



Artificial Intelligence in Sociology: In the Context of Inequality and Structural Change

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Abstract:

Artificial Intelligence (AI) has emerged as a transformative force across various disciplines, including sociology, where it offers unprecedented opportunities for understanding and addressing societal issues. This abstract delves into the intersection of AI and sociology, specifically focusing on its implications for inequality and structural change within societies. In contemporary society, inequality remains a pervasive and complex challenge, deeply intertwined with structural factors such as race, class, gender, and geography. Traditional sociological methods have provided valuable insights into these dynamics, but they often face limitations in capturing the intricate interplay of variables and predicting future trends. Here, AI presents a promising avenue for advancing sociological inquiry by offering powerful analytical tools capable of processing vast amounts of data and identifying hidden patterns and correlations. One area where AI holds significant potential is in analysing large-scale datasets to uncover disparities and trends in social outcomes. By employing machine learning algorithms, researchers can sift through massive troves of socio-economic data to discern patterns of inequality across various demographic groups and geographic regions. Such insights can inform policymakers and stakeholders in designing targeted interventions to address disparities and promote inclusive social policies. Moreover, AI-driven predictive modelling enables sociologists to forecast the impact of policy changes and socio-economic trends on inequality dynamics. By simulating different scenarios and assessing their potential consequences, researchers can better understand the systemic drivers of inequality and develop strategies to mitigate its adverse effects. Additionally, AI-powered simulations can simulate the effects of structural changes, such as automation and globalization, on employment patterns, income distribution, and social mobility, providing valuable foresight for policymakers and communities to adapt and respond proactively. Furthermore, AI facilitates the exploration of complex social networks and dynamics, shedding light on the mechanisms underlying inequality and structural change.

Keywords: artificial intelligence, ethical technology, intersectionality, sociology of technology.

Introduction -

Sociology and Artificial Intelligence (AI) are both unique and important disciplines that study many aspects of human society and technological advancements. There is a deep connection between the two, as AI is driving technological and social change, and sociology helps us understand its social impacts.

AI is a major branch of science that uses computer systems and systems to mimic and simulate human intelligence. The use of AI is causing revolutionary changes in various sectors, such as health care, education, manufacturing, financial services, and communications. Additionally, AI also impacts important issues such as social justice, employment, and ethics. Sociology studies in depth the social, economic, and ethical implications of the use of AI. This is especially important in areas where the impact of AI is most felt, such as robotics, automation, incompatibility, ethics, and negligence issues. The intersection of AI and sociology is an exciting field that gives us a deeper understanding of the relationship between technological and social developments. It is a combination that helps us understand new changes, problems, and policies of society, and provides us with the ability to see them in a social and ethical context with expertise. Through this framework, we see that both sociology and Artificial Intelligence are important branches that help us understand the injustices and contradictions of society's structure and technological development. The union of these two gives us the ability to take early and dynamic steps towards a better and more vibrant society.

Understanding Artificial intelligence from a Sociological perspective

These ideas shed light on the ways in which AI affects social interactions, power dynamics, and inequality. Technological Determinism: According to this theory, technology influences human behavior and propels social development. Technological determinism in the context of AI examines how the broad use of AI may cause changes in education, labor markets, and human-computer relationships, ultimately affecting the course of society. Surveillance capitalism: Because AI systems rely on enormous volumes of data, privacy and surveillance issues are brought up. The monetization of personal data for financial gain, known as "surveillance capitalism," allows businesses to target consumers with tailored ads and influence their preferences, hence escalating the power disparity between individuals and corporations. Digital Divide idea: This idea looks at how different social groups have differing access to digital resources and technology. Disparities in digital literacy and access to AI technologies can exacerbate already-existing social injustices, putting vulnerable people at a disadvantage.

