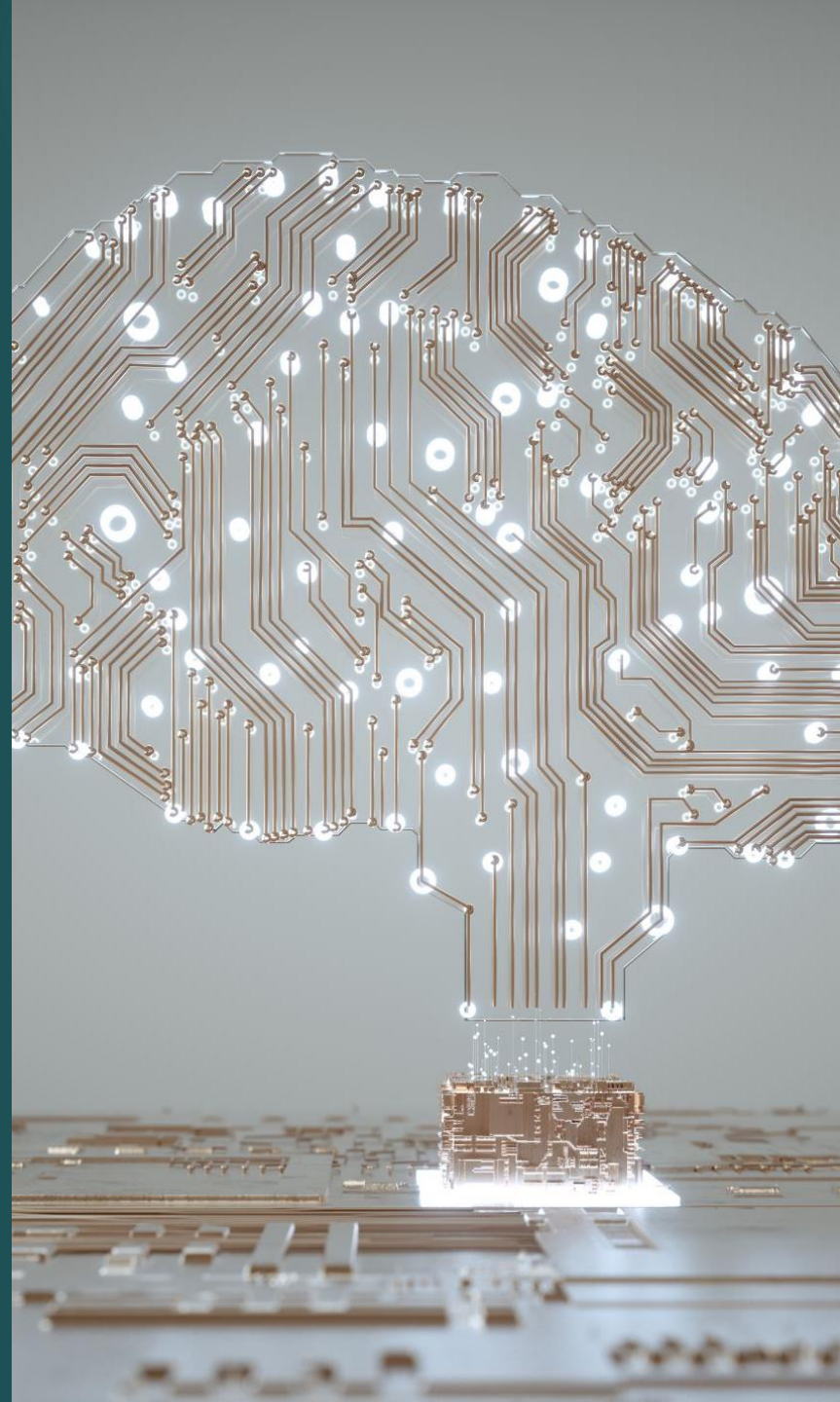
Artificial Intelligence

BS(AI & MMG)



