ISSN: 2756-2638
Transactions on Engineering and Computing Sciences; Vol. 14 No. 04 (2026) (121-132)
https://doi.org/10.14738/tmlai.1404.12057

Artificial Intelligence and the Human Brain: A Comparative Analysis of Capabilities and Trajectories

Rajan Thapaliya

University of Fairfax

The advent of artificial intelligence (AI) has sparked heated debates, raised serious concerns about the future of specific jobs, and, not to be overlooked, the advantages it brings. Although AI can be described as highly futuristic, some tasks still require human input, especially those that necessitate empathy. Notwithstanding this, AI outperforms human brains across several key areas, particularly in machine learning. Where large amounts of information need to be processed, AI shines, as the processing and integration of new information require only substantial energy and powerful computers for training. Generative AI has proven more effective than humans at detecting patterns in data, including medical imagery, digital fraud, speech, and plagiarism.

Additionally, AI has a significantly faster processing speed compared to human intelligence. The focus of this article is to determine whether, with all the aforementioned examples, AI will become strikingly dominant over the human brain. Where is the balance? Should AI replace humans in day-to-day activities, or is human assistance inevitable in all fields? This research examines the potential and limitations of AI in comparison to the human brain. By analyzing technological advancements and current trends, this paper aims to evaluate whether AI will ultimately surpass human intelligence or whether human intelligence will remain superior.

DEFINING INTELLIGENCE: HUMAN AND ARTIFICIAL PERSPECTIVES

Intelligence, broadly defined, refers to the ability to learn, reason, solve problems, and adapt to new situations (Legg & Hutter, 2007). From a human perspective, intelligence includes cognitive functions such as perception, memory, decision-making, and emotional understanding (Sternberg, 2019). Theories of intelligence provide the conceptual framework for AI development, shaping how machines are designed to mimic or complement human cognition. Charles Spearman's theory of general intelligence is considered the most rigorously validated model of human intelligence over the past century (Spearman, 1904). It is commonly referred to as the 'g factor'. The theory stated that individuals who excelled in one cognitive domain, for instance, verbal reasoning, performed significantly better in other domains such as mathematical or spatial abilities. Although influential, this theory faced criticism from psychologists such as Gardner and Sternberg, who advocated for the concept of multiple intelligences (Gardner, 1983; Sternberg, 2019). Despite debates, the g-factor remains central to intelligence research, shaping IQ testing and our understanding of cognitive abilities across different individuals. Howard Gardner’s multiple intelligences theory (1983) challenges the traditional view that intelligence is a single, general ability.

Instead, Gardner proposed that intelligence consists of numerous distinct types, each representing a different way of processing information and solving problems (Gardner, 1983). Gardner identified eight intelligences that highlight the diverse ways individuals may learn and excel. They are linguistic intelligence, logical-mathematical intelligence, musical intelligence, bodily-kinesthetic, spatial intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence.

GARDNER'S EIGHT TYPES OF INTELLIGENCE

Linguistic Intelligence

This refers to the ability to use language effectively, whether in speaking, writing, or comprehension. It involves sensitivity to the meanings, sounds, and rhythms of words. Some individuals possess strong vocabulary, storytelling abilities, persuasive communication skills, and a genuine enjoyment of reading and writing (Brown et al., 2020). Writers, lawyers, journalists, and teachers are among the professional individuals who exemplify this intelligence in practice, crafting narratives or arguments that resonate deeply. In history, poets like Maya Angelou refined their writing with linguistic emotion, captivating their audience, much as the oratory of Martin Luther King Jr. did, whose speeches galvanized movements. Currently, natural language processing has made significant strides with the advent of models like Grok, GPT models, and other generative AI systems, which generate human-like text at impressive speeds.

