



Learning Concepts of Artificial Intelligence - Applications in IT companies

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Abstract: For almost every industry, the impact of automation and artificial intelligence (AI) has become a significant topic of discussion as we enter the origin of a long-awaited future. The conversation nowadays is on elimination of work through robotics and going beyond those efficiencies to deliver on self-healing through artificial intelligence (AI) and machine learning. Customer understanding is becoming more key, with the customer here being defined generally as any set of stakeholders across any set of processes that are being serviced. These topics are limited to the impact on a current set of Business Process Outsourcing (BPO) processes and not the larger troublesome impact of digitization to the core business itself, since that's a conversation that transcends BPO. This paper gives an overview of the application of artificial intelligence and learning concepts in many IT organizations and BPOs.

Index Terms: Intelligent being, Data prediction, Envisioning the future.

I. INTRODUCTION

Artificial intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform errands commonly associated with intelligent beings. It is gifted with the rational processes that are distinctive of humans such as the ability to reason, determining meaning, generalize, or learn from past experience. Many tools are used in AI, including forms of search and mathematical optimization, logic and methods based on probability and economics.

AI techniques use three ways to create new ideas:

1. Producing innovative combinations of familiar ideas
2. Exploring the prospective of conceptual spaces.
3. Making transformations that enable the generation of previously impossible ideas.

The AI field calls upon computer science, mathematics, psychology, linguistics, philosophy, neuroscience and artificial psychology.



II. LEARNING

Machine Learning is one of the applications of Artificial Intelligence. It is the computer's ability to learn without

being clearly programmed. It aims on building systems that can learn from and make predictions on data. Such algorithms overcome by strictly following static program instructions by making data-driven predictions. Machine Learning can be implemented in the following three ways:

➤ Constrained Conditional Model (CCM)

It is an interpretation framework that enhances the learning of conditional models with declarative constrictions. This constriction is used as prior knowledge for the model and bias the tasks made by the learned model to satisfy these constrictions. These models attract much attention within the natural language processing (NLP) community. It allows focus on the molding of problems by combining domain-specific knowledge as global constraints using a first order language^[1]. From a machine learning outlook, it allows decoupling the stage of model generation from the reserved inference stage, thus helping to simplify the learning stage while refining the quality of the solutions.

➤ Deep Learning

Deep learning is a class of machine learning algorithm that uses a flow of many layers, of which each succeeding layer uses the output from the previous layer as feedback. The algorithms can be supervised or unsupervised and its uses include pattern analysis and classification. These algorithms transform their inputs through more layers than superficial learning algorithms. At each layer, the signal is altered by a processing unit, like an artificial neuron, whose constraints are 'learned' through training.^[2]

➤ Neural Modeling Fields

Neural Modeling Field (NMF) is a mathematical structure which chains ideas from neural networks^[3] and fuzzy logic. This framework has been developed by Leonid



Perlovsky at the AFRL. It can be regarded as a mathematical depiction of functioning of mind, which includes concepts, emotions, thinking, instinct, imagination and understanding. NMF is a multi-level system in which each level encapsulates the knowledge; generates the top-down signals, interacting with input i.e. bottom-up signals. These interactions are directed by dynamic equations, which determine concept-model learning, adaptation, and formation of new concept-models for better communication to the input.

III. APPLICATIONS

Binod Choudhary, The Head of Infosys BPO operations in America states that "Talent which was used to be about field knowledge and solving current problems which now is shifting towards a softer description of accepting the customers' needs, envisioning the next problem and solving those problems" [4].

Deep learning has changed computer vision and improved machine translation. It is now used to guide all sorts of key decisions in medicine, finance, manufacturing.

Google purchased DeepMind for \$400 million

Facebook started its own artificial intelligence division last year

Amazon figures out what the customer wants even before clicking the order button.

- In 2015, researchers at Google reformed a deep-learning-based image recognition algorithm so that it would generate or modify objects in photos. By running the algorithm in reverse, they discovered the features which the program used to recognize the objects [5].

- In 2015, a research group applied deep learning to the hospital's database of patient records. This data featured variables on patients, drained from their test results and doctor visits. The resulting program, named Deep Patient, used data from about 700,000 individuals, and proved incredibly good at predicting disease.

- Facebook already uses machine learning to determine a user's Newsfeed. It aims to use artificial intelligence research using the knowledge people have shared on Facebook and eventually deliver more relevant status updates and advertising.

- Amazon knows what the user wants to buy even before going to the site. It does so on the basis of ordering history. This prediction requires a system to analyze a user's previous buying history, ad interest, and real-time browsing on the site. The goal of Amazon is to keep its customers from going out and buying an item in the store, by sending it to them when they need it.

- Google uses artificial intelligence to bring up relevant websites and ads.

The idea behind AI is to forestall users needs. Google already fills in several options it thinks the user wants when typing in the search field.

IV. THE PITFALLS OF AI

- It has been predicted that AI could make low- and medium-skill jobs pointless, and broaden the wage gap.

- It is hard to assess the principle of the most advanced algorithms which may pose to be a problem.

In 2016, a self-driving car was released which was unable to follow any external instructions provided by an engineer or programmer. Instead, it relied entirely on an algorithm that it had taught itself by observing humans. The mysterious mind of this vehicle indicates towards an alarming issue of artificial intelligence.

V. ADVANTAGES

- It facilitates a better cultural fit and speedy action.

- Some jobs get redefined, some are made obsolete, and new ones are created.

- Daniel Culbertson an economist revealed that the companies are planning to increase the rate of hiring people with expertise in AI. It has also been noted that AI positions nearly double every year since past couple of years.

Uber is looking for engineers, mostly people to work in artificial intelligence and robotics in its advanced technologies group.

Ford hired 400 engineers from Canada and United States—to work on connected and autonomous cars.

GE Healthcare announced its next big intake would be hiring 5000 software engineers by 2018, who will be focussing on analytics, cloud-based imaging, population health, and machine learning.

VI. CONCLUSION

Every technology has its own pros and cons and so does artificial intelligence. To maximize the benefit from this technology, legacy core platforms will need to be renovated or even replaced. Smart use of artificial intelligence learning will lead to likeable development instead of uncontrollable development.

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