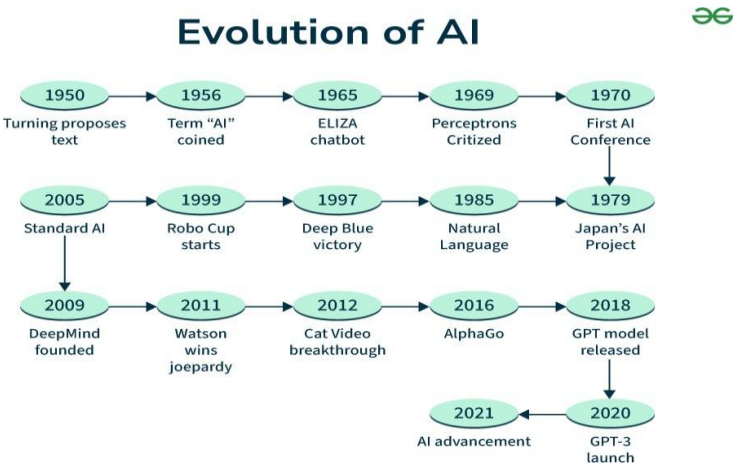
INDIVIDUAL TASK 1: MODULE-1

Timeline of Major Milestones in Artificial Intelligence (AI)

1. Research and present a timeline showing major milestone in AI History.

➢ Early Foundations of Artificial Intelligence (Before 1950)

- **Ancient Concepts of Artificial Beings**
  - Ideas of intelligent machines date back to Greek myths (e.g., Talos, mechanical servants).
  - Early philosophers imagined machines that could imitate human reasoning.
- **Mechanical Computation Era (1600s–1800s)**
  - Blaise Pascal and Charles Babbage designed mechanical calculators.
  - Ada Lovelace wrote the first algorithm and predicted machines could think creatively.
- **Formal Logic and Mathematics**
  - George Boole introduced Boolean algebra, forming the basis of digital logic.
  - This laid the groundwork for machine reasoning.



➢ Birth of Artificial Intelligence (1950–1956)

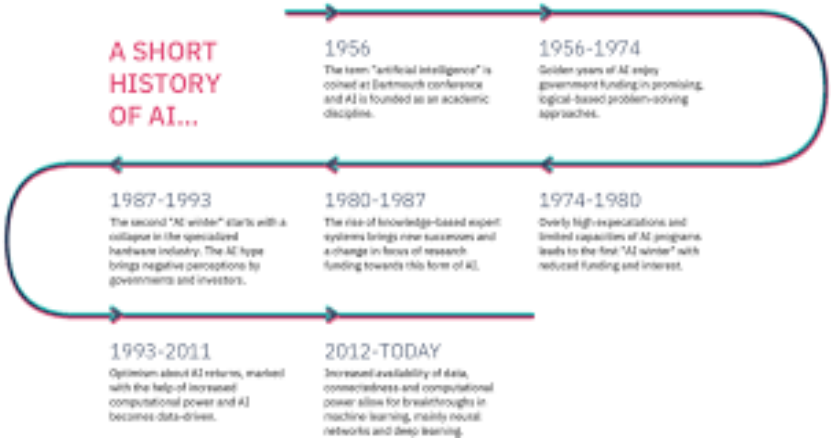
- The modern idea of AI began with Alan Turing's 1950 paper, *Computing Machinery and Intelligence*, which asked the question: "Can machines think?"
- Turing proposed the Turing Test, a method to evaluate whether a machine can imitate human intelligence through conversation.
- In 1956, the Dartmouth Conference officially marked the birth of AI as a scientific field.
- The term "Artificial Intelligence" was coined by John McCarthy during this

  conference.
- Researchers like Marvin Minsky and Claude Shannon contributed significantly to early AI research.
- This period laid the foundation for AI as an academic discipline.

➢ Early AI Research and Optimism (1956–1974)

- **Symbolic AI Development**
  - Researchers focused on logic-based systems and rule-based reasoning.
  - Programs like Logic Theorist and General Problem Solver were created.
- **Early AI Programs**
  - ELIZA (1966) simulated human conversation.
  - SHRDLU (1970) could understand natural language in limited environments.
- **Government Funding and Hype**
  - Strong optimism that human-level AI would be achieved quickly.

- Significant funding from military and universities



➢ First AI Winter (1974–1980)

1. Why AI Was Created

- AI was developed to simulate human intelligence in machines.
- Early scientists wanted computers that could:
  - Solve problems
  - Understand language
  - Learn from experience
- The goal was to automate complex tasks that require human thinking.
- AI was also influenced by neuroscience and cognitive psychology.
- Researchers tried to understand how the human brain works and replicate it in machines.

