



UNLOCKING THE POWER OF ARTIFICIAL INTELLIGENCE: OPPUTUNITIES, CHALLENGES AND SOLUTION

BY
ABUBAKAR MUHAMMAD DANHAYA

CIVIL ENGINEERING GRADUATE
OF

KANO UNIVERSITY OF SCIENCE AND TECHNOLOGY WUDIL

PRESENTED
AT
ML4CIVILEENGINEERS LIVE SESSION.

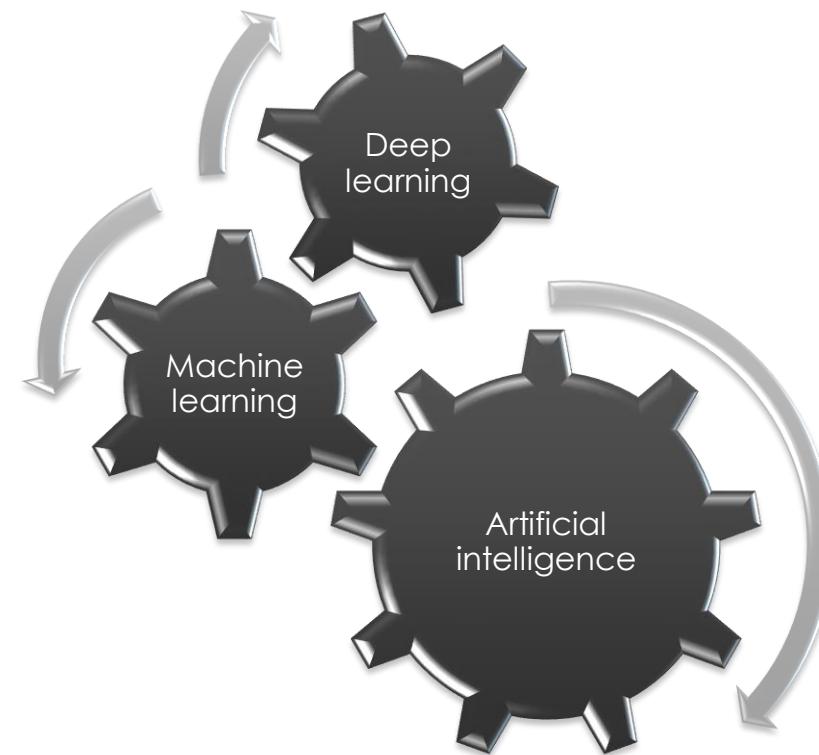
22nd NOVEMBER, 2025.

BACKGROUND OF THE STUDY

Artificial intelligence AI is the science and engineering of making intelligent machine.

In other words is a technique of getting machine to work and behave like a humans. Is the science of getting machine to mimic the behavior of humans.