Topics to cover

- Gestation of AI
- History of AI
- Trending AI tools
- Applications of AI
- State of the Art AI
- Classification of AI
  - Weak AI
  - Strong AI
  - Evolutionary AI
  - Super AI

HISTORY OF AI

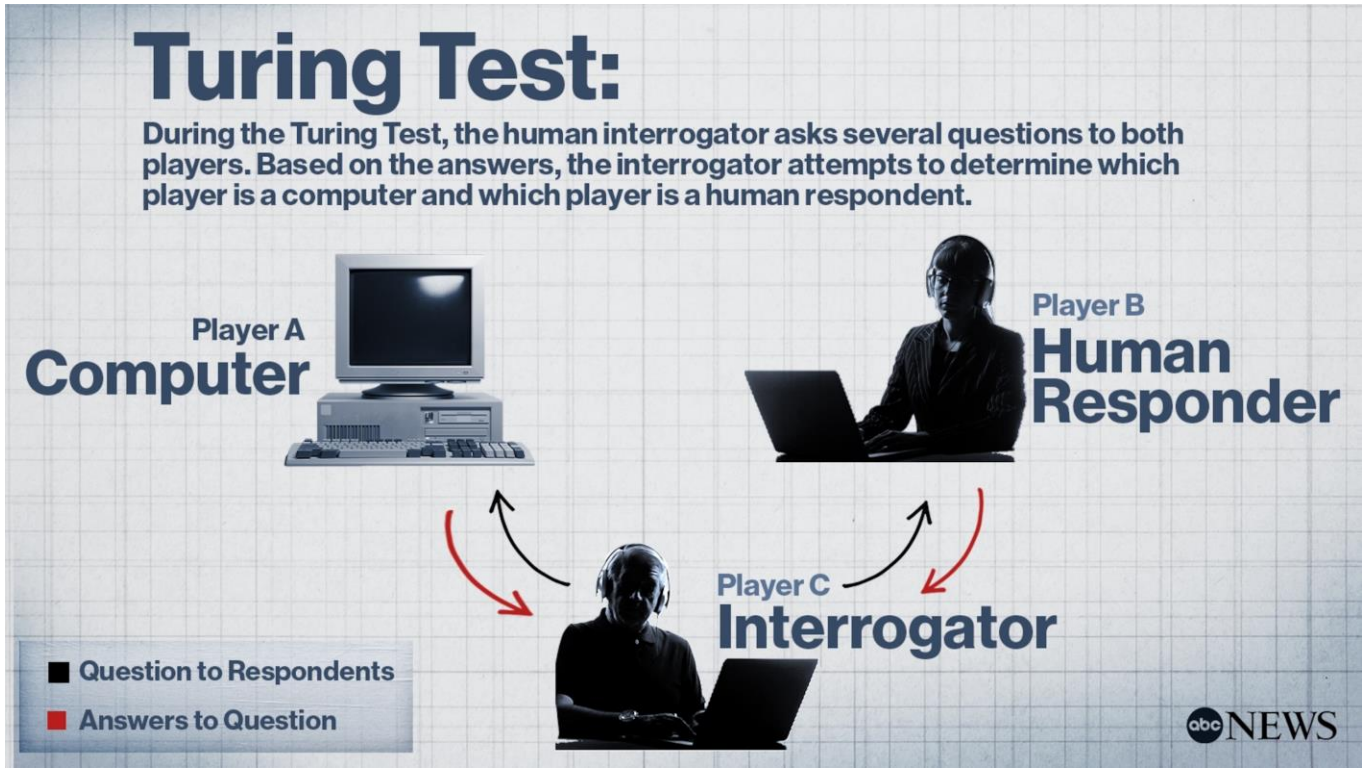
- **Gestation of AI:**
  - First work, now generally recognized as AI, was done by Warren McCulloch and Walter Pitts (1943).
    - They proposed a model of artificial neurons