2. Key AI Pioneers

You can add this as a separate section.

- **Alan Turing** – Father of modern AI, introduced Turing Test.
- **John McCarthy** – Coined the term Artificial Intelligence.

- **Marvin Minsky** – Co-founder of MIT AI Lab.
- **Herbert Simon & Allen Newell** – Created early AI programs.
- **Geoffrey Hinton** – Pioneer of deep learning.
- **Yann LeCun & Yoshua Bengio** – Leaders in neural networks.

Impact:

Their research built the foundation of modern AI technologies.

- **Rise of Expert Systems (1980–1987)**

- **Expert Systems Boom**
  - AI programs designed to replicate expert decision-making.
  - Used in medical diagnosis, engineering, and finance.
- **Popular Systems**
  - MYCIN for medical diagnosis.
  - XCON used by Digital Equipment Corporation.
- **Commercial Adoption**
  - Businesses began investing heavily in AI technologies.
  - AI moved from labs into industry.

- **Second AI Winter (1987–1993)**

- **Collapse of Expert Systems**
  - Maintenance costs were high.
  - Systems lacked flexibility and adaptability.
- **Funding Cuts**
  - AI investments declined again.
  - Many companies shut down AI divisions.

- **Lessons Learned**
    - Researchers realized the need for better learning models.

➢ **Machine Learning Emerges (1990s)**

- **Shift from Rule-Based AI to Learning Systems**
    - Focus moved from hand-coded rules to data-driven learning.
    - Rise of machine learning algorithms.
- **1997 – IBM Deep Blue**
    - Defeated world chess champion Garry Kasparov.
    - Demonstrated machines outperforming humans in specific tasks.
- **Improved Algorithms**
    - Development of decision trees, support vector machines, and neural networks.

➢ **Big Data and AI Growth (2000–2010)**

- **Internet Boom**
    - Massive data generation enabled better AI training.
    - Growth of search engines and recommendation systems.
- **Speech and Vision Improvements**
    - Advancements in speech recognition and computer vision.
    - AI became more practical in consumer products.
- **Rise of Tech Giants**
    - Companies like Google and Amazon invested heavily in AI.

➢ **Deep Learning Revolution (2010–2015)**

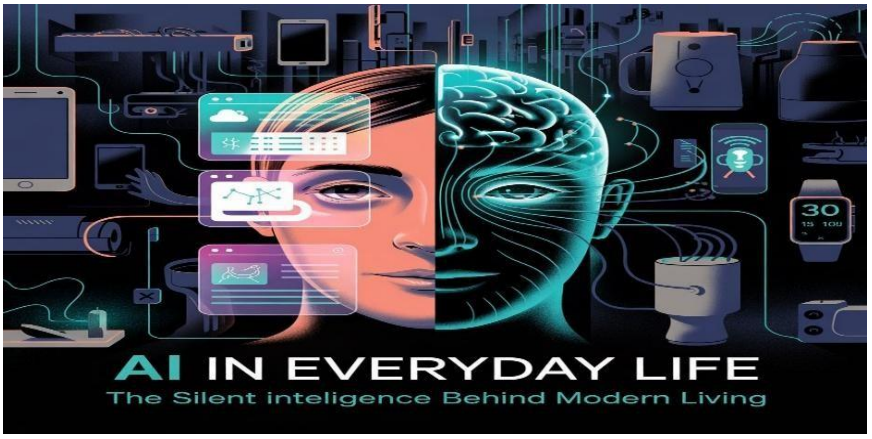
- **Breakthrough in Neural Networks**
    - Deep learning models began outperforming traditional AI methods.

- Enabled by GPUs and large datasets.

- **2012 – ImageNet Breakthrough**
  - AlexNet dramatically improved image recognition accuracy.
  - Sparked widespread adoption of deep learning.
- **Advancements in NLP and Vision**
  - Significant progress in translation, speech recognition, and image classification.

➢ **<u>AI Enters Everyday Life (2015–2020)</u>**

- **Smart Assistants**
  - Siri, Alexa, and Google Assistant became common.
  - AI integrated into smartphones and homes.
- **Self-Driving Research**
  - Major progress in autonomous vehicles.
  - Companies like Tesla and Waymo led innovation.



➢ **<u>Conclusion</u>**: The history of Artificial Intelligence reflects a journey of innovation, setbacks, and breakthroughs. From early theoretical models and rule-based systems to modern deep learning and generative AI, the field has evolved significantly over time. Periods of rapid progress were often followed by challenges, known as AI winters, which helped refine research approaches. In recent years, advancements in computing power, big data, and neural networks have accelerated AI development, making it a part of everyday life through virtual assistants, recommendation systems, and intelligent automation