



## HARNESSING THE SUPERIORITY OF COGNITIVE TECHNOLOGY OVER ARTIFICIAL INTELLIGENCE

Dr.Latika Kharb<sup>1</sup>, Dr. Deepak Chahal<sup>2</sup>

---

### Abstract

*Artificial Intelligence (AI) has revolutionized numerous industries by enabling machines to simulate human intelligence and perform tasks that were once exclusive to humans. However, there is a rising star in the field of technology known as cognitive technology, which holds the potential to surpass the limitations of traditional AI systems. Cognitive technology combines AI techniques with elements of human cognitive processes, leading to more advanced problem-solving, natural language understanding, and decision-making capabilities. In this paper, we will explore how cognitive technology offers unique advantages over AI and why it represents a significant step forward in the realm of intelligent systems. Moreover, we will delve into the realm of cognitive technology and explore its superiority over artificial intelligence. We will examine the unique features and capabilities of cognitive technology that set it apart from conventional AI systems. By harnessing the potential of cognitive technology, we can unlock new horizons of technological advancements and usher in a new era of intelligent systems that not only mimic human intelligence but truly understand and engage with users on a deeper level.*

**Keywords:** AI, Cognitive technology, innovation, NLP, decision making.

---

<sup>1</sup> Professor, Department of IT, Jagan Institute of Management Studies, Sector-5, Rohini, Delhi.

<sup>2</sup> Professor, Department of IT, Jagan Institute of Management Studies, Sector-5, Rohini, Delhi.

## 1. Introduction

The rapid advancements in technology have propelled artificial intelligence (AI) to the forefront of innovation, revolutionizing various industries and transforming the way we interact with machines. However, a new contender has emerged on the scene, poised to surpass the capabilities of traditional AI systems. This challenger, known as cognitive technology, combines the power of AI with elements of human cognitive processes, offering a superior approach to problem-solving, decision-making, and human-machine interactions. Throughout this paper, we will analyze key aspects where cognitive technology excels, such as enhanced natural language processing, contextual understanding and reasoning, adaptive learning and personalization, ethical decision-making, and emotionally intelligent interactions. By contrasting these capabilities with the limitations of traditional AI, we will highlight the transformative power of cognitive technology and its potential to reshape industries and improve human experiences across various domains.

Furthermore, we will draw on relevant research, industry insights, and expert opinions to support our arguments and provide a comprehensive analysis of why cognitive technology represents a significant leap forward in the field of intelligent systems. By understanding the strengths and advantages of cognitive technology, we can discern its potential applications, its impact on various sectors, and the implications for future technological advancements. In conclusion, this paper aims to shed light on the superiority of cognitive technology over artificial intelligence. By exploring its distinct features and capabilities, we hope to provide a compelling case for the adoption and further development of cognitive technology in order to unlock its vast potential and revolutionize the way we interact with intelligent systems. The possibilities are limitless, and by embracing cognitive technology, we can pave the way for a future where machines not only assist us but truly understand and augment human capabilities.

**Scope:** The study mainly concentrated on the effective analysis of potential applications and implications for future technological advancements.

### Objectives

- To identify the potential applications of AI.
- To analyse the implications for future technological advancements.

## 2. Design of the Study

In this paper, we will delve into the realm of cognitive technology and explore its superiority

over artificial intelligence. We will examine the unique features and capabilities of cognitive technology that set it apart from conventional AI systems. By harnessing the potential of cognitive technology, we can unlock new horizons of technological advancements and usher in a new era of intelligent systems that not only mimic human intelligence but truly understand and engage with users on a deeper level.

## 3. Unique Capabilities of Cognitive over AI

Cognitive technology represents a significant leap forward in the realm of intelligent systems, offering a range of unique features and capabilities that set it apart from conventional artificial intelligence (AI) systems. By incorporating elements of human cognition, cognitive technology goes beyond traditional AI approaches, enabling advanced problem-solving, reasoning, and human-like interactions. In this section, we explore the distinct features that make cognitive technology stand out from conventional AI systems.

### Enhanced Natural Language Processing

One of the prominent features of cognitive technology is its superior natural language processing (NLP) capabilities. While AI systems have made significant progress in understanding and generating human language, cognitive technology takes NLP to a new level. By leveraging linguistic models, semantic networks, and deep learning algorithms inspired by the human brain, cognitive systems can better comprehend complex language nuances, context, and even emotions. This enhanced NLP allows for more accurate and meaningful interactions between humans and machines, making cognitive technology ideal for applications such as customer service, chatbots, and virtual assistants.