It is very important to understand the difference among the subfields within AI



SUB FIELDS WITHIN ARTIFICIAL INTELLIGENCE FIELD

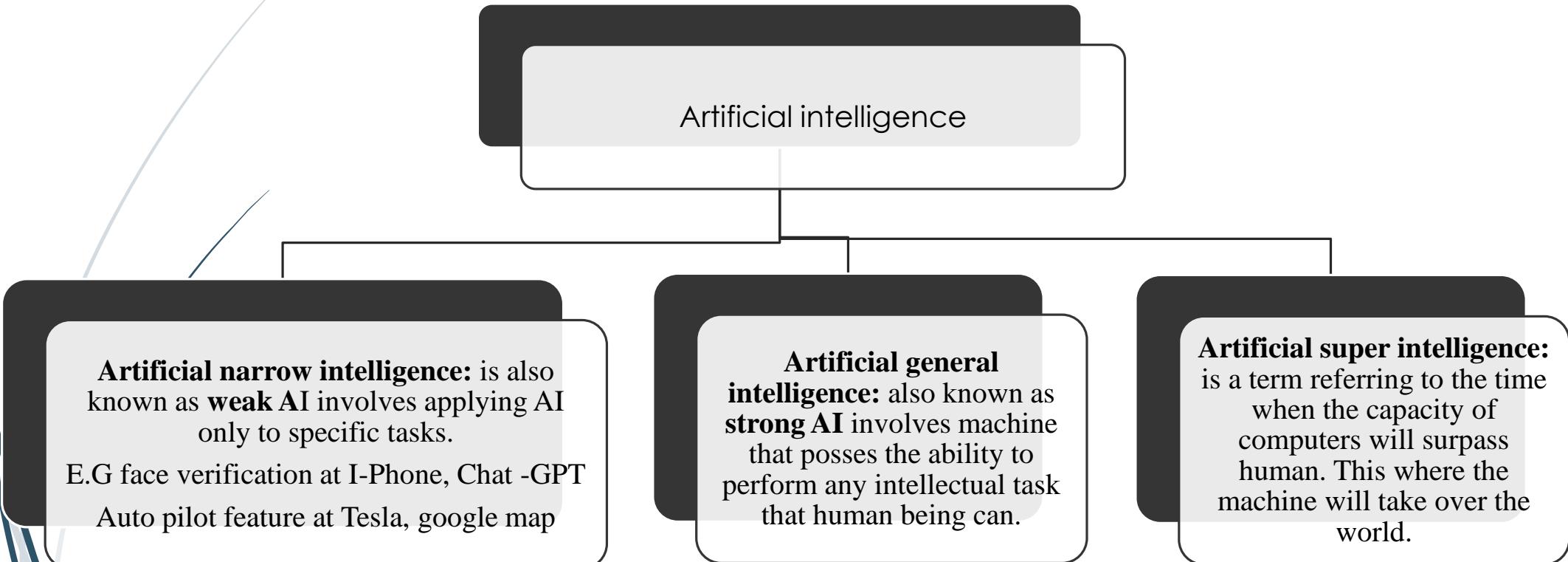
Artificial intelligence : Artificial intelligence (AI) is a branch of computer science and technology that aims to create systems, machine, or software programs capable of performing tasks that typically require human intelligence.

Machine learning is a subset of AI that focuses on getting machine to make decisions by feeding them with data.

Deep learning is a subset of machine learning that uses the concept of neural networks to solve complex problems. **Neural network** is a computer program that is designed to learn things from data, much like the way our brains learn from experience.

Machine learning and deep learning aid artificial intelligence by providing a set of **algorithms** and **neural networks** to solve data driven problems.