HISTORY OF AI

- **Gestation of AI:**
  - Two undergraduate students at Harvard, Marvin Minsky and Dean Edmonds,
  - Built the first neural network.
  - The SNARC, as it was called, used 3000 vacuum tubes

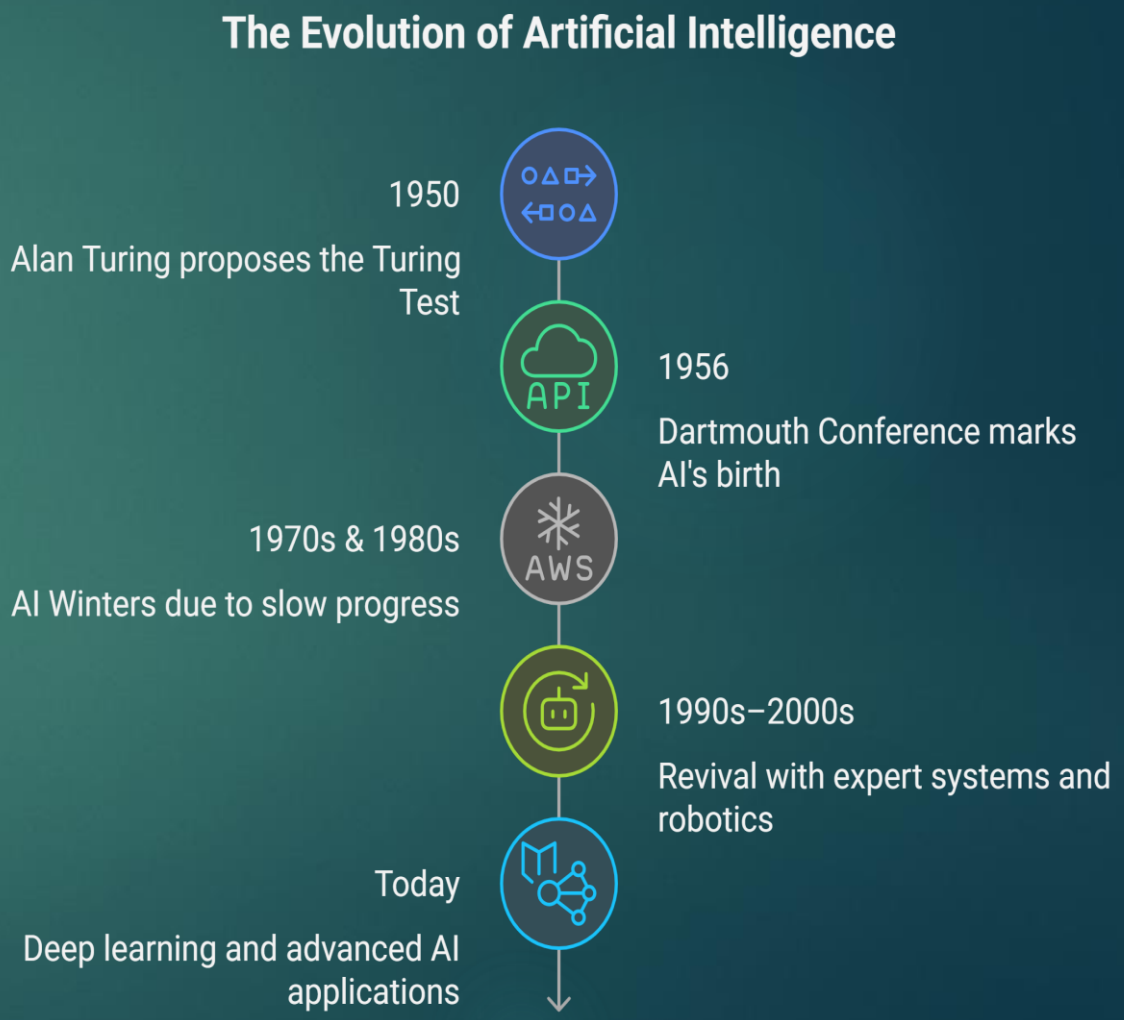
HISTORY OF AI

- **Gestation of AI:**
  - Alan Turing's vision was perhaps the most influential
  - Proposed Turning Test
  - Introduced the machine learning, genetic algorithms, and reinforcement learning.



