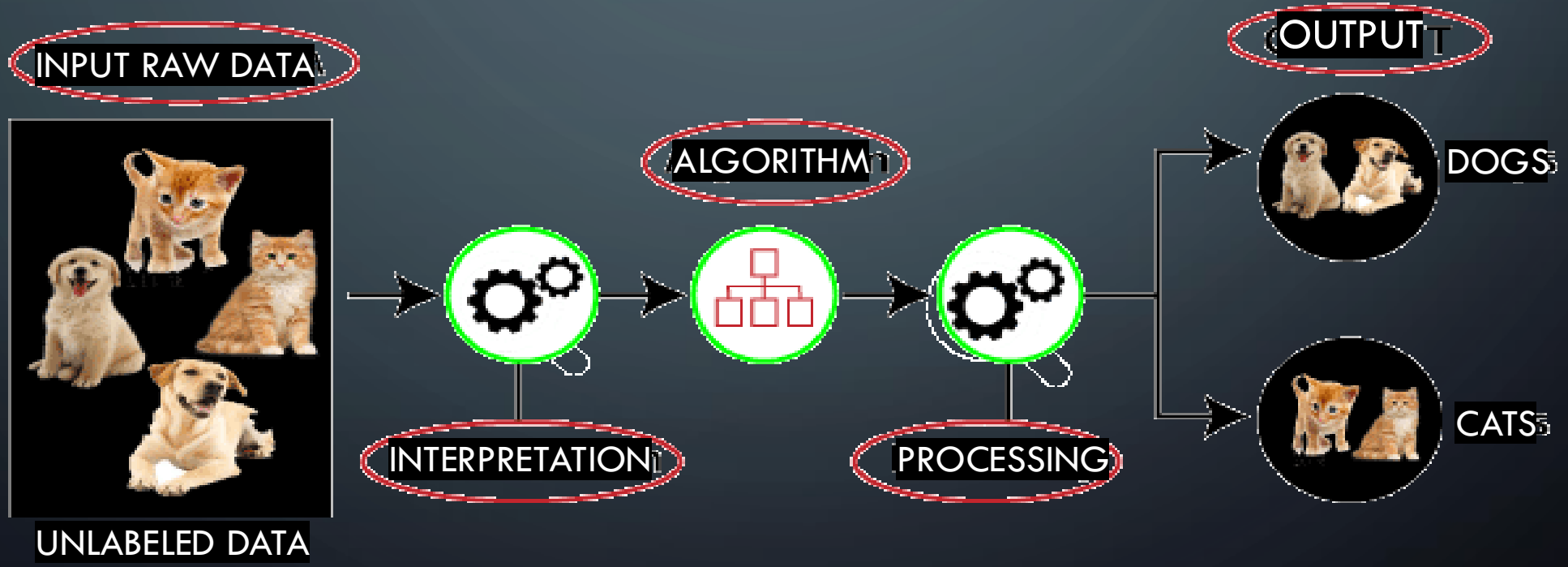
TYPES OF UNSUPERVISED LEARNING

CLUSTERING – CLUSTERING IS A METHOD OF GROUPING THE OBJECTS INTO CLUSTERS SUCH THAT OBJECTS WITH MOST SIMILARITIES REMAINS INTO A GROUP AND HAS LESS OR NO SIMILARITIES WITH THE OBJECTS OF ANOTHER GROUP.

ASSOCIATION – AN ASSOCIATION RULE IS AN UNSUPERVISED LEARNING METHOD WHICH IS USED FOR FINDING THE RELATIONSHIPS BETWEEN VARIABLES IN THE LARGE DATABASE. IT DETERMINES THE SET OF ITEMS THAT OCCURS TOGETHER IN THE DATASET.
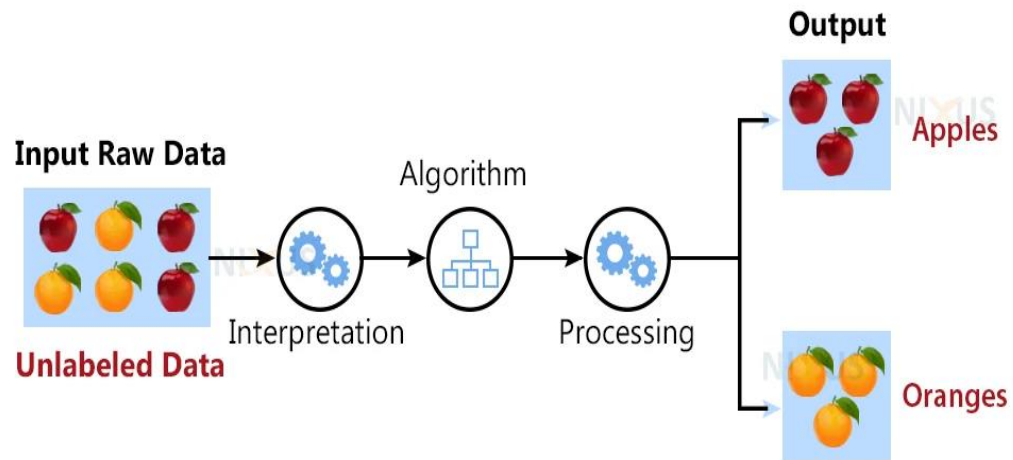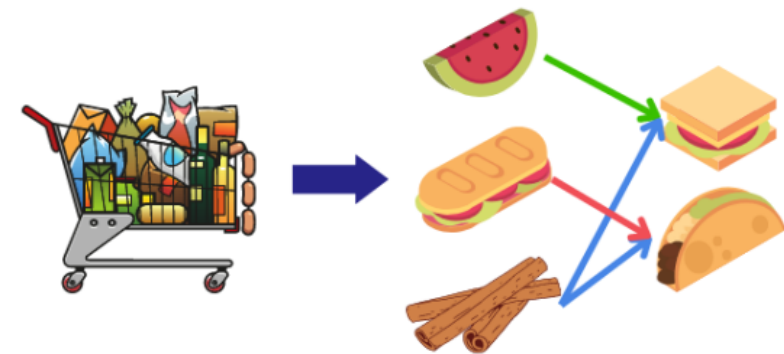
WHAT IS REINFORCEMENT LEARNING

