WELCOME AND INTRODUCTION

Welcome to our AI Program Teaser sponsored by Christ International Community Church, where we love God and people and transform to serve!

We are thrilled to have you join us as we embark on a journey to explore and master the fascinating world of Artificial Intelligence (AI). In this program, we will delve into the core concepts, methodologies, and applications that drive the transformative power of AI in today's world.

Whether you're a tech enthusiast looking to deepen your understanding or a newcomer eager to learn, this program offers valuable insights and practical techniques to apply immediately. From understanding the basics of AI and Machine Learning to engaging in hands-on activities and ethical discussions, we aim to equip you with the knowledge and skills to navigate the AI landscape confidently.

Get ready to collaborate, innovate, and discover as we explore the dynamic world of AI together. Let's unlock the potential of AI technologies and empower ourselves to harness their capabilities for good.

Once again, welcome aboard, and let's make this AI program an enriching and transformative experience for all!

MEET YOUR AI COACH

Thomas Torku is an AI data science expert with over 7 years of combined experience in both industry and academia. He has tutored over 150 students in data science BootCamps, many of whom have gained full employment and admission to study for masters or PhD degrees in data science.

Thomas holds a Ph.D. in computational and data science and has several cited publications. He has successfully mentored students to win Data Hackathons, showcasing his expertise and dedication to fostering talent in the field.

Thomas is passionate about youth empowerment and serving God through discipleship. Outside of work, he enjoys mentoring, spending time with his family, and meeting new friends. His passion for AI and data science, coupled with his commitment to student success and community service, makes him a valuable asset to the community.

OUR EXPECTATION

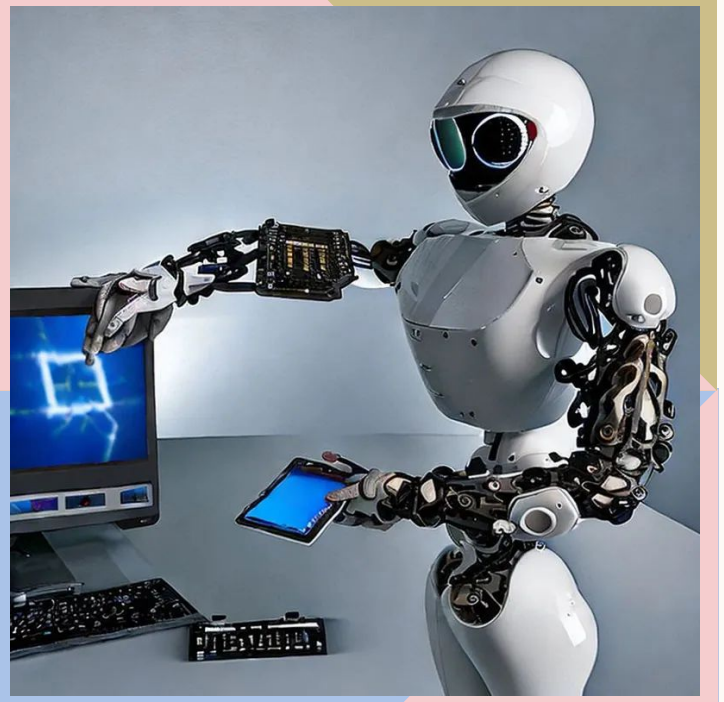
At the end of this workshop, we should be able to know the following:

- Understand the history, significance, and real-world applications of AI.
- Engage in interactive Q&A sessions to clarify foundational AI concepts.
- Learn key Machine Learning concepts and different types of ML.
- Observe simple examples and demonstrations of ML principles.
- Participate in guided activities to create and test ML models using simple tools.
- Discuss AI's integration into daily activities and analyze case studies.
- Explore ethical implications of AI, including bias, privacy, and the future of work.
- Introduce basic coding for AI using tools like Scratch or Python.
- Compete in a fun AI-related challenge or quiz to solve AI problems and answer questions.
- Recap the day’s activities, receive information about the upcoming 3-day AI program, and provide feedback.

Icebreaker

Kahoot

WHAT IS AI?



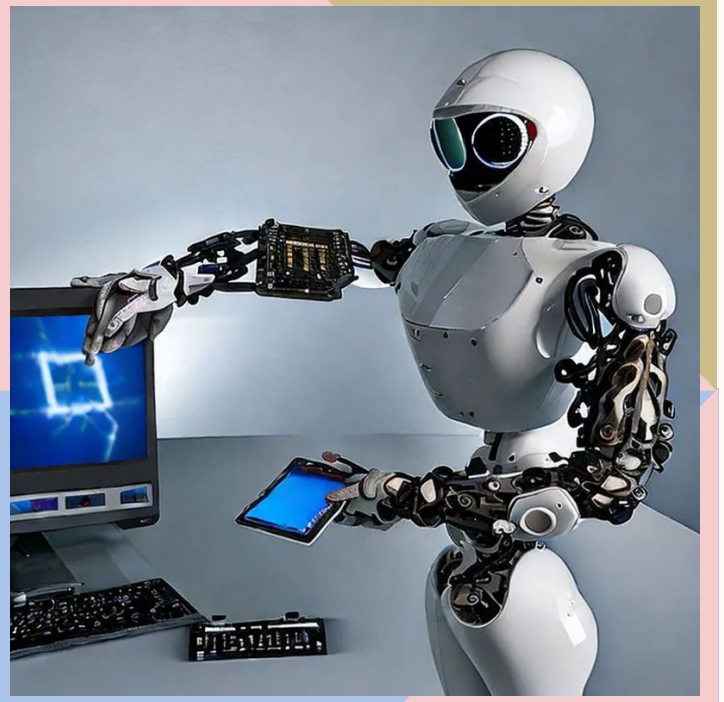
In a layman's language, **Artificial Intelligence (AI)** is the ability for a computer to **think and learn.**