History of Artificial intelligence

Man is a social and intelligent creature, which is always known for new discoveries. The concept of artificial intelligence is also the result of these continuous discoveries, which developed during the mid-twentieth century. The father is the British scientist Alan Mathieson Turing. In 1935, British scientist Alan Mathieson Turing had imagined a computer machine with infinite memory,

which would be capable of reading text and printing copies by sliding back and forth. Then, during World War II, he invented the Turing Machine, which succeeded in breaking the German code language. Subsequently, in 1950, he wrote an article regarding machines working like humans. Through the Turing test, he criticized whether computers could think like humans.

These thoughts on artificial intelligence were quite early. But this later became its basis. That is why Alan Turing is called the father of artificial intelligence. The first successful AI program was written by British Christopher Strachey in 1951. Strachey's checkers (drafts) program ran on a Ferranti Mark computer. By mid-1952 it was able to play checkers normally.

However, the new turning point in the field of Artificial Intelligence (AI) came only after the Dartmouth Conference in 1956 by American scientist John McCarthy. In this conference the term artificial intelligence was coined and its concept was widely discussed. After this the discussion on this concept continued to expand. This greatly promoted research and new discoveries in the field of computers. Therefore, some people consider John McCarthy, who coined the term Artificial Intelligence (AI), to be the father of AI.

After this, scientists worked in the development of various Artificial Intelligence systems and algorithms. In the early decades, some computer programs were created using logic and related mathematical methods, which were capable of solving directed problems. These systems were based only on certain rules. By the 1970s, game-playing programs, algorithms useful for numerical calculations, and robotic applications for messaging were developed in the same field. Further till 1990, many experiments related to increasing the knowledge of computers were conducted. Among these, Japan's announcement of making fifth generation computers using AI technology in 1981 is very important. For this, the outline of a 10-year program was presented. Japan's announcement attracted the attention of other countries of the world.

Further, Britain announced 'LV' program to compete with Japan. The European Union also announced a scheme named 'Esprit'. Then, some private companies came forward to work in the field of artificial intelligence. In 1983, the group established a joint venture called 'Micro-Electronics and Computer Technology' for the development of Very Large Scale Integrated Circuits (VLSIC). The era between 1990-2000 was revolutionary for artificial intelligence. During this period, machine learning and neural networks developed. This gave the computer the ability to learn in a disciplined manner by absorbing its own experiences. In the next decade, computers had a wealth of data. During this period, the use of new deep learning techniques gave computers the ability to learn and understand more. The use of modern natural language processing, introduced in 2010, gave computers the ability to understand language and communicate. ChatGPT technology is based on this.

Structural changes in Sociology through AI

Artificial intelligence (AI) seeks to develop computer and automated technologies capable of successfully simulating human intelligence. AI is being used in many fields to gain insight into user behaviour and generate data-driven recommendations. AI applications in e-commerce:

Artificial intelligence technology is used to create recommendation engines, which allow you to communicate with your customers more efficiently. Chatbots and virtual shopping assistants help improve the online shopping experience.

Cybersecurity: Using machine learning algorithms and large amounts of sample data, AI can detect anomalies and adapt and respond to cybersecurity threats.

Virtual assistants: Voice recognition is now used by Siri, Cortana, Alexa, and Google to follow user commands. Based on customer preferences, these virtual assistants constantly enhance and customize solutions.

Artificial Intelligence in Navigation: GPS technology can provide users with accurate, timely, and complete information to enhance safety. Uber and many logistics companies use AI to increase operational efficiency, assess traffic, and optimize routes.

Artificial Intelligence in Lifestyle: Artificial Intelligence has a significant impact on our way of life. The email we use every day has AI that filters spam emails and sends them to the Spam or Trash folders, allowing us to see only the filtered information.

Artificial Intelligence in Education: Artificial intelligence contributes to the creation of a rich learning experience by creating and delivering audio and video summaries as well as complete lesson plans. Artificial intelligence can be used to digitize information such as video lectures, conferences, and textbook guides.

