

Chapter 9

Machine Learning for Risk Analysis

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ABSTRACT

Evolution of technology summons risks. With the use of complex prototypes and methods, not only the decision-making propensity of the machines increases but also the risk assessment reduces and frauds increased. Machine learning (ML) is considered an appropriate solution for the management of risks as it can produce the desired solution with less human effort. So, to minimize the possibility of risks, certain methods are adopted that benefited through ML. The chapter provides an insight into various applications of ML techniques in the field of risk analysis. The application of ML in this sector has led to a fact that these methods can be used to analyze huge amounts of data with efficient predictive analysis. Moreover, the future of machine learning in risk analysis and management is presented bringing out the positive picture. As a conclusion, one can just say that humans will be seeing an era which will make even complex problems easy to solve with efficiency. The chapter concludes with some limitations which need to be fixed for better risk management.

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INTRODUCTION

Machine Learning (ML) is the new utterance of technology. It has the proficiency of replacing emphatic programming of the devices. It is generally hinged on the conception that a substantial amount of data is provided and on the basis of that data and some algorithms the machine is trained, and different machine modules are fabricated. The decisions made by the machines based on data provided are immensely efficient and accurate. With the commencement of the contemporary aeon of technology, ingenious crimes and risks are also escalating. In the modern world the most important constituent to take off is the risk management and its intensifying production. This chapter comprises all the information regarding how machine learning has palliated in risk assessment (Aggarwal et al., 2021; Apostolakis, 2004; Aven, 2012).

Large scale organizations, companies, and institutions are prone to risks like frauds consequently they are sticking to various machine learning techniques that can prevent or abate these frauds or risks. The chapter is an amalgamation of various strategies for changing the perspective of risk assessment. On the basis of risk assessment with machine learning various case studies sheathing different aspects has been covered in the chapter. These case studies have effectively engulfed the seriousness of risk assessment. Case studies are basically an inspiration of the future consequently elucidating constructing techniques to diminish risks. Several applications are also incorporated in this chapter as well that lead us to the significance of risk assessment in several industries and organizations for protection from copious frauds and deceptions altogether with the integration of machine learning in this peculiar field (Chen et al., 2008; Cheng et al., 2016).

The resonance of this chapter is related to the arguments that can be a sense of salvation from risks that can emerge abundant provenances followed by a conclusion which covers the mantle of machine learning in the field of risk management as a whole.

Machine Learning

Machine learning can be described as a subcategory of the Artificial Intelligence (AI) field which has its main focus on examining and recognizing patterns and arrangements in data to facilitate features such as training, thinking, decision making, learning, and researching without interference. Machine learning allows the user to pack an enormous sum of data with a computer algorithm, allows the computer to examine and analyze the data to make recommendations based on the input received. If some features require redesigning, they are classified and improved for a better

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