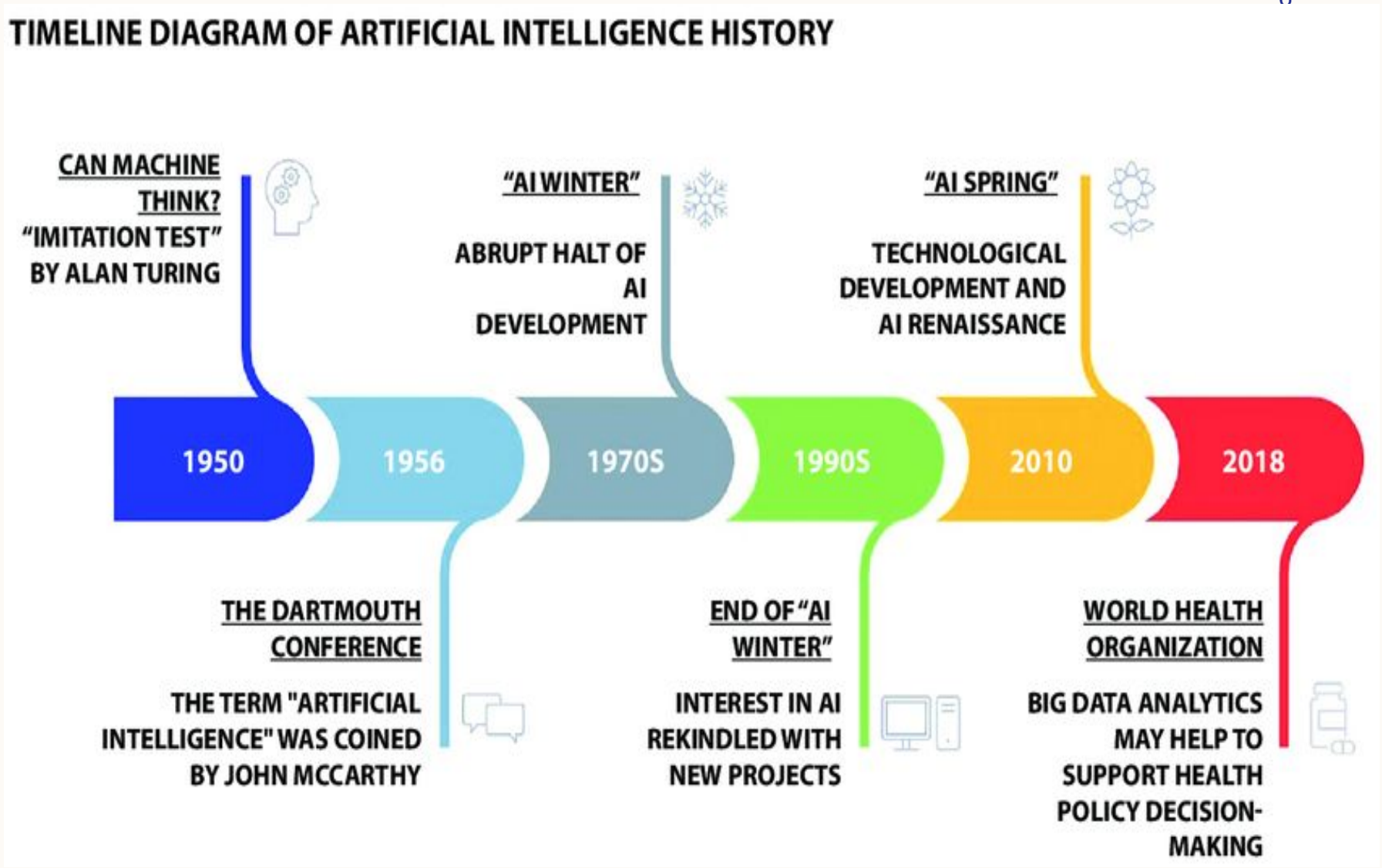
AI is a branch of computer science that focuses on creating systems capable of performing tasks that normally require human intelligence.

These tasks include learning from experience, **recognizing patterns**, **understanding natural language, and making decisions.**

Essentially, **AI is about making computers "smart"** so they can help us with various tasks, just like a human would, but often faster and more efficiently.