Logical-Mathematical Intelligence

The capacity for logical reasoning, abstract thinking, and problem-solving, often involving numbers and patterns, is what logical-mathematical intelligence entails. Individuals in this category possess good analytical skills, are comfortable with mathematics, have a high ability in deductive reasoning, which involves deducing cause-and-effect relationships, and have a love for puzzles. Examples from the past include mathematicians and physicists such as Isaac Newton and Albert Einstein, as well as programmers like Ada Lovelace. Scientists, engineers, and economists often thrive in this domain. With the advent of computers, AI has proven to excel, as seen in algorithms solving complex equations or chess engines like Stockfish outmaneuvering humans, as well as numerous programming software, tools, and applications (Russell & Norvig, 2021).

Spatial Intelligence

Gardner's description of spatial intelligence involved the ability to visualize and manipulate objects in space, understand their relationships, and think in three dimensions. Individuals with this type of intelligence possess a strong sense of direction, mental imagery, and the ability to interpret maps, graphs, and designs. To be a pilot, surgeon, or graphic designer, spatial intelligence is essential. AI applications include computer vision, autonomous vehicles such as self-driving cars, and robots; however, human intuition in spatial creativity remains unmatched.

Bodily-Kinesthetic Intelligence

Bodily-kinesthetic intelligence is the ability to control one's body movements and handle objects skillfully, often involving coordination and manipulation. This intelligence exhibits agility, fine motor skills, and a sense of timing or rhythm. People with strong bodily-kinesthetic intelligence include athletes, dancers, craftpeople, and surgeons.

Musical Intelligence

Musical intelligence entails the capacity to perceive, create, and appreciate music, including sensitivity to pitch, rhythm, tone, and timbre. Individuals with good musical skills can compose melodies, play instruments, or recognize musical patterns. Musicians, sound engineers, and music therapists wield it professionally. AI can generate music—OpenAI's MuseNet produces compositions—but it lacks the emotional resonance humans bring to performance or creation (Boden, 2016). This gap highlights a human strength in the intelligence race.

Interpersonal Intelligence

Interpersonal intelligence is the ability to understand and connect with others, interpreting their emotions, motivations, and behaviors. It is characterized by empathy, social acumen, and the ability to build relationships and resolve conflicts effectively. Teachers, counselors, and politicians rely on it to navigate human dynamics. AI simulates fundamental interactions. Chatbots handle customer queries but lack genuine empathy, leaving humans dominant in this social sphere as AI remains a tool, not a companion.

Intrapersonal Intelligence

Self-awareness, the capacity to understand one's own emotions, goals, and motivations, is what intrapersonal intelligence entails. It manifests as introspection, self-discipline, and a clear sense of identity or purpose. Philosophers like Socrates, who probe the nature of existence, writers like Virginia Woolf, who explore the inner world, and spiritual leaders like the Dalai Lama, who radiate wisdom, exemplify this trait. Therapists, entrepreneurs, and those pursuing personal growth tap into it. AI has no counterpart here; lacking consciousness or subjective experience, it cannot reflect on itself (Chalmers, 1995). This uniquely human quality bolsters the brain's position in the intelligence race.

Naturalist Intelligence

Naturalist intelligence involves recognizing and categorizing patterns in the natural world, encompassing plants, animals, and environmental systems. It has been defined by keen observation, an affinity for nature, and skill in classification. Biologists like Charles Darwin, who laid the groundwork for evolution, environmentalists like Rachel Carson, who championed the preservation of ecosystems, and farmers with deep ecological insight demonstrate this intelligence. Botanists, zoologists, and conservationists apply it in practical settings. AI aids with pattern recognition—identifying species via images—but human curiosity and contextual understanding drive discovery, suggesting a collaborative rather than competitive dynamic.

RELEVANCE TO THE INTELLIGENCE RACE

Gardner's framework highlights the diversity of human intelligence, in contrast to AI's current capabilities. AI excels in logical-mathematical and, increasingly, linguistic and spatial domains, often surpassing humans in speed and accuracy (e.g., AlphaGo's mastery of Go or AlphaFold's protein predictions). However, bodily-kinesthetic, musical, interpersonal, and intrapersonal intelligences remain human strongholds due to their reliance on physical embodiment, emotional depth, and consciousness, qualities AI lacks. Naturalist intelligence shows a mixed picture; AI can process ecological data, but humans bring interpretive insight to environmental challenges.

