

INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

Volume 7 | Issue 4

2024

© 2024 *International Journal of Law Management & Humanities*

Follow this and additional works at: <https://www.ijlmh.com/>

Under the aegis of VidhiAagaz – Inking Your Brain (<https://www.vidhiaagaz.com/>)

This article is brought to you for “free” and “open access” by the International Journal of Law Management & Humanities at VidhiAagaz. It has been accepted for inclusion in the International Journal of Law Management & Humanities after due review.

In case of **any suggestions or complaints**, kindly contact Gyan@vidhiaagaz.com.

To submit your Manuscript for Publication in the **International Journal of Law Management & Humanities**, kindly email your Manuscript to submission@ijlmh.com.

An Overview of Artificial Intelligence and Its Classification

KANI MALAR RAJENDRAN¹

ABSTRACT

Artificial intelligence is changing our world in each and everything we do in terms of how we shop to how doctors diagnose a disease. The term Artificial intelligence refers to computer systems which can perform monotonous tasks without seeking human interference. It can also be called as intelligent machines that can mimic human cognitive functions like learning and problem solving. Artificial Intelligence also refers to a wide range of technologies that power many of the services and goods we use in our daily routine from applications that recommend television shows to chat bots that provide customer support in actual time. The main objective of designing Artificial Intelligence is emulate human intelligence in machine. The tasks includes functions such as reasoning, learning, problem solving and decision making. The core concept of Artificial Intelligence includes Machine Learning, Neural Networks, Deep Learning, Natural Language Processing, Robotics, Cognitive Computing, Expert systems. The concepts in each of this helps to build systems that can automate, enhance, and in some cases outperform human capabilities. Artificial Intelligence has already got the potential to revolutionize many industries and fields, such as health-care, finance, transportation, and education. However, it further raises important ethical and societal questions, for instance., the impact on employment and privacy, and the responsible development and use of Artificial Intelligence Technology. This research paper emphasizes mainly on the types of Artificial Intelligence based on its functions and capabilities to know more in detail about its specific performance in all walks of life.

Keywords: *Artificial Intelligence, Classification, Capabilities.*

I. INTRODUCTION

The term Artificial intelligence refers to computer systems which can perform monotonous tasks without seeking human interference². Artificial Intelligence refers to a wide range of technologies that power many of the services and goods we use in our daily routine from applications that recommend television shows to chat bots that provide customer support in

¹ Author is an Advocate at Madras High Court, India.

² What Is Artificial Intelligence? Definition, Uses, and Types, <https://www.coursera.org/articles/what-is-artificial-intelligence> last visited on 14.08.2024

actual time. Despite continuing advances in computer processing speed and memory capacity, there are as yet no programs that can match full human flexibility over wider domains or in tasks requiring much everyday knowledge³. On the other hand, some programs have attained the performance levels of human experts and professionals in executing certain specific tasks, so that artificial intelligence in this limited sense is found in applications as diverse as medical diagnosis, computer search engines, voice or handwriting recognition.

II. DIVERSE APPLICATIONS OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence has already got the potential to revolutionize many industries and fields, such as health-care, finance, transportation, and education. However, it further raises important ethical and societal questions, for instance., the impact on employment and privacy, and the responsible development and use of **Artificial Intelligence Technology**⁴. **The following are** some examples illustrating the diverse applications of Artificial Intelligence⁵:

- Virtual Personal Assistants
- Autonomous Vehicles
- Health-care Diagnosis and Treatment
- Recommendation Systems
- Fraud Detection

III. WORKING OF ARTIFICIAL INTELLIGENCE

The working of Artificial Intelligence is through a combination of data, algorithms and other computational power. Artificial Intelligence uses a wide range of techniques and approaches that enable machines to simulate human-like intelligence and also to perform tasks that traditionally require human assistance. The working overview of Artificial Intelligence thus includes,

- Data Collection
- Data Pre-processing
- Algorithm Selection

³ What is Artificial Intelligence?, <https://www.geeksforgeeks.org/what-is-artificial-intelligence/> last visited on 14.08.2024

⁴ Explore the future of artificial intelligence with these top 10 AI films in 2024, <https://timesofindia.indiatimes.com/technology/social/explore-the-future-of-artificial-intelligence-with-these-top-10-ai-films-in-2024/photostory/112545047.cms?picid=112545144> last visited on 15.08.2024

