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CREATIVITY in ARTIFICIAL INTELLIGENCE

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Abstract- Creativity is a crucial element of human intelligence and a struggle for artificial intelligence. In three ways, artificial intelligence approaches can be utilized to produce new ideas., by creating new combinations, Investigating the possibilities of conceptual spaces, and Creating modifications. Modeling the generation of new ideas will be easier for AI than automating their evolution. Artificial Intelligence [AI] is playing a huge role in today's world in almost, if not every aspect of this global age. Almost everything we do today is influenced by Artificial Intelligence. However, this field of computer science has its merits and demerits. The purpose of this study is to shed more light on the creative aspect of Artificial intelligence going to the future of Artificial (what to expect from this field of study. In this paper, I present the definition and roles of AI studies from the perspective of societal needs. I propose a framework to discuss the subject.

Keywords- Artificial intelligence, creativity, creative independence, novelty, intuition

I. INTRODUCTION

Why would it be essential for AI to attempt to mimic creativity?

According to some, creativity is a puzzle, a contradiction, and even a mystery. Artists and scientists are rarely aware of their inventions' origins. They mention intuition but don't go into detail about how it works. In addition, most psychologists are unable to supply us with much knowledge on the topic. Furthermore, many people feel that science will never be able to explain creativity because science cannot explain basic novelties.[7]

Creativity is an essential component of human intelligence and an inherent challenge for AI. Innovative algorithms can be incredibly valuable in the lab or on the market, so even technologically focused AI can't disregard them. Artificial intelligence models, on the other hand, were designed with this in mind. Cognitive science can help psychologists understand how human minds must be able to think beyond the box to be creative. [1]

Creativity is not a "talent" or a psychological quality that only a few people possess. It is, rather, a characteristic of human mental function. It's built on daily abilities like concept association, recall, sagaciousness, critical reasoning, and exploration. An organized problem-solving setting includes not only a mental but also a physical component, as well as introspective self-criticism. Dimension, Incentive, and sentiment, as well as personality traits and contextual factors, are all intimately associated. [2]

A unique concept is both new and startling while also being valuable. In this sense, however, the term "novel" has two distinct meanings. The notion could be unique to the human (or AI-system) in question, or unique throughout history, at least as far as we know. Historical creativity refers to the ability to make second-generation novelties, while psychological creativity refers to the ability to generate first-generation inventions. Historical creativity is a subset of psychological creativity, which is the more fundamental idea[7].

The focus of AI should be on psychological creativity. As we will see, artificial historical creativity will arise in some circumstances if it is successful in modeling it powerfully.[1]

Artificial intelligence is becoming more common in our everyday lives. As we progress, the distinction between what is man-made and machine-made gets increasingly blurred, leading to significant changes in how we see and interact with the world.

Not only has AI's capacity to walk, see, and hear amazed us but so has its ability to create was assumed to be uniquely human characteristic, creativity has become a contentious issue. Is AI capable of fully mastering the creative process? Is a concept, is the process constrained by our human definitions?

AlphaGo, a Google DeepMind system, in 2016. stunned Lee Sedol, worldrlds reigning Go game champion, by creating a winning strategy employing creative thinking. intelligence. Years of development have gone into the development of he AlphaGo system. Artificial intelligence (AI) is rapidly approaching, much ahead of its time in our daily lives, and its progress has started to reshape they support creative processes while also challenging our beliefs to think creatively.

The Google machine made the 37th move in one game against Sedol that no human would dream of. "It isn't a humanistic behaviour.

"I haven't seen a human use this strategy before," says the author "another Go champion stated, before adding "beautiful" to the mix. p[3]

AI can help designers produce better ideas by speeding up their cognitive procedures and expanding their creative options. Ai Build reduces resource utilization, workforce, and expenses while developing sophisticated designs that were previously difficult to devise and build by using Ai to improve the production process. It used concrete in irregularly shaped molds in one case to lessen the quantity of material required

Creative Artificial intelligence[AI], on the other hand, is used for more than just manual labor. It has an impact on the music industry as well, enabling musicians to better understand their artistic thinking and even themselves Harry YJeff a beatboxer, is the first musician to compete against artificial intelligence. A robot was programmed to not only categorize Yeff's sounds but also to compose its very own tunes, using a deep-learning program. [3]

II. THEORY OF CREATIVITY

The pivotal theme of this paper is that creativity is inextricably linked to our humanity. Progress appears to be governed by our ability to dissociate ourselves from the present, reinvent and overrun existing thought patterns, and develop new ones in all human crafts, arts, and sciences. Creativity may be the most visible example of a mental occurrence so crucial to our existence that we know exists that we do not know much about[6].

III. WHAT IS CREATIVITY?

Before we can reason about conceptual things, we must first be able to precisely characterize creativity. The definition of creativity has proven to be particularly difficult. Years and years of arguments have focussed on clarifying its uniqueness by differentiating it from highly associated concepts such as uniqueness, brilliance, creative thinking, and talent [7], as is usual with such complex notions. The most important quality of creativity in our collective subconscious is a novelty. In this sense, creativity entails separating the present from the future and expanding our preconceived notions [8].Because it introduces unpredictability, creativity appears to strain our relationship with the future. Because it's impossible to fully comprehend the implications of a truly unique idea or item, embracing creativity is a risky move that may disrupt our pattern-seeking habits [9].

