

# Artificial Ignorance

Understanding the Unintended Consequences of AI

Daniel Blair

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# Who am I?

Daniel Blair is a dynamic and innovative leader in technology and digital media. As the founder and Chief Technology Officer of BSD XR, he has been at the forefront of creating innovative research projects in areas like AI and spatial computing for various industries, including construction, defence, aerospace, mining, and utilities. His passion for innovation and commitment to excellence have earned him recognition as an award-winning entrepreneur and software developer.

Daniel's influence extends beyond his company. He is the chair of the board for the Interactive Digital Media sector council, New Media Manitoba, where he guides the growth and development of Manitoba's interactive digital media industry. In 2023 Daniel joined the board of directors for the Virtual World Society to help drive their mission of ethical thought leadership and responsible application of emerging technology. Dan also helps advance the innovation and startup ecosystem by sitting as a board director for North Forge.





# The Virtual World Society

Our expertise extends beyond providing technical knowledge, implementation strategies, and assessment support. We are committed to sparking and channeling human creativity to devise sustainable solutions that enable enduring transformations. By collaborating with local policymakers, philanthropic entities, global innovators, and families most impacted by the swift progression of emerging technologies, we assist communities, governments, and businesses in carving out new routes to prosperity. The Virtual World Society is dedicated to providing support to international collectives that champion universal access to emerging technologies aimed at societal betterment.



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for Humanity*

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# Artificial Ignorance

What are we even talking about this morning?

## The Growing Role of AI in Business Operations

- AI has moved from research labs to boardrooms, becoming a critical part of business strategies across industries.
- Organizations are adopting AI to improve efficiency, reduce costs, and enhance decision-making.

## The Paradox: AI's Power vs. Its Potential Ignorance

- While AI is celebrated for its ability to solve complex problems, it can also make critical errors due to its lack of human understanding and judgment.
- We trust AI to help us make decisions, but we often overlook its limitations, which can lead to unintended and even harmful consequences.

## Why This Discussion is Critical Today

- As AI is implemented more widely, there's a growing need to understand both its capabilities and its weaknesses.
- Misunderstandings and hype can lead to poor decisions in AI integration, which could impact business operations, society, and ethics in profound ways.
- Now is the time to critically assess how we deploy AI and ensure that we are aware of its potential pitfalls.

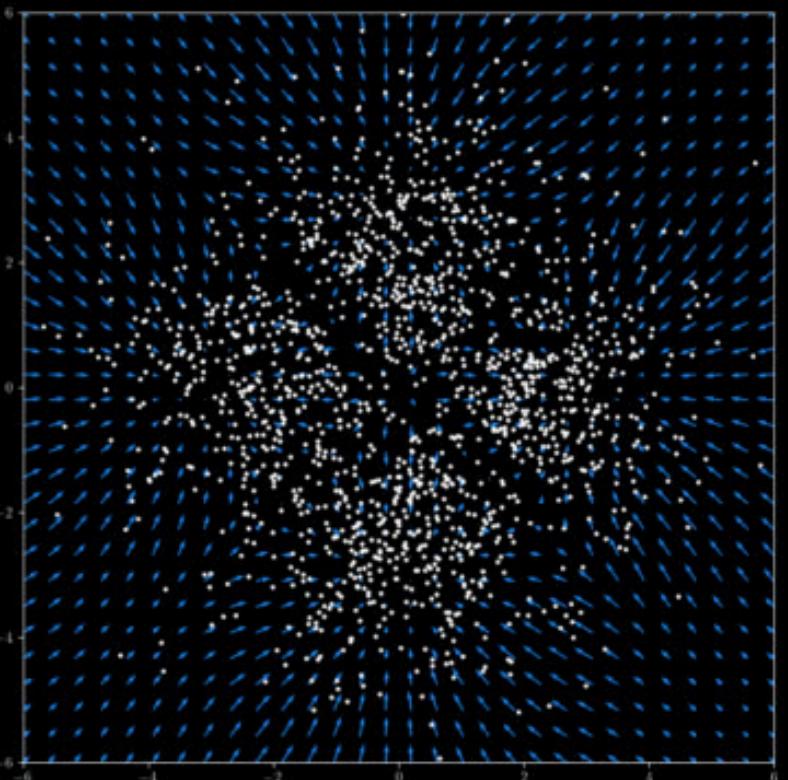
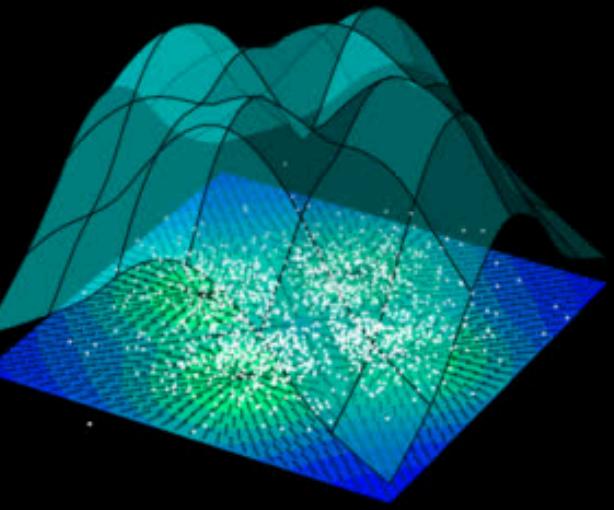
# AI and Society

AI is rapidly shaping the future of society, from the way we work to how we interact with technology. One of the most discussed impacts is the potential for job displacement. While AI can automate repetitive tasks and increase efficiency, there is a growing concern that it could replace human workers, particularly in industries like manufacturing, transportation, and customer service. However, the reality is more nuanced—AI can also create new job opportunities, especially in areas that require managing and maintaining AI systems or interpreting its outputs. Another significant societal concern is AI's role in perpetuating inequalities. If not designed carefully, AI systems can entrench existing social biases, leading to unfair treatment in areas like hiring, lending, and law enforcement. Additionally, AI's increasing presence in everyday decision-making raises important questions about privacy, autonomy, and the ethics of allowing machines to influence human lives. To ensure that AI benefits society as a whole, it is crucial to prioritize equity, fairness, and transparency in its development and deployment.



