


# Chapter 1

## Artificial Intelligence: Applications of AI in Turbulent Times

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### **ABSTRACT**

*Artificial intelligence (AI) has been one of the most active research areas in computer science and has attracted the attention of researchers from different fields due to its potential to bring significant transformations in various spheres of life. The COVID-19 pandemic and the accompanying social and economic turmoil have further highlighted the importance of AI. In this chapter, the authors discuss the prospects of AI in times of turbulence, with a special focus on applications and theoretical context. AI has been used in different industries, including healthcare, finance, manufacturing, retail, and education, and discuss the challenges and opportunities associated with its use. They also address some of the ethical, legal, and social issues related to AI and highlight the importance of a responsible and equitable approach to its implementation.*

### **INTRODUCTION**

Artificial intelligence (AI) is a research area that has been growing exponentially in the last decades and has revolutionized various sectors of society, from healthcare to industry. In times of turbulence, such as economic crises, pandemics, or natural disasters, AI can play an even more important role, providing insights and solutions that can help mitigate the impacts of these crises. This paper aims to explore the perspectives of artificial intelligence in times of turbulence by examining the

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applications, challenges, and opportunities associated with the use of AI in different sectors. Furthermore, recent advances in the field of AI and how they can be applied to help cope with crises and turbulent situations will be discussed. Based on the literature review, the main applications of AI in times of turbulence are identified, highlighting its contribution in areas such as healthcare, finance, manufacturing, retail, and education. The ethical and social challenges associated with the use of AI are also discussed, including the possibility of perpetuating existing prejudices and discrimination, as well as the potential impact on the labour market. Finally, the opportunities AI offers in terms of crisis mitigation are explored, from predicting market fluctuations to improving the customer experience in retail. This paper concludes that while there are significant challenges to be addressed, AI has the potential to bring many benefits in times of turbulence and should be carefully explored and used ethically and responsibly.

## **Applications of AI in Turbulent Times**

AI has been widely used in different sectors in turbulent times. In healthcare, AI has been used to diagnose diseases, identify infection patterns, and develop treatments and vaccines for infectious diseases such as COVID-19. For example, AI has been used to analyse chest CT scan images of patients with COVID-19 to help detect and monitor disease progression. In finance, AI has been used to predict market fluctuations, detect fraud, and manage risk. AI can help analyse large volumes of financial data to identify trends and patterns, allowing investors to make more informed decisions. In addition, AI can be used to detect suspicious activity, such as fraudulent transactions, and help reduce the risk of financial losses (Islam, M. et al 2020). In manufacturing, AI has been used to improve production efficiency and reduce costs. AI can help optimize production by reducing downtime and increasing machine efficiency. In addition, AI can be used to predict problems in production before they occur, allowing preventative measures to be taken to minimize costs.

In the retail industry, AI has been used to improve the customer experience and optimize retail operations (Liao, T. W., & Hsieh, H. P. 2020). AI can be used to personalize the customer experience by offering product recommendations based on the customer's purchase history and browsing behaviour. In addition, AI can be used to optimize inventory management, forecast demand, and reduce product waste. In education, AI has been used to personalize learning and improve student performance. AI can be used to provide personalized learning resources, tailoring content and delivery to individual student learning styles and needs. In addition, AI can be used to assess student performance, providing personalized feedback, and helping to identify areas where the student may need more support.

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