Health care: AI in health care can improve preventive care and quality of life, provide more accurate diagnosis and treatment planning, and result in overall better patient outcomes. Applications that understand and classify clinical documentation are a popular use of artificial intelligence in healthcare. By analysing data from government, healthcare, and other sources, AI can predict and track the spread of dangerous diseases. In retail AI helps retailers improve demand predictions, price choices, and product positioning. AI gives them access to streams of data, increasing their speed, efficiency and business options. Artificial Intelligence makes automated decisions based on marketing data collection, data analysis, and further observations of audiences or economic trends that may influence marketing activities.

Manufacturing: Artificial intelligence in manufacturing is using technology to automate complex activities and uncover previously unknown patterns in manufacturing processes or workflows. AI helps modernize maintenance management by shifting it from a reactive or routine maintenance posture to a predictive or prescriptive posture. Every firm works hard to keep its facilities and critical production equipment running.

Banking: Banks can use Artificial Intelligence to manage record levels of high-speed data and derive useful information. Front-end AI is being used by banks to improve customer identification and verification, strengthen customer interactions, and deliver tailored insights and suggestions. Furthermore, technologies such as digital payments, AI bots and biometric fraud detection systems contribute to higher quality services for a larger consumer base.

AI in the public sector AI in the Public Sector

Artificial Intelligence (AI) is a field of study and technological application that has the potential to significantly transform public policy and services in a variety of ways.

Governments are using Artificial Intelligence (AI) to reduce backlogs, reduce costs, overcome resource constraints, free up employees from boring tasks, improve projection accuracy, and enhance process and system intelligence. AI can help governments develop better policies and make better decisions, improve communication and interaction with residents and communities, and accelerate and improve the quality of public services. Government use of AI lags the private sector; the field is challenging and has a steep learning curve; and the mission and setting of government are unique, presenting a variety of challenges.

Due to the benefits of artificial intelligence and machine learning, an increasing number of government organizations are exploring or starting to employ them to make better decisions. AI can help governments set better policies and make better decisions, enhance communication and interaction with citizens and communities, and accelerate and improve the quality of public services.

Artificial intelligence and Inequalities

Predicting the future is difficult, especially doing so ahead of time. There is a growing conversation among the general public about AI. People are forming their perception based on this and it is influencing the policies. How should we anticipate our connection to technology? What kind of impact can we create?

First of all, AI and automation can work at different speeds in the same economic system. It is being said that AI will do for the fourth industrial revolution what electricity did for the previous revolution.

AI, Big Data, automation and quantum computing etc. can impact economic progress to a great extent. Governments pursue national policies. China is aiming to become a superpower in the field of AI by 2030. The European Union, France and Japan are spending a lot of money on research and development in this field. During this time, they are working on the development of AI while staying within the legal framework. An American task force has talked about a detailed research and development plan and is setting up a task force on AI. NITI Aayog's discussion paper talks about an inclusive vision of 'AI for all' in India.

But this change will not bring separation. Old and new industries, technologies and methods of production will all exist together. This multiple automation will complicate industrial policies. Efforts have already started to address emerging technology and larger market share. China's 2025 policy identifies 10 areas including robotics and semi-conductors. Indigenous companies in these sectors aspire to compete globally while capturing the indigenous market. It is not easy to guess. The 10 sectors in which China sees a huge role for robots include energy and mining, medical and defence sectors. Apart from these, cleaning, film making and companionship are also included. If industrial policies are determined from above, they achieve very limited goals.

Technology enables us but it is not an end in itself. Responsible production and consumption depends on how AI and automation can increase resource efficiency, reduce food sector losses, and ensure material recycling and reuse. Policies can set the direction that innovation can take. Second, speculation about future employment should be avoided. Whatever comments are being made regarding AI and automation are full of talks about the loss of employment. This also includes the issue of high skilled employment. Meanwhile, America has produced 78,000 AI researchers and China has about half that number. This is an important indicator of technological development but it does not indicate the loss of employment. A 2017 report by the Confederation of Indian Industry (clarification: I was a member of the steering group) identifies several factors that will shape the employment environment. This included the education system, size and structure of enterprises, social safety net and inclusive growth through technology and innovation.