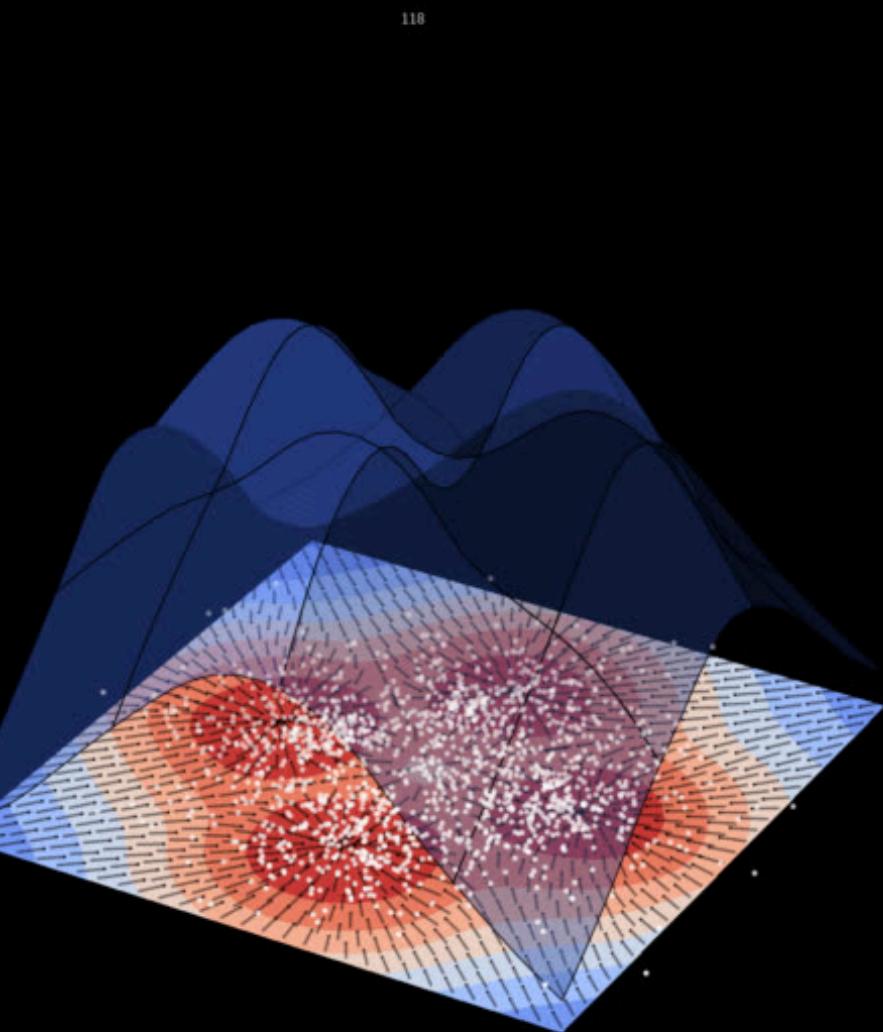
# Clarifying AI's Misconceptions

- There's a widespread belief that AI can do anything: think like humans, solve complex moral problems, or even achieve full autonomy. But the reality is far more limited.
- AI excels in specific, well-defined tasks – known as narrow AI – but it cannot replicate the broad, general intelligence of humans.
- For example, AI can identify objects in images, predict trends in data, or provide recommendations based on past behavior. However, it does this without understanding the context or meaning behind the data.



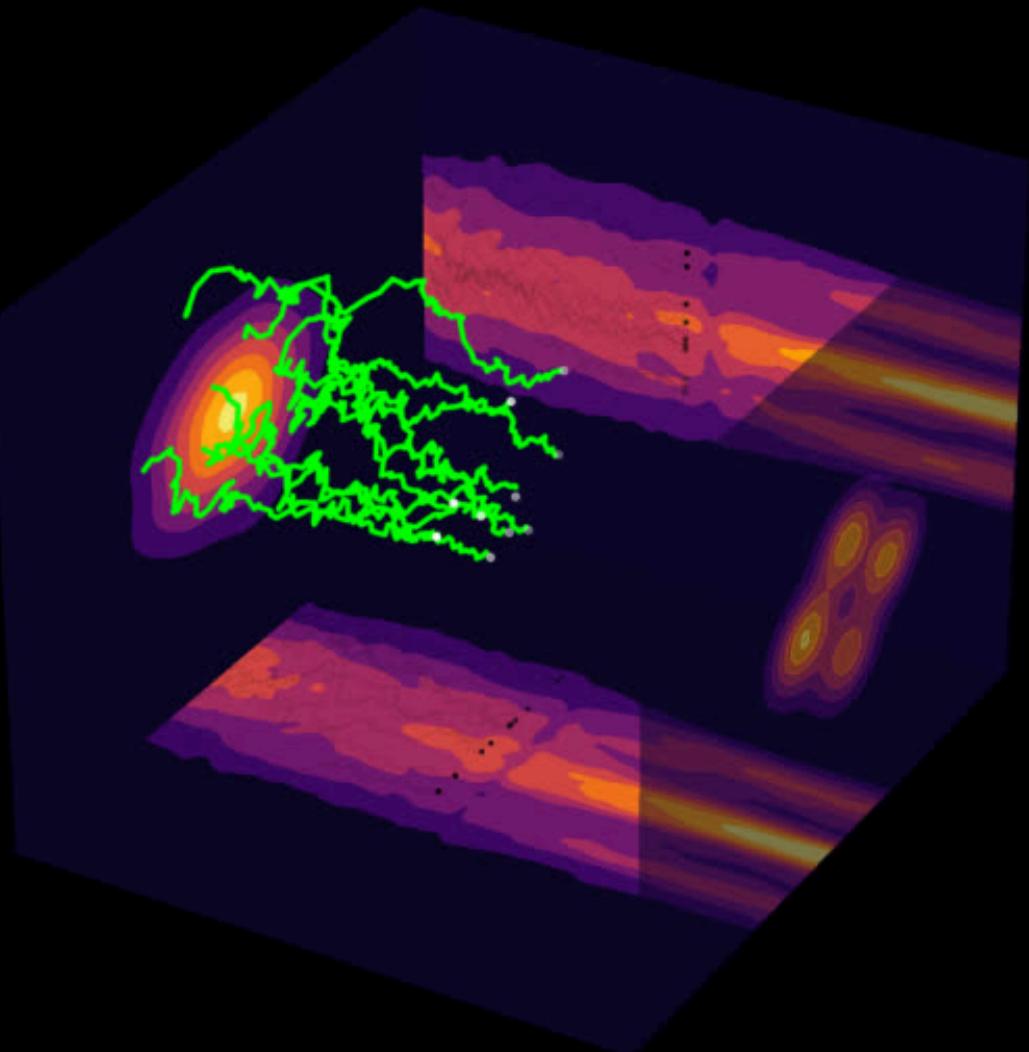
# Common Applications of AI

- Image and speech recognition: AI is highly effective at identifying patterns in images and audio data. This powers systems like facial recognition, voice assistants (Siri, Alexa), and even medical imaging.
- Natural Language Processing (NLP): AI can process and generate human language. From chatbots to translation services, NLP is becoming more sophisticated but is still prone to misunderstandings.
- Automation and Robotics: AI drives many of the automation technologies used in manufacturing, logistics, and customer service, boosting efficiency and reducing costs.
- Predictive Analytics: AI can analyze vast amounts of data to find patterns, making predictions about future trends in business, finance, or healthcare.