SUBDIVISIONS OF ARTIFICIAL INTELLIGENCE

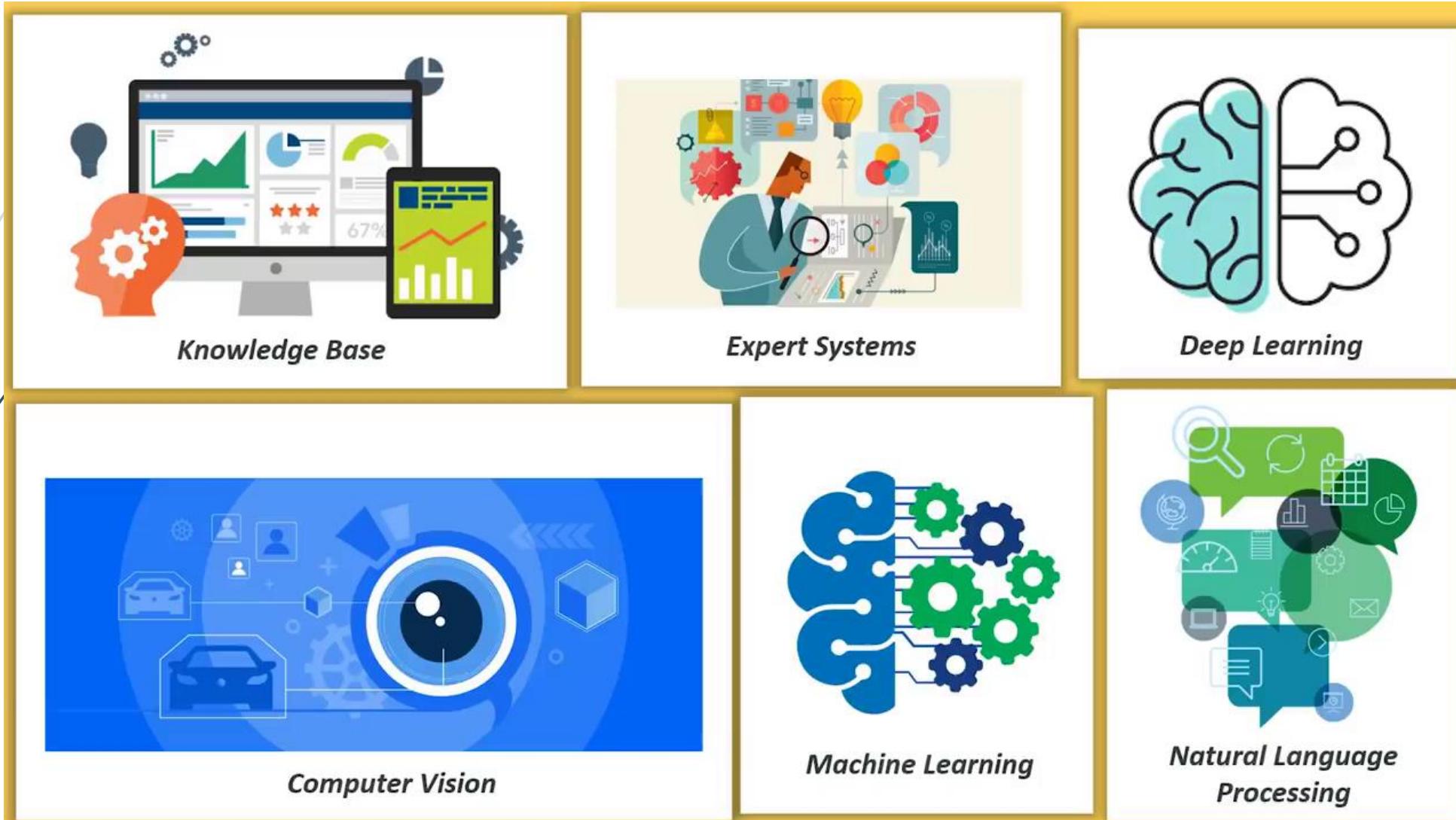


Strong AI would take off on its own, redesign itself at an ever – increasing rate. Humans, who are limited by slow biological evolution could not compete, and would be superseded

Artificial super intelligence refer to the era where machine/ computer will take over the world. The predictions were made, 2040 AI will take over the world. This phenomenon was started describing in Hollywood movies TERMINATOR.



COMPONENTS OF ARTIFICIAL INTELLIGENCE



AREAS WHERE AI PLAYS IMPORTANT ROLES

Artificial intelligence plays important roles in almost areas of human life.

These include

Health care: It assists in disease diagnosis, drug discovery, and personalized medicine.

Education: It is used for personalized learning, intelligent tutoring systems, and educational content recommendation.

Finance: It is used for fraud detection, algorithm trading, and risk assessment.

Security: It is used for facial recognition, threat detection, and cybersecurity.

Autonomous vehicles: It powers self – driving cars and improves transportation safety.

Robotics: It enhances automation and enable robots to perform tasks in various industries.

Agriculture: It improves crop management, pest control, and yield prediction.

Entertainment: It is employed in content recommendation, video game design, and special effects.

Manufacturing: It optimizes production processes, quality control, and predictive maintenance.

AI SOFTWARES AND APPLICATIONS

CHAT GPT is a versatile AI that can provide information, answer questions, generate text, assist with tasks and hold natural language conversation on a wide range of topics

JPMorgan chase's contract intelligence to analyze and manage contract and legal documents. It can do the work of 36,000 employees per seconds.

