A Study on Artificial Intelligence with special focus on Finance Sector

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Abstract

Artificial Intelligence is a new innovation in development of recent new technology, which includes machine learning (ML) and algorithm language.AI is popular in different fields such as healthcare, automobile, finance, robotics, gaming, entertainment, agriculture, social media, surveillance, e-commerce etc. The main aim of Artificial Intelligence is to develop an intelligent and autonomous system. In this paper study is fuscous on the applications of artificial intelligence in the field of finance sectors, which includes Insurance companies, Investment companies, banking etc. The study explains challenges as well as impacts with pros and cons in financial sectors. The study also focuses how Artificial Intelligence will make changes in financial industries in the future. Lastly some recommendations and conclusions are given based on the study.

Keywords: Artificial Intelligence, Machine learning, Finance.

Introduction

In the recent years, AI and MI and their applications are commonly used in wide area. Because of these it becomes a trendy in many areas. This new innovation in the technology includes machine learning and algorithm language. We can describe that AI is the ability of machines i.e. computers to make an intelligent design like human beings i.e. workout what to do, while achieving a particular task.

Defining Artificial Intelligence (AI), a term coined by. Emeritus Stanford Professor John McCarthy in 1955 was defined by him as "the science and engineering of making intelligent machines".

To solve complex mathematical problems and creating 'thinking machines', in 1950 the era of modern AI began. From the beginning, there were two contending approaches. One used formal rules to manipulate symbols, a logic-based approach which is not based on biology. This became recognized as 'good old-fashioned artificial intelligence': GOFAI. The other camp took stimulation from how the brain works and created 'artificial neural networks' loosely stimulated by our brains. These still had to be trained using definite procedures to solve problems. GOFAI was the more successful approach, leading to much publicity and significant government funding, in the first 20 years, but in real-world settings GOFAI didn't complete its outcomes. In the 1970s artificial neural networks also fight, and funding dried up, research slowed and the AI community shrank. Improvements were made in the 1980s, both the rules-based GOFAI systems and biologically-inspired neural networks. Formerly difficult problems became achievable and AI looks like promising once again. However, the

hope and publicity exceeded reality, and by the 1990s AI research again diminished.

The most recent stream of interest comes off the back of the power of deep learning, a type of biologically-inspired neural network that harnesses the huge amounts of data now available, and the huge computational power and speed of today's computers. Modern AI neural networks can often exceed human performance in many tasks, with huge data sets, including pattern recognition and playing games like Go earlier than it was very difficult for AI. Vitally, these systems can find out from experience, unlike GOFAI. AI's ubiquity might now emerge like it's not far off reaching human-level intelligence. But AI needs huge amounts of data to learn, unlike our brains, which can learn from a sole experience. According to some researchers for advancement in AI, it further needs to be understood about the basic laws of how our brains function, and the kinds of biological shortcuts our brains take to complete tasks.

Objectives of the Study

The following are the main objectives of the present study:

1) To study various applications of artificial intelligence in the field of finance sectors.
2) To study the impacts as well as challenges of AI in financial sectors with their pros and cons.
3) To study the upcoming prospectus of AI in India with recommendations.

Significance of the Study

The application and effects of artificial intelligence (AI) in the financial sector—which includes a number of sub-domains like banking, real estate, insurance businesses, and investment firms—are the main emphasis of the study. It looks at how AI-powered technologies are transforming various sectors by increasing productivity, boosting judgment, and improving client experiences. AI is being used in the insurance industry for fraud

detection, predictive analytics, and customized policy recommendations. AI is used by investment organizations for risk assessment, portfolio management, and algorithmic trading. AI-powered solutions for property assessment, market trend analysis, and improved customer engagement are advantageous to the real estate industry. Similar to this, AI is widely used in the banking industry for automated procedures, credit scoring, fraud protection, and Chabot-enabled customer service.

Nevertheless, the research is restricted to comprehending this application in the designated financial domains, leaving out other industries where artificial intelligence could be useful. Within this narrow emphasis, it seeks to draw attention to the opportunities, difficulties, and revolutionary potential of AI.