# AI is not a Substitute for Human Judgment

- Despite its advanced capabilities, AI remains a tool – not a replacement for human decision-making.
- It can process data faster than humans, but it can't think critically, understand nuance, or make ethical decisions.
- Relying solely on AI without human oversight can lead to significant errors, especially in complex or dynamic environments.



## Overhyped Capabilities

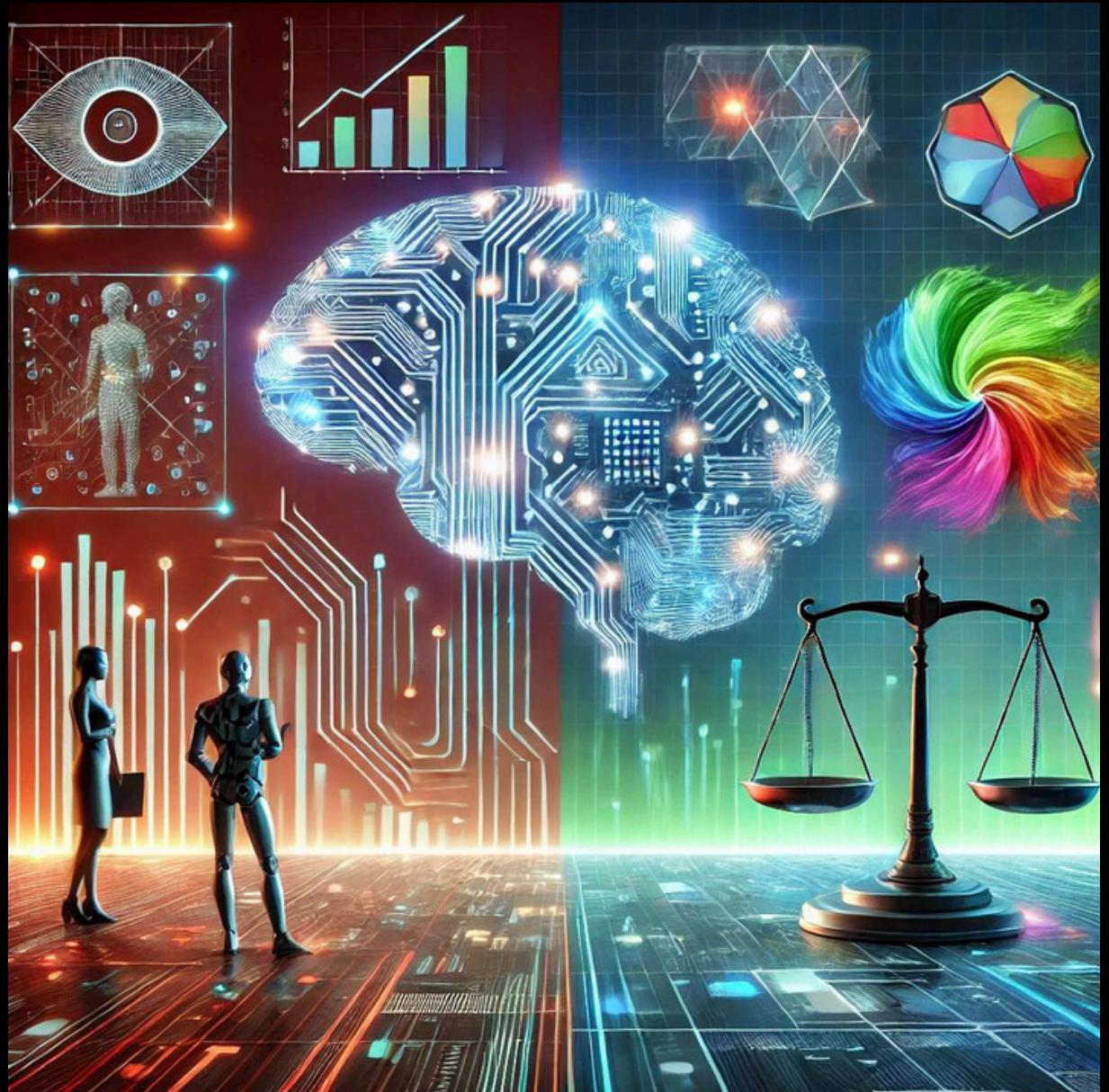
# The Hype vs Reality



- AI as "Magic": There's a common narrative that AI can solve any problem. Media and marketing often portray AI as an omnipotent technology that can think, adapt, and act autonomously.
- Autonomy Myth: AI is often thought to be fully autonomous, but the truth is it still requires significant human intervention, especially in complex situations.
- General Intelligence Assumption: Many believe AI is approaching human-level intelligence (AGI), but current AI systems are still task-specific and far from understanding or reasoning like humans.

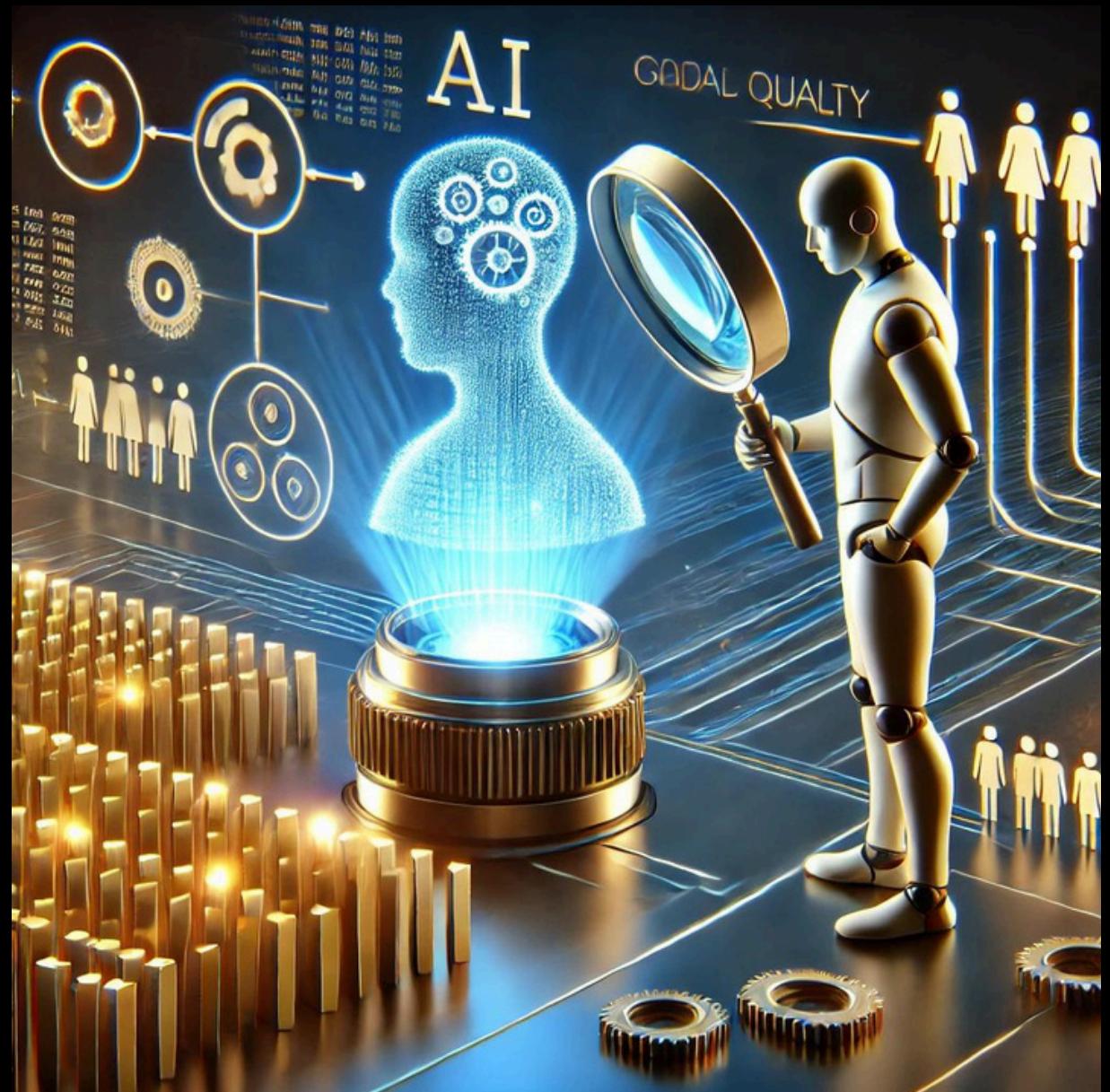
## What AI Can't Do (Yet)

