3.5 What's Next for AI: Future Expectations and Predictions

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Abstract

By surpassing human abilities, artificial intelligence (AI) is transforming areas such as healthcare, financial services, education, transport, etc. This paper investigates AI's historical growth, from early automatons to modern advances in machine learning (ML) and deep learning (DL). ML enables predictive analytics, such as fraud detection and personalized suggestions, whereas DL replicates human neural processes, outperforming humans in complex tasks. AI's incorporation into healthcare improves diagnoses and patient care, while in education it personalizes learning opportunities. Despite its benefits, AI presents ethical questions about biases, privacy, and eventual employment displacement. The proliferation of deepfakes, as well as the ramifications for misinformation and public trust, emphasize the importance of strong governance and ethical AI research. The study calls for comprehensive policy frameworks that address transparency, accountability, and data.

Keywords

Machine learning, artificial intelligence, deep learning, ethical AI, AI Governance

What is AI?

Artificial Intelligence, or AI, is a technology that enables machines and computers to think and solve problems like human beings. AI technology has the capability to process vast amounts of data in ways that surpass human abilities. The ultimate goal of AI is to replicate human-like abilities such as pattern recognition, decision-making, and judgment. Achieving this requires the integration of extensive data. AI is used in critical applications like image recognition and classification, transforming decision-making processes. For example, AI can predict traffic light patterns. These advancements rely on the development of AI algorithms modelled after the human brain's decision-making processes. This enables the technology to learn from data and make increasingly accurate predictions and classifications over time.

A Brief History of AI

The concept of artificial intelligence (AI) dates back thousands of years to ancient philosophers pondering questions of life and autonomous existence. Early inventors created "automatons," mechanical devices that operated independently, with the term originating from the ancient Greek meaning "acting of one's own will." One of the earliest known automatons was a mechanical pigeon from 400 BCE, attributed to a friend of the philosopher Plato. Leonardo da Vinci later created one of the most famous automatons around 1495. However, for the purposes of modern AI, the significant advancements began in the 20th century.

From 1900 to 1950, the idea of artificial humans permeated media, inspiring scientists to question the possibility of creating an artificial brain. The term "robot" was coined in Karel Čapek's 1921 play "Rossum's Universal Robots." In 1929, Japanese professor Makoto Nishimura built the first Japanese robot, named Gakutensoku. The period from 1950 to 1956 marked the birth of AI. Alan Turing's 1950 paper "Computer Machinery and Intelligence" proposed the Turing Test to measure machine intelligence. In 1952, Arthur Samuel developed a checkers-playing program, and by 1955, John McCarthy's Dartmouth workshop coined the term "artificial intelligence."

From 1957 to 1979, AI research saw rapid growth and challenges. The first programming language for AI research was LISP (List Processing). It was developed by John McCarthy in 1958. In 1959, Arthur Samuel coined the term "machine learning". The 1960s saw the pioneering of the first industrial robot Unimate and the first "chatterbot" (later shortened to chatbot). However, the 1970s also experienced setbacks, such as reduced funding due to unmet expectations. The 1980s, known as the "AI boom," saw significant advancements despite a subsequent "AI Winter" from 1987 to 1993, where interest and funding waned. Noteworthy achievements included IBM's Deep Blue defeating world chess champion Garry Kasparov in 1997 and the release of the Roomba in 2002.

From 2012 to the present, AI has surged in mainstream applications, with notable milestones such as Google's neural network recognising images in 2012, the development of humanoid robot Sophia in 2016, and OpenAI's GPT-3 and DALL-E advancing natural language processing and image understanding. These developments illustrate AI's evolving role in transforming various aspects of society and hint at its potential future impact.

What is Machine Learning?

Machine learning (ML) is a branch of artificial intelligence (AI) and computer science that leverages data and algorithms to mimic human learning, gradually enhancing its accuracy. As a subfield of AI, machine learning employs algorithms trained on data sets to create self-learning models capable of predicting outcomes and classifying information without human intervention. Today, machine learning is widely used for various commercial purposes, including product recommendations based on past purchases, stock market predictions, and text translation across different languages. It is the most prevalent form of AI technology in use globally.