Methodology

The study is based on secondary data. Data is descriptive, the data furnished, in this paper is collected from various journals, reports, and articles.

Limitations

This research paper study is based on AI, considering the field of finance sector only. There are different applications of AI such as automobile, healthcare, gaming, Surveillance, Robotics, Entertainment, Agriculture, E-Commerce, Social Media on which more study can be done.

Review of Literature

Kunwar M (2019) in his thesis on "Artificial Intelligence in Finance: presents, perceptive how machine learning and automation is transforming the financial industry", it examines the power of artificial intelligence in the innovative world, mainly in the field of finance. The research concludes that all through the value chain in financial services whether it is processing, analytics, or investing, there's going to be more and more technology that can get things done. Xie, M (2019) in his paper of Development of

Artificial Intelligence and Effects on Financial System, focused on the development and application of artificial intelligence and machine learning in the financial system, in addition to its impacts on macroeconomics and microeconomics. a few suggestions and strategies were provided for realistic usage of AI in financial risk management, based on the financial risk management raised by artificial intelligence. As per the thesis by Wallon (2019), on "Artificial intelligence applications in corporate finance" focused on the custom of AI in corporate finance with the current usages and its prospects in a near future. It offered a viewpoint on this subject through information retrieved from reports, papers, and experts and an evolving survey by qualitative and quantitative analysis.

It makes possible to get perfect views on the current situational analysis and the future opportunity of AI in finance and, more precisely, in corporate finance. The article written by Tom C.W. Lin, 2019 on "Artificial Intelligence, Finance, And the Law", says a study of those risks and limitations—the ways artificial intelligence and misunderstandings of it can harm and hinder law, finance, and society. It highlights the risks and difficulties of artificial codes, virtual threats, data bias, and systemic risks relating to financial AI. It also raises larger issues about the implications of financial artificial intelligence on financial cyber security, competition, and society soon. Patel, K (2018) in his research paper on "Artificial Intelligence in Finance "focuses studying the thought processes of human beings. Also focus that AI deals with representing those processes via machines (like robots, computers, etc.).

Application of Artificial Intelligence
Applications in Finance

   I. Regulatory compliance – Detection and prevention fraud: Today's trend is of making more transactions on online mode, this online mode transaction increases the possibilities of fraud. AI is based on the system of anti-fraud which detects fraudulent activities, reports and blocked such transactions. Banking and finance organizations have fraud detection software that patterns can be spotted by using predictive analysis without any knowledge to the human analysis and applying machine learning algorithms to detect the fraudulent transactions and minimizing fake decline.

  ii. Increasing security: AI with help of MI algorithms, with in a split minute can find out fraudulent transactions in real time not spot them after the crime is committed, because of this most of the organizations are trying in the direction of the AI to enhance the security in online transactions and related services.

 iii. Prediction of Stock Market and Trading system: Different issues are making an obstacle in the system of trading. AI system provides a fast Analysis of data, to know the cause of failure and provides the solution related to that. A computer system has been trained to forecast when trade shares to maximize the returns and to reduce the losses at the time of uncertainties and thus helps to the, companies, investors and Institutions to take quick decisions.

  iv. Risk management: most of the organizations lead to the subprime mortgage crisis, due to lack of risk management. Traditional software applications focused only on the selected financial reports and loan application but new MI Technology focused on every fact related to the current market trend for preventing financial crisis prediction, financial crime by its credit scoring task in real life environment. It helps to minimize underwriting risks. It can help to handle every risk in the field of loan health mortgage or

Life Insurance. The underwriting tasks those are so common in finance and insurance in that it fits perfectly.

v. Credit card and loan decisions: AI automatically accessing the profile which reduces the cost and efforts involved significantly and making the whole process fair and transparent in the process of credit card and loan decisions.

vi. Protect client by spending pattern prediction: In this new era of development everybody is dependent on online transactions. In case if anyone's mobile or card is stolen or if the accounts get hacked, AI is useful for client spending detection to prevent in that case fraud or theft. It identifies the user and allows the transaction to happen.