THE HISTORY OF AI



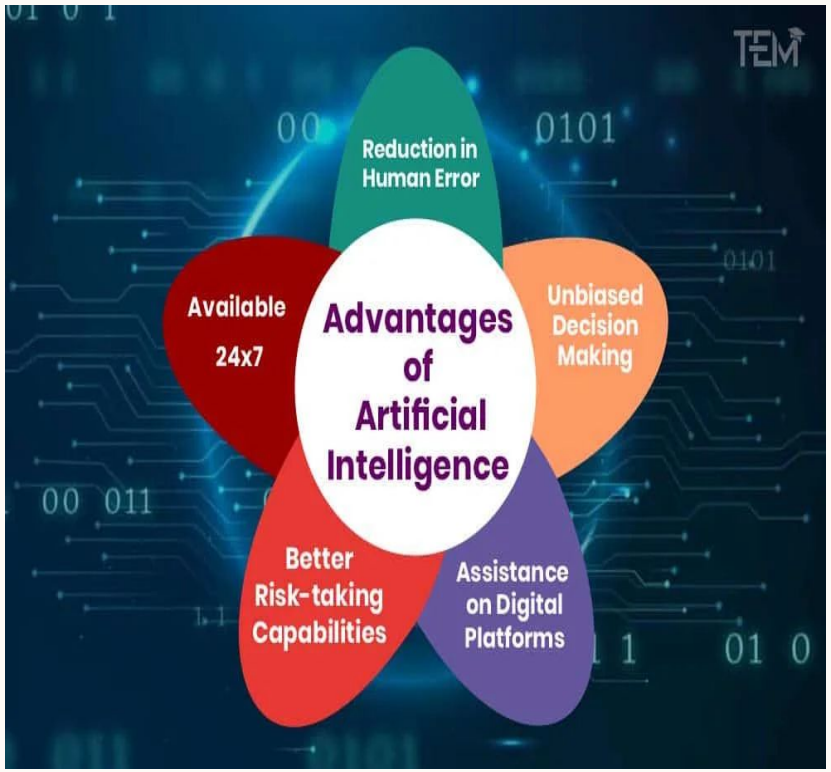


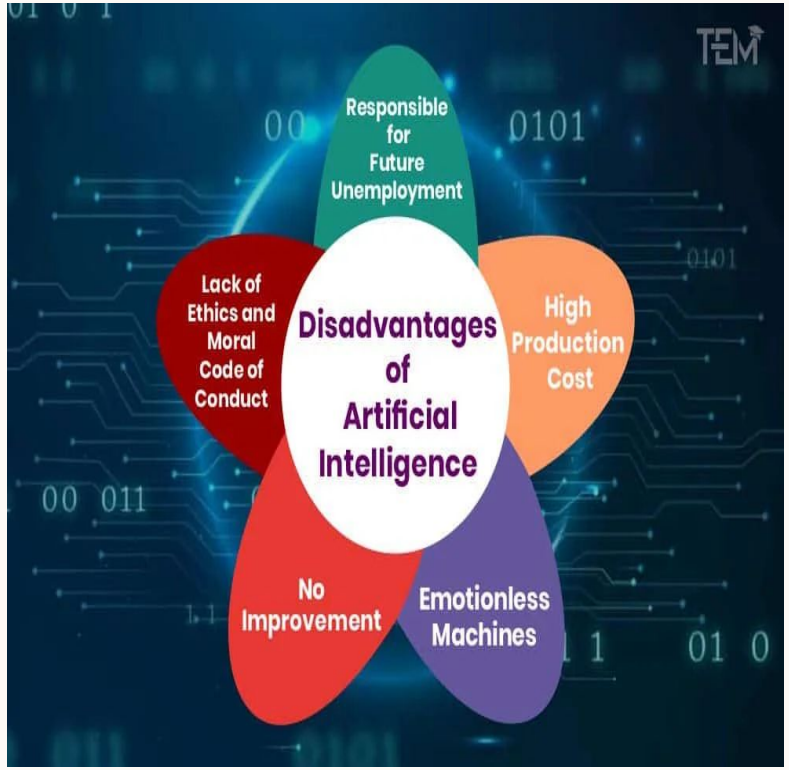
source: https://www.researchgate.net/figure/Timeline-diagram-showing-the-history-of-artificial-intelligence_fig1_364826401

SIGNIFICANCE OF AI

The significance of AI can not be overemphasised:

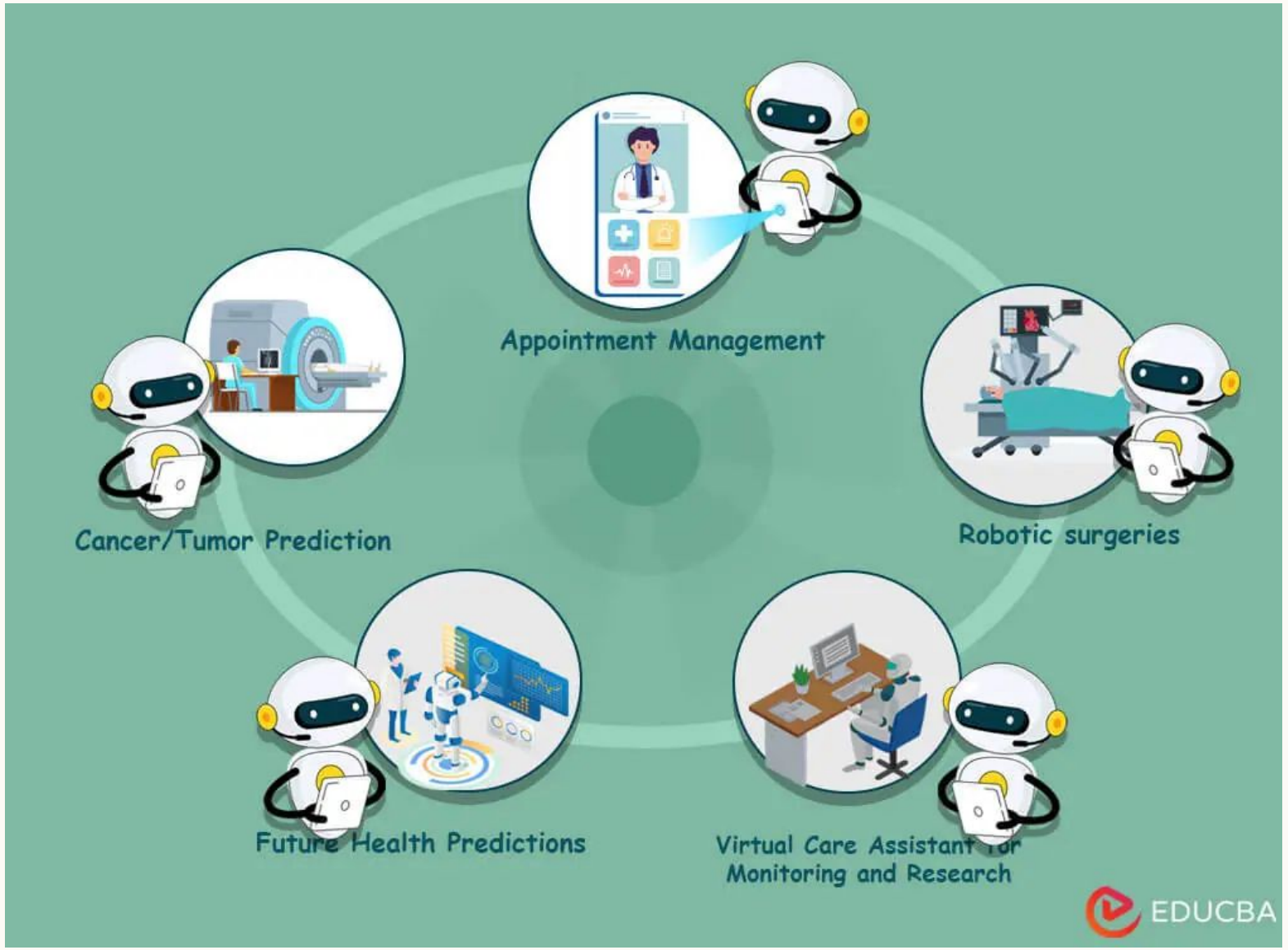
"Those who **do not know how** to use AI will end up replaced by **those who know how to use AI**"





