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AI in Humanities: Review

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Abstract: Researchers in the humanities and social sciences are examining Artificial Intelligence's (AI's) profound effects on human society and how they are changing research paradigms. The integration of connectionism and symbolism in neuro-symbolic AI holds great significance for the study of humanistic and social problems involving large amounts of data. It also plays a vital role in the development of new multidisciplinary fields like computational social sciences and digital humanities. The humanities and social sciences face significant challenges from artificial intelligence (AI), which is influencing public conversation with worries about acceptability, privacy, and economic ramifications. In addition to posing social issues, it also transforms research procedures by opening up new avenues for analysis across a range of disciplines by facilitating large-scale data analysis via machine and deep learning techniques. In addition to defining AI's scope specifically for this purpose, this study offers a vision for AI-powered social theory and suggests using digital data to test social theories based on predictive capacities using AI models. It illustrates AI's existing capacity to synthesize knowledge, reason, and systematically solve a variety of issues using Randall Collins' state breakdown model. AI-driven social theory is hampered, nevertheless, by practical, technological, and epistemological issues. Semantization (generating machine-manipulable verbal concepts), transferability (using learned information across contexts), and generativity (independently producing and upgrading concepts) are critical functions that are absent from current systems. By filling in these gaps, future research could establish AI as a pioneer in the development of cumulative social theories. With a wealth of data, neuro-symbolic AI has enormous potential to address difficult humanistic and social concerns. For burgeoning interdisciplinary fields like computational social sciences and digital humanities, its integration represents a significant advancement.

Keywords: Digital Humanities, Deep Learning, Somatization, Neuro Symbolic

Introduction

Combining connectionism and symbolism, neuro-symbolic AI seems as a potent remedy for complex social and humanistic problems involving large datasets. This combination explores the subtle aspects of AI's influence and tackles important questions in the social sciences and humanities. AI opens up previously undiscovered analytical domains by bringing about a paradigm change through sophisticated data processing. The paper outlines a novel program: AI-powered social theory, explaining how AI plays a critical role in theory development and hypothesis testing. The integration of AI and social science research becomes critical in this complex environment. It emphasizes how important AI systems built on social science frameworks are to drive progress, particularly in areas like tourism technology development. Under the heading of neuro-symbolic AI, these transdisciplinary leaps represent transformative potentials where theoretical depth converges with computing power. This synergy expands the social sciences' conceptual frontiers as it navigates the intricacies of

humanistic issues. Essentially, neuro-symbolic AI is at the intersection of innovation, providing not only answers but also a paradigm for reimagining how we tackle the complex web of social and humanistic problems. A new era in comprehending the human experience is dawning, one that promises revolutionary insights and unmatched achievements through the marriage of established ideas with state-of-the-art technologies [1-5].

Literature Survey:

In domains such as digital humanities and computational social sciences, where humanistic and social problems involving large amounts of data are studied and solved, neuro-symbolic AI holds great potential for application. The relationships between neuro-symbolic AI and the humanities and social sciences are discussed in this paper, along with a summary of current developments and representative applications. Additionally, a viable route for the expansion of pluralistic methodologies in the humanities and social sciences to accommodate the big data era is explored. AI has fundamentally altered human society. Neuro-symbolic artificial intelligence holds great potential for analyzing and resolving large-scale data-driven humanistic and societal challenges. It explains how neuro-symbolic AI relates to the humanities and social sciences and considers potential avenues for the pluralistic methodology to be expanded in these fields in order to accommodate the big data era. Neuro-symbolic artificial intelligence holds great potential for analyzing and resolving large-scale data-driven humanistic and societal challenges. For the advancement of developing transdisciplinary subjects like computational social sciences and digital humanities, neuro-symbolic AI is a key development. explains the relationships between neuro-symbolic AI and the social sciences and humanities. Examines potential avenues for the growth of pluralistic approaches in the social sciences and humanities in order to adjust to the big data era. AI with neurosymbolics pluralistic approaches in the social sciences and humanities. High application value exists for neuro-symbolic AI in the social sciences and humanities. It makes the shift in research paradigms easier. Research paradigms in the social sciences and humanities are facilitated by neuro-symbolic AI. . Neuro-symbolic artificial intelligence holds great potential for analyzing and resolving large-scale data-driven humanistic and societal challenges. Neuro-symbolic AI can be used to investigate and resolve social and humanistic issues with large amounts of data. Emerging multidisciplinary subjects like computational social sciences and digital humanities can benefit from its development [1].