⁵ artificial intelligence, <https://www.britannica.com/technology/artificial-intelligence> last visited on 15.08.2024

- Model Training
- Model Evaluation
- Model Deployment
- Continuous Learning and Improvement
- Inference and Decision-Making

IV. CLASSIFICATION OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence is classified into two

(A) Capability-based types of artificial intelligence

Artificial intelligence is classified into three types based on capabilities⁶. They are

a. Narrow Artificial Intelligence

Narrow Artificial Intelligence is also called as Artificial narrow intelligence or weak Artificial Intelligence⁷. The tools of Narrow Artificial Intelligence are designated to carry out a particular command or an action. The technologies of Artificial Narrow Intelligence are built so as to serve and excel in one cognitive capability. They will not be able to learn a particular skill independently beyond its design. They frequently utilize machine learning and neural network algorithms in order to complete these specified tasks. For instance, natural language processing can recognize and respond to voice commands only. They can not be able to perform other tasks apart from recognizing and responding to voice commands⁸. There this is a type of Narrow Artificial Intelligence.

Examples of Narrow Artificial Intelligence:

- Image recognition software⁹
- Self-driven cars
- Artificial Intelligence virtual assistants.

b. Artificial General Intelligence (AGI):

Artificial General Intelligence is a hypothetical type of intelligent agent¹⁰. Artificial General

⁶ Sunny Betz, 7 Types of Artificial Intelligence, <https://builtin.com/artificial-intelligence/types-of-artificial-intelligence> last visited on 15.08.2024

⁷ Vijay Kanade, What Is Narrow Artificial Intelligence (AI)? Definition, Challenges, and Best Practices for 2022, <https://www.spiceworks.com/tech/artificial-intelligence/articles/what-is-narrow-ai/> last visited on 16.08.2024

⁸ Understanding Narrow AI: Definition, Capabilities, and Applications, <https://deepai.org/machine-learning-glossary-and-terms/narrow-ai> last visited on 16.08.2024

⁹ Id.

¹⁰ Supra 2

Intelligence has the potential to accomplish any intellectual task which humans can. In some exceptional cases, it outperforms capabilities of a human being in such a way that is beneficial to researchers and companies¹¹. There are certain companies that conduct researches such as Open AI to advance Artificial General Intelligence and what it actually means for companies, governments, and humanity alike. Artificial General Intelligence works by incorporating logic into the Artificial Intelligence and machine learning processes instead of simply applying an algorithm which learns and act as a development mirrors that of humans.

c. Artificial Super Intelligence:

Artificial Super Intelligence is a hypothetical software based Artificial Intelligence system with an intellectual scope beyond human intelligence¹². At the most fundamental level, this Super Intelligence has cutting-edge cognitive functions and highly developed thinking skills more advanced than any human. Not all thinkers are aligned on the feasibility of something like an ASI. Human intelligence is the product of specific evolutionary factors and may not represent an optimal or universal form of intelligence. Moreover, the brain's workings are still not fully understood making it difficult to recreate via software and hardware.

(B) Functionality-based types of artificial intelligence:

Functionality based types of Artificial Intelligence are further divided into

a. Reactive Machine Artificial Intelligence:

Reactive machines are next evolution in Artificial Intelligence.¹³ They are highly reactionary. They usually respond to immediate requests and tasks. But they can not able to store memory, neither they can learn from past experiences nor improve their functionality through experiences¹⁴. In Addition to this, reactive machines can respond only to a limited combination of inputs. Reactive machine based are highly helpful for performing basic autonomous functions including filtering spam from an email inbox or recommending items based on shopping history on one's site¹⁵.

