Fundamentals of AI and ML

Module 1 - Individual Task

Q). Research and present a timeline showing major milestones in AI history Artificial Intelligence (AI) is one of the most revolutionary technological developments in modern history.

- AI refers to the ability of machines and computer systems to perform tasks that normally require human intelligence.
- These tasks include learning, reasoning, decision-making, and problem-solving.
- AI is used in many fields such as healthcare, education, transportation, finance, robotics, and entertainment.
- The development of AI did not happen suddenly; it evolved gradually over several decades.
- Scientists and researchers continuously worked to improve machine intelligence.
- Understanding AI milestones helps us see how AI developed from simple ideas to advanced systems like chatbots and automation tools.

Early Foundations of Artificial Intelligence (Before 1950)

- One of the earliest contributors to AI was Alan Turing.
- He proposed that machines should simulate human intelligence.
- In 1936, he introduced the concept of the Turing Machine.
- The Turing Machine became the theoretical foundation of modern computers.
- In 1950, Alan Turing published a research paper titled Computing Machinery and Intelligence.
- He introduced the Turing Test to check machine intelligence.

Birth of Artificial Intelligence (1950–1970)

- Artificial Intelligence became an official field after a conference at Dartmouth College.
- The conference was called the Dartmouth Workshop.
- The term “Artificial Intelligence” was introduced during this workshop.
- Scientist John McCarthy played a major role in developing AI as a research field.
- Early AI programs were developed to solve mathematical and logical problems.

First AI Winter (1970–1980)

- AI development slowed due to a lack of advanced computer technology.
- AI systems failed to solve complex real-world problems efficiently.
- Government and private organizations reduced funding for AI research.

Rise of Expert Systems (1980–1990)

- Expert systems were developed to imitate human expert decision-making.
- The expert system XCON helped configure computer systems automatically.
- XCON was developed by Digital Equipment Corporation.
- Expert systems were widely used in medicine, engineering, and business industries.

Machine Learning and Game Intelligence (1990–2000)

- AI research shifted toward machine learning.
- In machine learning, computers learn from data.
- IBM developed the chess-playing computer Deep Blue.
- Deep Blue defeated world chess champion Garry Kasparov in 1997.
- This event proved that machines could perform complex intellectual tasks.

Growth of AI and Big Data Era (2000–2010)

- The availability of large amounts of data improved AI performance.
- Faster computers helped in training AI models efficiently.
- Companies like Google used AI in search engines and speech recognition.
- Researchers started developing deep learning techniques.

Deep Learning Revolution (2010–2020)

- AI systems improved using neural networks and deep learning technologies.
- AI research company DeepMind developed AlphaGo.
- AlphaGo defeated professional Go champion Lee Sedol in 2016.
- This achievement showed that AI could solve highly complex strategy-based problems.

Modern Artificial Intelligence Era (2020–Present)

- Generative AI technologies were developed to create text, images, and videos.
- OpenAI introduced advanced AI systems like ChatGPT.
- AI is widely used in healthcare, robotics, education, and automation.
- AI research now focuses on ethical and responsible AI development.

Conclusion

- Artificial Intelligence has developed through several stages over many decades.
- Each era contributed to improvements in machine intelligence and real-world applications.
- AI has transformed industries by improving efficiency and decision-making.

- The future of AI is expected to bring more advanced and intelligent technologies.