Gardner himself notes that intelligences are not fixed; they can develop or combine (Gardner, 1983). This adaptability gives the human brain an edge in the "intelligence race," as it integrates these domains holistically, whereas AI remains specialized in each domain. However, as AI evolves toward artificial general intelligence (AGI), it might simulate more of these intelligences, narrowing the gap.

STERNBERG'S TRIARCHIC THEORY OF INTELLIGENCE

In 1985, Robert J. Sternberg introduced the Triarchic Theory of Intelligence, a framework that redefines intelligence as more than a single, measurable entity, such as the intelligence quotient (IQ).

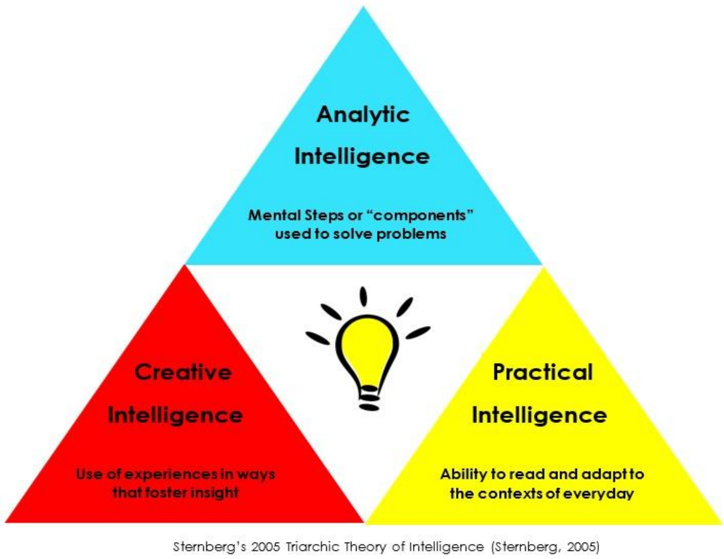

Figure 1: Sternberg's triarchic theory of intelligence. Adapted from Sternberg (2005).

Challenging the psychometric tradition, Sternberg argued that intelligence comprises three distinct but interrelated abilities: analytical, creative, and practical. This theory, detailed in *Beyond IQ*, states that these components work together to enable individuals to adapt to their environments, solve problems, and achieve goals. Unlike Gardner's focus on multiple independent intelligences, Sternberg emphasizes how these three aspects integrate within a person, offering a dynamic view of cognitive capability. The three interrelated abilities are discussed in detail.

Analytical Intelligence

Analytical intelligence is the ability to analyze, evaluate, and solve problems using logical reasoning and critical thinking. This involves breaking down complex issues, comparing options, and applying abstract thought. Sternberg likened it to "academic" intelligence, which excels in structured settings, such as solving math problems or interpreting texts. For example, a student performing well on a standardized test or a scientist testing hypotheses demonstrates analytical intelligence. In the AI-human intelligence debate, this is where AI excels. Chess engines, such as Deep Blue, which defeated Garry Kasparov in 1997, or modern algorithms that optimize logistics with precision (Russell & Norvig, 2021). Sternberg noted that while this ability is crucial, it is only one piece of the intelligence puzzle, as it is limited without creativity or practicality.

Creative Intelligence

Creative intelligence, also known as experiential intelligence, focuses on the capacity to generate novel ideas, think outside the box, and adapt to new situations. It is about synthesizing experiences to produce original solutions or insights, often thriving in ambiguity where rote analysis falls short. Sternberg highlighted two sub-processes: dealing with novelty, which involves inventing something new, and automatizing skills, which involves mastering a task through practice. An artist like Pablo Picasso, who reimagined form in Cubism, or an entrepreneur like Elon Musk, who pushes technological boundaries, exemplifies this intelligence. In education, it is the student who devises an unconventional project rather than memorizing facts. AI has made significant strides in this area; tools like DALL-E generate art or music, but Sternberg would argue that human creativity, driven by emotion and context, retains an edge over AI's data-driven outputs (Boden, 2016). This component underscores the brain's adaptability, a key advantage in the intelligence race.