# The Hype vs Reality



- Contextual Understanding: AI cannot grasp the full context behind the data it processes. It sees patterns, but it doesn't understand the "why" behind those patterns.
- Moral and Ethical Decision-Making: AI lacks the ability to make value-based decisions. It follows programmed rules and data but doesn't have the capacity for moral reasoning.
- Creative Problem Solving: AI can analyze data and generate outputs based on patterns, but true creativity and innovation still require human input.

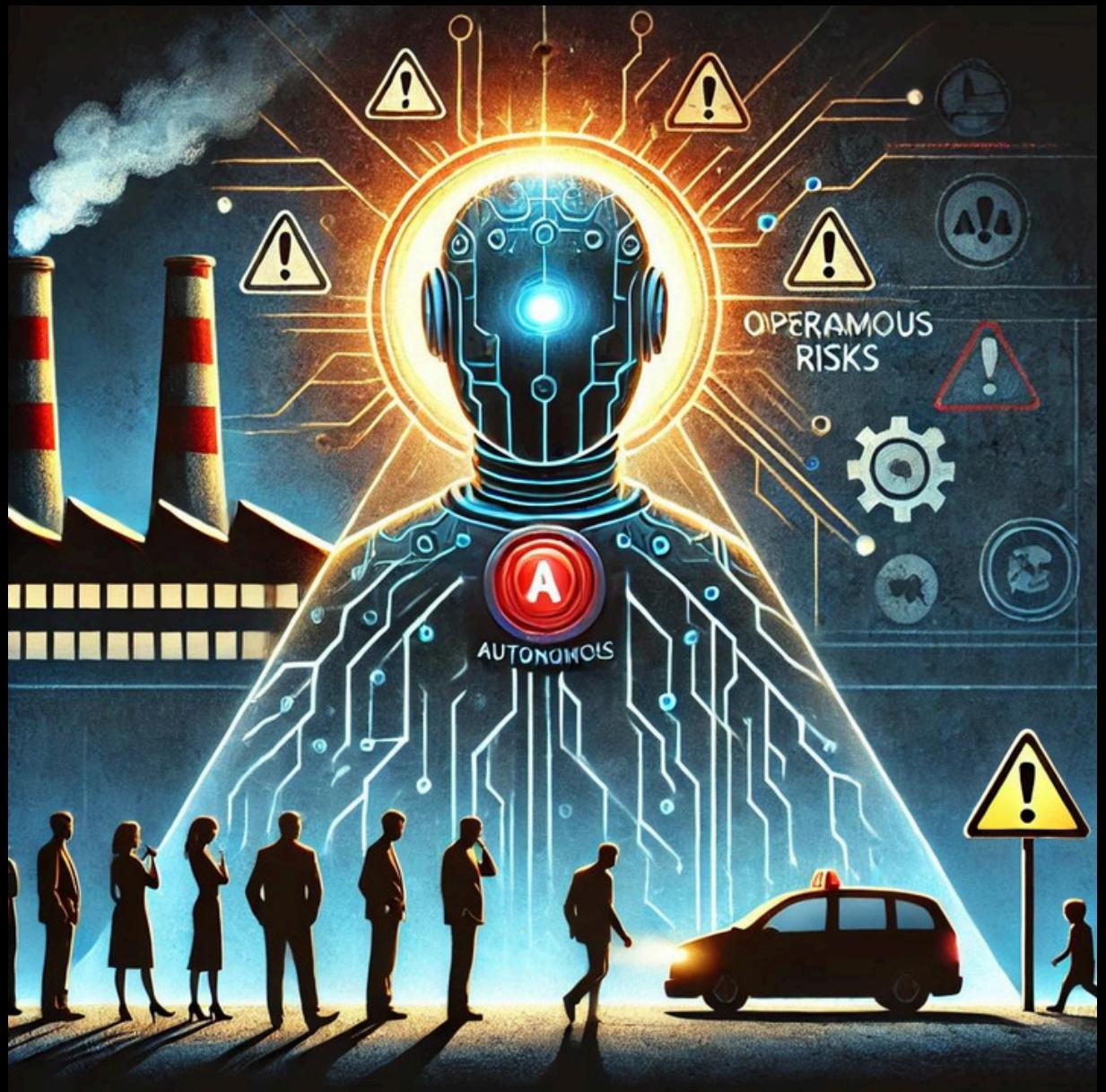
# The Hype vs Reality



## Reality Check: What AI is Actually Doing

- Specific Problem Solving: AI works best when focused on a narrow, well-defined problem. It's great at tasks like sorting through large datasets, identifying patterns, or automating routine tasks.
- Human-AI Collaboration: The most successful AI applications today are not fully autonomous systems but rather tools that augment human decision-making. AI assists, but human oversight is critical.
- Dependence on Data: AI's effectiveness is entirely dependent on the quality of the data it is fed. Poor data leads to poor outcomes, no matter how advanced the algorithm.

# The Hype vs Reality



## Why the Hype is Dangerous

- Misleading Expectations: Overestimating AI's abilities can lead to poor decision-making, such as trusting it to perform tasks beyond its actual capabilities (e.g., fully autonomous systems).
- Operational Risks: Organizations that implement AI without understanding its limitations may face operational failures, security risks, or ethical dilemmas.
- Public Mistrust: When AI fails or doesn't meet inflated expectations, it erodes trust in the technology, which can delay beneficial innovations.