History of AI

- **Alan Turing (1950):** Proposed the famous "Turing Test" to check if a machine can imitate human conversation.
- **Dartmouth Conference (1956):** Marked the official birth of AI as a field. Researchers like John McCarthy (father of AI), Marvin Minsky, and Herbert Simon explored the possibility of human-level AI.
- **AI Winters (1970s & 1980s):** Funding dried up when progress was slow.
- **1990s–2000s:** Revival with expert systems, robotics, and machine learning.
- **Today:** Deep learning, self-driving cars, ChatGPT, AlphaGo, and large-scale data-driven AI.



SOME TRENDING AI TOOLS IN 2025

AI Assistants & Chatbots

- **ChatGPT**: A versatile AI assistant for tasks like writing, brainstorming, and coding.
- **Claude 4**: Known for its conversational fluency and strong contextual understanding.
- **Perplexity AI**: Combines web search with summarization and citation generation.

Creative & Design Tools

- **Adobe Firefly**: Generates images, videos, and text effects with a focus on creative professionals.
- **GlamAI**: Offers virtual try-ons for fashion, makeup, and hairstyles, enhancing online shopping experiences.
- **ElevenLabs**: Provides advanced text-to-speech synthesis and AI-generated music creation.

Productivity & Automation

- **Zapier with AI Agents**: Automates workflows by connecting various apps and services.
- **Acrobat Studio**: Transforms PDFs into interactive documents with AI-powered assistants.
- **Grammarly GO**: Assists with writing tasks, offering suggestions for tone, clarity, and style.

Video & Multimedia Generation

- **Veo 3**: Google's AI model that generates 4K videos with synchronized audio.
- **Synthesia**: Creates AI-generated videos with avatars in multiple languages.
- **Pictory**: Converts text content into engaging videos, ideal for content creators.

Coding & Development Tools

- **Mistral Devstral**: An open-source AI model optimized for coding tasks.
- **GitHub Copilot**: Assists developers by suggesting code snippets and functions.
- **Replit**: An online IDE with integrated AI tools for collaborative coding.

Applications of AI

- AI in Gaming: Chess, Poker, Tic Tac Toe
  - Machine can think large number of moves
- AI in NLP: Chatbots, Alex, Siri etc
  - Machine can understand human language
- AI in Healthcare: Fast Diagnosis
  - Robotic Surgery
- AI in Finance: Adaptive Intellegince
  - Trading Algorithm etc
- AI in Data Security: AEG BOT, AI2
  - Helps in making applications more secure

