Module-1

Research and present a timeline showing major milestones in AI history.

Solution->

Timeline of Major Milestones in AI History

1. Foundations Before AI (Ancient to Early 20th Century)

350 BCE – Aristotle and Formal Logic

Aristotle formalizes deductive reasoning, laying the conceptual groundwork for symbolic logic — a core component of AI reasoning systems in later decades.

1642 – Pascaline & Mechanical Calculators

Blaise Pascal invents the Pascaline, an early mechanical calculator, illustrating how humans mechanize computational tasks — a philosophical precursor to machine intelligence.

1818 – *Frankenstein* and Artificial Life Themes

Mary Shelley's *Frankenstein* explores artificial life and autonomous beings, foreshadowing later ethical questions around AI and agency.

2. Mathematical and Theoretical Beginnings

1943 – First Neural Network Model

Warren McCulloch and Walter Pitts publish a mathematical model of a neural network, providing a formal basis for later neural learning systems.

1950 – Turing Test Proposed

Alan Turing publishes *Computing Machinery and Intelligence*, introducing the "Imitation Game" (Turing Test) as a benchmark for machine intelligence.

3. Birth of Modern AI (1950s–60s)

1951 – First AI Programs

Early AI programs for playing games (e.g., checkers and chess) run on Ferranti Mark 1 computers, demonstrating simple "intelligent" behaviors.

1956 – Dartmouth Workshop (Founding Event)

Often called the *Constitutional Convention of AI*, the Dartmouth Summer Research Project formally establishes artificial intelligence as a field.

1956 – Logic Theorist

Allen Newell and Herbert Simon develop the *Logic Theorist*, considered one of the first AI programs solving symbolic reasoning tasks.

1966 – ELIZA and Early NLP

MIT's ELIZA becomes the first widely known "chatbot," simulating conversation and sparking research in Natural Language Processing (NLP).

4. AI Winters and Expert Systems (1970s–80s)

1973 – Lighthill Report and First AI Winter

A critical report in the UK highlights unmet expectations, triggering funding cuts and skepticism — leading to reduced AI research momentum.

1980 – Expert Systems Boom

Rule-based systems like XCON and MYCIN dominate industry applications, showing practical AI in decision-making tasks.

1987–1993 – Second AI Winter

Following hype and overinvestment, a second downturn in funding slows progress, until resurgence in machine learning and computing power again energizes the field.

5. Rise of Machine Learning and Robotics (1990s–2000s)

1997 – *Deep Blue* Beats World Chess Champion

IBM's *Deep Blue* defeats Garry Kasparov, marking a symbolic victory for machine computation over human strategic reasoning.

Late 1990s – Support Vector Machines and Learning Algorithms

New statistical learning methods (like SVM) and related algorithms elevate machine learning's effectiveness on real-world data.

2000 – AI Vision at Google

Larry Page predicts AI as the future of search, inspiring major tech companies to embed AI deeply into their core missions.

6. Deep Learning Revolution (2010s)

2012 – AlexNet & Deep Learning Breakthrough

AlexNet's landmark win in the ImageNet challenge accelerates deep learning, using GPUs to train deep neural networks and launching a new era of capability.

2016 – AlphaGo Defeats Go Champion

DeepMind's *AlphaGo* beats Lee Sedol in Go — a complex game thought too nuanced for AI — proving reinforcement learning's power.

2017 – Transformer Architecture Introduced

The "Attention is All You Need" paper introduces the Transformer, a foundational architecture for modern NLP and generative AI models.

7. Generative AI and the Modern Age (2020s)

2020 – GPT-3 and AlphaFold 2

OpenAI's GPT-3 (175 B parameters) showcases large language model capabilities; *AlphaFold 2* solves protein folding, revolutionizing computational biology.

2022 – ChatGPT Launch

OpenAI's ChatGPT becomes a phenomenon, registering millions of users rapidly and sparking global interest in accessible AI.

2023 – GPT-4 and Multimodal Models

Next-gen large models like GPT-4 and other open-source innovations cement AI's utility across text, images, and diverse applications.

2023 – Global AI Developments

Google Bard, AI agents (e.g., AutoGPT), and broader ecosystem activities highlight rapid diversification in AI capabilities.

8. AI in Society, Policy, & Today

2023 – AI Safety Orders

Governments like the United States issue executive orders promoting safe, trustworthy AI development.

2025 – Global AI Summits

International summits in Paris and upcoming gatherings underscore the geopolitical importance of AI cooperation and governance.

2026 – AI as a Turning Point

Leaders emphasize AI not just as technology, but a transformative force reshaping economies and societies at a global scale.

9. Looking Ahead: Future Milestones (Predictions & Trends)

Toward Autonomous AI & AGI:
Researchers project timelines where AI evolves into "research interns" and potentially autonomous systems by 2028, with broader general intelligence questions steadily driving research debates.

Turing Test & Beyond:
Experts speculate whether advanced systems will pass formal intelligence benchmarks like the Turing Test by the late 2020s and early 2030s.

Conclusion

From early philosophical ideas and mathematical logic to modern deep learning systems that generate language and drive scientific discovery, the history of AI illustrates a dramatic evolution interwoven with cycles of innovation, skepticism, and resurgence. Today's AI continues to reshape technology, society, and policy — expanding not just computational power but our understanding of intelligence itself.