# What AI is NOT

## AI is NOT Perfect or Unbiased

- Bias in Data = Bias in AI: AI models are only as good as the data they're trained on. If the data is biased, incomplete, or unrepresentative, the AI will perpetuate those biases.
  - Example: Facial recognition systems being less accurate for certain ethnicities due to biased training data.
- AI is prone to errors: Even the most advanced AI can make mistakes, especially when faced with ambiguous or unfamiliar situations.

## AI is NOT a Decision-Maker

- No Understanding or Reasoning: AI doesn't truly "think." It processes data and patterns, but it cannot understand context or reason like humans do.
  - Example: A medical AI can suggest treatments based on patterns, but it lacks the ability to factor in unique human circumstances.
- Tools, not Authorities: AI outputs should be viewed as tools to assist human decision-making, not replace it. Human oversight is essential to catch errors and account for nuances AI misses.

# What AI is NOT

## AI is NOT Always Autonomous

- Human Input Required: Most AI systems still require extensive human training, input, and oversight. Full autonomy is rare, and AI typically operates best in hybrid systems where humans remain in control.
  - Example: Self-driving cars still require human intervention in unpredictable or complex traffic situations.
- Dependent on Human-Made Rules: AI operates within the constraints of the rules and parameters set by humans, meaning it can't act beyond what it's been programmed to do.

## AI is NOT “One Size Fits All”

- Narrow AI Specialization: AI systems are built for specific tasks. A system designed for language processing can't perform computer vision tasks. Each AI must be tailored to a particular use case.
  - Example: A chatbot can't diagnose medical conditions accurately because it wasn't built for that task.
- Highly Specialized, not Universal: AI excels in niche areas, but trying to generalize its use can lead to failure, as no single AI model can address all problems across industries or domains.

# Clarifying AI's Misconceptions

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- For example, AI can identify objects in images, predict trends in data, or provide recommendations based on past behavior. However, it does this without understanding the context or meaning behind the data.



# Misunderstanding the Tech

## The Data Fallacy: "Garbage In, Garbage Out"

- Quality of Data = Quality of AI: AI systems are only as good as the data they are trained on. If the data is incomplete, biased, or inaccurate, the AI's results will reflect those flaws.
  - Example: Predictive policing systems that have perpetuated racial bias because they were trained on historical data that reflected biased policing practices.
- Assumption of Neutrality: There is a widespread belief that AI is inherently neutral or objective. In reality, it inherits all the biases and errors present in the data it processes.

## AI Does Not Understand Context

- Pattern Recognition vs. Comprehension: AI excels at recognizing patterns in data, but it doesn't understand the meaning behind the patterns. This can lead to faulty conclusions when context is essential.
  - Example: AI in healthcare might recommend a treatment based on data but miss critical factors like patient lifestyle or emotional well-being.
- Lack of Common Sense: AI lacks the ability to reason or apply common sense to situations. It can analyze data but doesn't have the judgment that humans apply when making decisions.

# Misunderstanding the Tech

## Overfitting: Models Without Flexibility

- Too Specialized: AI models often overfit to the specific datasets they are trained on, meaning they perform well in controlled environments but struggle in real-world situations.
  - Example: An AI model trained to recognize objects in well-lit images may fail in low-light conditions because it wasn't exposed to diverse lighting scenarios.
- Misuse of AI Outside Its Scope: A common mistake is assuming AI models are adaptable to different domains or problems without retraining or reconfiguration. When applied in areas outside their training, AI systems can produce misleading results.

## The Illusion of Explainability

- Black Box Problem: Many AI systems, especially those based on deep learning, are black boxes, meaning their internal decision-making process is opaque even to the developers.
  - Example: AI in finance making credit decisions without clear explanations for why one person gets approved and another does not.
- Overconfidence in Predictions: Without understanding how or why AI makes certain predictions, businesses and users can place unwarranted trust in AI outputs, leading to potentially harmful decisions.

# Models Without Context

## AI Models Are Context-Blind

Pattern Recognition, Not Understanding: AI models are excellent at recognizing patterns in data, but they don't understand the context or reasoning behind those patterns.

- Example: An AI might flag certain financial transactions as fraudulent because they deviate from typical patterns, but it can't discern if the deviation is due to legitimate reasons like a vacation abroad.

## The Danger of Missing the Big Picture

- Siloed Data: Many AI models are trained in narrow, isolated contexts and don't consider broader societal, cultural, or environmental factors.
  - Example: An AI in a hiring system might favor candidates based on limited attributes like education and work history, overlooking important factors like cultural fit or adaptability that a human would recognize.

# Models Without Context

## Overfitting to Training Data

- Narrow Focus: AI models often overfit to the specific data they are trained on. This means they perform well in a specific, controlled environment but fail in real-world applications where more context is needed.
  - Example: A model trained on urban traffic data may perform poorly when deployed in rural areas, as it lacks the contextual understanding of different road conditions and traffic behaviors.

## Contextual Blind Spots Lead to Unintended Consequences

- Ethical Blindness: Without context, AI systems can produce outcomes that are ethically questionable or outright harmful.
  - Example: A job recruitment AI might inadvertently favor candidates from specific demographics because it doesn't account for systemic inequalities in education or access to job opportunities.
- Lack of Flexibility: Context-blind models may be inflexible, rigidly applying their learned patterns to situations where adaptability and judgment are crucial.

