

Chapter 1: Introduction to Artificial Intelligence: Concepts, Frameworks, and Evolution

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Abstract:

A wide range of areas have been impacted by Artificial Intelligence (AI), which is considered to be one of the most influential technological advancements of the current time period; the area has developed from purely theoretical concepts in the mid-20th century to practical application across many different disciplines. Initially based on rule-based systems and symbolic reasoning, the development of AI as a science began formally when the Dartmouth Conference took place. Since then, the inclusion of machine learning, neural networks, and deep learning has moved the field from deterministic computing to adaptive, data-driven intelligent computing that can recognize patterns, make predictions and make decisions. AI has a significant role in all of the major categories of Big Data Analytics, Natural Language Processing, Computer Vision, and Reinforcement Learning, and its use has become widespread in many other areas. In addition to the ability to generate new content for creative, industrial, and scientific innovation, generative AI provides an additional layer of functionality. While AI provides increased efficiency, accuracy and innovation, it also presents significant ethical and social problems, including privacy issues and disruption of the socio-economic order.

Keywords: *Artificial Intelligence (AI), Machine Learning, Neural Networks, Big Data Analytics, Ethical Considerations in AI*

1. Introduction

The development of Artificial Intelligence (AI) as a scientific field was in the middle of the last Century when scientists attempted to develop machines that would simulate human thought. The origin of AI is found in early advancements in the fields of math, logic, and computer science. During the 1940's a