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5. Artificial Intelligence (AI) in Information and Communication Technology (ICT): An Overview

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ABSTRACT

The Artificial intelligence (AI) sector is critically transformed by a range of technological advances such as machine learning, deep learning and natural language processing in the Information and Communication Technology (ICT) sector. Artificial Intelligence (AI) is a broad-based tool that enables individuals to rethink how information is integrated, analyses data and uses the results to improve decision making — transforming every aspect of life already. This is a large-scale tool that allows people to reconsider how information is integrated, data analyzed and the results used to improve the decision-making process. With the help of AI, we can explain every aspect related to our need viz policymakers, opinion leaders and interested observers and show how AI already alters the world and poses important social, economic and governance questions.

KEYWORDS

Information & Communication Technologies, Artificial Intelligence, & Machine learning

Introduction:

Three levels can be divided into artificial intelligence:

a. The ability to simulate. Artificial intelligence imitates human thinking activities after collecting information and data. Machine learning, interaction between humans and computer and others, for instance, are as close to human thinking activities based on logical rules as possible.

b. Simulate the structure of the brain. In order to simulate human neural networks the neural cell theory is adopted. Make sure computer algorithms are similar to brain structures, for example perceptron models.

c. Have the capacity to mimic human conduct. By understanding the environment, artificial intelligence fulfils the purpose of self-learning and development.

This shows the adaptive nature of artificial intelligence to the environment, such as algorithms for biological intelligence.

The three levels summarize the artificial intelligence development. First of all, it has a brain structure and then continually adapts by imitating human thinking to its surroundings. This completes self-evolution and better reflects the artificial intelligence development process. [1]

This paper evaluates the AI ecosystem, technology, solutions and market perspectives. The key vertical industries covered include the use of AI for services & products related to the Web, financial services, medical and bioinformatics services, production and telecommunications. Certain important areas of application covered are marketing and decision-making, workplace automation, predictive analysis and forecasting, fraud detection and classification.

The report provides detailed forecasts across the following market segments at the global, regional and global levels:

a. predictive and projected analyses;
b. marketing and decision making;
c. Detecting and classifying fraud; and
d. Workplace automation.

This report contains software, hardware and services forecasts.

Artificial Intelligence (AI) is poised to transform information and communications technology (ICT) industries substantially by improving the performance of communications, apps, content, and digital commerce, such as machine learning, natural language processing, and deep learning. AI will also promote new business models and create completely new opportunities for business, because interfaces and efficiencies facilitate previously incomprehensible engagement. Many other vertical industries will be transformed as ICT and digital technologies support a wide variety of aspects of industry activities, including supply chains, marketing and sales, product, service and support models. [2]

Artificial Intelligence (AI) can support information and communication technologies (ICTs) and enhance their accessibility. We need to develop more tools that automate accessibility tasks in an increasingly media-heavy world where writers and developers don't understand the importance of alternative formats that fit user preferences like work with audio content, not written images or videos. Failure to access means that ICTs cannot make persons with disabilities (PwD) easy to use and assist (PwD). The ability of 'AI for Good' can be removed if the correct data and algorithm (rules and calculations) are provided while the Universal Design (UD) is ensured for everyone.

The 2014 "Model ICT accessibility policy report" International Telecommunications Union (ITU) recognized the need to ensure that one billion people with certain forms of handicap are empowered with information and communication technology (ICT).” [3, 4]

"In its heart, AI is the learn-and-adapt computer programming. It cannot solve any problem, but it has an enormous potential to improve our lives... [And] we believe that the overall likely benefits exceed the expected risks and downgrades significantly." Google CEO Sundar Pichai[5]

AI has shown its prominence in the age of industry 4.0 and aims to turn IT systems into smart systems that restore IT industry prominence. In this area, AI can play a vital role, given that information technology concerns computers, software and data communication systems. And today AI is a defining identity for future technology and its applications in different industries.

In this article, we discuss how IA differs from IT, how it's important in the field of information technology, and how it can help the IT sector to build better systems with guaranteed quality.AI seeks to build intelligent systems that can learn, reason, adapt and perform human-like tasks.

In order to communicate the best output in terms of information, data capture, storage, analysis and evaluation systems are concerned. AI systems are considered to be smarter than information systems as they work more closely on developed knowledge and facts.

