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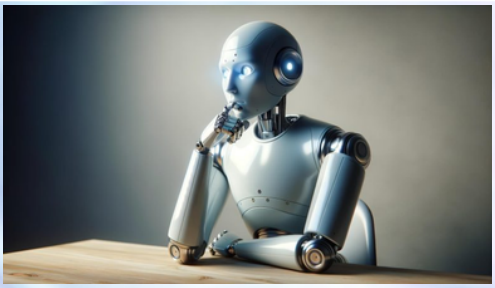
Byte Quest

Department of CSE

GOOGLE GEMINI

THE FUTURE OF AI



LIMITS OF AI

WILL ARTIFICIAL INTELLIGENCE SOON BECOME CONSCIOUS?

Department Vision

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals.

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

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GOOGLE GEMINI

Google's newest AI system, Gemini, marks a significant milestone after eight years of intense development. Featuring three distinct modes—Ultra, Pro, and Nano—Gemini stands poised to redefine AI benchmarks. Its Ultra mode, utilizing the largest language model, showcases unprecedented prowess, outperforming humans in language tasks with a remarkable 90.0% score in multitask language understanding. This achievement positions Gemini as a pioneering model, surpassing human expertise in fields like math, physics, history, law, medicine, and ethics. Integrated across Google's suite, Gemini elevates existing systems like Bard, enhancing reasoning, planning, and understanding. Additionally, its Nano mode powers practical applications like smart replies and the Recorder app on Google Pixel phones

Beyond its performance, Gemini's multi-modal capabilities promise a revolution in user interactions. Able to engage through text, images, and audio, it's a versatile AI system with plans for extensive integration across Google's Search, Ads, Chrome, and Duet AI in the foreseeable future. This launch not only signifies a leap forward in AI capabilities but also heralds Google's intent to lead the charge in shaping the AI landscape.

THE FUTURE OF AI

Self-Learning Machines Could Replace Current Artificial Neural Networks

Researchers at the Max Planck Institute developed an energy-efficient AI training method through neuromorphic computing. Differing from digital neural networks, it promises reduced energy consumption. This approach, utilizing physical processes, aims to advance AI systems. Traditional AI consumes vast energy; the new method seeks to replace current neural networks, potentially saving substantial power.

Neuromorphic computing, unlike digital networks, integrates processing and memory, reducing energy for data transfer. The innovative self-learning physical machine optimizes synapses independently, improving efficiency by eliminating the need for external feedback in training. The team collaborates on an optical neuromorphic computer, aiming to implement their concept within three years, potentially revolutionizing AI development and energy-saving initiatives.

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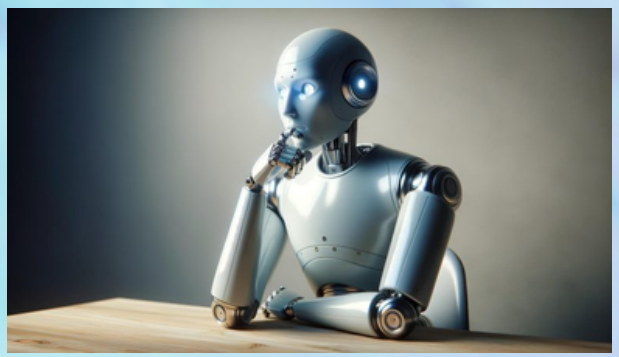
THE LIMITS OF AI: WHY CHATGPT ISN'T TRULY "INTELLIGENT"

Anthony Chemero, a University of Cincinnati professor, draws a clear distinction between artificial intelligence (AI), exemplified by ChatGPT, and human intelligence. He emphasizes that AI's capabilities, particularly in text generation, stem from statistical predictions rather than genuine understanding. These AI models, termed large language models (LLMs), lack embodied experiences and comprehension of context, resulting in text generation devoid of true meaning or concern for truthfulness.



Chemero contrasts this with human intelligence, which is fundamentally shaped by embodiment within physical and cultural environments. He stresses that human cognition is deeply intertwined with the physical world, fostering a sense of care for survival and a genuine connection to the surrounding environment—qualities absent in AI systems.
The critical distinction lies in the inherent care and commitment that humans possess toward their existence and surroundings, contrasting sharply with the indifferent and contextually detached nature of AI. Chemero's insights underline the limitations of AI in replicating human intelligence due to its inability to embody experiences and develop genuine care and concern for the world it interacts with, setting it apart from human cognition.

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WILL ARTIFICIAL INTELLIGENCE SOON BECOME CONSCIOUS?

In exploring the potential consciousness of advanced AI like ChatGPT, a trio of neuroscientists—Jaan Aru, Matthew Larkum, and Mac Shine—takes a critical neurobiological stance. Despite AI's impressively human-like responses, they argue that these systems likely lack consciousness due to fundamental disparities. First, AI lacks the rich sensory input and embodied information found in human perception. Second, current AI architectures lack key features present in mammalian thalamocortical systems linked to consciousness. Additionally, the intricate evolutionary and developmental paths shaping consciousness in living organisms have no parallel in today's AI.

This perspective highlights the vast complexity of neural mechanisms responsible for human consciousness, far surpassing current AI capacities. Real neurons' physical nature contrasts starkly with the simulated neurons in AI, emphasizing the immense gap in complexity. While tempting to attribute consciousness to AI, the authors caution against underestimating the intricate and multifaceted processes underlying human consciousness. Understanding consciousness remains a profound challenge, suggesting a considerable journey before achieving conscious machines.

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