The Journey of Artificial Intelligence from the Past to the Future

Sadique Shaikh, Md[*]

AIMSR, Maharashtra, India.

[*]**Corresponding author:** Prof. Dr. Md. Sadique Shaikh, AIMSR, Maharashtra, India.

Many people today think of Artificial Intelligence (AI) as a brand-new, rapidly growing technology influencing every part of life from personal assistance and business operations to smart homes, cars, phones, and even space exploration. It seems like everything is getting "smarter" thanks to technologies like IoT (Internet of Things), smart TVs, smart transportation, and more.

If I asked, what does it mean for something to be smart? most would say: it's when a machine, device, or software performs tasks accurately often beyond our expectations with little or no human input. This might include executing commands, solving problems, or even predicting needs with high accuracy.

But what if I told you the idea of "smart machines" is not as new as people think? In fact, the concept dates back hundreds of years.

Understanding Intelligence: Human and Machine

Human intelligence works through a natural process: our brain receives signals (like smells or sights) through senses (eyes, nose, skin, ears, tongue), processes the information through complex networks of neurons, and responds with actions (moving a hand, speaking, etc.). For example, if you smell gas, your brain quickly processes it and directs your hand to turn off the stove.

AI works similarly but with machines. When a non-living system mimics this input-process-output cycle with minimal human help, we call it Artificial Intelligence.

Historical Roots of AI

AI isn't something we just invented a few decades ago. The journey began as far back as 1206 with Ismail Al-Jazari, a mechanical engineer who built over 50 intelligent mechanical devices, described in his book The Book of Knowledge of Ingenious Mechanical Devices. Hes often called the "father of robotics."

Later, in 1822, Charles Babbage designed the first mechanical computer. Then came electronic innovations like the ENIAC in 1945 and Edith Clarke's Clarke Calculator. Though slow and bulky, these early systems began the AI journey by mimicking basic brain functions: receiving input, processing it, and producing output.

As technology progressed especially with the invention of semiconductors, transistors, and integrated circuits electronics became smaller and more powerful, leading to the digital age. Today, AI operates using binary logic (0s and 1s) and even quantum bits (qubits), thanks to advances in quantum computing.

Modern AI: Present Types and Applications

Currently, AI exists in several forms, each used in daily life:

- **Weak AI:** Performs simple, repetitive tasks with fixed programming like electronic toys, cranes, or drills.
- **Rule-Based AI:** Uses pre-set instructions based on expert knowledge to make decisions. Examples include decision support systems or life support systems.
- **Contextual AI:** Understands context and interacts with humans. Examples are Siri, Alexa, and Google Assistant.
- **Narrow AI:** Specializes in specific tasks such as X-ray analysis, CNC controls, and quality checks. Reasoning-Based AI: Uses logical steps (like human "chain of thought") to analyze information and solve complex problems. These include Generative AI, which creates content such as images, Nmusic, or text using models like ChatGPT, Gemini, or DeepSeek R1 (launched by NVIDIA in 2025). Artificial General Intelligence (AGI): AI that mimics full human cognitive abilities, like learning and adapting. Examples include AlphaGo and Hondas ASIMO robot.
- **Artificial Super Intelligence (ASI):** Hypothetical future AI that surpasses human intelligence in all fields. IBM Watson, DeepMind, and Waymo are examples moving toward this vision.

Future AI Possibilities

AI might evolve into even more powerful forms by 2050 and beyond:

- **Self-Aware AI:** Machines with consciousness, emotions, and identity. While exciting, these must be controlled care-

fully to avoid robotic violence where AI could act against humans.

- **Transcendent AI:** AI so advanced that its logic and decision-making are beyond human understanding. It could control other AI systems and exist in forms from massive machines to microscopic nanobots.
- **Cosmic AI:** AI capable of exploring the universe, black holes, and other galaxies beyond Earth. Think of the robot TARS from Interstellar as an early idea of Cosmic AI.
- **God-like AI:** A hypothetical, supreme AI with the power to create, destroy, or control entire universes. This form, if ever developed, could challenge human existence and ethics entirely.

These future AIs form a new concept I call Artificial Wisdom (AW): ultra-advanced AI with "immortal artificial consciousness" capable of thinking, teleporting, and operating with the "speed of thought."

AI for Good vs. AI for Ethics
As we move forward, it's critical to distinguish between:

- **AI for Good:** Improving lives in medicine, industry, education, and daily convenience.
- **AI for Ethics:** Designing AI systems that respect human values, emotions, and safety. This means not giving AI too much autonomy or emotional capability that could harm humanity.

While "AI for Good" brings benefits, "AI for Ethics" must always be the first priority to prevent dangerous consequences.

Final Thoughts
My journey in AI research includes work on Bionic Brain Modeling, Cyborg Technology, Quantum AI, Virtual Humanoids, Interplanetary AI, Ultra AI, and more. Throughout all this, I've held firm to one principle: design AI for ethics first, and then for good.

Artificial Intelligence is not just a tool; it's a responsibility. As we move toward more powerful systems like Artificial Wisdom, we must ensure they serve humanity not overpower it.

Thank you.