vii. Personalized banking: AI plays a vital role in banking sector to do all the transactions online like deposits, payments where clients do not require to visit bank, majority of the complaints of the client handled by the bank with an efficient self-help interface. Virtual supporters based on AI like Google assistant, echo, alexa etc. are by now gaining popularity in the consumer markets. It presents reliable and true guidance to the perspective client and so that they can get accurate information and fast solutions to their problems.

viii. Process automation: product boosting and minimizing operational cost is possible with the process automation, as it is control to boost productivity by doing it in just a few minutes. More than 50% repetitive task performed by human will get reduced by AI and it also helps to minimize cost.

ix. Security to World financial data: The main challenges in the modern era are, virus-like worms, and Cyber-attack. Machine learning security solutions are proficient of securing the world's financial data by providing the power of intelligent pattern analysis, combined with big data capabilities through security technology an edge over traditional and non-AI tools.

x. Marketing: AI also shows its implication in finance sphere people by analytical marketing analytics based on past behavior easily. It assists in accurately forecast sales by analysing expectations of customer. Web action can be properly supervised and cell phone app usage can be understood to learn trends and patterns.

Challenges of Artificial Intelligence

We know that AI is used in every field but it has some challenges, those are:

I. Difficult to understand – Machine learning language is difficult to understand. It leads to some extent of risk and maximizes the level of control. For reducing the complexities banks need to make clear about models and facts behind them in deep to their users so they can stay away from bad business decision.

ii. Based on data availability and quality - As we all are aware that AI technology is based on big data. When sufficient and excellent quality of data uploaded then only it gives consistent information. Even in quality sources, biases can be unseen in the data. In the financial industry, the understanding of the data from front to back is already problematic, and data referential are often overwhelmed with quality issues. Having a data-quality program in place is a requirement to any large-scale artificial intelligence scheme. Lack of this causes

hazardous losses to the users.

iii. Responsibility – one more main challenge in AI is if something goes wrong who will be liable for responsibility as well as for accountability. The fact that there is no clarification as to why the algorithm provided a positive or negative answer to a definite question can be troubling for a banker's balanced mind. So it becomes necessary to keep a human supervisor to confirm the machine's decisions for critical activities such as releasing/blocking validating, payments or trades, partially defeating the purpose of using a machine in the first place.

iv. Fast changing technology- As technology change quickly each financial organization must look to move theoretical concepts about AI from theory to practice so they can be used in daily operations. The right AI technology can mechanize labour-intensive manual processes, offer the level of performance needed to make use of the latest technologies, and mix with active systems and be reusable for other reasons.

v. Reliability of AI – For security reasons Reliability of AI depends on its data and degree of control over the system. The slow but stable method of Test Driven Development which places verification and evaluation to develop the required algorithm at its hub is needed for a reliable system that can survive the test of time.

vi. Lack of emotional intelligence- AI is intelligent in solving various specific problems; detect fraudulent activities but lacks emotional intelligence. For example, chat boxes are smart but lack sympathy. They act as per the program is loaded.

vii. Regulatory barriers – precision in AI is important to succeed in the well-regulated world of financial services. The sphere expert is required who can explain the reasoning and main context related to data. The capability of machine learning to communicate their reasoning will go a long way in crossing regulatory obstacles and gain acceptance from the users.

viii. Tracking measure of success- AI forecasting is based on the future prospectus, not provide a 100% guarantee whether your investment gives you profit or loss. It is a challenge to tracking measure of success like how ML positively impact on human behavior, how to improve efficiencies, how to reduce cost. As AI grows the challenges in financial institutions also will vary.

Impact of AI in Finance Sector
AI provides huge benefits to a large number of concerns. Every factor has their positive and negative impact.

