



Artificial Intelligence in the Modern Business

How to thrive in this new digital age

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What is Artificial Intelligence (AI)?

Artificial Intelligence (AI) is the field of computer science dedicated to creating intelligent machines that can perform tasks that would normally require human intelligence to accomplish. In other words, AI involves developing algorithms and computer programs that can perform complex tasks, reason about information, learn from experience, and make decisions in ways that are typically associated with human intelligence.

AI encompasses a range of techniques, but the most common applications in use today are:

CATEGORY	USAGE
Natural Language Processing (NLP)	AI trained to understand and interpret human language. Examples include speech recognition, sentiment analysis, and chatbots.
Computer Vision	Analysis and interpretation of visual information, enabling applications such as facial recognition, object detection, and self-driving cars.
Predictive Analytics	Analyzing large amounts of data to make predictions about future outcomes. For instance: personalized marketing.
Drug Discovery	AI has transformed the drug discovery process by helping researchers analyze vast amounts of data to identify new drug candidates. Machine learning algorithms can predict the efficacy and safety of new drugs, speeding up the drug discovery process.
Genomics	Parsing large datasets, identifying genetic variations, understanding the relationship between genes and diseases, predicting the likelihood of developing diseases based on an individual's genetic makeup.

A Brief History of AI

The origins of AI date back to the 1940s, when computer pioneer Alan Turing proposed the concept of a machine that could simulate any human intelligence task, which he called the "Turing Test."

However, in the 1970s and 1980s, AI research shifted towards a focus on expert systems, which were designed to mimic the decision-making processes of human experts in various fields through decision trees. However, the limitations of early AI systems soon became apparent, and AI research went into a period of decline known as the "AI winter."

In the 1990s and 2000s, AI research experienced a resurgence, with the development of more sophisticated machine learning algorithms, including neural networks and deep learning. These new techniques enabled AI systems to achieve breakthroughs in tasks such as image recognition, speech recognition, and natural language processing.

Today, AI systems can be programmed to perform specific tasks, such as playing chess, recognizing speech, or driving a car, or they can be designed to learn from data and improve their performance over time.

AI algorithms can be further classified into various categories:

- supervised learning
- unsupervised learning
- reinforcement learning
- deep learning
- neural networks
- decision trees
- genetic algorithms

According to a Databricks poll of 600 Fortune 1000 CIO's, 72% of respondents say that data is the biggest challenge for AI and 68% say unifying their data platform for analytics and AI is crucial to future growth prospects. Furthermore, 94% say they are already using AI in development projects and more than half expect AI to be widespread by 2025.

What is ChatGPT and why it has changed the world

ChatGPT is a type of language model architecture developed by OpenAI, which is designed to generate natural language text based on the input it receives. The ChatGPT architecture uses a deep neural network and is pre-trained on large amounts of text data to learn patterns and relationships within language. This pre-training allows the model to generate coherent and fluent text in response to new input(s).

In fact, The 'GPT' in ChatGPT stands for "Generative Pre-trained Transformer", that particular abbreviation is actually invoking the desired use case of the tool. ChatGPT is simply one type of language model that uses deep learning to generate human-like responses to text-based prompts. For example, if the prompt is "I went to the store and bought some", a language model like ChatGPT might predict "groceries" or "food" as the next word in the sequence. ChatGPT is a particularly powerful language model because it has been pre-trained on a massive amount of text data, making it capable of generating highly coherent and contextually appropriate responses.

The key is in the 'Transformer'

"Transformer" is a type of neural network architecture used in natural language processing, including the GPT (Generative Pre-trained Transformer) family of language models.

The "transformer" architecture was introduced in a research paper by Vaswani et al. in 2017, and it has since become a widely used architecture for processing natural language data. The main advantage of the transformer architecture is its ability to process long-range dependencies in a sentence, which is crucial for language modeling.

Transformers rely on the concept of self-attention, which allows the model to focus on different parts of the input sequence when making predictions. The model creates a set of attention scores that determine how much each input token should contribute to the output at each position. By allowing the model to attend to all tokens in the input sequence, regardless of their position, transformers are able to capture long-range dependencies and produce more accurate predictions.