It is indisputable that AI has had a revolutionary effect on social and human science methodology. Artificial Intelligence (AI) transforms not only the modeling and analysis of data but also the basic knowledge of research procedures. Artificial Intelligence (AI) enables the processing of large datasets and reveals complex patterns that were previously concealed by utilizing machine and deep learning techniques. The fundamental nature of study in various fields is redefined by the empirical methodologies brought out by this paradigm shift. The widespread use of machine learning is one of the important aspects of this change. AI enables academics to explore social and human phenomena more thoroughly, revealing nuanced details and complexity. Machine learning becomes an effective tool for comprehending social behaviors, cultural dynamics, and human relationships thanks to sophisticated algorithms and data-driven insights. Furthermore, AI creates new analytical opportunities and provides scholars with previously unattainable viewpoints. Combining AI technologies with Social and Human Sciences improves analytical depth and accuracy while also speeding up data processing. Artificial intelligence (AI) is a light in this digital age, pointing academics in the direction of a future in which AI will not only improve but also fundamentally change empirical research[2].

This study explores the revolutionary potential of AI-driven social theory in the field of social sciences, while also openly recognizing the current limitations of AI systems. It examines critically the epistemological, technical, and practical limitations that prevent AI from fully realizing its potential to advance social theory. The central claim of the discussion is that the capabilities of contemporary AI systems are insufficient for the development of social theory. These restrictions cover a wide range of difficulties, from biases in data collecting to problems with the generativity and transferability of knowledge produced by AI. The paper presents a visionary picture in spite of these obstacles. It highlights the pressing need for more research to close the current gaps and lays forth a thorough plan for AI-driven social theory. The report makes a strong case that, if the gaps are carefully filled in by means of large-scale research projects, there is a bright future ahead of us, one in which AI-driven cumulative developments will take the lead in influencing social theory. The key is to add necessary functions to AI systems so that they can process large datasets and understand the complexities of human behavior, culture,

and societal dynamics. These models serve as the foundation, making it easier to evaluate social theories according to how well they predict outcomes. The discussion does not, however, avoid addressing the limitations brought about by finite and biased data sources, which highlights the difficulties in expanding AI-driven social theory. The paper's discussion threads through the advantages and disadvantages of existing AI methods with respect to their potential to further social theory. It establishes the groundwork for an in-depth discussion of how these constraints can be overcome by focused research projects. The study puts up a basic idea: in order for AI-driven social theory to genuinely take off, AI systems need to advance above their present constraints, which will eventually lead to a paradigm change in the social sciences. Beyond the existing constraints preventing its revolutionary influence, AI has the ability to alter our understanding of the complex fabric of human society through ongoing exploration and invention[3].

AI is transforming the Social and Human Sciences in terms of data interpretation, subject comprehension, and findings presentation. According to the authors, artificial intelligence (AI) represents a new paradigm for study since it allows for large-scale data processing using machine and deep learning techniques, opening up new research directions. AI ushers in novel views for analysis and poses significant problems and opportunities for the humanities and social sciences[4].

[5] This incisive chapter centers on the critical role that humanities education plays in the face of artificial intelligence's (AI) disruptive waves. The discourse highlights the essential need for a seamless integration of science and technology with the humanities, developing a holistic approach to learning in the age of AI, while acknowledging the enormous impact of AI on education and the humanities. Inspired by the timeless wisdom embodied in Confucianism and the profound philosophies of John Dewey's Pragmatism, the article offers insightful reflections on the role of humanities in addressing the many opportunities and challenges brought about by the development and widespread use of artificial intelligence. In the middle of the technological revolution, education in the humanities becomes not just important but essential. It is a stronghold of wisdom, promoting a profound comprehension of human nature, morality, and principles that are fundamental to negotiating the intricacies of the AI-powered world. Dewey and Confucius are lighthouses of wisdom, their viewpoints shedding light on the way to a peaceful fusion of the humanities and sciences in education.