source: https://www.theeducationmagazine.com/advantages-and-disadvantages-of-artificial-intelligence/

APPLICATIONS OF AI: MEDICAL SCIENCES



source: https://www.educba.com/importance-of-artificial-intelligence/

APPLICATIONS OF AI: AIR TRANSPORT

source: https://www.educba.com/importance-of-artificial-intelligence/

APPLICATIONS OF AI: BANKING & FINANCIAL INSTITUTIONS

source: https://www.educba.com/importance-of-artificial-intelligence/

APPLICATIONS OF AI: GAMING & ENTERTAINMENT

source: https://www.educba.com/importance-of-artificial-intelligence/

“Those who **do not know how** to use AI will end up replaced by **those who know how to use AI**”

15mins

INTRODUCTION TO MACHINE LEARNING (ML)

Machine Learning (ML) is a subset of AI that enables systems to learn from data and improve their performance over time without being explicitly programmed.

Goal: The main goal of ML is to develop algorithms that can find patterns in data, make decisions, and predict outcomes.

Algorithms: Step-by-step procedures used for calculations and problem-solving.

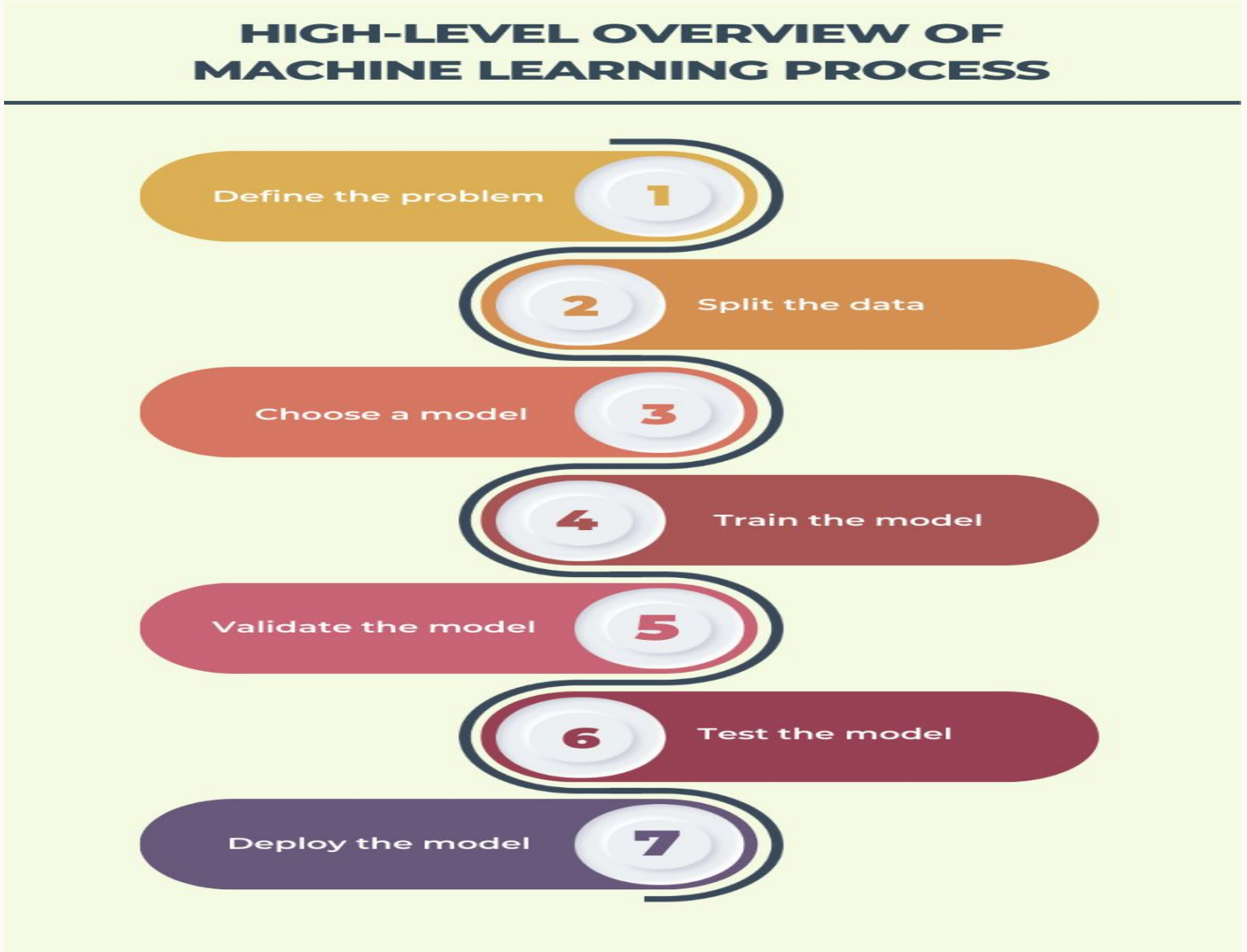
Data: The raw information that algorithms use to learn and make decisions.