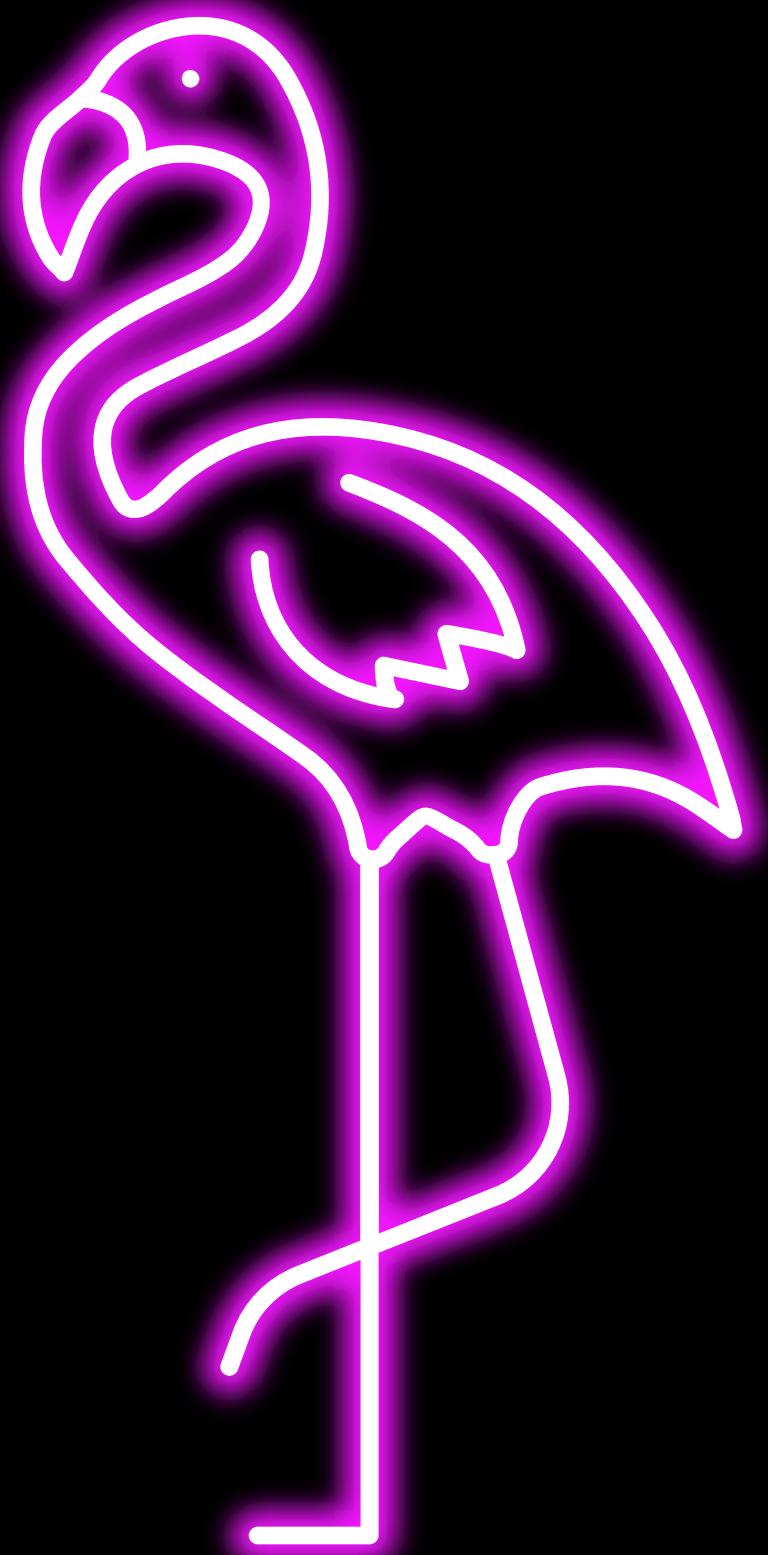
# Models Without Context

## Need for Human Contextual Oversight

- AI as a Tool, Not a Replacement: Human input is essential to provide the context that AI lacks. AI should be seen as a tool to assist human decision-making, not a replacement for it.
  - Example: In medicine, AI can suggest potential diagnoses based on symptoms, but the final decision should always involve a doctor who understands the patient's unique context.

# Ethics in AI

Ethics in AI is a critical issue as the technology increasingly influences decisions that impact people's lives. AI systems, by their nature, inherit biases from the data they are trained on, leading to the potential for unfair or discriminatory outcomes. This can exacerbate existing social inequalities if not addressed. For instance, biased hiring algorithms or facial recognition systems have already demonstrated how AI can reinforce discrimination. Beyond bias, there's also the question of accountability: when an AI system makes a mistake, who is responsible? Developers, businesses, and policymakers must work together to establish clear ethical frameworks and guidelines to govern the development, deployment, and monitoring of AI. Transparency, fairness, and the ability to explain how decisions are made are key components of building trust in AI systems. Ensuring that AI respects human rights, privacy, and dignity should be a core principle in its ethical deployment.



# The Ethical Data Challenge

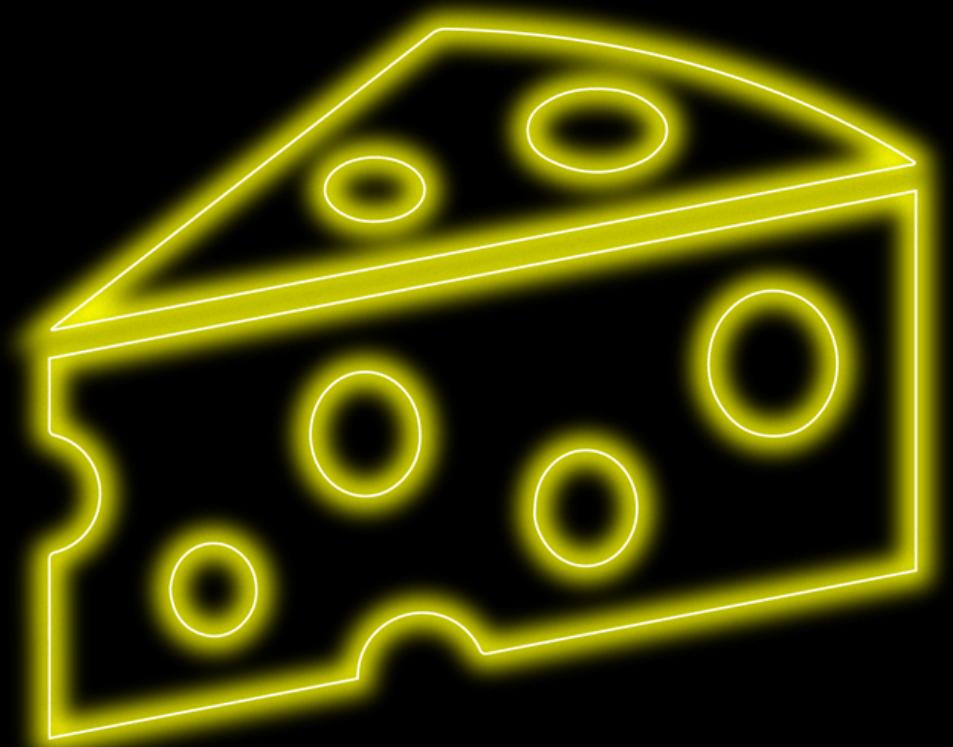
Data is the foundation of AI, and the ethical challenges surrounding its use are profound. One major issue is the bias in data, which can result in skewed AI outcomes. If the data used to train AI models is unrepresentative or contains historical biases, the AI will replicate and even amplify those biases. This has real-world consequences, such as biased hiring algorithms or AI systems in criminal justice that disproportionately affect certain groups. Another challenge is data privacy. AI systems often require vast amounts of personal data, raising concerns about how this data is collected, stored, and used, and whether individuals have consented to its use. Additionally, the ownership of data is murky—who controls the data, and who has the right to benefit from it? To address these challenges, organizations must adopt responsible data practices, ensuring that data is diverse, ethically sourced, and handled with transparency and respect for privacy.