Examples of Reactive Machine Artificial Intelligence:

¹¹ Tim Mucci, Cole Stryker, What is artificial superintelligence?, <https://www.ibm.com/topics/artificial-superintelligence> last visited on 17.08.2024

¹² Supra 7

¹³ Exploring Reactive Machines: Next Evolution in Artificial Intelligence, <https://www.prodigitalweb.com/reactive-machines-ai-technology/> last visited on 18.08.2024

¹⁴ What is Artificial General Intelligence?, <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-artificial-general-intelligence-agi> last visited on 18.08.2024

¹⁵ Reactive Machines, <https://www.artificial-intelligence.blog/terminology/reactive-machines> last visited on 18.08.2024

- IBM Deep Blue: IBM's reactive Artificial Intelligence machine Deep Blue can read real-time cues as to beat Russian chess grand master Garry Kasparov in a 1997 chess match.
- Netflix Recommendation Engine: Media platforms such as Netflix frequently utilize Artificial Intelligence powered recommendation engines, processing data from a user's watch history to determine and suggest what they would be most likely to watch next.

b. Limited Memory Artificial Intelligence:

The core of Limited memory Artificial Intelligence is the concept and function of deep learning so as to imitates the functions of neurons in the human brain which allows a machine to absorb data from experiences-based and to learn from them¹⁶. This helps in improving the accuracy of its functions and actions over time. Limited memory Artificial Intelligence typically store past data and use the same to suggest predictions¹⁷. This indicates that , it actively builds its own limited, short-term knowledge base and performs tasks based on that knowledge. The majority of Artificial Intelligence applications uses the limited memory model.

c. Theory of mind artificial intelligence:

The concept of theory of mind is that, this type of Artificial Intelligence can perceive and pick up on the emotions of others. Therefore the term theory of mind is borrowed from psychology which states humans' ability to read the emotions of others and to ascertain future actions based on the information¹⁸. This concept have not been fully realized yet. But this type stands as the next substantial milestone in the development of Artificial Intelligence. Research brings out that this might have its own risks in addition to its positive changes¹⁹.

d. Self-Aware Artificial Intelligence:

Self aware Artificial Intelligence can detects emotions of human beings in addition of having a sense of self and human level intelligence²⁰. This is considered as the ultimate goals in Artificial

¹⁶ Limited Memory AI – Enhancing Machine Learning with Restricted Data Storage, <https://aiforsocialgood.ca/blog/limited-memory-ai-enhancing-machine-learning-with-restricted-data-storage>

¹⁷ Understanding the four types of AI, from reactive robots to self-aware beings, <https://theconversation.com/understanding-the-four-types-of-ai-from-reactive-robots-to-self-aware-beings-67616> last visited on 19.08.2024

¹⁸ Felp Roza, Theory of Mind and Artificial Intelligence, <https://towardsdatascience.com/theory-of-mind-and-artificial-intelligence-231927fabe01> last visited on 19.08.2024

¹⁹ F. Cuzzolin, A. Morelli, B. Cirstea and B. J. Sahakian, Knowing me, knowing you: theory of mind in AI, <https://www.cambridge.org/core/journals/psychological-medicine/article/knowning-me-knowing-you-theory-of-mind-in-ai/C935A66A018117BA5B1991071393655F> last visited on 20.08.2024

²⁰ If AI becomes conscious, how will we know?, <https://www.science.org/content/article/if-ai-becomes-conscious-how-will-we-know> last visited on 20.08.2024

Intelligence and also as the final stage of the development of Artificial Intelligence²¹. This possesses self-awareness, a stage beyond theory of mind. Once this level is achieved, the machines of Artificial Intelligence will be beyond our control. This is because they will not only be able to sense the feelings of others, but will also have a sense of self as well.

Example of self-aware artificial intelligence

- Sophia, a robot by robotics company Hanson Robotics.

V. CONCLUSION AND SUGGESTIONS

It is clearly understood that Artificial Intelligence will highly have an impact in our daily lives starting from house hold works to office works. This will be achieved with the continued advancements of technology enabling Artificial Intelligence systems to become highly capable and integrated to utilize through wide range of applications and industries. The future of Artificial Intelligence is more likely to involve continued advancements in machine learning, natural language processing, and computer vision. The growth has already been seen in the areas including health-care, finance, transportation, and customer service. Additionally, there may be a chance of increasing use of Artificial Intelligence in areas such as decision making in criminal justice, hiring and education, which will raise ethical and societal implications that need to be addressed.

²¹ The Intricate Path to Creating Self-Aware AI, <https://medium.com/illumination/the-intricate-path-to-creating-self-aware-ai-f1008e6e92cb> last visited on 20.08.2024