Chapter 2
Applications of AI in Financial System

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ABSTRACT

Role of computers are widely accepted and well known in the domain of Finance. Artificial Intelligence(AI) methods are extensively used in field of computer science for providing solution of unpredictable event in a frequent changing environment with utilization of neural network. Professionals are using AI framework into every field for reducing human interference to get better result from few decades. The main objective of the chapter is to point out the techniques of AI utilized in field of finance in broader perspective. The purpose of this chapter is to analyze the background of AI in finance and its role in Finance Market mainly as investment decision analysis tool.

OBJECTIVES

Role of computers are widely accepted and well known in the domain of Finance. Artificial Intelligence(AI) methods are extensively used in field of computer science for providing solution of unpredicted event in a frequent changing environment with utilization of neural network. Professionals are using AI framework into every field for reducing human interference to get better result from few decades. The main objective of the chapter is to point out the techniques of AI utilized in field of finance in broader perspective. The purpose of this chapter is to analyze the background of AI in finance and its role in Finance Market, mainly in process of investment decision making from evolution and use of AI techniques in this respect.

INTRODUCTION OF ARTIFICIAL INTELLIGENCE

Few decades before, a computer program was only used for a numerical computation and computing the path of a bullet. Now a days, a computer programs are used in decision making in important decisions area, supported by a big database across global. As the tasks that computers perform are getting complex and intertwined with the daily life decisions, such behavior of decision making from the computer programs associate with intelligence. So these programs labeled as intelligence incorporated without human neural system, named Artificial Intelligence (AI). However experts are using AI and its concepts in every area of decision making still this branch is unexplored and not known to masses. AI as an academic discipline started from Dartmouth conference organized by John McCarthy from Stanford University and Marvin Minsky from MIT in the 1955 as "the science and engineering of making intelligent machines". Many researchers define AI, as branch of computer science concerned with making computers behave like humans. While some define AI as extension of human intelligence through use of computers.

Alan Turing undertook a test of a machine's ability to demonstrate intelligence, Turing Test, by judgment to distinguish between human and AI machine on natural language conversation .The AI approach can further divided into two major areas -Conventional AI and Computational AI .Conventional AI is based out on logic and rules to make decisions. Computational AI takes biological mechanisms. Computational AI are more advanced form and broadly used in decision making in economy and social sciences. Artificial Neural network (ANN), Expert system (ES), Fuzzy systems (FS), Genetic algorithms (GA) are examples of Computational AI used in field of Financial and Investment decision making.

We use AI every day, without knowing the facts, a simple conversational navigator's application like Google Voice for Android. Our smart phones are getting better day by day; remind us on simple things like birthday of friends, time to go to work, hands free searching and messaging and even telling us if we forget attachment in an email. Such automations are based on concept and application of AI. Currently IBM along with Google is working on AI research for creating a Super computer, WATSON that could change our future significantly. WATSON is learning everything related to human behavior, nature and other complexities in order to forecast and recommend on our future actions.

Concepts of AI has been used in every industry, from computers to pharmaceutical .After gain of trust in these field, professional are start using AI in financial services decision making as well.

HISTORY OF AI IN FIELD OF FINANCE

History of AI in Financial services domain can be traced back from Pacific National Bank of USA in 1987, set-up a Fraud Prevention Security Task force to check the unauthorized use of cards at ATM machines and vendor counters. The bank build a prototype on a regular office computer to perform as warning system for fraud prevention, modeled around the weather warning systems that warned before possible natural disasters like cyclones and earthquakes. This prototype was successful and paved the way for AI-based technology into consumer interactive products and services. Thus,AI has found a new home in financial industries and used as a valuable tool to many business applications for decision making.

In 2001, Wednesday, 8 August, BBC has flashed a new "Robots beat humans in trading battle". Technology giant IBM pitted robotic commodity trading agents, known as "bots", in opposition to humans in trading Commodities, pork bellies and gold. The bots made 7% more return than the human traders, reported in New Scientist magazine.

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