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**Preface**

This book offers a comprehensive exploration of the evolving landscape of machine learning (ML) and deep learning (DL). It begins with a detailed overview of modern architectures and trends in Chapters 1-3, ………..

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Table of Contents

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# **Chapter 1: Artificial intelligence and machine learning**

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**1 Introduction**

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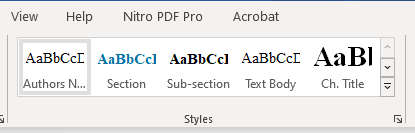
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These technologies adoption and expansion have been accelerated by the rapid advancement of processing power and the wealth of available data (Shinde & Shah 2018; Shrestha & Mahmood, 2019; Dargan et al., 2020). The ML and DL architectures, which are the foundation of these technologies, have made significant progress and shown remarkable capabilities in tasks such as natural language processing, autonomous systems, and image and audio recognition. ML models come in a variety of architectures, from basic linear regression models to intricate neural networks, designed for different tasks and types of data (Chauhan & Singh, 2018; Sengupta et al., 2020; Alzubaidi et al., 2021).



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1.1 Artificial Intelligence

Table 1.1 shows the key architectural innovations and enhancements in ML and DL.

1.2 Machine Learning

Table 1.1 shows the key architectural innovations and enhancements in ML and DL.

2 **Literature review**

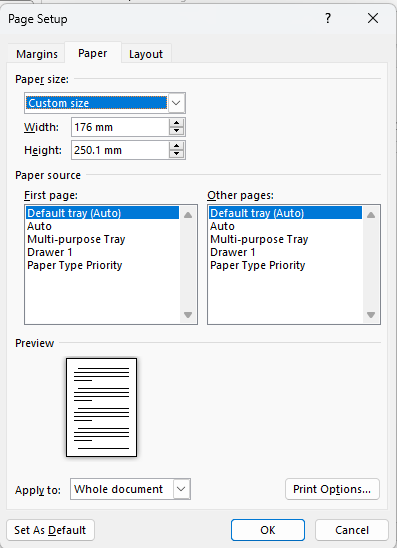
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3 Methods and materials

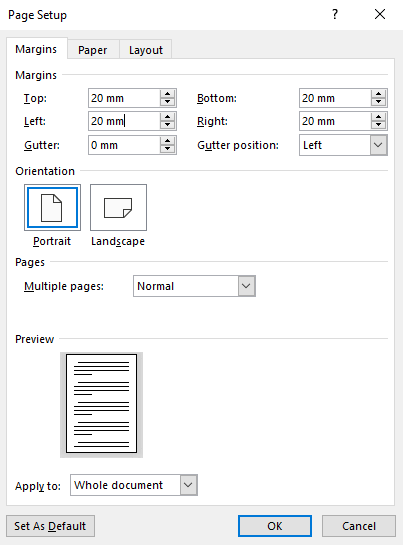
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4 Results and discussions

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**Fig. 1.2** Page size



**Fig. 1.3** Page margin

**Table 1.1** Key architectural innovations and enhancements in ML and DL. Text within tables should be set in size 10.

|  |  |  |  |  |  |
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| **Sr. No.** | **References** | **Architectural Innovation** | **Description** | **Enhancements** | **Key Applications** |
| 1 | (Shrestha & Mahmood, 2019; Aziz et al., 2020; Deng, 2014) | Convolutional Neural Networks (CNNs) | A category of deep neural networks predominantly employed for scrutinizing visual stimuli. | Noteworthy advancements encompass. | Disciplines of interest encompass. |
| 2 | (Alzubaidi et al., 2021; Janiesch et al., 2021; Wu & Xie, 2022) | Recurrent Neural Networks (RNNs) | Neural network architectures characterized | Distinctive enhancements embrace proficient handling of sequential datasets. | Application domains. |

Conclusions

Transformer-based models such as BERT have caused a significant change in the field of NLP and consistently establish higher levels of performance. These models use self-attention mechanisms to better capture contextual information compared to traditional RNNs and CNNs.

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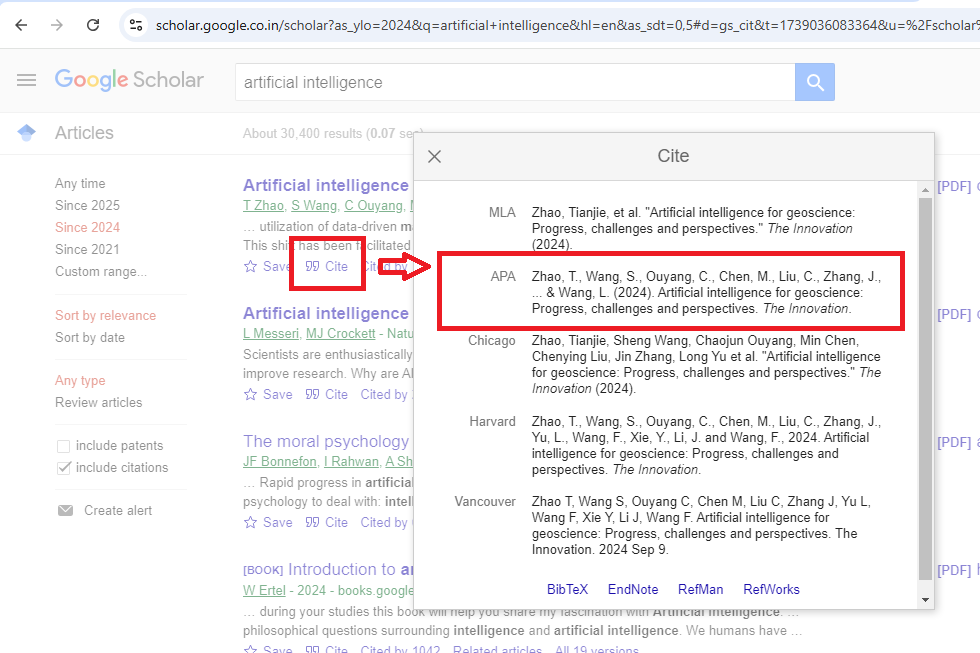
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