Model: A mathematical representation built by algorithms using data to make predictions or decisions.

Training: The process of teaching a model by feeding it data and adjusting it to improve accuracy.

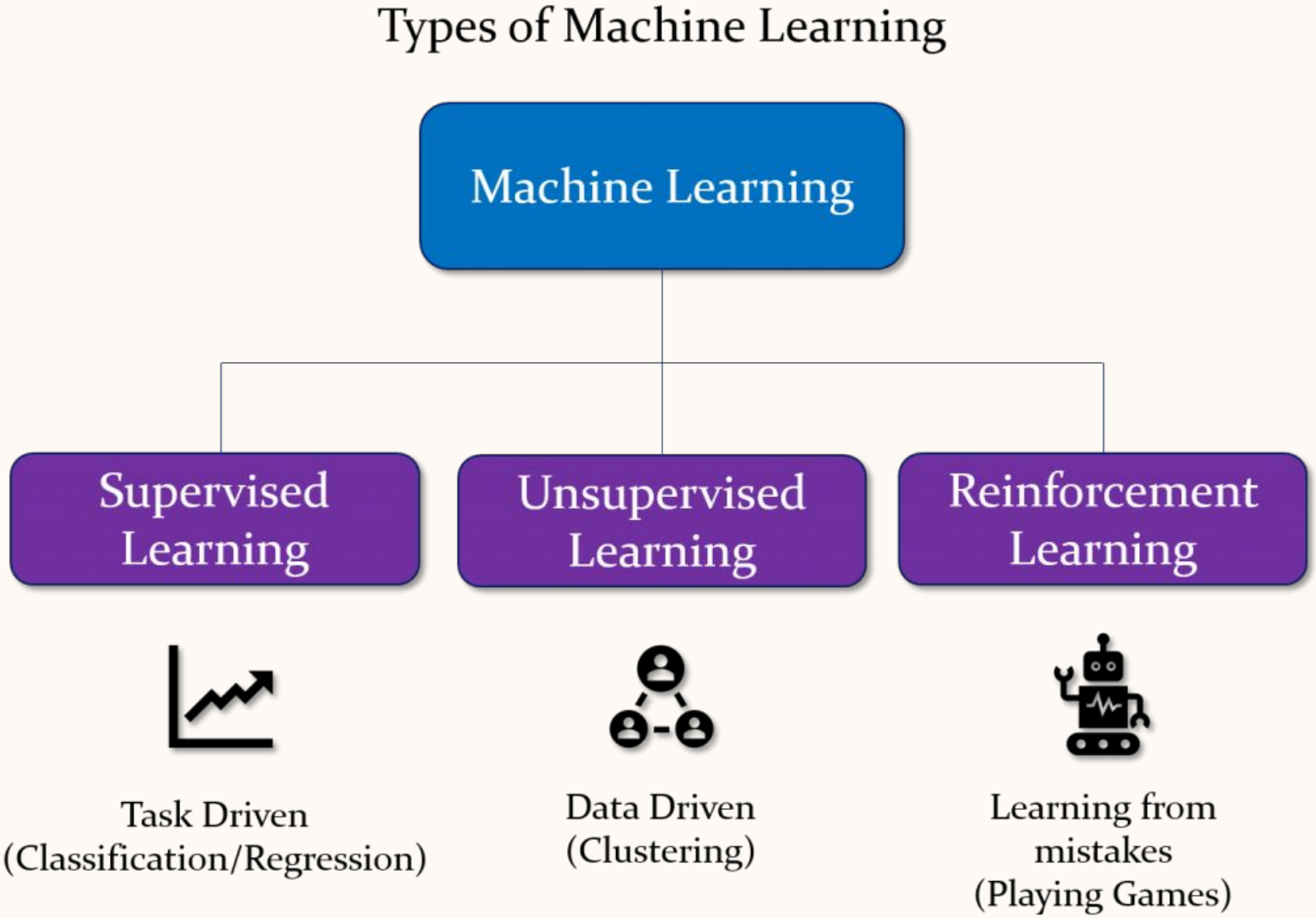
Testing: Evaluating the model's performance on new, unseen data.

FLOWCHART OF ML



source: https://www.linkedin.com/pulse/high-level-overview-machine-learning-process-akshay-gangshettiwar/

TYPES OF ML



source: https://www.newtechdojo.com/3-types-of-machine-learning/

SUPERVISED LEARNING
EXAMPLE: PREDICTING HOUSE PRICE

Factors that affect House price: ***Size, Number of Rooms, Age (how old is the house in years). (for simplicity)***
Target: ***House Price***

Let's consider this data:

Size (sq ft)	Bedrooms	Age (years)	Price ($)
1500	3	10	300000
1700	4	15	350000
2000	3	20	400000
2100	4	25	450000
2500	5	30	500000

For Python Demonstration:
https://colab.research.google.com/drive/1jK1QbRFCMBsaVT7AM2EzX2t3QYRGHns_#scrollTo=aDbKtyY3QK4m

For UI: http://127.0.0.1:5000/predict

SUPERVISED LEARNING
EXAMPLE: PREDICTING DIABETES (YES OR NO)

Factors that affect Diabetes: ***Pregnancies, Glucose, BloodPressure,SkinThickness Insulin, BMIDiabetesPedigreeFunction, Age***