REINFORCEMENT LEARNING (RL) IS A TYPE OF MACHINE LEARNING WHERE AN AGENT LEARNS TO MAKE DECISIONS BY PERFORMING ACTIONS IN AN ENVIRONMENT TO ACHIEVE SOME REWARD.

REINFORCEMENT LEARNING INVOLVES LEARNING FROM THE CONSEQUENCES OF ACTIONS, ESSENTIALLY LEARNING BY TRIAL AND ERROR.

WHAT IS DEEP LEARNING

DEEP LEARNING IS A SUBSET OF MACHINE LEARNING THAT USES NEURAL NETWORKS WITH MANY LAYERS (HENCE "DEEP") TO MODEL AND UNDERSTAND COMPLEX PATTERNS AND REPRESENTATIONS IN DATA.

IT IS PARTICULARLY EFFECTIVE FOR TASKS INVOLVING LARGE AMOUNTS OF DATA, SUCH AS IMAGES, AUDIO, AND TEXTS.
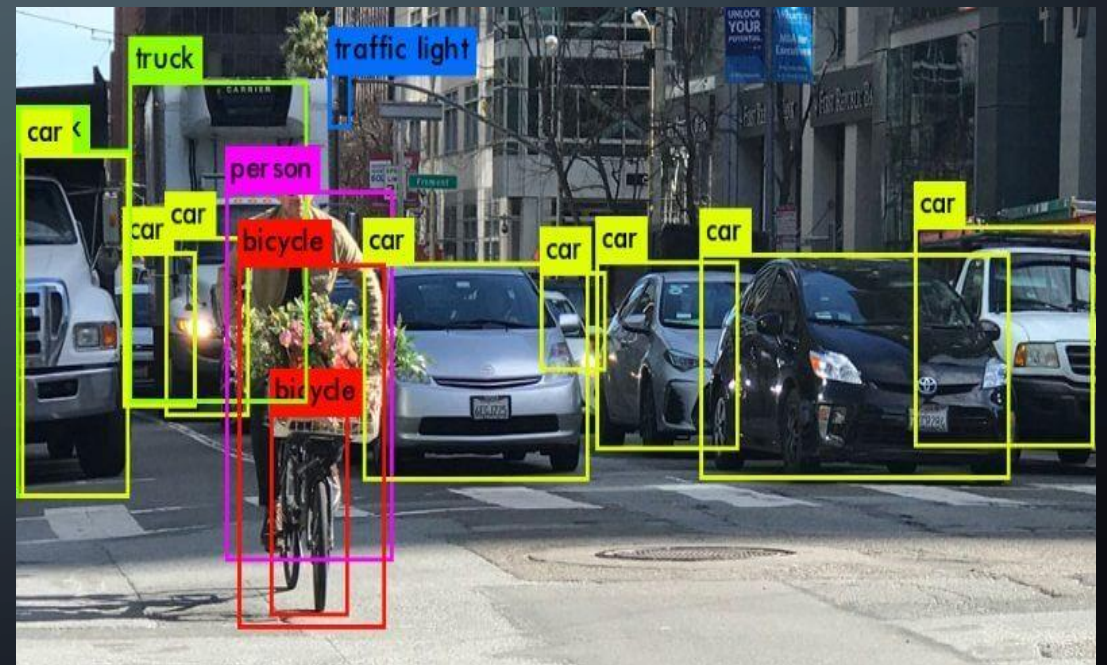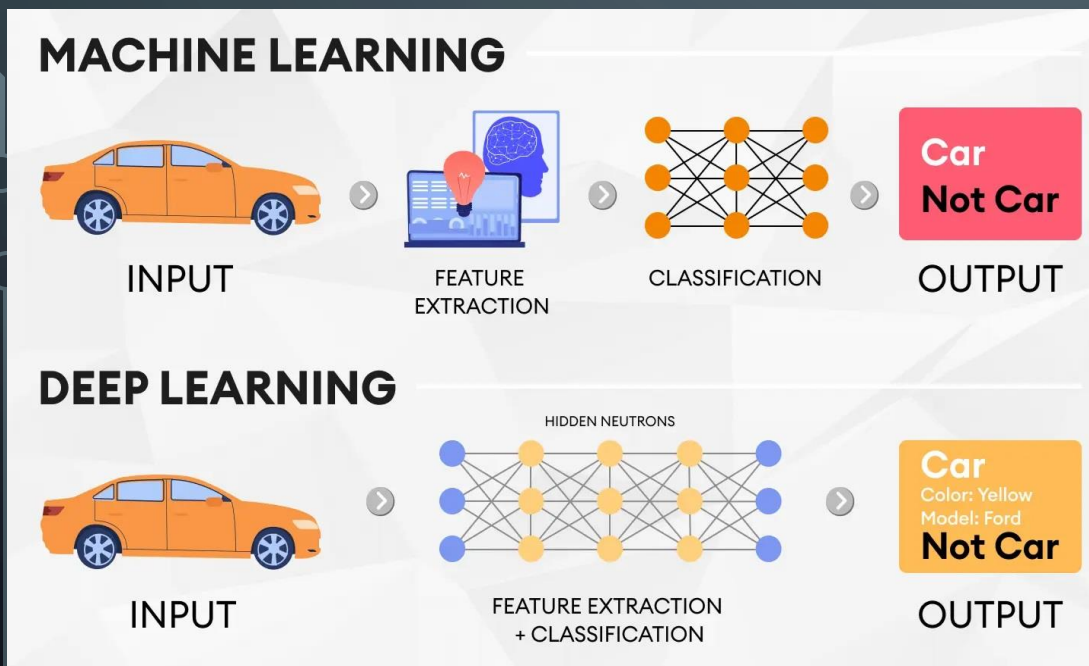
TOOLS USED IN AI