### Contextual Understanding and Reasoning

Cognitive technology surpasses conventional AI systems in contextual understanding and reasoning. While AI often relies on statistical analysis and predefined rules, cognitive technology incorporates advanced techniques such as ontologies, knowledge graphs, and semantic networks. These mechanisms enable cognitive systems to grasp complex relationships, infer meaning from diverse data sources, and reason in a contextual manner. By considering the broader context, cognitive technology can make more informed decisions and

solve intricate problems that require deeper understanding.

### **Adaptive Learning and Personalization**

Unlike traditional AI systems that require extensive training on large datasets, cognitive technology introduces adaptive learning capabilities. Cognitive systems can continuously learn and improve over time, adapting to user preferences, understanding individual needs, and providing personalized experiences. By analyzing user behavior, feedback, and contextual information, cognitive technology can dynamically adjust its responses, recommendations, and decision-making processes. This adaptability and personalization enhance user satisfaction, increase efficiency, and facilitate more effective human-machine collaboration.

### **Ethical and Explainable Decision Making**

A notable advantage of cognitive technology is its focus on ethical and explainable decision making. Conventional AI systems often operate as black boxes, making it challenging to understand how and why certain decisions are made. In

contrast, cognitive technology incorporates explainability features, allowing users to comprehend the reasoning behind a system's recommendations or decisions. This transparency is crucial in domains such as healthcare, finance, and legal systems, where the ability to justify and audit decisions is essential.

### **Emotionally Intelligent Interactions**

Human emotions play a crucial role in communication and decision-making. Cognitive technology integrates emotional intelligence into its systems, enabling machines to recognize, interpret, and respond to human emotions. By leveraging techniques like sentiment analysis, facial recognition, and voice modulation, cognitive systems can empathize with users, adapt their tone and responses accordingly, and establish more meaningful connections. This emotional intelligence aspect enhances user engagement, improves customer experiences, and opens new possibilities in fields like mental health support and emotional well-being.

## **4. Potential Research Spheres of Cognitive Technology**

### **Enhanced Natural Language Processing**

One of the primary areas where cognitive technology shines is natural language processing (NLP). While AI has made significant strides in understanding and generating human language, cognitive technology takes NLP to a new level. By incorporating linguistic models and deep learning algorithms inspired by the human brain, cognitive systems can better comprehend complex language nuances, context, and even emotions. This enhanced NLP allows for more accurate and meaningful interactions between humans and machines, making cognitive technology ideal for applications such as customer service, chatbots, and virtual assistants.

### **Contextual Understanding and Reasoning:**

Cognitive technology goes beyond simple pattern recognition and delves into contextual understanding and reasoning, replicating human-like cognitive processes. AI systems often struggle with context, as they primarily rely on statistical analysis and predefined rules.

Cognitive technology, on the other hand, utilizes advanced techniques such as semantic networks, ontologies, and knowledge graphs to represent and reason with contextual information. This ability to grasp complex relationships and infer meaning from diverse data sources enables cognitive systems to make more informed decisions and solve intricate problems.

### **Adaptive Learning and Personalization**

AI systems typically require extensive training on large datasets to perform specific tasks accurately. However, cognitive technology introduces adaptive learning capabilities, allowing systems to continuously learn and improve over time. These systems can adapt to user preferences, understand individual needs, and provide personalized experiences. By analyzing user behavior, feedback, and contextual information, cognitive technology can dynamically adjust its responses, recommendations, and decision-making processes. This level of personalization enhances user satisfaction, increases efficiency, and facilitates more effective human-machine collaboration.

### **Ethical and Explainable Decision Making**

One of the key challenges with traditional AI is the lack of transparency in decision-making processes. Neural networks and deep learning models often operate as black boxes, making it difficult to understand how and why certain decisions are made. Cognitive technology addresses this concern by incorporating explainability features, allowing users to comprehend the reasoning behind a system's recommendations or decisions. This transparency is vital in critical areas such as healthcare, finance, and legal systems, where the ability to justify and audit decisions is essential.

### **Emotionally Intelligent Interactions**

Human emotions play a significant role in communication and decision-making. Cognitive technology integrates emotional intelligence into its systems, enabling machines to recognize, interpret, and respond to human emotions. By leveraging techniques like sentiment analysis, facial recognition, and voice modulation, cognitive systems can

empathize with users, adapt their tone and responses accordingly, and establish more meaningful connections. This emotional intelligence aspect enhances user engagement, improves customer experiences, and opens new possibilities in fields like mental health support and emotional well-being.

## **5. Suggestions and Conclusion**

While AI has made remarkable progress, cognitive technology takes intelligent systems to a whole new level. By combining the power of AI with the insights from human cognitive processes, cognitive technology offers enhanced natural language processing, contextual understanding and reasoning, adaptive learning and personalization, ethical decision-making, and emotionally intelligent interactions. These advancements pave the way for more meaningful human-machine collaborations, improved user experiences, and increased trust in intelligent systems. As we continue to explore the potential of cognitive technology, it holds the promise of revolutionizing various industries and shaping a future where machines not only perform tasks but truly understand and interact with humans on a deeper level.