Target: ***Outcome (1-yes or 0-no)***

Let's consider this data:

Preg	Glu	BP	ST	Insulin	BMI	DPF	Age	Outcome
6	148	35	35	0	33.6	0.627	40	1
1	85	66	29	0	28.6	0.331	31	0
8	183	64	0	0	23.3	0.672	32	1

For Python Demonstration:
https://colab.research.google.com/drive/1jK1QbRFCMBsaVT7AM2EzX2t3QYRGHns_#scrollTo=aDbKtyY3QK4m

For UI: http://127.0.0.1:5001/predict

HANDS-ON ACTIVITY

Car Evaluation Model

In this car evaluation prediction application, users will input the following details about a car:

Factors (Features):

1. **Buying Price (buying)**: Indicates the buying price of the car (vhigh, high, med, low).
2. **Maintenance Price (maint)**: Indicates the maintenance price of the car (vhigh, high, med, low).
3. **Number of Doors (doors)**: Number of doors the car has (2, 3, 4, 5more).
4. **Capacity in Terms of Persons (persons)**: Number of persons the car can accommodate (2, 4, more).
5. **Size of Luggage Boot (lug_boot)**: Size of the luggage boot (small, med, big).
6. **Safety (safety)**: Safety rating of the car (low, med, high).

Target (Class):

- **Unacceptable (unacc)**: The car is evaluated as unacceptable.
- **Acceptable (acc)**: The car is evaluated as acceptable.
- **Good (good)**: The car is evaluated as good.
- **Very Good (vgood)**: The car is evaluated as very good.

Based on these inputs, the trained model will predict the overall evaluation class of the car, indicating whether the car is **unacc (unacceptable), acc (acceptable), good, or vgood (very good).**

AI IN EVERYDAY LIFE (Group Discussion)

Let's have a group discussion on how AI is used in (5-member or 3-member groups): **(15 mins)**

1. Healthcare
2. Entertainment
3. Transforpation

AI IN EVERYDAY LIFE (Introducing ChatGPT)

ChatGPT stands for "**Chat Generative Pre-trained Transformer.**" It's a type of AI developed by OpenAI that can generate human-like text based on the input it receives. Here's a breakdown of the components:

Chat: The primary function is to engage in conversations and provide responses to text inputs.

Generative: It generates text, meaning it can produce responses, answers, or content rather than just processing or analyzing existing data.

Pre-trained: The model is trained on a large dataset of text from the internet before being fine-tuned for specific tasks. This pre-training allows it to have a broad understanding of language and various topics.

Transformer: Refers to the architecture used for building the model. The transformer architecture is particularly effective for natural language processing tasks because it can understand the context of words in a sentence by looking at their relationships.

ChatGPT is designed to assist with **answering questions**, **providing information**, **creating content, and engaging in conversations across a wide range of topics.**

AI IN EVERYDAY LIFE (Introducing ChatGPT)

Examples of free GPTs:

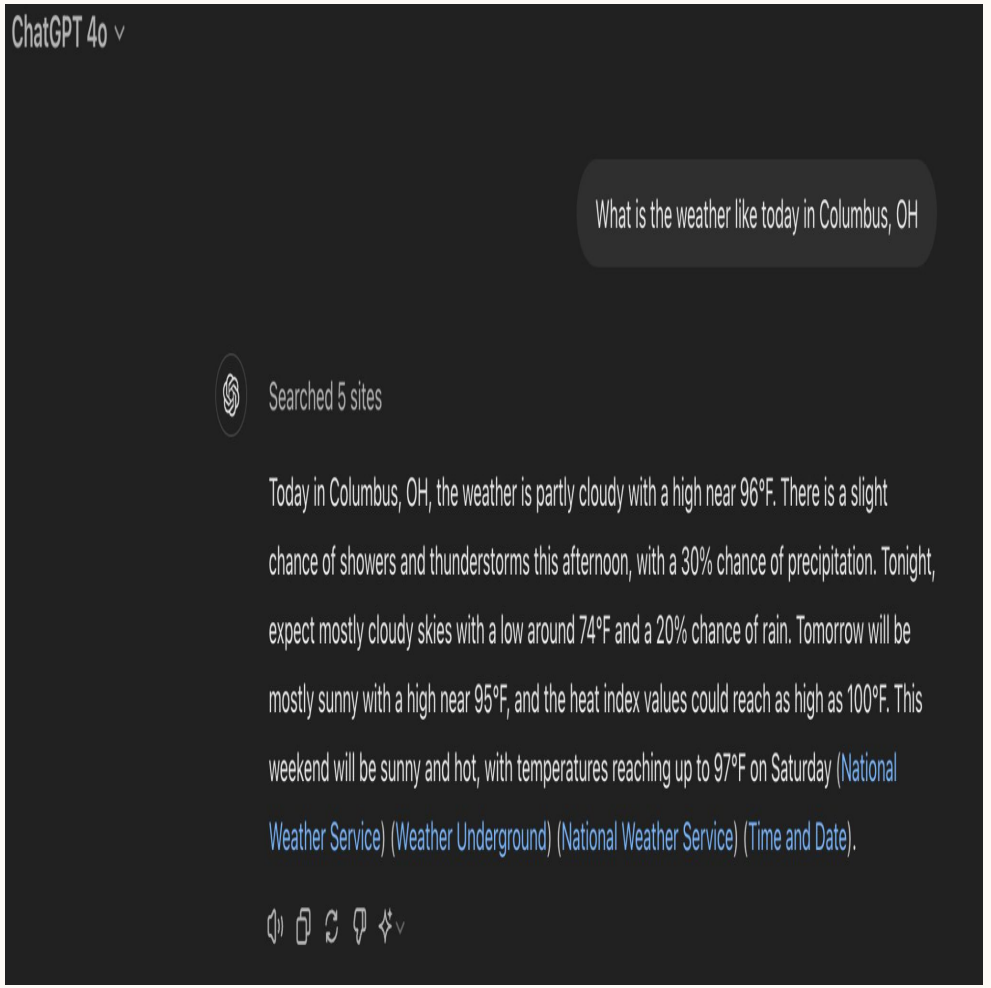
1. ChatGPT: https://chat.openai.com/
2. Claude: https://claude.ai/chats
3. Germini ai: https://gemini.google.com/
4. Bing: https://www.bing.com/