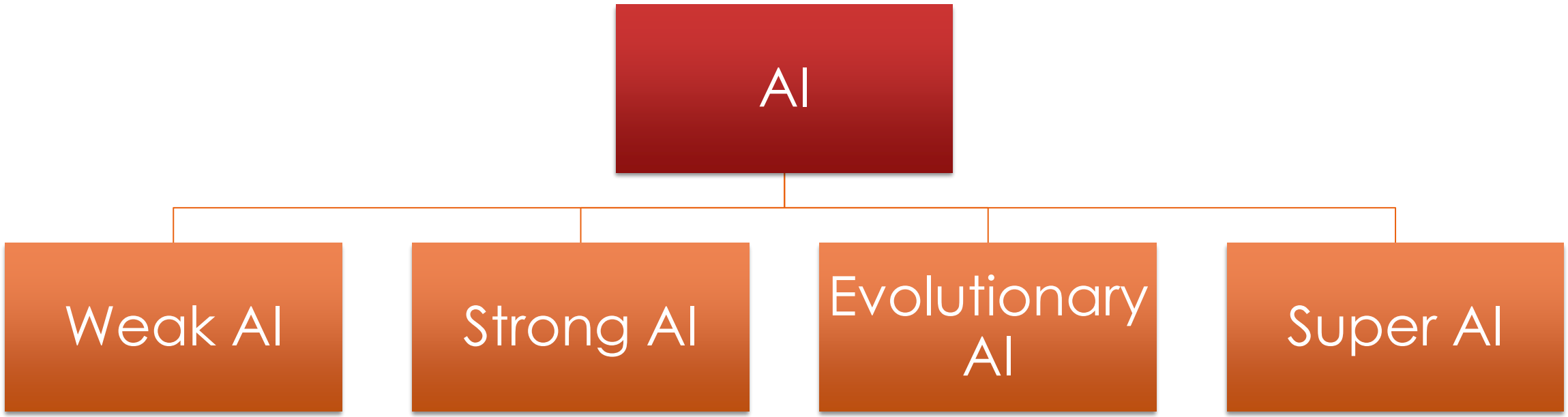
Applications of AI

- Expert Systems:
  - Integration of software, machine and special information to provide reasoning and advice
- Computer Vision:
  - Machine can understand the visuals
- Speech Recognition:
  - Extract the meaning of sentence by human talk (Slang Removal, Noise Removal etc)
- Robotics:
  - Erica, Sophia, Ameca is the most modern humanoid robot
- E-Commerce:
  - Automatic Recommendation of products etc

State of the Art AI

- **Computer vision:** AI can recognize faces, detect tumors in X-rays, and even track human joints in real time.
- **Natural Language Processing:** Systems like ChatGPT can generate essays, translate languages, or summarize research papers.
- **Robotics & Games:** AlphaGo beat world champions, and self-driving cars can navigate city roads.
- **Generative AI:** Tools like DALL·E or Stable Diffusion create realistic images and videos.

Classification of AI



Weak AI (NARROW AI / ANI)

- AI built to do *one* specific task efficiently. It may look "smart," but it doesn't *understand*.
- **Key points:**
  - Operates within a limited, pre-defined scope.
  - Cannot transfer knowledge from one domain to another.
  - Focus is on *performance*, not *understanding*.
- **Examples:**
  - Siri/Alexa → Voice assistants that respond to commands but don't actually "know" you.
  - Google Translate → Can translate languages but doesn't understand culture.
  - Chess AI (Deep Blue Developed by IBM, 1997) → Beat Garry Kasparov, but can't even play checkers.

Strong AI (Artificial General Intelligence / AGI)

- AI that has human-like intelligence — can *learn, understand, and apply knowledge* across different domains.
- **Key points:**
  - Can generalize knowledge (learn cooking, music, science all together).
  - Works like a human mind: reasoning, problem-solving, adapting.
  - Still **theoretical** → No machine has achieved this yet.
- **Examples (fictional):**
  - Skynet (*Terminator*).
  - Data (*Star Trek*).
  - JARVIS (*Iron Man*).

Evolutionary AI

- It is the study and design of machines that simulate simple creatures and attempt to evolve
- AI that evolves and improves over time, inspired by biological evolution.
- **Techniques:** Genetic algorithms, evolutionary strategies.
- Examples:
  - Ants, Bees etc
  - Robots learning to walk through trial-and-error.
  - AI optimizing airplane wing shapes.

Super AI

- Hypothetical - Machines that can be more intelligent than humans.
- Intelligence far beyond the smartest human minds.
- **Key points:**
- Could outperform humans in science, art, emotions, and creativity.
- Theoretical — does not exist today.
- Raises ethical and safety concerns.
- **Examples (fictional):**
- Ultron (*Avengers*).
- HAL 9000 (*2001: A Space Odyssey*).