Practical Intelligence

Practical intelligence, also known as contextual intelligence, is the ability to apply knowledge to real-world situations, adapt to various environments, and achieve practical goals. It involves "street smarts". It is the unspoken skills learned through experience rather than formal or class knowledge. Sternberg emphasized its role in everyday problem-solving, like negotiating a deal or managing a household. Unlike analytical intelligence, it is less about abstract logic and more about achieving contextual success, often in culturally specific contexts. While AI can optimize predefined tasks, such as navigation apps, it lacks the intuitive, adaptive judgment that humans use in unpredictable social or physical settings.

RELEVANCE TO THE INTELLIGENCE RACE

Sternberg's triarchic theory suggests that accurate intelligence results from the interplay among the three abilities. Sternberg argued that intelligence is not fixed but context-dependent, shaped by how one leverages these components in their environment (Sternberg, 1985). In education, teaching should nurture all three, not just analytical skills. Compared to Gardner's theory, Sternberg's is less focused on separate domains and more concerned with functional processes, offering a complementary and broader perspective on human intelligence. In the intelligence debate, Sternberg's theory can be used to argue both sides. AI dominates analytical intelligence with its computational power, solving problems faster and more accurately than humans in structured domains (Jumper et al., 2021). In creative intelligence, AI has made considerable strides in generating high-quality graphic designs, texts, and even snippets of code, but still lacks human aspects such as emotional depth or deep insights upon querying. Practical intelligence remains a human stronghold. AI cannot navigate the unpredictable realities of life as humans do, from parenting to diplomacy. Sternberg's view suggests that while AI may outpace humans in specific sectors, the brain's integrated adaptability across all three gives it a holistic advantage, potentially favoring a collaborative future over a definitive "winner."

COMPUTATIONAL INTELLIGENCE THEORY

Computational Intelligence (CI) Theory is a branch of artificial intelligence (AI) that focuses on developing systems capable of learning, adapting, and evolving to solve complex problems. Unlike traditional AI, which relies on explicit programming and logical reasoning, CI emphasizes methods inspired by nature, human cognition, and biological processes (Engelbrecht, 2007).

KEY COMPONENTS OF COMPUTATIONAL INTELLIGENCE

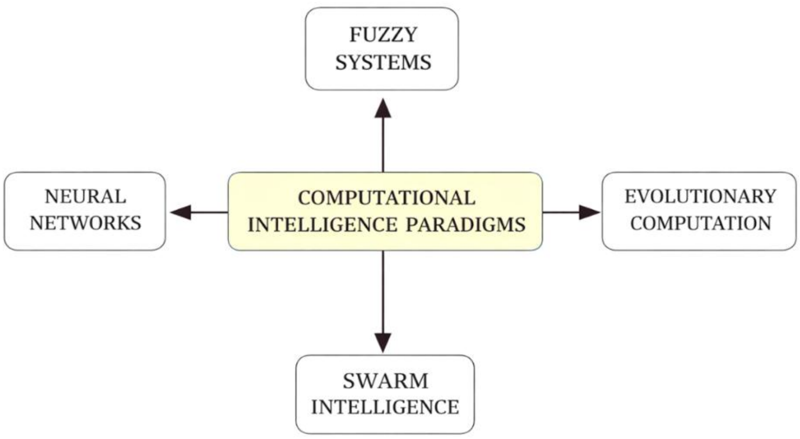

Figure 2: Key components of computational intelligence. Adapted from Engati (2025).

1. **Artificial Neural Networks (ANNs):** Modeled after the human brain, ANNs consist of interconnected nodes, or neurons, that process information in a manner similar to

biological neurons. They excel in pattern recognition, image processing, and deep learning applications (Haykin, 2009).