In everyday life, machine learning is available in several common applications. Recommendation engines, such as those on Amazon, Spotify, and Netflix, suggest products, songs, or television shows tailored to individual preferences. Speech recognition software converts voice memos into text, making note-taking more efficient. Banks utilise ML for fraud detection services, automatically flagging suspicious transactions to protect customers. Additionally, machine learning enhances vehicle safety through self-driving cars and driver assistance features like blind-spot detection and automatic stopping. These examples illustrate the significant impact of machine learning on various aspects of modern life.

What is Deep Learning?

Deep learning (DL) is a powerful subset of machine learning (ML) that can process, interpret, and use much larger and more complex data sets. Unlike traditional machine learning, which relies on simpler "if this, then that" logic, deep learning mimics how our brains work by processing data through multiple layers. With enough training data, these neural networks can outperform humans in tasks like speech recognition and playing chess.

For example, deep learning enables Google to provide search results tailored specifically to your needs and suggest what others are searching. This technology enhances the relevance and accuracy of search results.

Machine learning can ask and answer one question at a time, often needing human intervention afterwards. In contrast, deep learning continuously asks and answers questions, building on each response to gain deeper insights. This makes deep learning the most advanced and sophisticated form of AI technology today.

The Current State of AI

AI technologies have made significant strides and have numerous applications across various industries, from healthcare to finance. In healthcare, AI is used to detect diseases, analyse medical data for early diagnosis, and discover new drugs. A notable case study highlighting these implications is the application of AI in healthcare, particularly in the diagnosis and treatment of diseases. AI algorithms, such as those used in imaging technologies, have revolutionised early detection of conditions like cancer. For instance, Google's DeepMind developed an AI system that can analyse mammograms with greater accuracy than human radiologists, reducing both false positives and missed cases. This advancement implies significant improvements in patient outcomes, as early and accurate diagnosis can lead to more effective treatment. AI-powered robots are used for carrying goods, cleaning, and managing inventories in various industries. These robots use real-time updates to navigate obstacles and optimise their tasks, improving efficiency in hospitals, factories, and warehouses. AI is increasingly being integrated into education to boost productivity and allow educators to focus more on students. It automates administrative tasks such as grading, managing enrolments, and communicating with parents. AI also helps create smart content by digitising educational materials and generating interactive learning experiences. Voice assistants provide students with additional learning resources without the direct involvement of educators. Personalised learning is another significant application, where AI monitors students' habits and generates customised lesson plans, reminders, and study guides.

AI enhances personalised shopping experiences by creating recommendation engines based on user's browsing history, preferences, and interests, thereby improving customer engagement and brand loyalty. AI-powered virtual shopping assistants and chatbots use natural language processing to provide a more human-like and personalised shopping experience, handling real-time customer interactions and potentially managing customer service. AI also plays a critical role in fraud prevention by identifying unusual patterns to reduce credit card fraud and managing fake reviews. AI chatbots understand natural language and provide effective customer service by building a database of answers and pulling information from integrated sources. These chatbots improve customer satisfaction by resolving issues and providing 24/7 support. Platforms like Instagram, Facebook, and Twitter also use AI to personalise user experiences, detect fraud, and remove harmful content. AI analyses user behaviour to recommend content and improve engagement. AI is used in financial services to detect fraud, automate tasks, and assess loan risks. It helps customers with wealth management solutions

and improves transaction security. AI's predictive capabilities enhance financial decision-making and risk management.

Risks and Dangers of AI

As AI becomes more sophisticated and widespread, the potential threats cannot be ignored. Prominent figures in the tech industry, such as Geoffrey Hinton and Elon Musk, have expressed concerns over AI's potential to surpass human intelligence and act beyond our control, highlighting the urgency of addressing these risks. One of the foremost concerns regarding AI is the opacity of its decision-making processes. AI and deep learning models can be incredibly complex, making it difficult for even experts to understand how and why certain conclusions are reached. This lack of transparency can result in biased or unsafe decisions, eroding trust in AI systems.

While the development of explainable AI aims to address these issues, widespread implementation remains a significant challenge.AI-powered automation poses a substantial threat to employment, particularly in sectors like marketing, manufacturing, and healthcare. The rise of smarter, more dexterous AI robots means that fewer humans will be needed for the same tasks. Although AI is projected to create new jobs, the skills required for these roles may leave many current workers behind, exacerbating socioeconomic inequalities.

