Artificial Intelligence (AI) and its applicability in Banking and Financial system in India

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ABSTRACT -- *The Advent of Computer and Information Technology Scientists have innovated human intelligence with the help of machine (computer) and invented artificial intelligence with enables Computer machine to think, learn, act like human beings. the Artificial intelligence technology which does every work on machine learning, deep learning, cloud computing and black chain technology is an extension to Information science and computer technology and is being used and adopted in various officers, industries, institutions and banking is which an essence to help the banking system and customer support and satisfaction. An attempt is focused in this paper to highlight the use of artificial intelligence usage in the banking and financial system. This paper elaborates the areas of usage of banking and financial institution utilizes artificial intelligence system and also highlights the significance and benefits of usage of banking and financial system in India. This paper also overviews of case study pertaining to usage of Artificial Intelligence in banking sector.*

Keywords-- Artificial Intelligence, Expert system Neural network, Natural Language processing, Computer vision, Intelligent Robots, Artificial Intelligence (AI) and its applicability in Banking and financial System in India.

I.   INTRODUCTION

Artificial Intelligence (AI) was developed by John McCarthy who delivered a seminar Lecture in the University of Dartmouth in USA. His idea is the basic ideology forth birth and emergence of Artificial Intelligence. Artificial Intelligence is the intelligence of Computer or robotic developed through computer in order to transform communication information and develop output and efficiency in a systematic manner with the support of thinking ideas of human being in learning, problem solving solutions and also making decisions at appropriate level and faster. The aim and objective of Artificial Intelligence is to develop techniques and systems which is capable of providing solutions to complex and difficult problems with the help of human intelligence and logical advanced tools and techniques of reasoning. It information   on Computer Science belongs with enrich research development in the areas of processing of image, processing and developing natural language, robotics and finally it is termed as learning of machines i.e. machines learning. Artificial Intelligence is being applied in vast areas and researchers developed many ideas in the Information technology and Computers and it is being used widely in intelligent expert systems, human being interacting machines, process of language naturally, information safeguarding and protecting as well retrieving, use of graphical system, processing of images, robotics system, mining of data and many more which are fast developing in many fold areas in the years to come. Artificial Intelligence is a very broader in nature and it is enumerable in one way of application and another thinking of application of computer and machine technology which are in usage. It is

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9763

the application and the use of chips of chips in calculators to virtual human assistants like siri which is virtual assistant that is part of iOS, iPods, Watches, Macros and touch operating systems. This uses voice queries and a natural language user interface to answer questions, make recommendations, and perform actions by delegating requests to a set of internet services. Artificial Intelligence uses Alexa which is known as virtual assistant. Artificial Intelligence technology to driverless cars and others which all part of the broader terminology known as Artificial Intelligence.   Artificial Intelligence in sometimes called machine intelligence which is the intelligence demonstrated by machine in contrast to the natural intelligence displayed by humans. The Computer Technician and information technology scientists developed by creating intelligent machine system that would replace human brains, thinking, work life of human beings which is called as Artificial Intelligence.

Artificial Intelligence is the skill and ability to read, write, speak, learn, acquire knowledge for studying, analysing, investigating and experimenting of various events like reasoning ability, perception, develop storing and safeguard and protect information from memory out of comprehensive complex issues and application of knowledge, talented skills to problem solving. The godfather of Artificial Intelligence John McCarthy defined Artificial Intelligence in the Darmouth conference as "The Science and engineering of making Intelligent machines especially intelligent computer programs". John McCarthy was an American Computer Scientist and cognitive scientist. He was one of the founders of the discipline of artificial intelligence. There are three types Systems of artificial intelligence namely (a) general (or) strong (b) narrow (or) weak and (c) artificial super intelligence.

Artificial narrow intelligence is having a narrower range of abilities. Artificial general intelligence is having intelligence on par with human beings. Artificial super intelligence is having more ability and capacity over and above human beings.

II.   CONCEPT

Artificial Intelligence is the creation of computer networks able to carry out tasks involves human knowledge. Examples of these tasks provide visual understanding, voice recognition, decision making, and linguistic-to-language exchange. Artificial Intelligence's true-life indicators are auto-driving cars, Boston Simulations, Electronic systems, ASIMO, chatbots, Human Vs. Electronic games, Bots music, sector, medical services, business, banking, and the economy.   There are four types of Artificial Intelligence machine which are elaborated as under:

a)   **Reactive Machines:**

The most basic types of Artificial Intelligence systems one purely reactive and have the ability neither to form memories nor to use past experiences to inform current decisions example is IBM.

b)   **Limited Memory:**

Chess playing super computer which beats international grand master Garry Kasparov.