However, we can relax because creativity (and art) do not emerge from a conceptual void [10]. Creativity is first and foremost a contextual phenomenon [11], even though it is one of the most erratic concepts. As it involves humans in what seems like a sense, collaborating with a set of available patterns of interpretations at a specific historical moment, creativity has social aspects[12]. The social setting and historical period in which creative ideas are created determine not only their importance and relevance, and

also their composition. A substantial amount of data can only appear in one place when a group of individuals gives their opinions on the same set of issues [13]. As a result, creativity varies and is influenced by its surroundings as well as its quality [14].

On the other hand, what was previously innovative and received widespread acclaim would gradually be adopted as a new period standard, gradually becoming standard in the society and area in which it operates [15]. Musical synthesizers are a well-known example in the musical world [16]. Audio synthesizers had been considered peripheral instruments in contemporary and exploratory music, trying to produce sounds that were rather bothersome to be categorized as melodic. After a lengthy developmental stage, such sounds started to occur over almost all musical genres, and now they commonly include different levels of audio synthesis. Per this viewpoint, creativity is a transformative process that involves the adjustment and assimilation of object classes into a domain governed by pre-defined rules, and the alteration and adjustment of those regulations over time[17].

IV. THREE MAJOR WAYS TO USE AI TO CREATE NEW IDEAS

i.*Creating new combinations*

The easiest of the three for a computer to investigate is creating new combinations, which is similar to producing analogies or jokes. An AI doctorate student-created Jape, computer software that can generate puns, in 1996. (This was one of them.) Well can see how a machine can make such jokes by assessing phonetic similarity among words and switching the words around, which isn't necessarily funny. However, much of what Jape produces is irrational and needs are corrected by a human afterward to judge what is and isn't entertaining.

ii.Investigating the possibilities of conceptual spaces

Imagine feeding an AI the rules of music composition, and a collection of signatures from notable composers, including their mannerisms, common harmonies, and melodies. That is the substance that gives Beethoven's sound its characteristic character. Then give this AI the task of writing a new song that sounds like it was created by Beethoven. This is remarkable in that the computer can recognize previously unknown combinations inside a conceptual universe of musical rules and signatures. In addition to high-quality music, it is possible to make music that sounds like a specific composer.

iii.Creating modifications

A successful discovery system was the Automated Mathematician, a 1970s effort that could generate and change small bits of code. This is the seed of the ultimate computer: a computer that can program itself.This type of technology is known as artificial development, and it is employed in a variety of fields with impressive outcomes. The least researched of the three, AI offers a lot of creative possibilities but also a lot of limits. potential.[5]

V. EXPLAINING NOVELTY AND CREATIVE THINKING

Amongst the most notable aspects of creativity is its novelty. This may be one of the most crucial and difficult features of a computational approach to discussing. It has to do with how systems are improved using a set of examples [18]. Undoubtedly, the presumption of a loss term is usually greatly reduced when training a prototype. This means we're calculating the average error over a collection of predefined instances. By attempting to integrate the primary mode of the distribution, the model is encouraged to perform correctly in the most pervasive domains of knowledge. The unique examples, on the other hand, will have the least impact on model training and will be largely ignored in place to evade trying to alter the global error term. Notwithstanding, as previously stated, engaging with these types of examples needs a great amount of creativity. As a result, the key question is whether Artificial Intelligence models truly can arouse novelty through certain operational mechanisms, or if human intervention would be required. And though AI is effective at coordinating and obtaining information, the combination of conceptual elements retrieved from memory is the result of much more complex processes. Margaret Boden, a psychologist, has focused on the relationship between creativity and machines[1]. As a consequence, there may have been some undiscovered procedures that favor creativity in AI by boosting their judgment abilities. This train of thought is mainly created in reinforcement learning approaches, whereby agents are outlined to explore space of potential. Moreover, because they correspond to nuanced perceptual and contextual aspects of the generated objects, such require the meaning of incentives and achievement functions, that are still complex to describe.

VI. EVALUATION OF CREATIVE IDEAS

There exists a strong difference in this question when it comes to evaluating creative quality. On the one hand, learning processes are perfected by reducing a standard that is supposed to be a proxy for quality. Even so, this loss usually focuses on the structural aspects of data generated instead of more abstract content aspects. As a result, Ai systems are unable to assess the true creative value of their output. To enable this degree of sophistication, we must be able to assess both the creative product and the process on its own. As a result, it appears that one of AI's significant problems when it comes to creativity is its incapability to evaluate the creative structures that originate from exploratory processes. In a wider context, the above means that AI initiatives are devoid of artistic intent. Even though this appears to be a simple observation, it can be followed back to the original point of measurement. Matter of fact, a solution to this problem would require not just a computational definition of creative ideas, but

also a set of criteria for determining what events are low-probability but still seem useful. The notion that creativity can only be analyzed within a given societal frame of reference underpins this relevant question.

VII. CONCLUSION

This has been part of the most significant slowdowns in creativity in Artificial intelligence has been the assessment of new ideas: how can the computer understand and further evaluate its results automatically after exploring and transforming spaces? How does it the ideas be kept out of all the ones it wrote? This can be especially difficult for space-transformation applications, but it is also more important.

Artificial intelligence breakthroughs have demonstrated that computers can produce high-level art that fools humans into believing it must have been created by humans. Will computers be able to accomplish this feature without our intervention? Not in the near future. Could we ever stop purchasing art created by humans? Almost certainly not. We can, however, start to value both.

The concept developed here is useful not just for comprehending and analyzing new Artificial Intelligence discoveries, but also for composing and solving new problems.

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