The chapter explores AI's transformative potential, a force that is changing civilizations and posing important existential issues. Through their respective philosophical vantage points, Dewey and Confucius had a deep conversation about humanities education. They highlight the grave ramifications of upholding a dichotomy between the humanities and sciences, stressing that this split obstructs the accomplishment of goals pertaining to holistic development and personal cultivation.

The chapter essentially makes a strong case for the inclusion of the humanities and sciences in the classroom. It imagines a time when combining various fields of study enables people to become morally upright, empathetic, and highly intelligent humans in addition to helping them adjust to the AI-driven world. As artificial intelligence (AI) keeps expanding the limits of human knowledge, the humanities and sciences must be integrated in order for society to be robust, compassionate, and morally aware. This will guarantee that humanism will always be at the center of technological advancement.

In view of Thomaso, Alexandre Geben, and Léa Saint-Raymond, Rethinking history and imagination is being prompted by AI, which is changing the underpinnings of the social and human sciences. AI's empirical methods are revolutionizing data modeling, analysis, and visualization in disciplines including geography, sociology, economics, and archaeology. Machine learning was first used for picture identification, but it is today used for a wide range of tasks and data kinds, from financial prediction to legal and medical decision support. Its expanding influence highlights how diverse and dynamic AI applications are in reshaping the field of social and human sciences is also acts as a societal issue. The social sciences and humanities investigate AI's significant societal ramifications using an interdisciplinary approach. AI is omnipresent in business, healthcare, the workplace, and daily life. It is present in facial recognition, robots, linked gadgets, and human-computer interaction. This revolutionary influence brings up many difficult issues, such as data protection, legal accountability, resolving prejudices, and the impact on the economy, geography, and environment. In an effort to develop AI that is ethically and socially acceptable, researchers from a variety of fields work together to turn these problems into research questions. Making instruments and procedures that are in line with moral principles and the general welfare of society is the main goal[6].

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The author Xiao Ma and the team reveal that, in order to close the gaps between the communities of social science and artificial intelligence research, the study suggests developing AI-mediated exchange Theory (AI-MET). Through a taxonomy of mediation mechanisms, the suggested framework, AI-Mediated Exchange Theory (AI-MET), conceptualizes AI's impact on human-to-human relationships. Its goal is to help the human-AI research communities communicate with one another[8].

The impact of AI on many facets of life, including the humanities, is covered in the study. It states that artificial intelligence (AI) has the power to change how people live and work in the future, impacting all job categories, including the humanities. AI has the power to supplant and eventually eradicate humans. AI will have an impact on all areas of employment, with educated workers being the most affected. AI's effects on human labor and related fields - The AIMLA session on AI and the humanities will have the greatest impact on professionals with education. - Microsoft reps talk about the GPT2 text generator from OpenAI. AI has the power to eradicate and replace humans. All job sectors will be impacted by AI, with educated workers being the most severely affected. - The GPT2 text generator from OpenAI - The ability of AI to predict and make decisions. AI will change the fabric[9].

It also highlights how important it is for AI researchers to have a common language and theoretical framework, and it offers suggestions on how academics studying digital humanities, ethics, and philosophy might be involved in understanding this document presents the findings from a workshop held on January 27, 2023, which drew together 24 participants, including educators, scientists, policy leaders, and professionals from the business world. Its primary objective was to find out how the arts and humanities will affect artificial intelligence in the future. The diverse group of participants was asked to submit queries and suggestions about applicable humanities and creative pursuits. Concerns over the potential marginalization of the humanities and arts in academic settings are raised by the study, which also discusses the expanding relationship between AI and the arts and stresses the significance of incorporating ethics into AI development. The results of a workshop with 24 different participants—including policymakers, academics, scientists, business executives, artists, and teachers—held on January 27, 2023, are presented in this publication. With the topic "How can the arts and humanities shape our AI future," the workshop set out to investigate how the humanities and arts might influence AI in the future. The introduction discusses how ethics are included into the development of AI, how the humanities and arts have different viewpoints from science, and how literary criticism may have an effect on the creation of AI. There is discussion of the need for an alternative research strategy that focuses on human flourishing, the marginalization of the humanities and arts in academia, and the connection between the arts and AI. In order to comprehend the roles of developers, the study highlights the need for a common lexicon and theoretical methods in AI development and suggests incorporating digital humanities, ethics, and philosophy scholars. Additionally, it suggests a change in direction toward a human flourishing-focused research methodology and calls on social scientists and action researchers to collaborate with developer communities to create ethical AI[10].