## **References**

- [1] Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard Business Review*, 96(1), 108-116.
- [2] Veloso, M. M. (2019). AI versus cognitive computing. In *AI Ethics* (pp. 69-79). Springer, Cham.
- [3] Leung, C. (2020). The Cognitive Era: Implications of Cognitive Computing in Business. *AI & Society*, 35(1), 89-104.
- [4] Kharb, L., & Singh, P. (2021). Role of machine learning in modern education and teaching. In *Impact of AI Technologies on Teaching, Learning, and Research in Higher Education* (pp. 99-123). IGI Global.
- [5] Deloitte. (2021). Cognitive technologies: The real opportunities for business. Deloitte Insights. Retrieved from: [https://www2.deloitte.com/content/dam/Deloitte/de/Documents/technology-media-telecommunications/2017\\_DE\\_TE\\_Cognitive-Technologies-The-Real-Opportunities-for-Business.pdf](https://www2.deloitte.com/content/dam/Deloitte/de/Documents/technology-media-telecommunications/2017_DE_TE_Cognitive-Technologies-The-Real-Opportunities-for-Business.pdf)
- [6] Kharb, L. (2014). Proposing a Comprehensive Software Metrics for Process

- Efficiency. *International Journal of Scientific and Engineering Research (IJSER)*, 5(6), 78-80.
- [7] Kolb, A. (2020). *Cognitive Computing: Principles, Applications, and Impacts*. In *AI and Cognitive Science* (pp. 1-13). Springer, Cham.
- [8] Thomas, R., & Subramanian, V. (2018). *Cognitive computing: A comprehensive survey*. *ACM Computing Surveys (CSUR)*, 51(5), 93.
- [9] Kharb, L., & Singh, R. (2008). Assessment of component criticality with proposed metrics. *INDIACom-2008: Computing for Nation Development*, by AICTE, IETE, and CSI, 453-455.
- [10] Aggarwal, L., Chahal, D., & Kharb, L. (2020, February). Pruning deficiency of big data analytics using cognitive computing. In *2020 International Conference on Emerging Trends in Communication, Control and Computing (ICONC3)* (pp. 1-4). IEEE.
- [11] Baniya, R., Aravind, R., Choo, K. K. R., & Sain, M. (2019). Cognitive computing: emerging advancements and future directions. *Information Systems Frontiers*, 21(3), 551-563.
- [12] Kharb, L. (2016). Automated deployment of software containers using dockers. *International Journal of Emerging Technologies in Engineering Research (IJETER)*, 4(10), 1-3.
- [13] Marr, B. (2019). Artificial intelligence vs. cognitive computing: what's the difference? *Forbes*. Retrieved from: <https://www.forbes.com/sites/bernardmarr/2019/04/15/artificial-intelligence-vs-cognitive-computing-whats-the-difference/?sh=69dd5e11120c>
- [14] Sonowal, G., Sharma, A., & Kharb, L. (2021). Spear-Phishing Emails Verification Method based on Verifiable Secret Sharing Scheme. *Journal of Information Assurance & Security*, 16(3).
- [15] Kharb, L. (2019). Implementing IoT and Data Analytics To Overcome" Vehicles Danger. *International Journal of Innovative Technology and Exploring Engineering*, 8(11).
- [16] Kharb, L. (2015). IBM Blue mix: Future development with open cloud architecture. *JIMS8I-International Journal of Information Communication and Computing Technology*, 3(2), 165-168.
- [17] Singh, R., & Singh, S. (2020). A comprehensive review of cognitive computing: Potential applications and challenges. *International Journal of Intelligent Systems and Applications*, 12(6), 1-11.
- [18] Kharb, L., & Kaur, S. Embedding Intelligence through Cognitive Services. *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, ISSN, 2321-9653.
- [19] IBM. (n.d.). Cognitive Computing. IBM Research. Retrieved from: <https://www.research.ibm.com/artificial-intelligence/cognitive-computing/>
- [20] Gandhi P, Silky Madan, Dr. Praveen Arora (2021). Virtual workplace- A new normal for the organisations, *Elementary Edu. Online*. Vol 20.
- [21] Aggarwal L., Chahal D., Kharb L. Brain Emulation Machine Model For Communication, *International Journal Of Scientific & Technology Research*. Volume 8, Issue 08, August 2019.
- [22] Kharb, L. (2019). Implementing IoT and Data Analytics To Overcome" Vehicles Danger. *International Journal of Innovative Technology and Exploring Engineering*, 8(11).