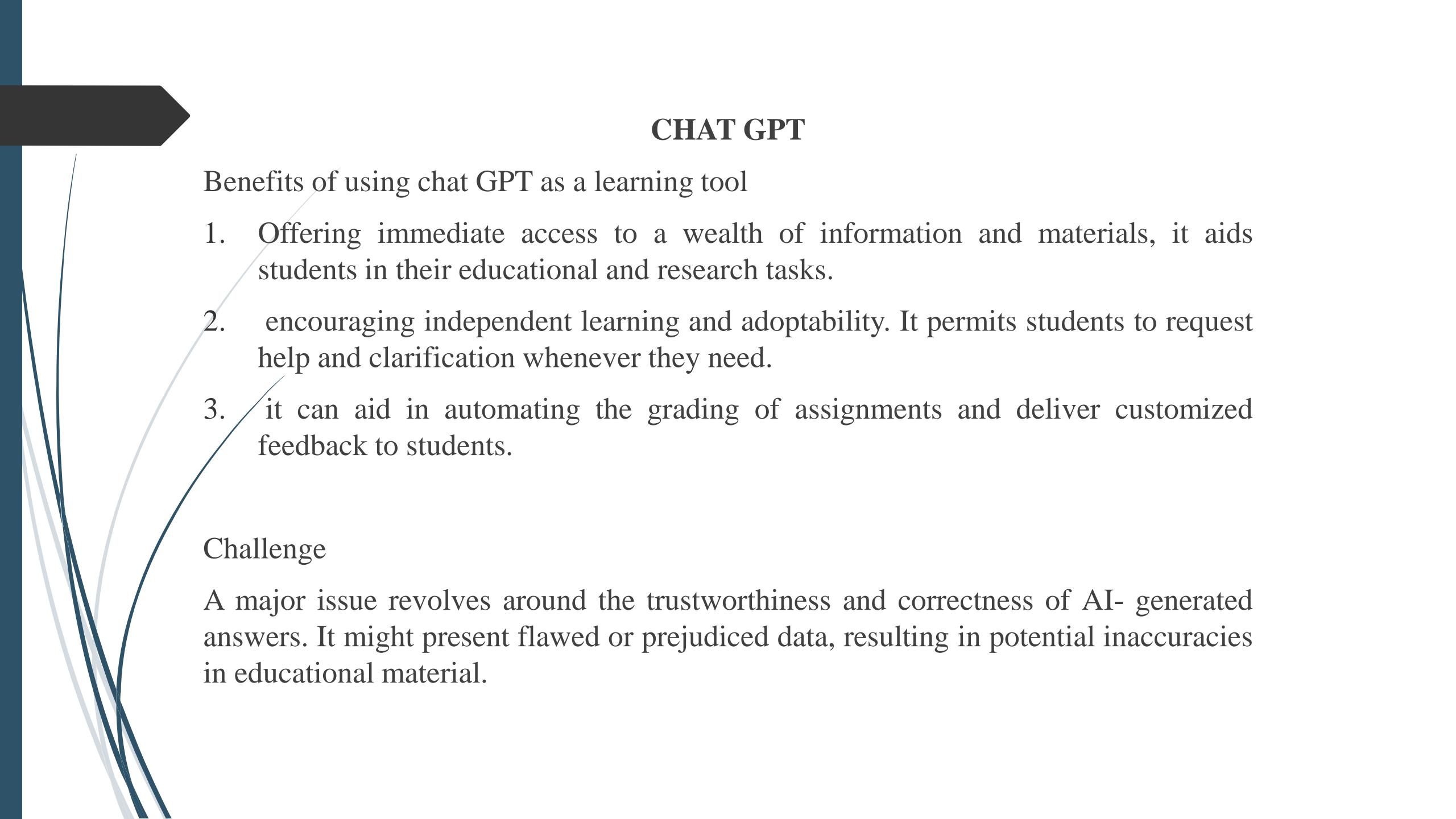
IBM AI (Watson) technology for medical diagnosis and treatment recommendation

ABAQUS is a finite element analysis (FEA) AI software package used in engineering and simulation for wide range of application.

BLACKBOARD LEARN is AI learning management system that includes assessment and grading capabilities. It allows instructors to create various types of assessments and grade them online.

Facebook AI uses facial features and tag your friend

Twitter AI is used to identify hate speech and terroristic language in tweets.



CHAT GPT

Benefits of using chat GPT as a learning tool

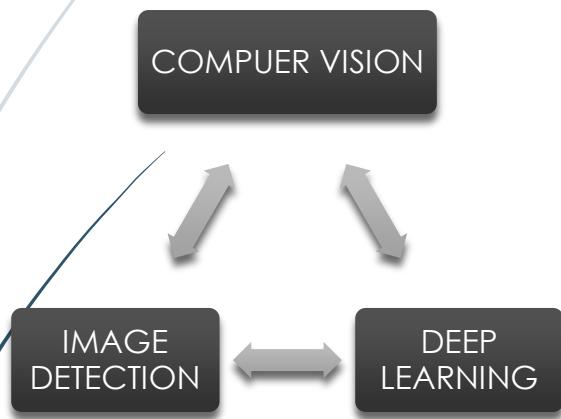
1. Offering immediate access to a wealth of information and materials, it aids students in their educational and research tasks.
2. encouraging independent learning and adoptability. It permits students to request help and clarification whenever they need.
3. it can aid in automating the grading of assignments and deliver customized feedback to students.

