

AI In Creativity

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Abstract—A key component of human intellect, creativity presents a problem for artificial intelligence. There are three ways that artificial intelligence (AI) approaches can be used to generate new ideas: by generating new combinations of ideas that are already familiar; by exploring the possibilities of conceptual spaces; and by transforming existing ideas to make them possible. Modeling the creation of new concepts will be easier for AI than automating their assessment. Since chatgpt's release, there has been a lot of interest in creativity in relation to artificial intelligence (AI). Theorizing and empirical research have raised questions about the nature of creativity, both artificial and human, as well as how much value should be placed on work created by both. Co-creation, or the use of AI as a tool to enhance human creativity, is one particular situation that has been discovered by the creativity research community and is the subject of this article. On a continuum of four degrees of creativity—mini-c, or creativity in learning; little-c, or everyday creativity; Pro-C, or professional creativity; and Big-C, or eminent creativity—we provide new research that is pertinent to the use of AI. The definition of AI in this context is broad and does not limit itself to huge language models (like chatgpt), which may approach.

I. INTRODUCTION

AI may enhance team performance in additive idea generation tasks because it tends to increase the average originality of ideas. The best individual performance is the basis for group success in disjunctive activities. AI, today is a very strong force changing business as well as human behavior. It is such an extraordinary force that opens up people's minds and gives them an imagination about anything. The very existence of AI encourages creative thinking about it, doing away with all conventional limitations and assumptions of the human intellect. The other more latent information such as facts, patterns, correlation, and ideas is therefore provided

by artificial intelligence for enhancing divergent thinking. Critical psychology within creativity includes non-linear thinking dimensions, where individuals are usually seen to move out of common cognitive biases and perspectives of thinking that enhance creative solutions and innovation. For one, evaluation might become excessive simply because democratizing invention leaves much to that effect. Crowdsourcing, for instance, develops into a flood of ideas, many of which are left in the lurch or ignored because businesses lack an effective method to assess them or combine little or unfinished ideas that could be really powerful when combined. Second, businesses may fall prey to the "curse of expertise." Domain experts who are good at generating and identifying feasible ideas often struggle to generate or even accept new ideas. Third, someone without domain knowledge may identify new concepts but be unable to provide the information required to make them work. They cannot transform incoherent concepts into coherent design.

II. LITERATURE REVIEW

Ongoing development of AI technologies meant a broader area for them to be implemented into. In addition to other fields of interest tied to human creativity, new AI programs also influenced the writing aspect of creation. In the late 1970s, Cercone and Murchinson (1985) carried out a research on the contributions of AI to literature, concluding the utility of AI as a process in which computers aid in making generalizations to establish whether AI techniques can simulate the typical language of a writer. Increased research in Natural Language Processing made it possible for new and more sophisticated language models to emerge. Bowman et al. (2016) have also devised a variational

autoencoder specifically designed to fill-in-the-blanks within normal sentences. Another high point for integrating AI models into ordinary writing was that of the GPT-2 model. Radford et al. (2019) formulated four language models, from which GPT-2 proved to be very effective and was one of the brightest candidates in all text analytics, including completing tasks in reading comprehension, translation, and memorizing. Although there is a need for more research and subsequent improvements, this study demonstrates the huge potential of projects trained with language modeling (Radford et al., Solaiman et al. (2019) generated different outputs of an already existing article in The New York Times using GPT-2, from the first two paragraphs and produced writings credible for human readers 66% of the time. In addition to writing texts and combining them to form meaningful texts, AI has also found other applications, which include proofreading and editing other people's work. Park (2019) assessed the performances of an AI-based grammar checker, Grammarly, compared to human raters for people who learn English as a foreign language. Although the study discovered that the program could not recognize some tenses and also failed to identify specific types of errors, it is still worth mentioning that Grammarly is one of the most regarded AI-based grammar instruments used by many people who want to check their writing (Park, 2019)..

III. FUTURE SCOPE

Up to now, numerous studies have demonstrated that AI has already positively influenced the fields most closely correlated to human creativity, and with new emerging models, it is getting increasingly challenging to distinguish between artwork created by humans and AI.

The power of AI technology in art is that it can execute repetitive, time-consuming tasks, which frees the artist to concentrate on the creative part of the process.traffic flow. Over time, these agents learn to make decisions that maximize efficiency and minimize congestion.

Whereas with all these developments concerning AI technology, it is still an emerging field that needs much more research for solid prediction to be made about the future of AI in art. This interest sparked by AI technology creates curiosity among many,

especially among artists and art lovers, who began experimenting and testing the relationship between AI and art, thereby diversifying the classical art known today.