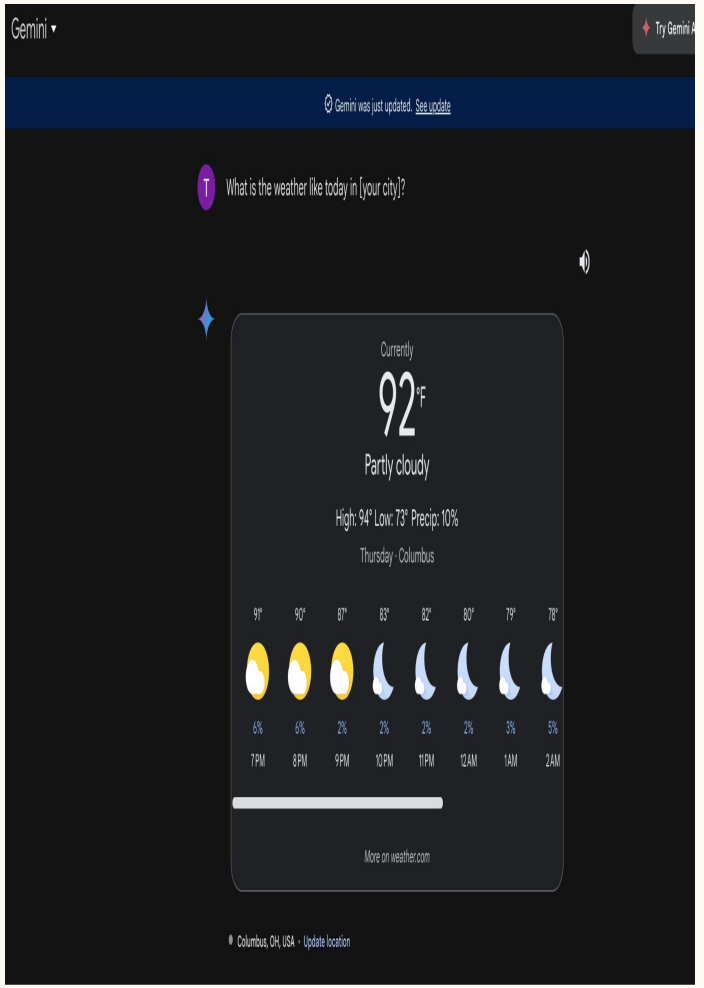
AI IN EVERYDAY LIFE (Demonstration)

1. What is the weather like today in [your city]?
2. Can you help me with my homework on American history?
3. What's the latest news on USA elections?
4. Can you recommend a good book/movie/TV show?
5. How do I cook [specific recipe or dish]?
6. Can you explain [a concept, such as quantum physics or blockchain] in simple terms?
7. What are some tips for improving productivity?
8. Tell me about landing a job in AI-related area?
9. How do I solve this math problem: X^2 +3X+2=0?
10. Can you provide a summary of this pdf?

AI IN EVERYDAY LIFE (Demonstration)