Challenge

A major issue revolves around the trustworthiness and correctness of AI-generated answers. It might present flawed or prejudiced data, resulting in potential inaccuracies in educational material.

AUTO PILOT

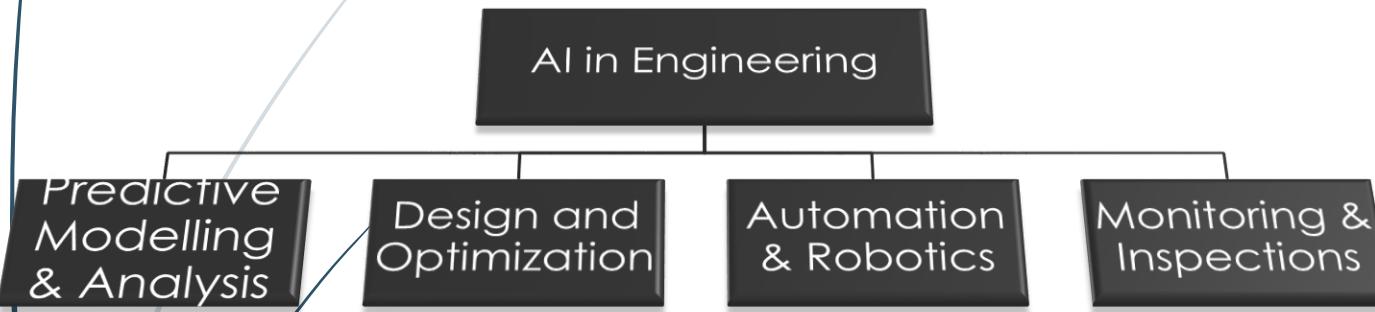
Tesla auto pilot uses computer vision, image detection and deep learning



"Tesla will have fully self -driving cars ready by the end of this year and robo taxi version, one that can ferry passengers without anyone behind the wheel. "
(Elon Musk ceo tesla motors 2013)



ARTIFICIAL INTELLIGENCE IN ENGINEERING



Predictive Modelling & Analysis

- Material behavior
- Structural performance under load
- Geotechnical conditions

Design & Optimization

- Automated structural and mechanical optimization
- Generative design and simulation
- Faster Evaluation of multiple design alternatives

Automation & Robotics

- Robotics for construction, manufacturing & inspection
- Autonomous vehicles/drones for surveying & monitoring
- Intelligent machinery

Monitoring & Inspections

- Structural health monitoring
- Computer vision for crack detection
- Automated infrastructural inspections using drones & cameras



*Is Artificial Intelligence a threat to human
existence?*



“Artificial intelligence is a fundamental risk to the existence of human civilization” Elon Musk

A study by Oxford University suggests that in the next 20 years, around 47% of jobs worldwide could be at risk of being taken over by artificial intelligence. This includes jobs in transportation, construction, law enforcement and food service. Even highly skilled roles like lawyers and doctors may face challenges due to AI advancements.



Twitter discovered and banned 300,000 linked accounts, and 95% of which were found by non-human (AI)



John Keynes wrote an essay where he tried to guess how technology (AI) would make life better for his grandchildren. He glorified what humanity can achieve in terms of quality of life, and low amount of human labor.

But Forbes wrote an article that said technology might actually make things worse. It could lead to big gaps between rich and poor, with lots of people without jobs and living in poverty. (Martin 2018)



*Who is the first person to lose their job
because of artificial intelligence ?*

Believe me, Tom is the first victim

Tom was the first guy losing his job because of Artificial intelligence



Now, what is the solution?