[1:35 pm, 02/12/2024] Shreya Patil: Many questions will also arise as to whether mass adoption of this kind of technology is to be anticipated in the future and the implementation and evolution of AI and the art industry concerning whether the art produced by AI will still be called original art.

[1:36 pm, 02/12/2024] Shreya Patil: will be Till date, AI techniques have proved optimum to help in various fields of human activity, such as health, sales, finances, etc. Consequently, it may be well predicted that the use of AI in creative attempts that were inspired since it brings about many advantages serving as an innovative, effective assistant.

However, the human condition itself, with its creativity, imagination, perception, and taste in art, is one factor that would be crucial in determining the extent to which AI would be implemented in art and other professions implying human creativity.

If human creativity can be described solely in terms of information processing, then it's not very difficult to see AI render the whole. Creativity goes far beyond the cognitive part, much beyond the conversion of inputs to outputs. New developments in AI signal a new rapport between man and machine. Adding human creativity to the powers of AI techniques widens our world-view.

Continuity of developments in blockchain types of technologies promotes the adoption and popularity of NFTs while furthering and expanding their application possibilities. While that may be the case, however, NFTs have diversifying certain aspects of the Metaverse thus far, and avoiding traditional art forms as people knew them and building a completely new concept of digital art.

New research showed that intelligence is more than logical reasoning. Intelligence involves creativity, emotions, interaction, cultural background. Creativity in humans results from multiregional interhemispheric interactions. A few years ago, the area of developing AI creativity was initiated and it is still at its earliest stage.

Unfortunately, there are many questions that have yet to be answered. Could a product be considered creative if a computer conceives it? How will the collaboration between human and Can we use

artificial intelligence to augment human creativity? Can computer creativity develop? Will the evolution and improvement of AI technologies influence human evolution, eventually leading to the birth of a new species?

Can artificial intelligence help to supplement human creativity? Can computer creativity emerge? Can the evolution and enhancement of AI technologies have any bearing on the evolution of humankind, with the emergence of a new species?

This would not matter if the AI-system could realize the poor quality of the new constructions, and drop (or amend) the transformation accordingly. A truly automatic AI-creator would have evaluative mechanisms sufficiently powerful to do this. At present this is very seldom so an exception is artificial co-evolution in which the fitness function evolves with the several species involved. Notoriously, AM generated many more useless items than powerful mathematical ideas and although it had heuristics of "interestingness" built into it its evaluations were often wrong by human standards. And some "adventurously" transformational programs carry no evaluation criterion at all, the evaluation being done interactively by human beings. Criteria powerful enough to allow them to change their conceptual spaces in fruitfully creative (including H-creative) ways. But for such computerized self-criticism to be possible, the programmers must be able to express the values concerned sufficiently clearly for them to be implemented. Even if the values are not predetermined, being represented instead as an evolving fitness function, the relevant features must be implemented in and recognized by the (GA) system.

It will, to some extent be achieved implicitly, by definition of a culturally acceptable conceptual space, so that any structure the program can produce will be perceived by humans as valid; but structures produced within new spaces, generated by transformations applied within, will require new types of evaluation-different from those implicitly present in the original space, or supplied hitherto in explicit form. This makes it even harder to communicate just what it is that we appreciate about a

Bach fugue, or an impressionist painting, than it is to recognize something as an acceptable member of one of those categories. And to say what it is that we like,

or even dislike, about a new, or previously unfamiliar, form of music or painting is even more challenging. It's hard enough to identify what criteria we use in our judgments. Justifying, or even merely causally explaining, why we rely on those criteria is harder still. For example, just why we like or dislike something will often have a lot to do with motivational and emotional factors considerations about which current AI has almost nothing to say. But human values-and so the novelties that we are prepared to sanction as "creative"-change from culture to culture, and from time to time. Sometimes they do this in extremely unpredictable and irrational ways: consider the fashion industry, for example, or of rogue memes like the back-to-front baseball-cap. Nor are value-shifts restricted to such frivolous issues as these: even Bach, Mozart, and Donne were disregarded and/or attacked at times.

The scientific criteria of theoretical elegance and coherence, and of experimental verification, are less variable than artistic values. But that's not to say they are easy to define, or to implement. (An attempt to do so, for certain sorts of mathematical symmetry, has been made by the BACON team.)

Moreover, science too has its equivalent of fad and fashion. Even the discovery of dinosaurs was not a cut-and-dried event, but the culmination of a process of scientific and political-nationalistic-negotiation lasting for several years. The important point is that what scientists count as "creative", and what they call a "discovery", depends largely on unarticulated values, including social considerations of various kinds. These social evaluations are often invisible to scientists. For sure, they are not represented in AI-models.