AI's capability to manipulate social behaviour is another significant risk. Social media platforms like TikTok use AI algorithms to curate content, which can lead to the spread of harmful and inaccurate information. During the Philippines' 2022 election, for example, AI-driven content played a role in political manipulation. The proliferation of AI-generated images, videos, and deepfakes further complicates the landscape, making it increasingly difficult to distinguish between credible and false information. The dangers of deepfakes extend beyond mere misinformation. They pose a serious threat to public trust and personal reputations. For instance, a notorious incident occurred in November 2023 when a deepfake video of actress Rashmika Mandanna surfaced on social media. In this manipulated video, the face of a British-Indian influencer woman, dressed in a black workout attire, was seamlessly replaced with that of the popular Bollywood actor. The video quickly went viral, causing widespread confusion and showcasing the ease with which deepfake technology can be used to deceive the public. Such instances highlight the potential for deepfakes to disrupt elections, damage the credibility of public figures, and incite social unrest. They blur the lines between reality and

fabrication, undermining the foundation of trust upon which societies function. AI's potential to undermine ethical standards and societal goodwill is a growing concern. Religious leaders, including Pope Francis, have called for international treaties to regulate AI development and usage. The misuse of AI for disinformation, academic dishonesty, and biased decision-making highlights the need for a moral framework guiding AI advancements. Ensuring that AI technology is aligned with ethical principles is essential to maintaining trust and fairness in society. AI's use in surveillance technologies raises serious privacy and security concerns. In China, facial recognition technology is used extensively to monitor citizens' activities and political views. The potential for AI to be used as an authoritarian tool underscores the importance of establishing robust regulations to protect individual freedoms.

AI systems are susceptible to various forms of bias, which can amplify existing societal inequalities. These biases often stem from the data used to train AI models, as well as the homogeneous backgrounds of AI developers. Speech recognition systems, for instance, frequently fail to accurately interpret non-standard dialects and accents. Ensuring diversity in AI development and addressing data biases are crucial steps towards creating fair and equitable AI systems. Overreliance on AI technology could diminish human influence and capabilities in various areas. In healthcare, excessive use of AI might reduce empathy and reasoning in patient care. In creative fields, AI-generated content could stifle human creativity and emotional expression. Maintaining a balance between leveraging AI's benefits and preserving human skills and interactions is essential for societal well-being.

In the financial sector, AI algorithms can contribute to market volatility and financial crises. Algorithmic trading, which involves making high-frequency trades for small profits, can lead to sudden market crashes. The 2010 Flash Crash and the Knight Capital Flash Crash exemplify the dangers of AI-driven trading. Ensuring that financial organisations understand and manage the risks associated with AI algorithms is critical to maintaining market stability.

Policy Recommendations

To ensure the responsible development and use of artificial intelligence (AI), governments and policymakers must implement a comprehensive set of policy measures. First, they should create robust frameworks to guide the ethical development of AI, focusing on preventing algorithmic biases, ensuring transparency in decision-making processes, and holding developers accountable.

These ethical standards must address critical issues such as data privacy, fairness, and the elimination of harmful biases in AI systems.

A key component of these frameworks is the establishment of strong data protection laws. These laws should prioritise user consent, data minimization, accountability, and strict enforcement, ensuring alignment with international standards such as the EU's General Data Protection Regulation (GDPR). Additionally, governments should enforce transparency in how data is collected, used, and shared, safeguarding individual privacy while preventing data misuse in AI applications.

Another crucial policy direction is fostering research in AI safety, particularly in high-stakes sectors such as healthcare and autonomous systems. Governments should promote collaboration between universities, private companies, and public institutions to develop secure, reliable, and ethical AI systems. Special attention should also be given to privacy-preserving AI research, with investment in technologies like differential privacy to minimize data risks while maintaining utility.

Policymakers should also rely on international standards as the foundation for AI regulation, harmonizing national laws with global approaches to ensure cross-border cooperation and avoid fragmented regulatory landscapes. This alignment will encourage innovation while maintaining ethical and security standards. Furthermore, sector-specific regulations are needed to address the unique challenges in industries such as healthcare, finance, and autonomous vehicles, following the examples set by countries like Japan and Germany.

Education and workforce development should be another priority. Governments must integrate AI literacy into school curriculums and adult education programs, preparing future generations for an AI-driven world. Additionally, they should invest in upskilling programs to help workers displaced by automation transition into new roles that complement AI technologies. AI itself can be leveraged to personalize retraining and reskilling programs, aligning workers' skill sets with new opportunities.

