# Deep Learning in Artificial Intelligence

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## I. INTRODUCTION

Artificial Intelligence is the field of computer technology and which is used to apply varies theories, models, methods, techniques and algorithms to simulate and develop intelligent systems. AI enables to solve real time problems by using computer and make intelligent decision. An algorithm is the main part for developing or solving real time problems and it is the step by step procedure at each stage. AI algorithms are set of procedure and used to perform intelligent behaviour and make successful decision using involvement of learning and perception. The main purpose of AI is to apply technology to real time situation and reduce the human efforts. The high level goal is to the user to exhibit perception behaviour to intelligent machine. Learning is the most important part for applying AI based solutions or automated environment. Learning can be done by perception of input behaviours at different environment. Deep learning is the most responsible part to recognize or percept following capabilities of intelligent system like problem solving, decision making, planning and reasoning, interaction and knowledge representation. Deep learning process is used to build, represent and analysis input behaviours and involves symbolic and neural forms to achieve knowledge representation. Knowledge representation is the important part in AI and which leads the role to make intelligent machine with decision making capabilities.

Machine learning and Natural Language processing is need to apply deep learning process. Machine learning techniques are used to analyse the behaviours be set of input characteristics. A successful intelligent AI system gives the ability to read, write, process and generate human and native user inputs. Nowadays Internet are playing important role in day-to-day life and includes information processing and analysing various inputs such as text, audio, video, etc. Handling internet request AI researchers are developed highly effective algorithms as well as computer vision techniques.

This paper mainly focuses on general techniques of AI with deep learning characteristics and gives historical view of current state of intelligent systems. Based on various survey we focused the AI can verifies different paradigms such as machine learning, agent interaction systems, natural language processing, etc. The core application of AI the above is need and most significant contribution in AI technology and deep learning.

## II. THE FIRST ERA OF AI

The expert systems are started in engineering domain in 1970s and it devised computer programs based on pseudo code transition. Teach Pendent type of AI system involved in Expert application processing in telecommunication and commercial environments. In this case the capability of learning and converting new situation is difficult process. So the decision making process was not up to the level and solve the complex problem is tedious process. The expert systems developed in 1980s with the if-else statement t make decision with inference rule forms. Due to this stage the first AI system cannot handle real time data processing, language processing and chat based applications.

The researchers can decide machine learning based expert systems with the involvement of contributors and optimization produce to good software deliverables. According to the survey of Colorado University and Li Deng et al, the speech processing agent systems are in the field of 1990s to perform automated caller based response system. The author can contribute to transmitting from inference rule based mechanism to speech recognition system with the capable of data domain, knowledge and statistical approach.

## III. THE SECOND ERA OF AI

The speech processing agents are used in real time application and which gives clear picture of learning and perception. Computer vision was played vital role for handling perception and knowledge request. According to defence based knowledge systems and NASA report the speech based agents are having autonomous behaviour and automated learning capabilities. In this case, the machine learning inputs and natural language processing are combined with deep learning representations. In such cases, AI system more focuses on trained input data and predefined algorithms. The real time input capturing agents are designed in 2000s with the key components such as decision trees, Bayesian networks, support vector machine, neural networks, etc. Generally the AI system performs various real time applications like face recognition, Bio-metrics process, speech processing, machine learning vision applications, etc.

According to the survey the Hidden Marco model and Limber Ziv Code are used to converting of language processing and speech processing agents. In that situation the involvement of Kalaman filter and statistical measurement techniques involved to human speech inputs capturing agents.

## IV. THE CURRENT AI

The current AI based application more useful t real time and day-to-day life environments and automated applications. The deep learning process is one the driving force in current application which includes learning different kind of input data and trained various decision making procedures. In traditional machine learning techniques are designed only doing specified task with less decision making capabilities. But current deep learning models have to handle end-to-end learning process and large scale automated applications.

In 2010, the automated data processing system developed with deep learning capabilities and handle data analytics behaviours. Microsoft started the speech processing applications for content delivery networks with lower recognition features. The start-of-the-art nature of machine learning systems and speech processing are the backbone of deep learning process. Large scale real time applications are which handle deep learning process and following are the major natural language process systems like Amazon Alexa, Google Now, Amazon Chime, etc. The deep learning includes large number of real time applications including of Robotics, Machine Vision Systems, Drone assisted networks, Energy Consumption, Medical Image Processing, Web Search engines, Gaming, CRM, Internet advertisement, etc.

The huge empirical analyse of AI System in real time environments, the deep learning process used to predict the learning and extract the knowledge and produce decision as correct manner. The various software is developed to implement automated process and handle variety of data set. Deep learning process is proven techniques in AI based smart applications and to achieve ultimate feature of future prediction capabilities. The current deep learning models have accessing human perception and competent real market. Deep learning process is break through the all the unstable in learning process, allow and explain the action, decision, decide and act their own way. The inference rule and knowledge representation techniques involved to predict integrated, worldwide and social media applications.

The following are the steps used in implementing deep learning process and it is breakdown all the statistical problem.

i. Percept the any form of input request like natural language and making the decision
ii. Analyze the input behaviours based on algorithms and inference rule of knowledge
iii. The knowledge representation techniques applied various Q-Learning algorithms
iv. Finally decision agent with capable to handle all type of request and analyze, synthesis in adversary networks

A close and typical research of deep learning in AI have low cost supervision and stated natural language processing systems, machine learning process and Image recognition system. The deep learning AI models are allows different knowledge representation techniques and statistical approach for making decision. This approach is aimed to improve engineering systems and measure the semantic values to design AI systems.

## V. APPLICATIONS IN AI

Artificial Intelligence includes various commercial application which offered deep learning behaviours. They are selected to elaborate and monitor the operations. The following services offered in selected and knowledge discovery process like financial services, transportation services, customer services automated applications, etc. AI techniques can process millions of applications and trigger the process. The following are the popular recommendation engines used in connecting various real time services providers such as Amazon Alexa, Amazon Chime, Google Assistance, etc. For example, banking systems are used AI applications to offers various file handling mechanisms, managing properties and reasoning capabilities. AI system can alert and trigger investigation process. Bots based automated techniques used to promise searching and firewall operations to control, e-commerce and social networks.

In summary, this paper constructs and analyse the techniques that enabling deep learning process in AI. The wide ranges of applications are used in data processing, social applications and other commercial applications. The AI technology development provided and improved perceptive based on research experience. This paper summarises the property of deep learning process in complex and real time applications. In future various optimization based deep learning methods are used to improve the efficiency of Artificial Intelligence applications in IT and ITeS.

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