# INTRODUCTION TO ARTIFICIAL INTELLIGENCE (AI)

- Explore the definition, history, techniques, and ethical considerations of Artificial Intelligence (AI), a field reshaping industries, economies, and daily life.
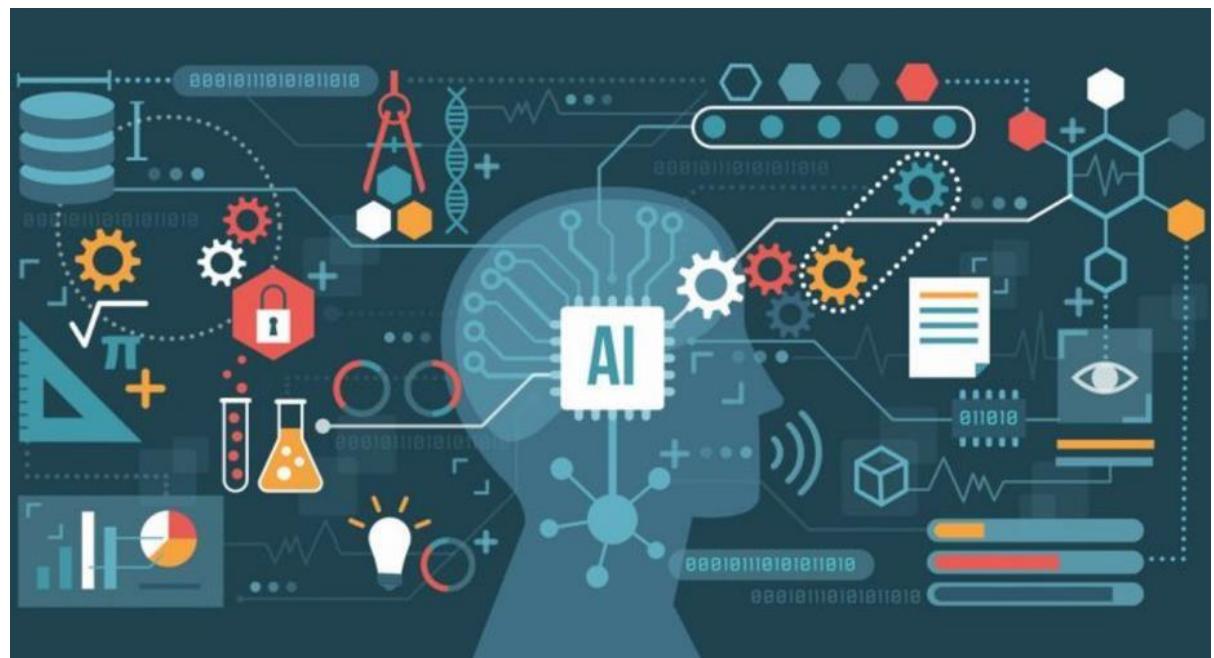
DEFINITION OF AI

- Artificial Intelligence refers to the development of computer systems capable of performing tasks requiring human intelligence.

- Tasks include reasoning, problem-solving, learning, perception, and decision-making.

- AI encompasses:

  - **Machine Learning (ML):** Systems learning from experience without explicit programming.

  - **Natural Language Processing (NLP):** Machines understanding and generating human language.

  - **Computer Vision:** Interpreting visual data like images or videos.

  - **Robotics:** Intelligent machines interacting with the physical world.

DEFINITION OF AI

- AI is categorized into three levels:

  - **Narrow AI (Weak AI):** Specialized in a single task (e.g., Siri, spam filters).

  - **General AI (Strong AI):** Hypothetical systems performing any intellectual task humans can do.

  - **Superintelligent AI:** Theoretical systems surpassing human intelligence in all areas, raising questions about control and ethics.

Artificial Narrow Intelligence (ANI)
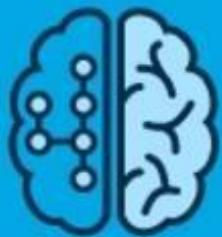
Stage-1

Machine Learning

▸ Specialises in one area and solves one problem

Siri   Alexa   Cortana

Artificial General Intelligence (AGI)
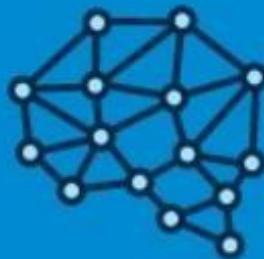
Stage-2

Machine Intelligence

▸ Refers to a computer that is as smart as a human across the board

Artificial Super Intelligence (ASI)

Stage-3

Machine Consciousness

▸ An intellect that is much smarter than the best human brains in practically every field