2. **Fuzzy Logic:** This approach addresses uncertainty and imprecise data, emulating human reasoning. Unlike binary logic (which operates with only true or false), fuzzy logic allows for partial truths, making it particularly useful in applications such as control systems, decision-making, and robotics (Zadeh, 1996).
3. **Evolutionary Computation:** Inspired by natural selection, evolutionary algorithms such as Genetic Algorithms evolve to find optimal solutions. These techniques are widely used in optimization problems, scheduling, and machine learning (Holland, 1992).
4. **Swarm Intelligence:** Modeled on collective behaviors observed in nature, it enables decentralized problem-solving and self-organization. It is applied in robotics, optimization, and network routing (Kennedy & Eberhart, 1995).

APPLICATIONS OF COMPUTATIONAL INTELLIGENCE

CI is widely used in various fields, including medical diagnosis, financial forecasting, autonomous systems, robotics, and game development. Its ability to handle uncertainty, adapt to new data, and optimize complex problems makes it valuable in real-world applications (Russell & Norvig, 2020). As CI continues to evolve, it integrates with deep learning and hybrid AI models, making it a crucial area in modern AI research. AI researchers have drawn from computational theories, such as the Turing Test (Turing, 1950) and connectionist models, to develop machine intelligence (Russell & Norvig, 2021).

Table 1: Strengths of Artificial Intelligence Vs the Human Brain

Aspect	Artificial Intelligence Strengths	Human Intelligence Strengths
Processing Speed	AI processes vast amounts of data at lightning speed, far exceeding human capacity. For example, GPT-3 generates text in seconds (Brown et al., 2020).	Humans process information more slowly but integrate sensory and emotional data intuitively, enabling rational decisions (Damasio, 1994).
Accuracy & Consistency	AI performs repetitive tasks with pinpoint accuracy and no fatigue—for example, AlphaGo's flawless strategy in Go (Silver et al., 2016).	Humans may err due to fatigue or bias, but excel at tasks that require subjective judgment, such as art criticism and data interpretation.
Scalability	AI scales effortlessly. Once trained, it applies knowledge instantly across contexts, as seen in IBM Watson's medical diagnostics (Ferrucci et al., 2013).	Human knowledge transfer is slower and requires formal education, but individuals adapt holistically across diverse and unpredictable situations.
Data Handling	AI analyzes massive datasets beyond human comprehension. AlphaFold solved protein folding using big data (Jumper et al., 2021).	Humans handle smaller datasets intuitively, drawing insights from limited information, such as diagnosing a patient with incomplete records.

Logical Reasoning	AI excels in structured, logical tasks such as solving complex equations or optimizing systems (Russell & Norvig, 2021).	Humans apply logic flexibly, combining it with intuition. For example, Einstein's thought experiments led to the development of relativity (Isaacson, 2007).
Creativity	AI generates novel outputs. DALL-E creates art, while MuseNet composes music, but both rely on patterns in training data (Boden, 2016).	Humans generate original ideas driven by emotions and experiences. Picasso's Cubism emerged from personal vision rather than data (Gardner, 1993).
Adaptability	AI adapts within programmed domains but requires retraining for new tasks. For instance, self-driving cars need updates for new terrains.	Humans generalize across contexts effortlessly. A child can navigate new environments without prior "training" (Sternberg, 1985).
Emotional Intelligence	AI simulates basic emotions, for example, chatbots, but lacks genuine empathy or moral depth, limiting social context emulations (Picard, 1997).	Humans excel in empathy, social bonding, and moral reasoning. Goleman (1995) gave examples of comforting a friend or resolving conflicts.
Consciousness	AI lacks subjective experience or self-awareness, operating purely on algorithms (Chalmers, 1995).	Humans possess consciousness, which enables self-reflection and qualia, allowing us to experience feelings of joy or pain, unlike AI (Searle, 1992).
Physical Interaction	AI controls precise robotic actions; Boston Dynamics' Spot performs tasks, but lacks the fluidity of human movement.	Humans master physical tasks with adaptability; for instance, athletes or surgeons adjust their movements quickly (Gardner, 1983).