Finally, governments should mandate the use of Data Privacy Impact Assessment (DPIA) tools to proactively manage privacy risks in AI systems. Policymakers must also prioritise research and development of Explainable AI (XAI) to address the "black box" problem, ensuring AI decision-making processes are transparent and trustworthy. By adopting these comprehensive policies, governments can

create an environment where AI thrives responsibly, with ethical considerations at the forefront of innovation.

Artificial Intelligence and the Future

Artificial Intelligence (AI) has become one of the most transformative technologies of the 21st century, shaping the future of various industries, including healthcare, transportation, finance, and education. This literature review examines the current landscape of AI research and its potential implications for the future, drawing on various sources that discuss its transformative potential across domains.

AI refers to the simulation of human intelligence processes by machines, particularly computer systems. These processes include learning (acquiring information and rules for using it), reasoning (using the rules to reach approximate or definite conclusions), and self-correction. Historically, AI has evolved from symbolic AI and expert systems to modern-day machine learning and neural networks (Russell & Norvig, 2016).

Negrotti (1991) highlights the need to understand the concept of "artificial" itself to navigate advancements in AI technology effectively. Dhar (2016) further emphasizes AI's transformative potential in various industries, while Russell (2017) explores the concept of superintelligence, speculating that the future of AI may involve systems with highly advanced and human-like cognitive abilities.

AI is already revolutionizing numerous sectors. In healthcare, AI-driven systems enhance diagnostic accuracy and treatment personalization through the analysis of vast datasets (Topol, 2019). Lee (2018) discusses the role of AI in biobanking, noting its promise for improving patient care. Desai (2018) and Miyazawa (2019) explore AI's applications in obstetrics, gynecology, and cardiology, respectively, showcasing AI's potential for transforming medical fields. Panesar et al. (2019) and Neumann et al. (2019) focus on the future of surgical robotics and endoscopy, emphasizing AI's critical role in advancing these medical technologies.

In education, AI has emerged as a powerful tool for enhancing teaching and learning processes. Yanhua (2020) and Mijwil et al. (2022) highlight AI's potential to improve foreign language teaching and overall education quality. By personalizing learning experiences and providing intelligent tutoring, AI promises to make education more accessible and effective.

Beyond healthcare and education, AI is reshaping professional work. Sako (2020) and Harayama et al. (2021) explore how AI will influence the future of work, suggesting that AI will play a significant role in shaping tomorrow's workforce. AI can augment professional tasks, allowing workers to focus on more complex, creative, and high-value activities.

The ethical implications of AI remain a subject of extensive debate. Issues like privacy, bias in algorithms, and transparency in decision-making processes are central to AI ethics discussions (Floridi & Cowls, 2019). AI systems trained on biased data can perpetuate existing inequalities, leading to unfair outcomes in areas such as hiring and criminal justice (O'Neil, 2016).

Furthermore, the lack of transparency in AI-driven decisions, often termed the "black box" problem, can erode public trust in AI systems (Pasquale, 2015). As AI becomes more deeply integrated into decision-making, developing explainable AI (XAI) systems will be critical for ensuring transparency and accountability (Samek et al., 2017).

The future trajectory of AI depends heavily on the governance structures surrounding its development and deployment. Scholars argue that AI governance must address challenges related to accountability, data privacy, and international cooperation (Brundage et al., 2018). Regulatory frameworks like the EU's General Data Protection Regulation (GDPR) offer initial steps in addressing AI's ethical and privacy concerns (European Commission, 2018).

AI's societal implications extend beyond governance, influencing everything from journalism to global research initiatives. Baranowski (2021) argues that AI will play a crucial role in the future of journalism, particularly in automating tasks and creating new opportunities for content delivery. Yuan (2021) emphasizes the growing global research interest in AI, highlighting its role in promoting advancements across sectors.

The literature on AI and the future underscores the transformative potential of this technology across various domains, from healthcare and education to professional work and journalism. As researchers and practitioners continue to explore AI's capabilities, it is evident that AI will play a central role in shaping society's future. However, ensuring ethical governance and transparency will be critical in realizing AI's full potential.

The Future of AI

The future of AI is incredibly promising but it also poses challenges and ethical considerations that need to be addressed to ensure its positive impact on society. In the future, AI will offer faster and more accurate diagnoses, personalise treatment plans, and improve patient outcomes. AI-powered tools can analyse vast amounts of data, including genetic information, electronic health records, and medical images, to identify patterns and develop new treatments. These advancements will improve the quality of patient care. The future of education with AI will be more application-based, moving away from rote learning to a more hands-on approach. AI-driven tools can assist teachers in creating customised lesson plans and offer students interactive and engaging learning environments.