For productive employment and excellent work, we need to explore new skills and opportunities in new areas. Water, sanitation, waste management and clean energy will be important areas for growth. Just imagine how many new jobs would be created by installing rooftop power systems, or by decentralizing water and sanitation infrastructure, or by training people to use, recycle and reuse critical minerals and other resources. But what about workers' rights? In an economy driven by new technology, one's personal economic value is inversely proportional to the standardization of tasks. The more specialized the work is, the greater will be its value among the workers. Workers can develop a variety of skills. In this new system, if everyone is their own boss, then who will demand a salary increase or health coverage?

Thirdly, the pressure on democratic participation also needs to be understood. In 1949, Ambedkar had said that inequality in social and economic fields could endanger political democracy. If AI automation and other emerging technologies increase economic inequality, what will be the impact on nominal political inequality in a democratic system? Talking about taxation, if robots become more productive than humans, will they be taxed? Many developing countries rely on indirect taxation. If the number of robots increases, indirect tax revenue will increase. It can be distributed among the sections affected by increasing automation. If robots make even essential services cheaper, then governments will have to think about new technology. In such a political environment, will robots or their owners be listened to? Or the victims? There will be problems if AI increases inequality of opportunity and social and cultural prejudice. Fourth, technology can help in sustainable development. This will be vital if AI develops applications for energy, water, cities or climate change. Algorithm based machines can make assessments based on the authenticity of observations of other models. AI can help connect renewable grids to more flexible and autonomous electricity grids. If the propellers of wind turbines can predict the speed and direction of the wind, their performance can be better. With the help of sensors and control systems, irrigation facilities can be increased in water-scarce areas. Farmers can be given information about sowing with better yield. AI is already helpful in identifying cyclones.

Conclusion-

The use of artificial intelligence is going to be seen in both negative and positive forms on the society, country and the world, but as we are able to see, the increasing trend of artificial intelligence is coming out as an invitation for the destruction of human civilization because scientists are On the one hand, they count the benefits of artificial intelligence and on the other hand, they also think about its dangers, they also know that its excessive use can harm human civilization, therefore, using artificial intelligence on a balanced basis is the best way for the society. It will be in the interest of the people of India and for further development and innovation in the field of artificial intelligence, scientists should think about both the advantages and disadvantages of innovation research and development and then take a decision on it and take it forward. AI adoption requires strategy and implementation, risk management, and an AI-enabled workforce. Several issues have emerged as a result of the impact of the pandemic on the digitalization of Indian firms. Promoting AI in education and industry can increase its development and implementation at the national level. It will push the boundaries of technology by generating new knowledge and developing applications.

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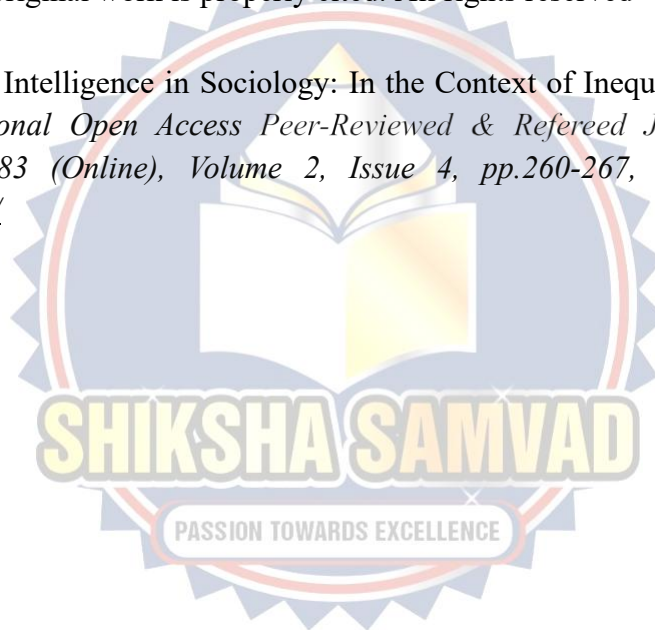
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