Source: Author's compilation based on Brown et al. (2020), Silver et al. (2016), Ferrucci et al. (2013), Jumper et al. (2021), Russell & Norvig (2021), Boden (2016), Damasio (1994), Goleman (1995), and related literature.

Table 2: Weaknesses and Limitations

Aspect	Artificial Intelligence Weaknesses/Limitations	Human Intelligence Weaknesses/Limitations
Processing Speed	Limited to pre-programmed tasks; cannot process beyond the training scope without updates.	Slow processing limits the handling of large datasets and is prone to fatigue (Kahneman, 2011).
Accuracy & Consistency	Brittle outside trained domains; errors in novel scenarios—e.g., AI misidentifying objects.	Errors from fatigue, bias, or memory lapses—e.g., misremembering facts (Schacter, 1999).
Scalability	Requires retraining for new domains; costly in time/energy—e.g., GPT-3's 1,287 MWh (Strubell et al., 2019).	Scaling limited by education time and individual capacity—e.g., years to train experts.
Data Handling	Over-reliant on data quality/quantity; fails with sparse or noisy inputs.	Overwhelmed by big data, it relies on heuristics that can lead to misjudgments (Tversky & Kahneman, 1974).
Logical Reasoning	Lacks common sense; struggles with unstructured problems—e.g., interpreting sarcasm.	Susceptible to cognitive biases—e.g., confirmation bias skews reasoning (Nickerson, 1998).

Creativity	Limited to patterns in training data; lacks true spontaneity or emotional depth (Boden, 2016).	Creativity can be inconsistent, blocked by stress or lack of inspiration (Amabile, 1996).
Adaptability	Requires extensive retraining for new tasks; rigid outside its scope.	Adaptation can be slow or resisted due to habit or fear of change (Feldman, 2000).
Emotional Intelligence	Lacks genuine empathy or ethical intuition; responses are scripted, not felt (Picard, 1997).	Emotions can cloud judgment—e.g., anger leading to rash decisions (Lerner & Keltner, 2001).
Consciousness	No subjective experience; cannot understand meaning or purpose (Chalmers, 1995).	Overthinking or self-doubt can paralyze action—e.g., existential crises (Kierkegaard, 1844).
Physical Interaction	Lacks human dexterity or intuition—e.g., robots struggle with soft, irregular objects.	Physical limits—e.g., aging or injury reduce capability (Baltes, 1997).

Source: Author's compilation based on Kahneman (2011), Strubell et al. (2019), Nickerson (1998), Picard (1997), and related cognitive science and AI literature.

THE FUTURE OF THE INTELLIGENCE RACE

Human intelligence, defined by adaptability, creativity, and emotional richness, faces its own transformation. Gardner's eight intelligences, linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal, interpersonal, and naturalistic intelligence, and Sternberg's triarchic model (analytical, creative, practical) highlight its multifaceted nature (Gardner, 1983; Sternberg, 1985). Limitations, such as cognitive biases, fatigue, and slow processing (Kahneman, 2011), suggest room for improvement. The future could see humans leveraging neuroplasticity and technology to push these boundaries. Brain-computer interfaces (BCIs), such as Elon Musk's Neuralink, promise to augment memory, speed, and even emotional regulation (Musk, 2019). By 2040, a student might be able to download calculus directly into their brain, or a poet might enhance their linguistic intelligence via neural implants, as Elon Musk is building with Neuralink; however, this is too speculative. Education will also evolve, nurturing Sternberg's practical and creative facets alongside analytical skills, preparing humans for a world where AI handles many tasks. Genetic engineering, such as CRISPR, may enhance baseline intelligence, although ethical debates about equity and "designer minds" are likely to intensify. Consciousness, however, remains humanity's best trait. AI may simulate empathy, but humans feel it (Searle, 1992). This subjective depth could anchor human intelligence, ensuring its relevance even as AI continues to scale.