# Responsible AI Development

Ethics and data integrity are essential for responsible AI development

The foundation of responsible AI lies in prioritizing ethics and ensuring data integrity throughout the development process. This involves using unbiased, high-quality datasets and ensuring transparency in how AI models are trained and deployed. Decisions made by AI should be explainable, accountable, and fair, avoiding unintended discrimination or harm. Encouraging a culture of curiosity and critical thinking in the AI space is vital for responsible innovation. Developers, policymakers, and users alike should critically assess the social, ethical, and technical implications of AI to build systems that genuinely benefit society. Responsible AI development means embracing a mindset that questions assumptions, prioritizes fairness, and continuously learns from real-world outcomes.



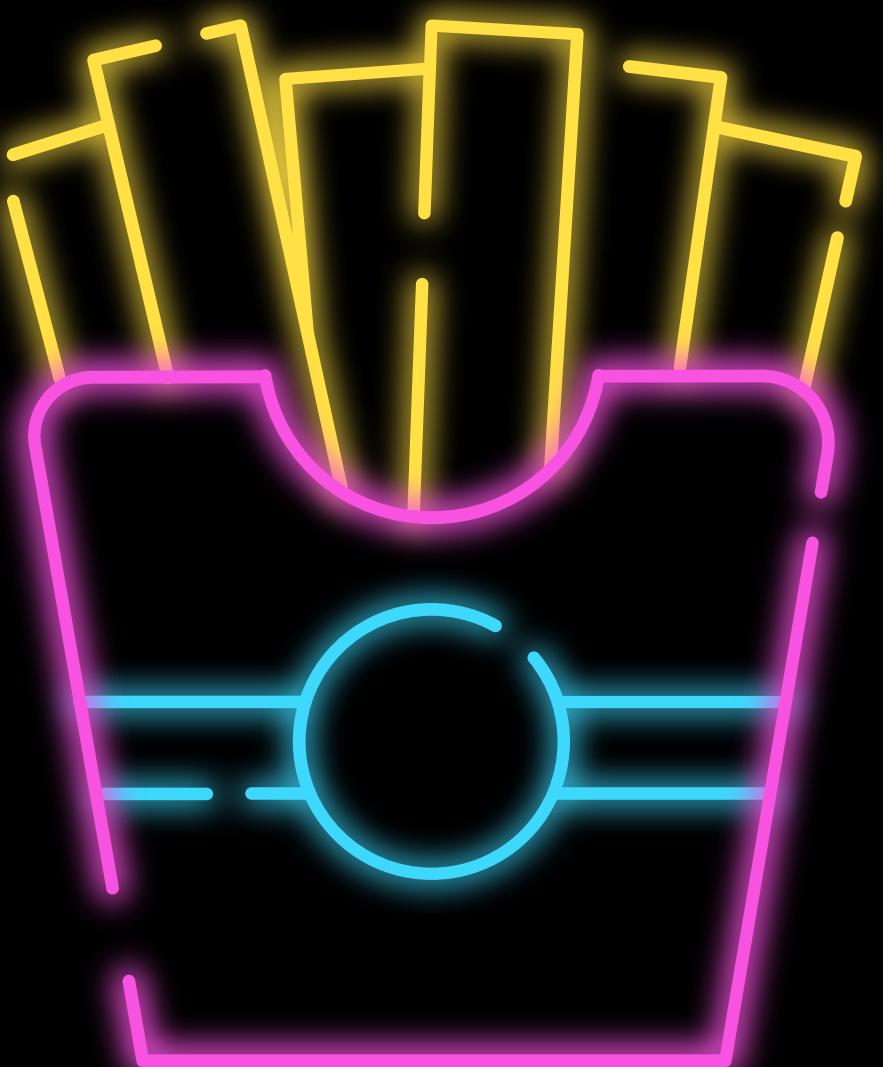
# Responsible AI Development

AI has the potential to revolutionize industries, solve complex problems, and drive efficiency, but it's crucial to understand that AI is not a cure-all solution. Over-reliance on AI without recognizing its limitations can lead to failures, especially in scenarios that require human intuition, empathy, or contextual understanding. AI systems are highly effective in narrow, well-defined tasks but often struggle with ambiguity or tasks requiring general knowledge. Successful deployment of AI requires a clear understanding of where it excels and where human expertise is irreplaceable. Organizations must adopt a balanced approach, combining AI's computational power with human judgment to make informed and ethical decisions.



# Mitigating AI Ignorance

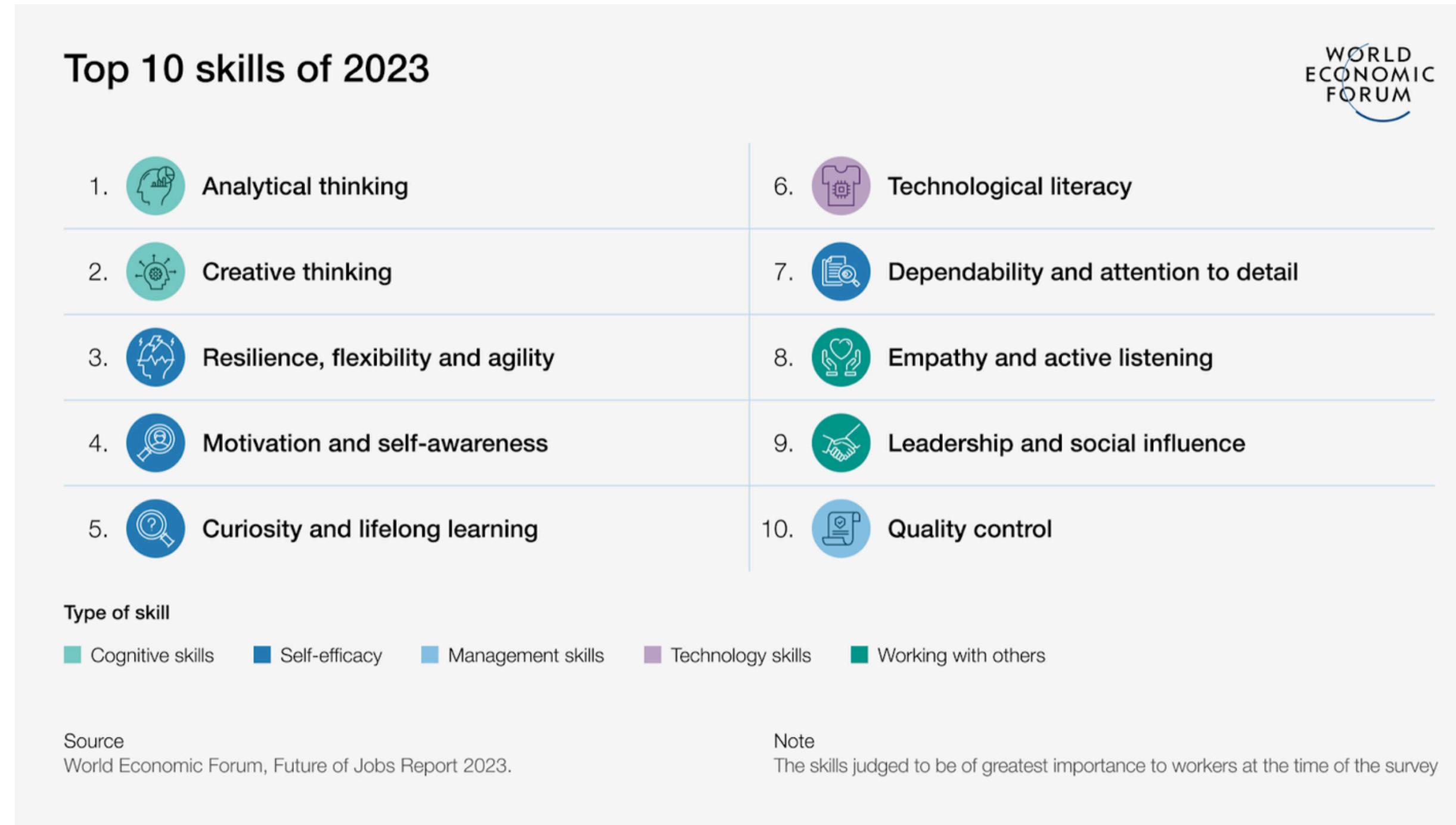
To mitigate AI ignorance—the inability of AI systems to fully understand context and the nuances of human decision-making—organizations must adopt a more thoughtful, interdisciplinary approach to AI development. One key strategy is implementing human-in-the-loop systems, where AI assists rather than replaces human decision-makers. This allows humans to intervene when AI encounters scenarios it cannot fully comprehend or when ethical considerations arise. Additionally, AI models should be continuously monitored and audited to ensure they are functioning as intended, adapting to new data, and not reinforcing harmful biases. Teams responsible for designing AI should include not only engineers but also domain experts, ethicists, and social scientists to provide a broader perspective and prevent tunnel vision. Lastly, organizations must focus on transparency and explainability, ensuring that AI's decision-making processes are clear to users and stakeholders. By combining technical innovation with human judgment and ethical oversight, we can reduce the risks associated with AI ignorance and enhance its positive impact. like hiring, lending, and law enforcement. Additionally, AI's increasing presence in everyday decision-making raises important questions about privacy, autonomy, and the ethics of allowing machines to influence human lives. To ensure that AI benefits society as a whole, it is crucial to prioritize equity, fairness, and transparency in its development and deployment.