*If we want to reduce high rates of unemployment,
there is a requirement of new compensation
policies. (Balakrishnan 2018)*



Government and companies should consider facilitating skills acquisition for their employees, allowing them to switch jobs more smoothly when necessary. (Balakrishman 2018)

To succeed in the future, a person needs to be :

- ✓ Creative
- ✓ Curious
- ✓ Innovative and
- ✓ Resilient

Creativity is the most important leadership skill. (IBM global CEO study)

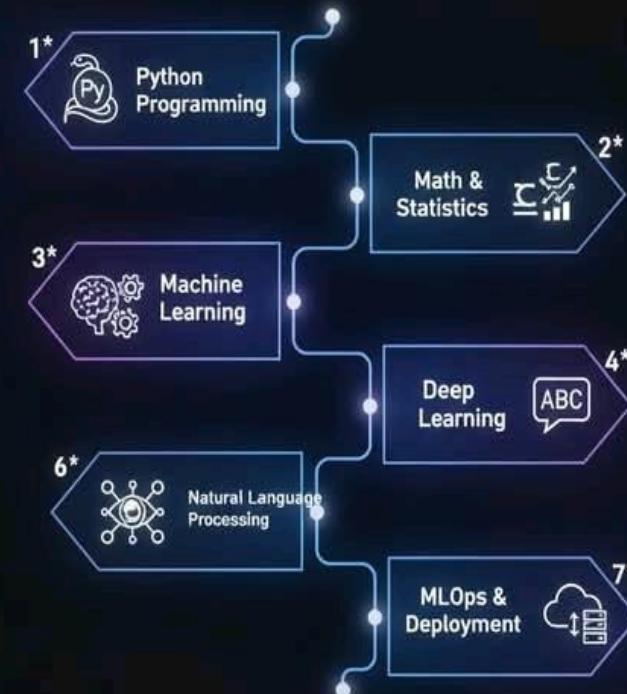


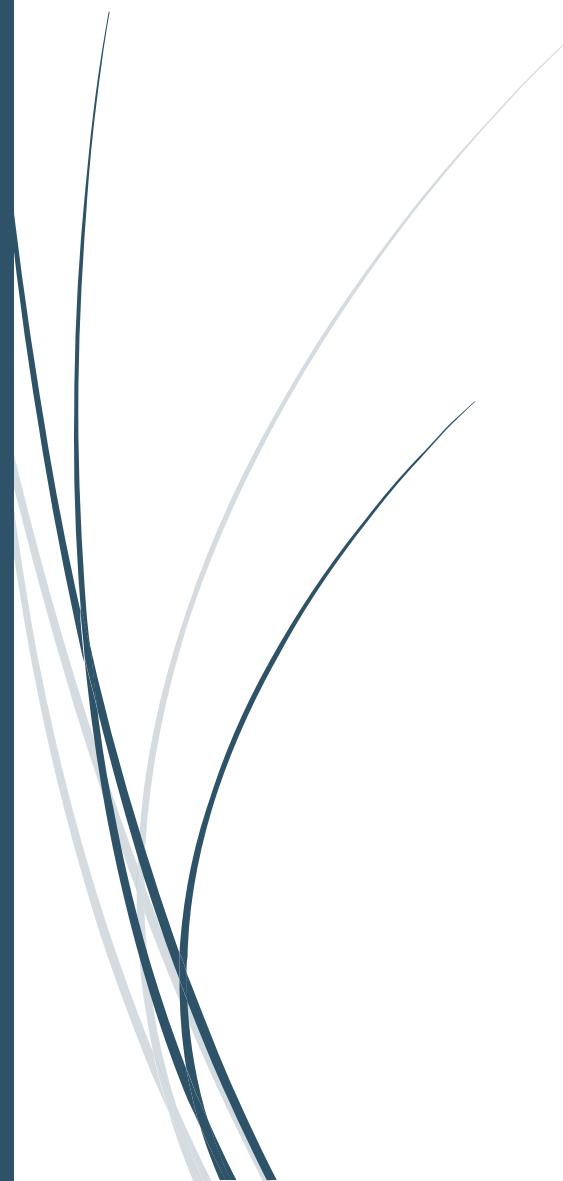
We should not compete with artificial intelligence, but instead focus on developing unique human intelligence. (Jack Ma founder of Alibaba)



To stay relevant in today's rapidly changing world, you must learn to embrace artificial intelligence rather than fear being replaced by it.

AI ROADMAP 2025





THE END
THANK YOU