The future of AI lies in its pursuit of artificial general intelligence (AGI), a system capable of performing any intellectual task that a human can, and potentially superintelligence, where it exceeds human capacity across all domains (Bostrom, 2014). Currently, AI excels in narrow tasks: AlphaGo mastered the game of Go (Silver et al., 2016), and AlphaFold revolutionized protein folding (Jumper et al., 2021). The weaknesses, as already highlighted, include a lack of common sense, emotional depth, and adaptability outside trained domains, which limit AI's scope and scalability. With time, advancements in neural networks, quantum computing, and energy-efficient algorithms could bridge these gaps. Companies like xAI, OpenAI, DeepMind, and Anthropic aim to accelerate this, potentially integrating vast datasets from X posts and web searches to mimic human-like reasoning.

However, superintelligence poses risks. Stephen Hawking warned it could "spell the end of the human race" if unchecked (Hawking, 2014), echoing concerns about control and alignment with human values. Ethical frameworks, like those proposed by the IEEE, may guide AI’s evolution, but its lack of consciousness, the "hard problem" (Chalmers, 1995), might persist. Without subjective experience, AI's intelligence could remain a powerful tool rather than a sentient rival, shaping a future in which it amplifies rather than replaces human potential.

The most likely future is not a victory of AI or human intelligence, but a convergence that blends their strengths. BCIs could merge AI's processing power with human intuition, creating "cyborg" minds. Imagine a scientist in 2050, augmented by AI, solving climate models analytically while intuitively grasping their societal impact, a fusion of Sternberg's triarchic components. AI can handle large datasets, such as predicting pandemics, while humans provide moral and creative oversight, aligning with Gardner's concept of interpersonal and intrapersonal intelligences. Projects like Neuralink or DARPA's neural enhancement programs hint at this trajectory, potentially erasing AI's adaptability weakness and human processing limits.

This symbiosis extends beyond individuals. Collective intelligence, where humans and AI collaborate globally, could tackle existential challenges such as space exploration or ecological collapse. xAI's mission to advance human discovery and understand the true nature of the universe exemplifies this, envisioning AI as a partner, not a replacement. Education, art, and even warfare could see similar integration, with AI generating blueprints and humans refining them with emotional or ethical nuance.

CHALLENGES, ETHICAL CONSIDERATIONS, AND LIMITATIONS

The future is not without hurdles. Excessive energy demand has been a topic of discussion. AI’s energy demands, for example, GPT-3's 1,287 MWh training cost (Strubell et al., 2019), should be reduced, possibly via quantum computing, to sustain growth. Leffer (2023) noted that data centers currently account for about 1 to 1.5% of global electricity use. Data privacy, already strained by some platforms, will face increased scrutiny and additional legislation to protect personal data. Superintelligence risks amplifying inequality or loss of autonomy if corporations or governments monopolize it (Bostrom, 2014). Humans, meanwhile, must overcome resistance to augmentation; cultural fears of "losing humanity" could slow adoption (Feldman, 2000). Ethically, who defines the purpose of intelligence? AI lacks moral intuition, and humans are fallible; emotional biases can skew decisions (Lerner & Keltner, 2001). A hybrid system might balance these, but designing it requires global consensus. In the following decades or century, international treaties could regulate AI-human integration, ensuring it serves the collective good rather than power. Consciousness remains the wild card; if AI achieves it, the race shifts; if not, humans retain a philosophical edge.

CONCLUSION

The future of intelligence lies in partnership, not in the triumph of AI or human intelligence. Advances in intelligence theories, computational techniques, and real-world applications have shaped the evolution of AI. From early symbolic AI to today's deep learning models, AI has grown into a transformative force across industries. However, ethical considerations and challenges must be addressed to ensure AI benefits humanity. Looking ahead, AI is likely to continue evolving, potentially reaching AGI, but collaboration with human intelligence will remain crucial for responsible development.

REFERENCES

Amabile, T. M. (1996). Creativity in Context. Westview Press.