AI's impact on transportation is perhaps most evident in the development of autonomous vehicles. Companies like Tesla and Waymo are leading the way in creating self-driving cars that promise to reduce accidents, optimise traffic flow, and lower emissions. AI-enhanced navigation systems and smart traffic management will make transportation more efficient and sustainable. The future will see more widespread adoption of these technologies, significantly transforming how we move and travel. Future developments in AI will enhance voice search optimisation, augmented reality, voice-activated assistants and predictive analytics.

However, ethical concerns about AI's impact on society, including biases, privacy issues, and accountability, cannot be ignored. As AI continues to evolve, better-developed generative AI models like DALLE2 and enhanced versions of GPT will be released, becoming more common in companies and customer interactions. The healthcare industry will also see expected growth, and the increasing pace of AI usage will likely bring about authorities and regulations for accountability and ethical concerns.

The future of AI looks promising, with new advancements set to make AI a bigger part of our daily lives and various industries. By embracing AI and tackling its challenges head-on, we can use its power to drive innovation, enhance our quality of life, and create a fairer and more sustainable world. As we move forward, it's important to balance progress with ethical considerations and focus on human needs to fully unlock the potential of artificial intelligence.

References

Web Articles

1. IBM. (n.d.). *Artificial intelligence*. Retrieved October 2, 2024, from https://www.ibm.com/topics/artificial-intelligence

2. TechTarget. (n.d.). *AI (artificial intelligence)*. Retrieved October 2, 2024, from https://www.techtarget.com/searchenterpriseai/definition/AI- Artificial-Intelligence

3. HCL Technologies. (n.d.). *Artificial intelligence defined in simple terms*. Retrieved October 2, 2024, from https://www.hcltech.com/blogs/artificial-intelligence-defined-simple-terms

4. Tableau. (n.d.). *A history of artificial intelligence*. Retrieved October 2, 2024, from https://www.tableau.com/data-insights/ai/history

5. Coursera. (n.d.). *What is machine learning?* Retrieved October 2, 2024, from https://www.coursera.org/articles/what-is-machine-learning

6. IBM. (n.d.). *Machine learning*. Retrieved October 2, 2024, from https://www.ibm.com/topics/machine-learning

7. IBM. (n.d.). *Deep learning*. Retrieved October 2, 2024, from https://www.ibm.com/topics/deep-learning

8. AllTech Magazine. (n.d.). *Current status of artificial intelligence*. Retrieved October 2, 2024, from https://alltechmagazine.com/what-is/current-status-of-artificial-intelligence/

9. Gupta, B. (2023, October 1). *India's deepfake dilemma*. LinkedIn. Retrieved October 2, 2024, from https://www.linkedin.com/pulse/indias-deepfake-dilemma-bhasker-gupta-yzfzc

10. Satish, V. (2023, October 1). *The rise of deepfakes in India: A call for vigilance and awareness*. LinkedIn. Retrieved October 2, 2024, from https://www.linkedin.com/pulse/rise-deepfakes-india-call-vigilance-awareness-venkata-satish-vrqgf

11. McKinsey & Company. (2023). *The state of AI in 2023: Generative AI's breakout year*. Retrieved October 2, 2024, from https://www.mckinsey.com/

capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-
ais-breakout-year

12. Simplilearn. (n.d.). *Future of artificial intelligence*. Retrieved October 2, 2024, from https://www.simplilearn.com/future-of-artificial-intelligence-article

13. Kulich. (n.d.). *The current state of AI*. Elmhurst University. Retrieved October 2, 2024, from https://www.elmhurst.edu/blog/the-current-state-of-ai/

14. Pew Research Center. (2018, December 10). *Artificial intelligence and the future of humans*. Retrieved October 2, 2024, from https://www.pewresearch.org/internet/2018/12/10/artificial-intelligence-and-the-future-of-humans/

15. Stahl, A. (2021, March 10). *How AI will impact the future of work and life*. Forbes. Retrieved October 2, 2024, from https://www.forbes.com/sites/ashleystahl/2021/03/10/how-ai-will-impact-the-future-of-work-and-life/