AI it's Future In India With Some Recommendation
Today, the world is moving towards artificial intelligence technology. Google, Flip kart, Amazon are some tech giant has using AI, to build prophetic models of consumer behavior. In the sector of education, most universities have offered various coursework and programs in AI. Bitcoin is the example of this AI which is getting popularity and has made the use of AI in finance by providing robotic advisory services. Insurance companies already dominated to AI for huge data which provide personalized recommendation replaces personal financial assistance. Huge investment is made by firms, companies, investors on basis of data of AI which saves their money and avoids human errors. These Banking, financial services & insurance (BFSI) industries adopting AI-based fintech solutions at a very large scale. Considering the

PROS	CONS
Efficiently handling a large volume of Information.	Requires high production and maintenance cost. Complex in nature
Reduces bias from metrics	Because of rapid technology changes many experts issue warnings about the hazardous nature of AI
Better informative graphs and charts help, to make a secure judgment.	Upcoming period can face a problem of Lack of regulatory scrutiny.
We are getting 24/7 hours' service as compare to human resources.	Chances of possibility of misuse of data can cause serious losses like delivered to wrong hand can cause serious threats to humankind.
Efficient in forecasting assist business relationship sturdy and perform advisory work as well	Due to high cost of technology, it is not possible for every organization to go for premium application of AI
promptly perform the task related to finance like Insurance, Trading, Accounting, etc. Financial users get transaction records online and offline which saves effort ,time, and money,	Unemployment, increase in dependency on machine, blocking of human mind. These are some disadvantages of it.
Fraud recognition is a smart card-based system with the use of AI.	Lack of creativity mind is there.

today's speed of AI in finance industry, very soon this will replace to human resource and will provide efficient and quick solutions to the end users.

Wealth management: Robo advisory, social investing, crowd funding, investment across regions engine

Insurance: Social integration, IOT and connected devices, prevention

Capital markets and investment banking: Next generation trade finance, trading, Trade analytics

Small and midsize enterprises: one stop shop for business, peer to peer corporate lending and investment. Digital cash management.

Payments: Mobile payments, International remittances, other payments processing.

Retail: Next generation personal financial management, peer to peer lending and investment, new digital lending, aggregator comparison engine.

Machine learning and AI will determine the future of finance. Machine learning and AI will become important part of the finance industry. They will enable a faster, more precise and more accurate analysis of data, improved risk management, and the development of advanced financial services and products. In the new era in future, AI will enable companies to get better in cryptocurrency and stock trading. What's more, it will allow companies to get better at trading as algorithms are more likely to

identify many complex trading signals.

In the Indian economy, up to 2035, the use of AI will increase massively. Recently, China and the US are the top countries making the implementation of AI technology, India is in the way of progress we can say that positively it will open the door for jobs around 2 lakhs for experts in AI and others in various sectors like education, retail, healthcare, etc. when startup scheme started in the year 2018, it has shown incredible growth in the financial sectors. Recently, near about 400 start-ups working in AI and machine learning areas. Indian start up cities such as Hyderabad, Mumbai, Bangalore, and New Delhi, working on AI and giving better customer services. A huge amount is spent by Private industry in AI, in the year 2018. As per the economic prediction AI will help the nation to develop economic and social growth.

The joint research conducted by Narrative Science and the National Business Research Institute says that, more than 32% of financial services providers making use of AI technologies in government finance, voice recognition, predictive analytics, audit, etc.

Recommendations

Following are a few recommendations with regards to the above study:

a) AI is used in every field and possibility to reduce human job opportunities, require throw knowledge of learning of AI. The business will achieve aims and goals with success, if the machine and human staff work together.

b) AI must be adopted according to the requirements of sectors for that, skilled managers are required.

c) AI requires specific talents, so students need to develop extraordinary training in learning and creating algorithm language and machine learning. So, such courses should by adopted by universities and institutions, colleges in the syllabus.

d) We can stand in a technology with other countries, but for this, Government support to encourage AI.

Conclusion

Experts believed that AI has made a tremendous development and soon it will become the part and parcel of human life. It makes drastic changes in every sector of the world. it solves many troubles in minutes. In future AI will reduce human needs, so we need to maintained balance by updating ourselves according to the changes. We must be kept in mind that, machines not made us, we made machines. We can get the advantages of it by making its proper utilization.

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