Baltes, P. B. (1997). On the incomplete architecture of human ontogeny. American Psychologist, 52(4), 366–380.

Boden, M. A. (2016). AI: Its Nature and Future. Oxford University Press.

Brown, T. B., et al. (2020). Language models are few-shot learners. arXiv preprint arXiv:2005.14165.

Chalmers, D. J. (1995). Facing up to the problem of consciousness. Journal of Consciousness Studies, 2(3), 200–219.

Damasio, A. R. (1994). Descartes' Error: Emotion, Reason, and the Human Brain. Penguin Books.

De Cremer, D., & Kasparov, G. (2021). AI should augment human intelligence, not replace it. Harvard Business Review, 18(1), 1-8.

Engati (2025). Computational intelligence. Available at: https://www.engati.com/glossary/computational-intelligence (Accessed: 07 March 2025).

Feldman, D. H. (2000). Changing the World: A Framework for the Study of Creativity. Praeger.

Ferrucci, D., et al. (2013). Watson: Beyond Jeopardy! Artificial Intelligence, 199–200, 93–105.

Gardner, H. (1983). Frames of Mind: The Theory of Multiple Intelligences. Basic Books.

Gardner, H. (1993). Creating Minds: An Anatomy of Creativity. Basic Books.

Goleman, D. (1995). Emotional Intelligence: Why It Can Matter More Than IQ. Bantam Books.

Griffiths, T. L. (2020). Understanding human intelligence through human limitations. Trends in Cognitive Sciences, 24(11), 873–883.

Isaacson, W. (2007). Einstein: His Life and Universe. Simon & Schuster.

Jarrahi, M. H., Lutz, C., & Newlands, G. (2022). Artificial intelligence, human intelligence, and hybrid intelligence are based on mutual augmentation. Big Data & Society, 9(2), 20539517221142824.

Jumper, J., et al. (2021). Highly accurate protein structure prediction with AlphaFold. Nature, 596(7873), 583–589.

Jumper, J., et al. (2021). Highly accurate protein structure prediction with AlphaFold. Nature, 596(7873), 583–589.

Kahneman, D. (2011). Thinking, Fast and Slow. Farrar, Straus and Giroux.

Kierkegaard, S. (1844). The Concept of Anxiety. (Translated by R. Thomte, 1980). Princeton University Press.

Korteling, J. H., van de Boer-Visschedijk, G. C., Blankendaal, R. A., Boonekamp, R. C., & Eikelboom, A. R. (2021). Human versus artificial intelligence. Frontiers in artificial intelligence, 4, 622364.

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. Journal of Personality and Social Psychology, 81(1), 146-159.

Lohman, D. F. (1989). Human intelligence: An introduction to advances in theory and research. Review of Educational Research, 59(4), 333-373.

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. Review of General Psychology, 2(2), 175–220.

Pathak, P., Pal, P. R., Shrivastava, M., & Ora, P. (2019). Fifth revolution: Applied AI & human intelligence with cyber-physical systems. International Journal of Engineering and Advanced Technology, 8(3), 23–27.

Picard, R. W. (1997). Affective Computing. MIT Press.

Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson.

Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson.

Schacter, D. L. (1999). The seven sins of memory. American Psychologist, 54(3), 182–203.

Searle, J. R. (1992). The Rediscovery of the Mind. MIT Press.

Silver, D., et al. (2016). Mastering the game of Go with deep neural networks and tree search. Nature, 529(7587), 484-489.

Sternberg, R. J. (1985). Beyond IQ: A Triarchic Theory of Human Intelligence. Cambridge University Press.

Strubell, E., et al. (2019). Energy and Policy Considerations for Deep Learning in NLP. Proceedings of the 57th Annual Meeting of the ACL, 3645–3650.

The Font (2020). Robert Sternberg's Triarchic Theory of Intelligence (2020). Available at: https://www.thefont.co.za/robert-sternbergs-triarchic-theory-of-intelligence/ (Accessed: 07 March 2025).

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. Science, 185(4157), 1124-1131.