Artificial Intelligence (AI) is transforming a number of industries by outperforming humans at activities like learning and problem-solving. Concerns have been raised concerning AI's effects on employment, social dynamics, individuality, and even the essence of mankind, despite the technology's potential to revolutionize industries like transportation, business, and medical. This chapter considers the role of humanities education in resolving the difficulties brought by artificial intelligence (AI), drawing on the viewpoints of John Dewey's Pragmatism and Confucianism. It makes the case that humanities education, as envisioned by Dewey and Confucius, becomes more significant for personal development and growth in a future where traditional jobs may become obsolete. The chapter does, however, criticize modern humanities education for continuing to maintain a polarization with the sciences.[11]

Conclusion

Investigating neuro-symbolic AI offers a viable path toward solving intricate social and humanistic problems entangled in large datasets. This work explores the fusion of symbolism and connectionism, revealing a new initiative: AI-powered social theory. The integration of artificial intelligence (AI) with social science research is deemed crucial, especially in areas like the creation of tourist technology, demonstrating the revolutionary potential of neuro-symbolic AI at the nexus of innovation. Exploration of the AI future in the humanities has sparked extensive discussions, drawing together academics, scientists, business leaders, artists, and educators. This interdisciplinary endeavor spans digital transformation, artificial intelligence, health ethics, climate change, and new media, giving rise to a critical humanities approach. The application of AI techniques and digital technologies has significantly impacted cultural heritage and archaeological studies, ushering in new possibilities in these fields.

Reference:

[1] Zhen, Huang. (2022). Introducing Neuro-Symbolic Artificial Intelligence to Humanities and Social Sciences: Why Is It Possible and What Can Be Done?. TEM Journal, doi: 10.18421/tem114-54.

[2] Alexandre, Gefen., Léa, Saint-Raymond., Tommaso, Venturini. (2021). AI for Digital Humanities and Computational Social Sciences. doi: 10.1007/978-3-030-69128-8_12

[3] Jakob, Mökander., Ralph, Schroeder. (2021). AI and social theory. Ai & Society, doi: 10.1007/S00146-021-01222-Z

[4] Gefen, A., Saint-Raymond, L., Venturini, T. (2021). AI for Digital Humanities and Computational Social Sciences. In: Braunschweig, B., Ghallab, M. (eds) Reflections on Artificial Intelligence for Humanity. Lecture Notes in Computer Science(), vol 12600. Springer, Cham. https://doi.org/10.1007/978-3-030-69128-8_12

[5] Le, Dung., Susanne, Becken., Bela, Stantic., Ranju, Mandal. (2020). Integrating social sciences research with artificial intelligence (AI): A case study from the Great Barrier Reef.

[6] Gefen, A., Saint-Raymond, L., Venturini, T. (2021). AI for Digital Humanities and Computational Social Sciences. In: Braunschweig, B., Ghallab, M. (eds) Reflections on Artificial Intelligence for Humanity. Lecture Notes in Computer Science(), vol 12600. Springer, Cham. https://doi.org/10.1007/978-3-030-69128-8_12.

[7] (2023). A Systematic Literature Review of Human-Centered, Ethical, and Responsible AI. doi: 10.48550/arxiv.2302.05284.

[8] Xiao, Ma., Taylor, W., Brown. (2020). AI-Mediated Exchange Theory. arXiv: Human-Computer Interaction,

[9] Wai, Chee, Dimock. (2020). AI and the Humanities. Pmla-publications of The Modern Language Association of America, doi: 10.1632/PMLA.2020.135.3.449

[10] Matthew, Studley., Scott, deLahunta. (2023). Arts and Humanities Shaping the AI Future. doi: 10.18552/cdare/2023/0001.

[11] Wenjun, Miao. (2022). Humanities Education in the Age of AI. 234-253. doi: 10.1163/9789004511477_013