# Some Takeaways

- AI is powerful, but it's not infallible: While AI offers incredible capabilities, it is not a substitute for human intelligence, judgment, or ethical decision-making. Understanding its limitations is crucial for its successful implementation in any industry.
- AI ignorance has real consequences: AI systems, without proper context, human oversight, and careful design, can lead to unintended and harmful outcomes. It's essential to address these risks through better data practices, interdisciplinary collaboration, and ongoing system monitoring.
- Ethics and data integrity must be at the core: The responsible development and deployment of AI hinge on maintaining ethical standards, ensuring data fairness, and fostering transparency. This is critical for building AI that serves society equitably and avoids perpetuating biases or injustices.
- Embrace critical thinking in AI: As AI continues to evolve, we must cultivate a mindset of curiosity, questioning, and ethical awareness. Encouraging a culture where AI systems are constantly evaluated and improved will lead to more beneficial and sustainable innovations.

# Preparing for an AI-Driven Future



Cognitive skills top the list for 2023. Image: World Economic Forum

# AI Jobs

## 1. Data Scientists

- Role: Analyze and interpret complex data to help in making informed decisions.
- Tasks: Data modeling, statistical analysis, machine learning algorithm development.

## 2. Machine Learning Engineers

- Role: Specialize in building and deploying machine learning models.
- Tasks: Designing ML systems, implementing ML algorithms, optimizing algorithms for scalability and performance.

## 3. AI Research Scientists

- Role: Focus on advancing the underlying AI and machine learning technologies.
- Tasks: Conducting research, publishing papers, developing new algorithms or techniques.

## 4. Data Engineers

- Role: Manage and optimize data infrastructure needed for AI applications.
- Tasks: Building and maintaining data pipelines, ensuring data quality and accessibility.

## 5. AI Software Developers/Engineers

- Role: Develop the software that makes use of AI models.
- Tasks: Writing code, integrating AI models into applications, maintaining and updating software.

## 6. Business Intelligence (BI) Developers

- Role: Transform data into insights for making strategic business decisions.
- Tasks: Developing, deploying, and maintaining BI interfaces, like query tools and data visualization dashboards.

## 7. AI Product Managers

- Role: Oversee the development of AI products from conception to launch.
- Tasks: Product planning, coordinating between teams, market analysis, defining product requirements.

## 8. UX/UI Designers

- Role: Design user interfaces and experiences for AI applications.
- Tasks: Creating user-centric designs, prototyping, ensuring usability and accessibility.

## 9. Ethical Compliance Officers

- Role: Ensure AI applications comply with legal and ethical standards.
- Tasks: Monitoring AI applications for ethical issues, ensuring compliance with regulations.

## 10. Quality Assurance (QA) Testers

- Role: Test AI applications to ensure they function as intended.
- Tasks: Identifying bugs, performing automated and manual testing, reporting issues for rectification.

## 11. Cloud Engineers/Specialists

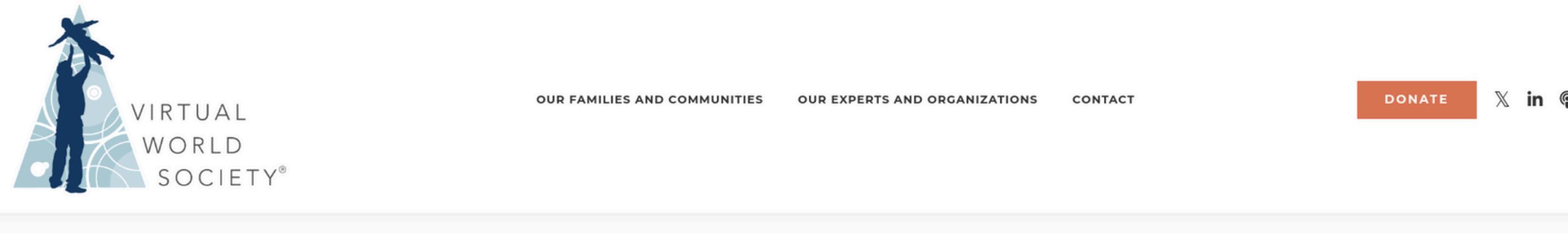
- Role: Manage cloud resources used for AI development and deployment.
- Tasks: Setting up cloud environments, ensuring data security, managing cloud infrastructure.

## 12. Technical Writers

- Role: Create documentation for AI systems and products.
- Tasks: Writing user manuals, product documentation, and help guides.

# The Virtual World Society

<https://www.virtualworldsociety.org/>



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# Thank You

## For putting up with me

For more information or to continue the discussion  
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