Overall, the transformer architecture has proven to be highly effective for natural language processing tasks, including language translation, question-answering, and text generation.

How is ChatGPT using the information it receives?

When you send information to ChatGPT through its API, it utilizes Natural Language Processing (NLP) techniques to understand the text and generate a response. It, according to OpenAI, DOES NOT STORE OR RETAIN ANY INFORMATION provided to through the API, and any information processed is deleted after use.

Similarly, when documents or other inputs are provided to ChatGPT for analysis, it uses NLP techniques to extract relevant information, generate summaries, perform language translations, and perform other language-related tasks. Any information provided for analysis is deleted after processing, and it DOES NOT STORE OR RETAIN ANY INFORMATION from the documents or inputs.

Who owns the Intellectual Property generated from ChatGPT?

The ownership of intellectual property (IP) rights related to the output generated by ChatGPT through its API or other language-related tasks may depend on several factors, including the specific circumstances of the use and the applicable laws and regulations.

Generally, the ownership of IP rights in the output of ChatGPT may depend on the following:

- **Input Ownership:** If the input used to generate the output is owned by the user or is in the public domain, the output may not necessarily be protected by IP rights.
- **Output Originality:** If the output is deemed original and creative, it may be eligible for copyright protection.
- **Patentable Output:** If the output is deemed novel, non-obvious, and useful, it may be eligible for patent protection.
- **Ownership Agreement:** Ownership of IP rights may be governed by the terms of an agreement or contract between the parties involved.

Broadly speaking, if the modifications to AI outputs are substantial enough to create a new work that is original and not substantially similar to the original works, then you may be the owner of the IP rights in the resulting work(s). However, if the modifications are minimal or do not create a new work that is substantially different from the original output(s), then the ownership of IP rights in the resulting work may still be governed by the ownership of the original output.

Additionally, if the output generated by ChatGPT is already protected by copyright or other IP rights, modifying the output may further infringe on those rights if you do not have permission or a license to make such modifications.

It is important to note that the ownership of IP rights can be a complex issue and may vary depending on the specific circumstances of each case. Therefore, it is recommended to consult with legal counsel to determine the ownership of IP rights in the output generated by ChatGPT or any other AI language model.

The Risks of Utilizing AI and ChatGPT for Businesses:

Despite the potential immediate upsides to utilizing these direct-to-consumer tools, businesses should approach their use with cautious optimism. There are some risk considerations that a company may not have fully considered before deploying the outputs. In short, the key risk factors for companies wishing to utilize AI tools in their present form are:

KEY RISK FACTOR	WHY IS IT A RISK?
Transparency & Accountability	AI systems are trained on large datasets that could be surprisingly incomplete. Currently, it is up to the user to decide whether the output is accurate, relevant, and properly attributed. If the user does not possess at least a sense of familiarity with the subject matter, they could misjudge what a credible, accurate response should be. Thus, the AI system could easily be perpetuating incorrect information. Accountability is essential for ensuring that businesses are using AI ethically and responsibly. This includes being accountable for any negative impacts or consequences that may arise from the use of AI. Issues such as privacy protection, potential trademark infringements, patent protections, or cybersecurity breaches. In addition, regulations and laws related to AI are evolving rapidly, and businesses need to be aware of their legal and ethical obligations when developing and deploying AI systems.

<p>Data Bias & Misinformation</p>	<p>One of the most significant risks of AI is data bias. AI algorithms can be opaque and difficult to understand. If businesses don't understand how their AI systems work, they may not be able to identify and address potential issues. Issues can include data that is misattributed, misunderstood, or just plain misinformation can easily be found in training data, especially for open-source applications like ChatGPT.</p> <p>AI algorithms are only as good as the data they are trained on. If the data used to train AI systems are biased, the AI will perpetuate and popularize that bias. This can, unfortunately, lead to unintended consequences for companies that are just excited to utilize this "new" tool.</p>
<p>Job Displacement & the Future of Work</p>	<p>AI can automate routine tasks, leading to job losses and a significant shift in the labor market. While some jobs may become redundant, new jobs will also emerge in areas like data science, software engineering, and robotics.</p> <p>The impact of job displacement on workers and the economy can be significant. Workers who lose their jobs may struggle to find new employment, leading to economic and social instability. To mitigate the risk of job displacement, businesses can invest in reskilling and upskilling programs that prepare workers for new roles in the AI-enabled economy.</p>

How can Businesses lower their risk exposure?