In this review article, we consolidate existing literature in order to illuminate the gaps and propose future research agendas in governmental areas on AI applications. This paper also proposes a theoretical framework for understanding the use of IA in public health sector, information, communication and technology (ICT), environmental sustainability (environmental sustainability), transportation, government law and policy making, economic and financial applications, other fields as the most researched, and the relevant sectors. [4-5]

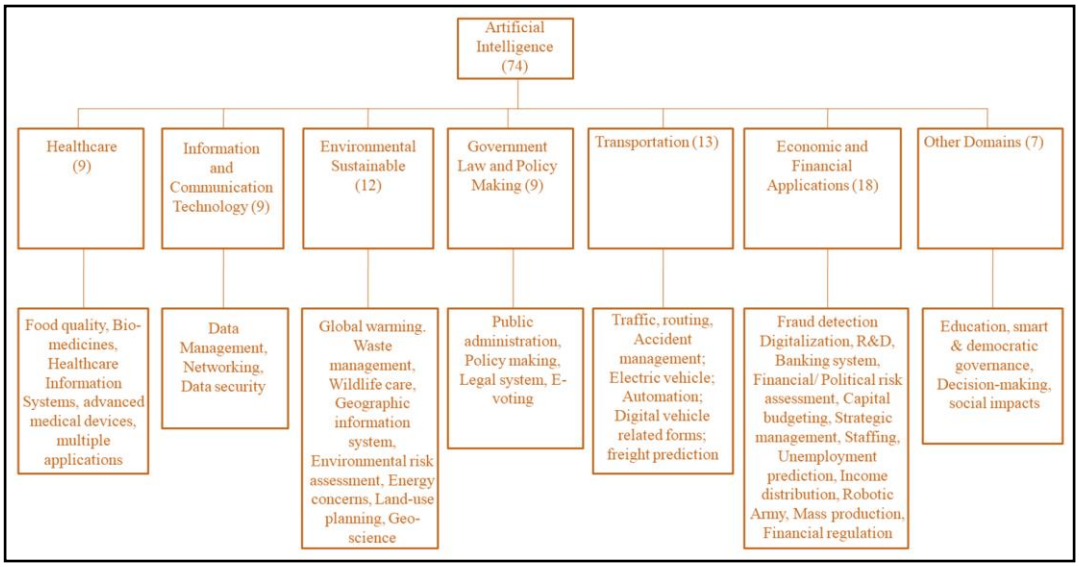

Fig.1: Organizing framework.

What an Artificial Intelligence will transform the IT:

The speed at which AI and information technology (IT) evolve is the fastest. And AI technologies revitalize old ideas to enhance IT systems for optimized operations. AI is the step-step for the IT industry to turn its systems into smart systems to scale up IT functionality.

The core functionalities of AI in IT are automation and optimization. The following are a couple of AI applications in IT.

a. Data security:

Why is it important to build a secure IT system? An IT system stores confidential information about the public, the government, the private and public organizations, etc. For an information system the construction and development of a secure system is a top priority.

The AI system can address these challenges by developing a smart system which identifies threats and violations and provides precautions and solutions to security-related problems as quickly as possible.

b. Building better information systems:

Efficient and bug-free code is the basis for any system to be build. Increased productivity is achieved by AI systems. An AI system uses a number of algorithms that allow programmers to better write code or overcome software bugs. AI system proposes a pre-designed set of developer algorithms to optimize development time through detection and elimination of software bugs based on their performance.

c. Process automation:

A deeply integrated AI system aims to automate the backend process in order to reduce time and cost. An AI-programmed algorithm gradually learns from its errors during tasks and automatically optimizes the code to work better.

Impact of AI in information technology:

New technological developments have been created in the digital transformation and revolutionary application of technology by the industries to optimize and address the key industries. AI is at the core of all technology applications for all industries and IT is at the forefront of the list.

The integration of IT IA systems has reduced developers' burden and improved efficiency, quality assurance, and increased productivity.

In broad measure it is now possible to develop and deploy IT systems that were previously unable by advanced algorithmic functions of AI.

AI applications in IT

Three main areas of use in the IT industry are AI-driven applications: Quality Assurance, Service Management and Process Automation.

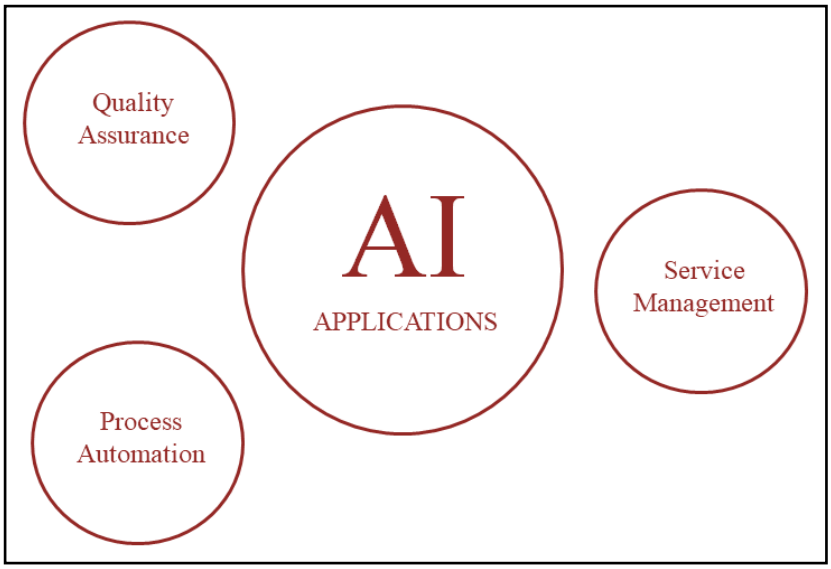

Fig. 2: AI applications

1. AI for Quality Assurance:

a. Software testing AI for QA:

A team has to test it before it can enter the market each time a new code is introduced. Regression tests take a lot of time and effort if they are performed by QA experts manually. This can be done easier and faster with AI's ability to determine repetitive patterns. AI allows QA departments to remove human errors, reduce runtime, and easily identify possible defects with data analysis. As a consequence, large amounts of data to be handled do not overload a QA team.

b. Application Testing:

An AI-based system builds test suite based on location, device and demographics by processing behaviour patterns. This enables QA departments to simplify test processes and improve application efficiency.

c. Social Media Analysis:

In AI systems, large volumes of data from social media can be processed and analysed. The system can predict market trends and customer behaviour based on these data and thus offer a competitive advantage to your company.

d. Defect analysis:

In order to identify errors, or areas that require special attention, AI Systems monitor and analysze data and then compare them with prescribed parameras. If a problem or error is detected by the system, a warning is generated. In addition, the AI system can perform a profound analysis of errors, define areas that are most suitable for defects and offer possible solutions for further optimisation.

e. Efficiency Analysis:

When the AI system analyses and synthesizes relevant data from various sources, QA provides valuable information, providing QA engineers with a complete understanding of the changes which they need to make. QAs can take more informative decisions with this information.

2. AI for Service Management:

In service management, AI technology is also widely used. Leveraging AI for service automation allows companies to make more efficient use of their resources and faster, cheaper and more efficient delivery of services.

a. Self-solving service desk:

Today AI offers IT firms an auto-solution desk that can analyse all input data and thus give users adequate suggestions and possible solutions with its machine-learning capability. Using AI, enterprises can track user behaviour, make recommendations and therefore offer self-assistance options for more efficient service management. Ultimately, in this case, AI provides users with a better self-service experience.

The system can analyse a request made to a service desk by ML or DL capabilities of AI. The AI systems identify concurrent requests, compare newly submitted with previously resolved requests, and then immediately understand which solution to choose based on past experience. AI is a powerful business tool that helps an IT team to act strategically in operational processes. The AI system can make suggestions for process optimization and even develop an effective business strategy with the monitoring and analysis of user behaviour.

3. AI for Process Automation:

The innovation, evolution, complexity, and change of the network can no longer match human and manual processes. AI is the next automation development. Variously smarter, more conscious and more contextual business processes. AI-driven automation will make it easy for IT companies to automate multiple operational processes, reduce costs and minimise manual work. In a wide range of situations, IT process automation can serve to streamline various IT operations, replacing recurrent manual tasks and business processes with automated solutions.

a. AI-Driven Computer Engineering:

Computer programming's future is the AI. Code is a number of rules-based decisions in very complex circumstances in traditional programming. An up-to-date AI system will soon be able to run and manage the development cycle of a code by itself. At present, AI helps human programmers navigate the ever more complex number of API's, which facilitates development coding.

b. Automated Network Management

In addition, AI automates operational and network management processes. In order to restate the network, AI with its ML capabilities has spot problems and takes the necessary action.

Conclusion

Innovative technologies have grown quickly and have made business smarter and more effective. The IT industry turns to Artificial Intelligence to solve and prevent high-severity outrages. AI's machine training and profound training capabilities enable traditional IT operations to be transformed, making them intelligent, time-saving, and efficient. The main areas that AI has proven to be an effective tool are quality assurance, service management and process automation. In addition, the AIOps concept offers better and better management of IT operations.

References:

1. Zhou Yanfang. Application of artificial intelligence in computer network technology [J]. Science and Technology Wind, 2017 (15): 130.
2. Sun Xiaoxia. Research on the Application of Artificial Intelligence in Computer Network Technology [J]. Network Security Technology and Application, 2018 (03): 99
3. Thomas Davenport, Jeff Loucks, and David Stansky, “Bullish on the Business Value of Cognitive” (Deloitte, 2017), p. 3 (www2.deloitte.com/us/en/pages/deloitte-analytics/articles/cognitive-technology-adoption-survey.html).
4. ITU, and The Global Initiative for Inclusive Information and Communication Technologies, “Model ICT Accessibility Policy Report, Telecommunication Bureau”, Nov, 2014Online (Accessed 23rdApril 2019) Available from: https://www.itu.int/dms_pub/itu-d/opb/phcb/D-PHCB-SIS_A.01-2014-PDF-E.pdf
5. ITU FSTP-TACL -Telecommunications Accessibility Checklist 2006 Online (Accessed 6 May 2019) Available from: https://itu.int/pub/T-TUT-FSTP-2006-TACL
6. 6. Pichai, S. AI at Google: our principles. Online, 2018 (Accessed 23rd April 2019) Available from: https://www.blog.google/technology/ai/ai-principles/
7. United Nations. Ageing and Disability Online (Accessed 2ndJuly 2019) Available from: https://www.un.org/development/desa/disabilities/disability-and-ageing.html