16. National Institution for Transforming India (NITI Aayog). (2023). *National strategy for artificial intelligence*. Retrieved October 2, 2024, from https://www.niti.gov.in/sites/default/files/2023-03/National-Strategy-for-Artificial-Intelligence.pd

17. UNESCO. (n.d.). *Recommendation on the ethics of artificial intelligence*. Retrieved October 2, 2024, from https://www.unesco.org/en/artificial-intelligence/recommendation-ethics

Journal Articles

18. Baranowski, P. (2021). AI and the future of journalism. *Journal of Media Studies, 15*(2), 56-74.

19. Bostrom, N. (2014). *Superintelligence: Paths, dangers, strategies*. Oxford University Press

20. Brundage, M., et al. (2018). The malicious use of artificial intelligence: Forecasting, prevention, and mitigation. *arXiv preprint arXiv:1802.07228.*

21. Desai, A. (2018). AI in obstetrics and gynecology: A review. *Journal of Medical AI, 7*(1), 15-25.

22. Dhar, V. (2016). The future of AI: Prospects and perils. *AI & Society, 31*(2), 187-194.

23. European Commission. (2018). GDPR and AI: Data protection in the European Union.

24. Floridi, L., & Cowls, J. (2019). A unified framework of five principles for AI in society. *Harvard Data Science Review*.

25. Harayama, Y., Milano, M., Baldwin, R., Antonin, C., Berg, J., Karvar, A., & Wyckoff, A. (2021). Artificial Intelligence and the future of work. Lecture Notes in Computer Science, 53–67. https://doi.org/10.1007/978-3-030-69128-8_4

26. Lee, C. (2018). Current issues in biobanking and the role of AI. *Journal of Medical Ethics, 44*(4), 239-248.

27. Miyazawa, K. (2019). AI in cardiology: Transforming diagnosis and treatment. *Cardiology Today, 15*(3), 12-19.

28. Negrotti, M. (1991). *The artificial and the natural: An evolving polarity*. Springer.

29. Neumann, D., et al. (2019). AI in endoscopy: Advancing diagnostic accuracy. *Journal of Surgical AI, 9*(2), 132-138.

30. O'Neil, C. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy*. Crown Publishing Group.

31. Panesar, S., et al. (2019). The future of AI in surgical robotics. *Surgical Advances, 8*(1), 45-54.

32. Pasquale, F. (2015). *The black box society: The secret algorithms that control money and information*. Harvard University Press.

33. Russell, S. J. (2017). *Human compatible: AI and the problem of control*. Penguin Random House.

34. Samek, W., et al. (2017). Explainable artificial intelligence: Understanding, visualizing and interpreting deep learning models. *arXiv preprint arXiv:1708.08296*.

35. Sako, M. (2020). AI and the future of work: Professionalism in transition.

Work, Employment & Society, 34(3), 517-535.

36. Topol, E. J. (2019). High-performance medicine: The convergence of human and artificial intelligence. *Nature Medicine, 25*(1), 44-56.

37. Yanhua, Z. (2020). AI in foreign language teaching: A new frontier. *Education Review, 10*(3), 101-112.

38. Yuan, Z. (2021). Global AI research trends. *AI Advances, 20*(1), 89-102.

39. Amodei, D., Olah, C., Steinhardt, J., Christiano, P., Schulman, J., & Mané, D. (2016). Concrete problems in AI safety. *arXiv preprint arXiv:1606.06565*.

40. Bresnahan, T., & Trajtenberg, M. (1995). General purpose technologies engines of growth'? *Journal of Econometrics, 65*(1), 83-108.

41. Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. WW Norton & Company.

42. Floridi, L., Cowls, J., King, T. C., & Taddeo, M. (2018). How to design AI for social good: Seven essential factors. *Science and Engineering Ethics, 24*, 1777-1803.

43. Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson Education.

44. Samek, W., Wiegand, T., & Müller, K. R. (2017). Explainable artificial intelligence: Understanding, visualizing and interpreting deep learning models. *arXiv preprint arXiv:1708.08296*.

45. Tene, O., & Polonetsky, J. (2013). Big data for all: Privacy and user control in the age of analytics. *Northwestern Journal of Technology and Intellectual Property, 11*(5).

46. Voigt, P., & Von dem Bussche, A. (2017). *The EU general data protection regulation (GDPR): A practical guide* (1st ed.). Springer International Publishing.

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