Despite the fast-paced evolution of AI in the present day, there are ways for a business to mitigate some of these risk factors.

KEY RISK FACTOR	IDEAS TO LOWER THE RISK EXPOSURE
Transparency & Accountability	<p>Develop Data Governance: Effective policies regarding data access, usage, retention, and disposal are needed to ensure that AI systems are being used in compliance with relevant laws and regulations.</p> <p>Human Oversight: Rules and regulations that govern the development and deployment of AI systems, as well as oversight mechanisms that monitor the use of AI systems. Very situationally dependent and specific for each organization.</p> <p>Establish Ethical Guidelines: Clear, concise guidelines that address issues such as bias, discrimination, privacy, and transparency must be agreed to before utilizing AI tools.</p> <p>Conduct Independent Audits: Auditing can include regular reviews of AI systems to identify issues and ensure that appropriate controls are in place.</p> <p>Consistent Stakeholder Engagement: Including employees, customers, and the broader community can help ensure that AI systems are being used appropriately. This can include soliciting feedback and input from stakeholders and incorporating their perspectives into AI development and deployment.</p>

<p>Data Bias & Misinformation</p>	<p>Have Explainability: The ability to understand and interpret how AI systems arrive at their decisions.</p> <p>Diverse Data Sets: AI models must be trained on diverse data sets that include examples from a wide range of demographic groups. By including more diverse data, AI models will be less likely to make biased decisions based on factors like race or gender.</p> <p>Regular Data Audits: Regular audits of AI data sets can help identify potential biases and ensure that models are being trained on high-quality data. Audits can also identify areas where additional data may be needed to improve model performance.</p> <p>Collaboration with Communities: Engaging with those that are most impacted by AI decisions can help ensure that models are being trained on data that reflects their needs and experiences. This can help reduce the risk of bias in AI decision-making.</p> <p>Algorithmic Fairness: Prioritize fairness and accuracy in decision-making. This can be achieved by designing AI models that are using metrics that quantify fairness and accuracy in decision-making.</p> <p>Human Oversight: Human oversight is critical for identifying and addressing bias in AI decision-making. This can include establishing review processes for AI decision-making, or implementing systems that allow humans to override AI decisions when necessary.</p>
<p>Job Displacement & the Future of Work</p>	<p>Reskilling and Upskilling Programs: Help workers develop new skills that are in demand in the AI era.</p> <p>Collaboration with Employees: Identify areas where AI can complement human skills and where it may displace workers. This can help businesses develop strategies to minimize the impact of AI on their workforce and promote more equitable outcomes.</p> <p>Job Rotation Programs: Job rotation programs can help workers develop new skills and gain exposure to different areas of the business.</p> <p>Career Counseling: Career counseling can help workers identify areas where their skills and interests align with the changing demands of the job market.</p>

Conclusion


AI platforms like ChatGPT can offer significant benefits to businesses, but they must be used safely and ethically. It is important for businesses to consider the risks and take steps to mitigate them, including protecting IP rights, ensuring user privacy, and implementing strong cybersecurity measures. Businesses should also consider ethical considerations, such as bias and transparency, and ensure that they have the technical expertise and training required to effectively use and monitor AI systems. By following these guidelines, businesses can use and build new systems with AI in a safe and responsible manner while also unlocking the potential benefits it can offer.

Sincerely,
The CodingIT Team

Thank You!

 <https://codingit.dev>

 cyril@codingit.dev

 (512) 920-2532

 Austin, TX

coding/it

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