This type is II class which contains machines can look into the past. Self driving cars to some of this already. For example they observe other cars speed and direction. that can't be done in a just one moment, but rather requires identifying specific objects and monitoring them overtime.

c)   **Theory of mind:**

It is the understanding that people, creators and objects in the world can have thoughts and emotions that affect their own behaviour which is vital for artificial intelligence application.

d)   Self awareness:

This is an extension of theory of mind possessed by artificial intelligence where in consciousness is termed as self awareness conscious beings are aware of themselves know about their internal states and one able to predict the feelings of others.

Artificial Intelligence denotes creating computer programs that are having capacity to perform multiple strategies and performance with higher level of accuracy and fast coupled with speeder than human being and also capable of possessing perception of visual sing, understanding of reasoning capacity, analysis, making decisions, communications and recognize speeches and performing capacity of any intelligence work and tasks without the help of human being on the base of available information passed on to machine with the help of algorithm.

The technologies of artificial intelligence are such as machine learning, deep learning, natural language processing, neural networks, computer vision, intelligent automation and others which provides verities of capabilities in to the machines to think and implement as well act like human being.

The objective of artificial intelligence is being carried out with the help of machine learning coupled with deep learning. The computer access the large data volume which is feeded systematically, learn and improve by experiencing with the help of process shifting datasets, recognition of pattern which are in build in to the computer system and by using algorithm which is helpful in identification of data, draw analysis, conclude and develop guidelines, direction and develop guidelines, direction and decision marketing.

III.   ESSENTIAL REQUIREMENTS OF ARTIFICIAL INTELLIGENCE

The Essential requirement of Artificial Intelligence is elaborated as under :

1.   Export **system:**

This denotes that decision making intelligence and skill of human beings in operation. It is required to give solution to complex problems, making decision, Users advise, knowledge management where in data is feed properly in the system.

2.   Neural **Network:**

It is essential to achieve face recognition, character, letters knowing, handwriting by the computer system.

3.   Natural **Language Processing:**

This is essence to interact computer machine and human being. It is devised with the help of speech understanding that helps to create relationship between human being and computer system as processing of information of language. This is done with the help of pitch voice, action of person, time of a person and recognizing voice of the person. It has automotive voice output ability and capacity.

4.   **Vision of** Computer**:**

This symbolizes understanding, interpretation, identification of visualized input of data along with images in to the computer system namely photographing and document writing.

5.   **Robot** Intelligence**:**

Robots are created by human being where in it does whatever human being does which is based on programming in computer system. It is a digital workforce of Software Which can execute any activity process in a business or other activities. It is a automation system enabling business man and others to automate the repetitive work and tasks. Artificial Intelligence robot helps to learn, listen, advise, work , execute tasks (or) work without the help of human being and also by using algorithm as tool in this system of artificial intelligence.

IV.   ARTIFICIAL INTELLIGENCE IN GENERAL

- Artificial Intelligence do not sleep, take rest and never get tiredness.

Artificial Intelligence provides repeated the task and work with the help of automation and it creates more discovery in processing of data.

- Artificial Intelligence increase and develop more intelligence in any type of work and task.

- Artificial Intelligence is using algorithm due to which there is progressive learning and execution of work and task take place.

- Deeper learning analysis helps the artificial intelligence to analyse comprehensive and difficult data to be made easy and accurate.

- Artificial intelligence helps to process the data at a faster rate with speed and maintain perfect accuracy.

Application of Artificial Intelligence in Banking and Financial System Computer science experts, RBI, Institute for development and Research in Banking.

- Artificial Intelligence does work with less error while comparing human being provided if coded properly due to its fast speed, accurateness and percussiveness.

- Artificial Intelligence is having ability, Talents and skill to meet any type of contingency coupled with its environ and also it have the skill and talents to manage dangerous situations and uncertainty.

- Artificial Intelligence is a tool of replacement of human being doing work in a repeat like situations and it does the task judiciously and takes care of laborious task assignment.

- Artificial Intelligence does decision rationally without being emotional in any types of environment and situations.

Why artificial Intelligence is must?

Technology and ministry of Finance is much interested and active in use of computer technology in banks, internet banking money transfer, banking software solutions. The invention of artificial Intelligence technology, There are enormous benefits to be enjoyed by the banking and financial system in India. There is urgent need to use artificial Intelligence to be in use in the banking and financial system in operation which will be beneficial to the bankers investors, Customers and public. The application one as of Artificial Intelligence are highlighted as under.

Before Highlighting Artificial Intelligence in banking, bank technology aspects are covered as under:

Online Banking innovation refers to the use of, in conjunction with information technology, of technical communication and information technologies to enable banks to produce better services to their customers in a

safe, accurate and sustainable manner and to preserve the advantage of consumer benefits.Role of Technology in Banking:

The technology is of great use in banking sector. It has changed the banking and financial system from paper and branch banks to digitized and network services. It has played a vital role in reducing framed in banks which protect its Clients.