- Python

- Numpy

- Pandas

- TensorFlow

- Scikit-learn

- Keras

MARKET ANALYSIS OF AI

Artificial Intelligence (AI) is rapidly transforming industries worldwide, and India is no exception. The AI market in India is projected to reach $8 billion by 2025, growing at a CAGR of over 40% from 2023 to 2030.

There is a shortage of skilled AI professionals in India, emphasizing the need for training and upskilling initiatives by Indian IT associations and educational institutions. Currently, there are approximately 1,50,000 AI-related job openings in India. However, the current available talent pool equipped with AI skills might be around 50,000 professionals. This illustrates a considerable gap between job demand and skill availability in the AI sector. To bridge this gap, initiatives focusing on upskilling, reskilling, and promoting AI education are crucial to meet the growing demand for skilled AI professionals in India.

OPPORTUNITIES IN AI

1. **Agriculture**: Precision farming and crop monitoring powered by AI have the potential to enhance agricultural productivity in India. Partnerships between U.S. agritech companies and local tech companies servicing Indian farmers can drive the adoption of AI-driven solutions in agriculture.

2. **Finance**: AI-powered solutions for fraud detection, risk assessment, and customer service automation are in high demand in the financial sector. U.S. fintech companies can leverage partnerships with Indian banks and financial institutions to deploy AI-driven solutions.

3. **Healthcare**: AI presents opportunities for predictive diagnostics, personalized treatment plans, and drug discovery in the healthcare sector. Indian information technology (IT) associations like NASSCOM are actively promoting AI-driven healthcare solutions, creating opportunities for collaboration between U.S. and Indian companies.

4. **Retail**: AI-driven technologies such as recommendation engines and chatbots are transforming the retail sector in India. Collaborations between U.S. retail giants and Indian retailers can lead to the development of innovative AI-powered solutions for personalized shopping experiences.

5. **Manufacturing**: AI-powered predictive maintenance and quality control are revolutionizing the manufacturing sector in India. U.S. manufacturing companies can collaborate with Indian counterparts to implement AI-driven solutions and improve operational efficiency.

IN-DEMAND JOB ROLES IN AI

- AI Research Scientist

- Machine Learning Engineer

- Data Scientist

- Computer Vision Engineer

- Natural Language Processing (NLP) Expert

SKILLS THAT WILL HELP YOU GET YOUR FIRST JOB IN AI

- Deep Learning

- Data Analytics

- Cloud Computing

- Natural Language Processing (NLP)

- Machine Learning

- Robotics

- Computer Vision

- Neural Networks

- Predictive Analytics

- Reinforcement Learning

HOW TO START LEARNING AI

- Basic prerequisites (e.g., understanding of programming, mathematics)

- Recommended programming languages (e.g., Python, R)

- Overview of essential concepts (e.g., data structures, algorithms, statistics)

THANK YOU

Thank you for attending the presentation