1. What is the weather like today in [your city]? (as of June 20th, 2024)





45 MINS

ETHICAL CONSIDERATIONS IN AI

ETHICAL

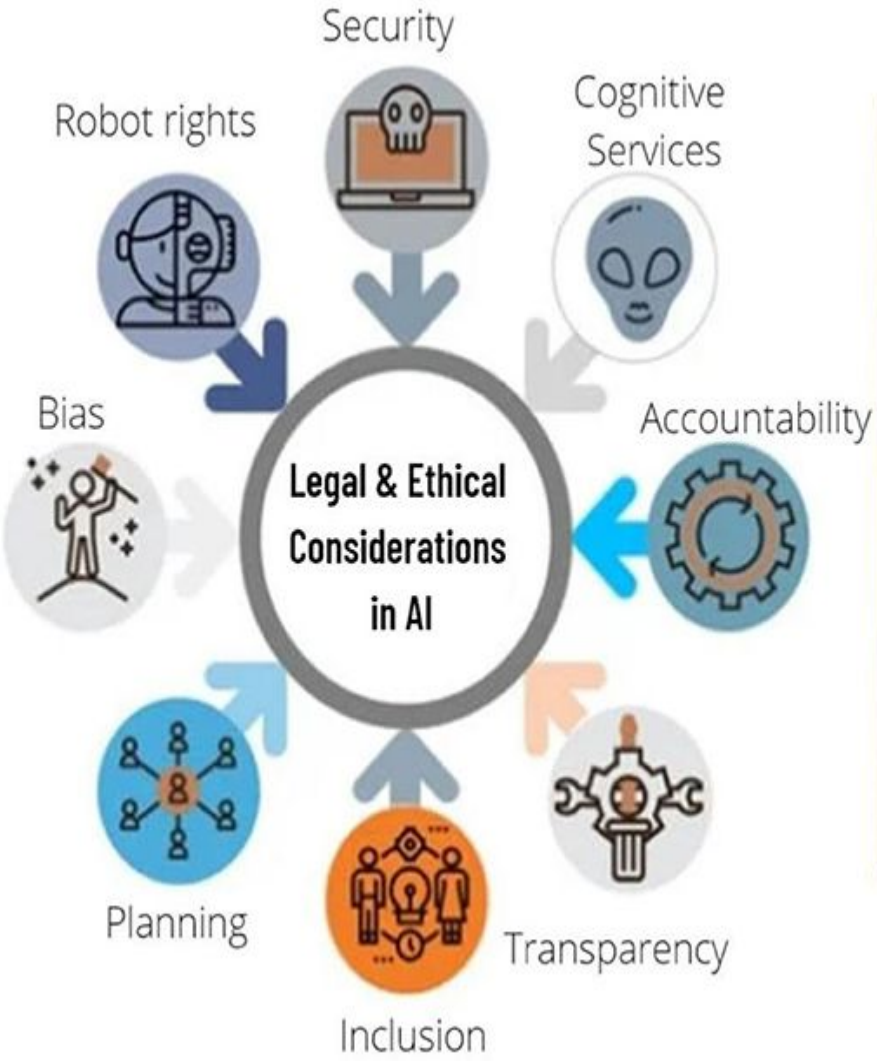
Regulation

Privacy

Mitigation of Bias

Transparency

Relevance



LEGAL

Governance

Confidentiality

Liability

Accuracy

Decision Making

source: https://www.frontiersin.org/articles/10.3389/fsurg.2022.862322/full

ETHICAL CONSIDERATIONS IN AI

Group Discussion (15 mins)

3-member or 5-member group

- Bias
- Privacy
- Future work

ETHICAL CONSIDERATIONS IN AI

Panel Discussion (20 mins)

Panel will address some questions related emanating from Group Discussion

LET US TAKE A BREAK AND ENCOURAGE SIDE CHATS

10mins

HANDS-ON CODING SESSION

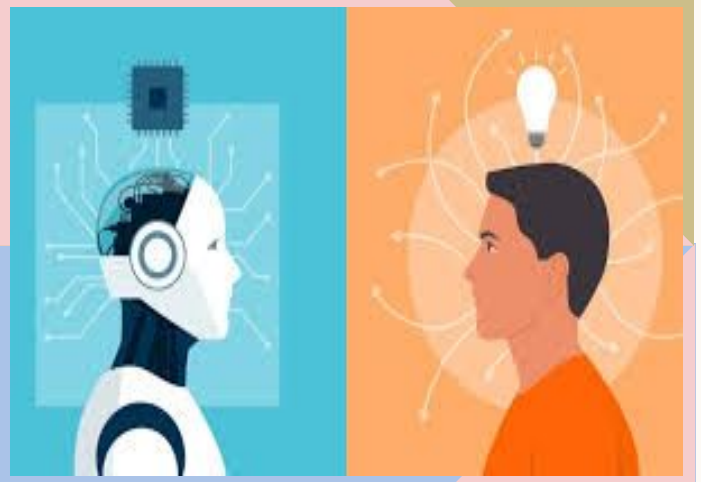
What is Python?

Python is a high-level, interpreted programming language known for its simplicity and readability. It was created by Guido van Rossum and first released in 1991. Python's design philosophy emphasizes code readability and syntax simplicity, allowing programmers to express concepts in fewer lines of code compared to other languages like C++ or Java.

Common Use Cases for Python

1. **Web Development:** Frameworks like Django and Flask make it easy to build web applications.
2. **Data Science and Machine Learning:** Libraries such as Pandas, NumPy, Scikit-Learn, and TensorFlow are widely used for data analysis, machine learning, and deep learning.
3. **Scripting and Automation:** Python is often used for writing scripts to automate repetitive tasks.
4. **Software Development**: Python can be used to develop both small and large-scale software applications.
5. **Game Development**: Libraries like Pygame are used for developing games.
6. **Network Programming:** Python's standard library includes support for many internet protocols, and third-party libraries extend this support even further.
7. **Artificial Intelligence (AI) and Robotics**: Python is a preferred language for developing AI models and robotics applications due to its simplicity and the powerful libraries available.

AI CHALLENGE



Quiz Questions:

1. **What does AI stand for?**
   - A) Artificial Intelligence
   - B) Automated Interface
   - C) Algorithmic Integration
   - D) Advanced Information
2. **Which of the following is an application of AI in everyday life?**
   - A) Online shopping recommendations
   - B) Autonomous vehicles
   - C) Voice assistants like Siri and Alexa
   - D) All of the above
3. **What is Machine Learning?**
   - A) The ability of machines to learn and improve from experience without being explicitly programmed.
   - B) The process of coding software to perform a specific task.
   - C) The storage of large amounts of data in machines.
   - D) The hardware component of a computer.
4. **Which of these is NOT a type of machine learning?**
   - A) Supervised learning
   - B) Unsupervised learning
   - C) Reinforcement learning
   - D) Automated learning
5. **Who is considered the father of AI?**
   - A) Alan Turing
   - B) Albert Einstein
   - C) Isaac Newton
   - D) Nikola Tesla

30 mins

Let Us Retrospect!

LIKED	LEARNED	LACKED	LONGED FOR

AI Workshop 2.0

MACHINE LEARNING

Practicals of ML

PYTHON CRASH COURSE

Fundamentals of Coding

BUILDING AI PRODUCTS

Learning AI products

DEEP LEARNING

Advanced AI techniques

NLP

Basics of Natural Language Processing

CHRIST INTERNATIONAL COMMUNITY CHURCH

LOVING GOD, LOVING PEOPLE, TRANSFORMED TO SERVE

AGILE PROJECT MANAGEMENT WORKSHOP Series 2.0

- Recap of Series 1.0
- Issue Types & Story Writing
- Estimation Techniques
- Project Simulation

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JUNE 29, 2024 | 9AM - 3PM

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Register for In-person or online session

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FOR FOLLOW UP QUESTIONS

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