Application areas of Artificial Intelligence in Banking and financial system which are narrated as under:

1.   Customer **Interaction:**

The use of AI in banking is beneficial to customers with the use of speech, Voice, Video processing, textual natural language processing. This facilitates vital assistance to customers by using cha bots, processing enquires attending customers request connecting customer and other users in various services of banking and financial system.

2.   Financial **Services:**

Banks can utilize Artificial Intelligence tools such as Chatbot and Rabot advise to help customers in terms of planning their finance and help them in portfolio management as well studying their financial goal as well assist them in investment and portfolio management.

3.   Strategic **Business advice:**

AI helps the corporate customers by studying their data analysis and business environment and provide strategic ideas by giving models,

> behaviour of customers market conditions as well prediction and forecasting of business for short term as well as long-term.

4.   Banking **Voice:**

Natural language processing is a technique of artificial intelligence which can be attempted to create like customer by providing assistance and processing their enquires with vision based approach. Voice aided technique is useful in ATM and payment gateways and minimize fraud through voice analysis of customers.

5.   Lending **Assistance:**

Artificial Intelligence is tool to assess the credit worthiness of customers accurately where in credit leading decision is best one. AI helps to evaluate customers loan portfolio regularly and periodically in order to know the strength and weakness of borrowing customers which will help bankers to enhance credit and minimize nonperforming assets of bankers.

6.   Automation **of Branches:**

AI helps the banks to do complete and comprehensive automation and digitalization of services to customers in receiving deposits, Lending and transfer of funds. While I am writing this paper, entire Globe is affected by Covid – 19, but banks do services with the help of AI and automation and digitalization of banking services in India and abroad.

7.   Banker **vision :**

AI help the banks to identify, verify customers signature verification and recognition and help ATM facility in complete and comprehensive use of customers and their satisfaction in all respects

8.   Helping **Documentation.**

AI is helpful to banks for backend document operations with high volume can be organized protected, safeguarded systematically.

9. Fraud detection**:**

AI is useful to banks to monitor and prevention of fraud with help of cyber crime and money laundering. Algorithms can be useful for ATM, debit and credit cards of banking system.

10. Client monitoring and Biometrics:

Artificial Intelligence is helpful in implementing KYC norms in order to identify and verify customers and provide satisfactory services to them Artificial Intelligence is helpful with the help of customers biometrics for cash deposit, withdrawal and biometric fingerprint which is safer mode of doing banking transactions.

V. SIGNIFICANCE AND UTILITY OF ARTIFICIAL INTELLIGENCE:

Technology adoption couples with use of artificial intelligence banking functions changed with the help of access too liquidity, transformation of assets on monitoring of risks. Further information technology, communication, networking systems coupled with artificial intelligence have a crucial bearing on the efficiency of money, capital and foreign exchange markets. Internet has significant influenced on delivery channel of the banks and it has emerged as an important medium for delivery of banking products and services in India. Information Technology Act 2000 have given legal recognition to creation, transmission and retention of an electronic data to be treated as valid proof in the court of law. The benefits and services benefited with the help of technology and artificial intelligence is as under:

- Net banking
- Credit card online
- Instant Alerts
- Mobile banking
- Electronic Fund Transfer
- Online payment pf GST
- Phone banking
- Bill payment
- Shopping
- Ticket booking
- Smart money Transfer
- Prepaid mobile charge
- Any where banking
- Bank @ Home express delivery
- Chatbot
- E-cheque
- ATM
- Customer support banks
- Security services

- ➢ Financial services
- ➢ Forex market

VI.   CASE STUDY

In this research paper, study conducted by Leena Priya De titled " Artificial Intelligence in Indian Banking Business" which is published in management account January 2020 pages 80 – 84 is reviewed as under as a Case Study.

The objective this study is the application of Artificial Intelligence

In banking and the extent of adoption in Indian Banking. The sample for this study is 29 public and private sector banks in India. The study highlights that voice aided banking and biometric application is applied by 4 banks out of 29 banks, 7 banks applied computer vision Technology and 21 banks utilized lending decision. The study concludes that in India, Artificial Intelligence Is being practiced by banks but there are many areas can be identified and utilized Artificial Intelligence in the year to come.

VII.   CONCLUSION

Artificial Intelligence is tool for E banking in India. There is a greater achievement and success is enjoyed by the society with the advent of Artificial Intelligence. Indian Banking system must adopt the Artificial Intelligence in wide variety of services namely voice aided banking and biometric application, computer vision technology, lending decision, detection fraud, financial services, data management and client identification. Artificial Intelligence is used by all the sectors in India and globally including service sectors and this research paper observes and concludes that the Indian Banking and financial sector will take it in the right direction and see that the Artificial Intelligence is applied in one as of its banking financial operations which will provide them better opportunities for their growth in the years to come in this dynamic society.

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