HISTORY OF AI
20TH CENTURY FOUNDATIONS

- **1936:** Alan Turing introduced the "Turing Machine," the mathematical foundation for computation.
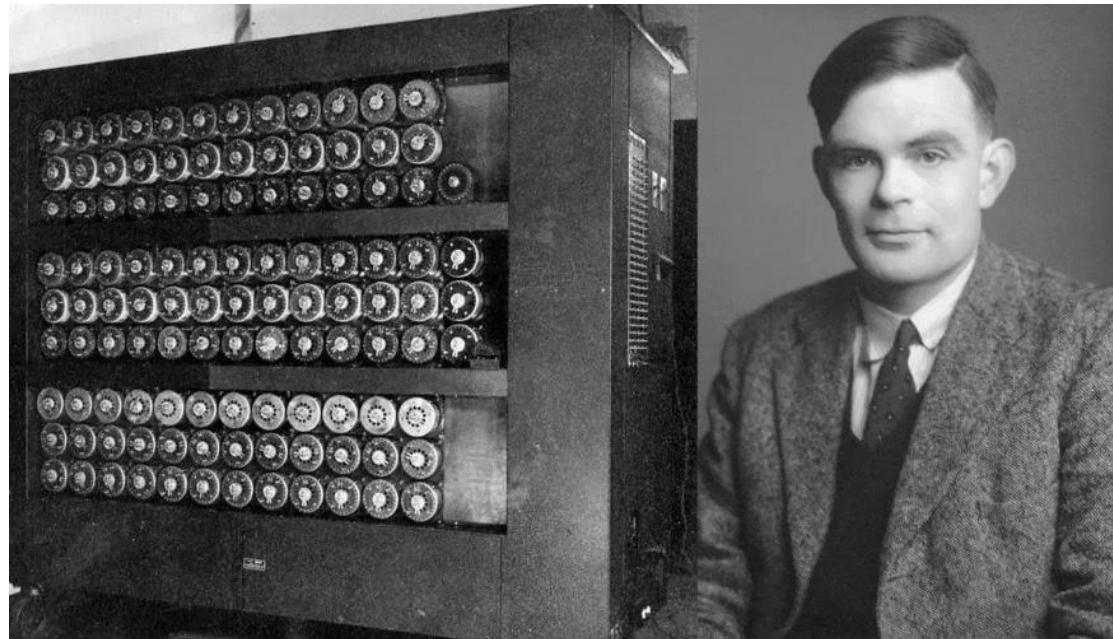
HISTORY OF AI
20TH CENTURY FOUNDATIONS

- **1940s-1950s:** Development of programmable computers like the ENIAC allowed for early experimentation with automated reasoning.
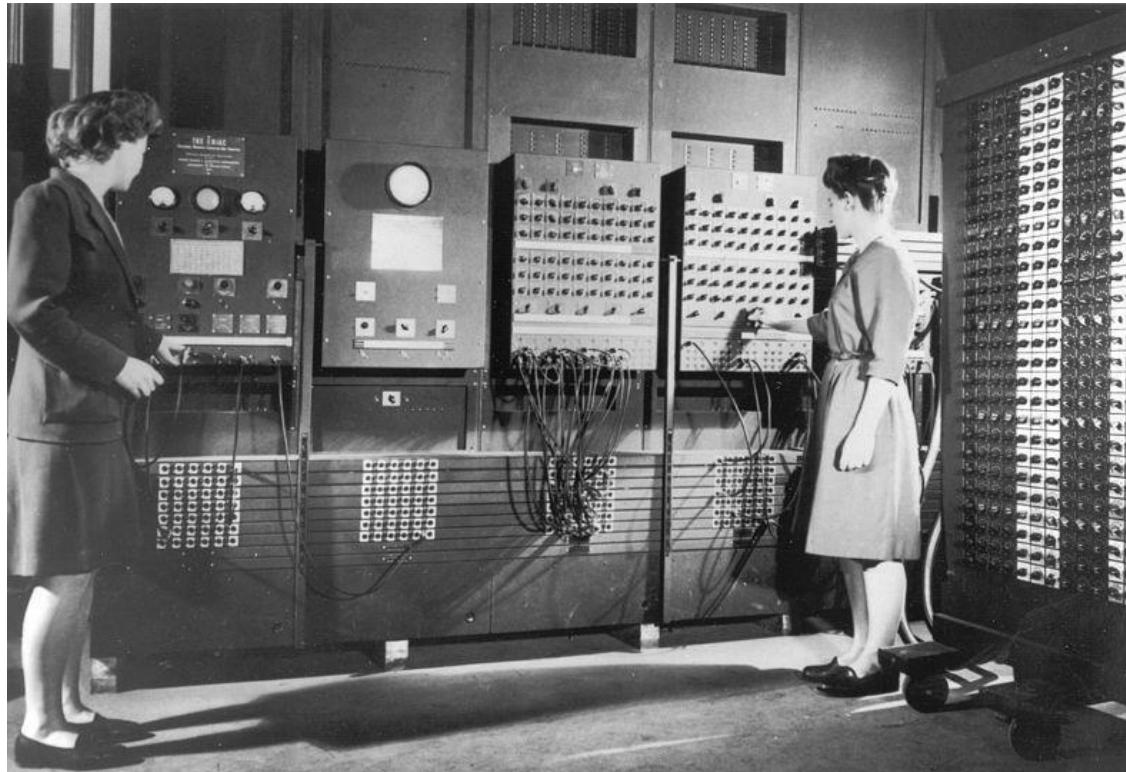
THE BIRTH OF AI (1956)

- The Dartmouth Conference marked the official birth of AI as a field.

- Key contributors included John McCarthy and Marvin Minsky.

- Early programs successfully solved algebra problems, played checkers, and proved logical theorems.

1956 Dartmouth Conference: The Founding Fathers of AI

John MacCarthy — Marvin Minsky — Claude Shannon — Ray Solomonoff — Alan Newell

Herbert Simon — Arthur Samuel — Oliver Selfridge — Nathaniel Rochester — Trenchard More
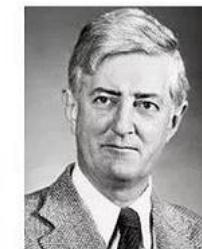
CHALLENGES AND AI WINTERS

- **1970s-1980s:** AI suffered from unmet expectations, leading to funding cuts and reduced interest.

- Limitations in computing power and the complexity of real-world problems led to "AI winters."

1956 Dartmouth Conference · 1970's Inflated Hype · 1974-1980 AI Winter I · 1980's New hopes · 1987-1993 AI Winter II · 2007 Data explosion led to improved features learning · 2020 Concerns about AI implications: regulatory trends

1950 · 1960 · 1970 · 1980 · 1990 · 2000 · 2010 · 2020