IV. ECONOMIC IMPACT

Now, with the continuous research and improvements in this domain, it becomes more and more apparent that AI will continue to play an important role in many aspects of our lives. However, when it comes to certain aspects of human creativity and professions directly tied to it, the question about how artists and AI are going to evolve and develop together is still up for debate.

Though there is real concern regarding the dynamic in the job market parallel to the development of AI, technology has shown to have a significantly positive

impact in many areas of expertise, including art.

This enhances the artist's imagination and gives him the means of achieving it with the support of technological developments, pushing the artist to new ideas and projects and giving facilities to realize them (Liu, 2020). It is also of great help regarding the time management of the artist, with the latter being able to focus more on the creation and imagination process while delegating the technical part to the AI, thus increasing his productivity and volume of work that he can complete. For public attitude toward AI artworks, Chamberlain et al. (2018) carried out a study, focusing on the comparison between the feelings evoked by artworks created by humans and those by non-human entities.

Despite their inability to differentiate between the two forms of art, the study found that participants have a bias towards non-human-generated art (Chamberlain et al., 2018). The same participants were more likely to put aside this bias if presented with artwork created by anthropomorphized agents (Chamberlain et al., 2018). Another study by Hong and Curran (2019) demonstrated that such biases are more related to the general feelings people may have towards AI and not necessarily how they feel about the artwork. So far, there is no significant evidence that the artists' job market will be negatively affected by the development of AI regarding art projects, even though the progress of the AI technology revealed both economic growth potential and concerns regarding job losses in other fields of interest (Felten et al., 2019).

What is more, recent technological developments and discoveries have altered the artistic view as well. There was an immense dominance of digital art in recent years as a result (Potts, 2014; Quirion, 2021; Ante, 2021; Wang et al., 2021). Evolution and developments of the type blockchain technology resulted in Non-Fungible Tokens, known as NFTs, bringing an extreme culture and economic change in art commerce and marketing (Potts, 2014; Quirion, 2021; Ante, 2021). The NFTs market recently reached an all-time high, and the sales volume reached \$2.5 billion in the first half of 2021, with a number of 4.7 million NFTs traded between June 23, 2017 and April 27, 2021 (Nadini et al., 2021).

[1:48 pm, 02/12/2024] Shreya Patil: Some of the properties that are making NFTs extremely helpful in the present art setting include verifiability, clear

execution, availability, usability, and tradability (Wang et al., 2021). Considering the art market, some sectors can be affected positively through the emergence and growth of NFTs (Wang et al., 2021). Development of blockchain technologies have been able to give rise to the creation of Metaverse; a shared virtual space between diverse users in which various sorts of digital activities can occur, for example, gaming, concerts, art show, and even purchasing digital property using it and exchanging assets, and so on using NFTs; hence further adding diversity to Metaverse (Wang et al., 2021). Other virtual events happening in the Metaverse also benefit from the sale and trade of NFTs, extending the usability and scope of certain applications (Wang et al., 2021). NFTs are also of great value in newly developed games on different blockchains. More and more people show interest in "play to earn" type blockchain games.

[1:49 pm, 02/12/2024] Shreya Patil: Art development would require a proper blend of imagination and creativity of artists along with AI technology and technical analysis to arrive at the correct solution to create worthy pieces of art. Continuous advancements in AI-based systems correlate directly with future changes and the disappearance of most jobs that imply repetitive functions in certain occupational domains, including industry, agriculture, transport, and commerce. However, the advanced technological progress in fields that imply human creativity and jobs using complex functions such as synthesis, abstraction, originality, imagination, and invention cannot show themselves immune to the dynamic currently found on the job market.

V. CONCLUSION

When using AI software for automatic design generation, the scene is still in its infancy. These tools might significantly speed up the design process while still requiring human designers to yield truly innovative products. These tools may also bring new challenges to designers who are forced to re-see the way of approaching the design process. Many creative professionals are against change and do not want to embrace new tools and technology that might make them less successful in their current positions. Still, one needs to keep an open mind about how new

technology can help improve the design and user experience process. As software development companies continue to evolve and merge new design capabilities into tools, we will see an infusion of artificial intelligence in this process of product development. This proposed approach can be useful as a reference for how one can write informative texts concerned with the topic of AI. It will be the first to step use AI in many design processes aspects such as product simulation or smart systems etc. It is also very important to show how designers make use of these novel methods in their practice. Finally, the AI itself must be examined in depth so that readers can gain a full appreciation of the technology as well as the benefits and limitations of using the technologies in practice. Conflicts of interest None declared.

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