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# How is AI changing Creative work?

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## Abstract

This thesis explores the impact of artificial intelligence (AI) on creative industries from various perspectives. It acknowledges that AI holds immense potential in revolutionizing industries through improved productivity, streamlined processes, and new content creation methods. However, it also highlights the associated concerns, such as job displacement, ethical issues regarding ownership and authorship, and the influence of AI on traditional notions of creativity and artistic expression. Through an analysis of historical developments in AI, a theoretical framework on creativity, and reactions from governmental institutions, legal authorities, and society at large. Through discourse analysis, the paper aims to question the moral, ethical and social understanding of AI and its usage in creative fields. With the combination of theories from Howard Becker', Mihaly Csikszentmihalyi, and Eitan Y. Wilf. Through these a better understanding of AI can be formed, as each part are able to fill missing gaps. By examining both the benefits and challenges associated with AI's role in creativity.

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# Introduction

This thesis focuses on understanding the impact of generative Artificial Intelligence (AI) on creative work from theoretical perspectives, practical applications, and societal implications. In addition to providing an overview of gen AI and its development. However, it does not delve into specific technical aspects or programming languages used in developing AI systems.

The concept of artificial intelligence (AI) has captivated human imagination for decades, from its inception in science fiction novels to its practical applications in modern society. The timeline of AI technology can be divided into 4, which are early developments (1950s-1970s), AI applications in fields (1980s-2000s), AI impact on creative industries (2010s-present), and ongoing advancements (future). Each stage represents significant milestones and breakthroughs that have shaped our understanding of AI's potential impact on creativity. (Anyoha, 2017; Press, 2016)

This paper delves into the historical timeline of AI, exploring its evolution from the Turing Test to the present day, and examining its impact on creative fields such as medicine, physics, algorithms, marketing, art, music, and video production. Pointing to potential effects caused by AI/technological disruption, such as work displacement, identity theft, art theft, copyright infringement, and uncredited work.

Finally, I will explore how AI is currently being used and whether it has merely provided us with faster Google searches or significantly transformed our way of living.

The point of this paper is to discuss how AI technologies have influenced creativity, both positively and negatively, and to explore potential implications for future of AI and ethical considerations surrounding these technologies. Through real life cases and different ongoing lawsuits regarding gen (generative) AI.

Understanding the impact of AI on creativity is crucial as it helps us navigate the complex relationship between humans and technology. By examining how AI influences creativity, we can better anticipate potential challenges and opportunities that may arise from its continued development and integration into industries. This understanding can inform lifestyle choices, ethical considerations, and future research directions.

The thesis will be organized into five sections: Theories, Methods, Historical Timeline of AI, What Has Really Changed? and concluding with, AI and I. Each section will contribute to understanding the impact of AI on creativity from different perspectives and explore potential

implications for society as a whole. Theories will cover my usage of Howard Becker's and Mihaly Csikszentmihalyi's framework, and Eitan Y. Wilf's case study. I combine them with my own findings to structure this paper. Allowing me to make a better overview on AI's creative impact. The next part with method will explain how I narrow down the scope and the limitations of this thesis. Then, the historical timeline will provide an overview of AI's development and cover of key events in AI's history. Afterwards what has really changed, will cover the current ongoing discourse around AI and current impact on society. Finally, AI and I will conclude the thesis with summary on the main findings with discussion on future events.

## Theories

The theoretical framework for the thesis lies in the work of Howard Becker, Mihaly Csikszentmihalyi, and Eitan Y. Wilf. Art Worlds from Becker is the foundation used to understand the intricacies of how AI has grown since its root to today's trend. By looking at each actors involved and impacted by AI, the paper provides introspect on the development of AI in creative fields. In between this is the work made by Csikszentmihalyi's theory on creativity, mainly in the structure and understanding of recombination. Lastly, Eitan Y. Wilf's anthropological research in the Inspiration Machine defines the findings of this thesis.

## Creativity

Mihaly Csikszentmihalyi's theory of creativity distinguishes between two types of creativity: Big C Creativity (or eminent creativity) and small c creativity (or everyday creativity). Both types of creativity share similar psychological processes but differ in their impact on society or cultural domains.

Big C Creativity refers to highly significant, innovative, or transformative creative achievements that have a substantial impact on society or culture. This type of creativity often involves groundbreaking discoveries or inventions that change our understanding of the world or advance human knowledge (Csikszentmihalyi, 1997, p. 152). Examples of Big C Creativity include scientific breakthroughs, artistic masterpieces, or influential literary works.

In the words of Csikszentmihalyi, "To achieve historical creativity many other conditions must be met. For instance, you must be lucky, for to excel in some domains you might need the right genes, you might have to be born in the right family, at the right historical moment." (Csikszentmihalyi, 1997, p. 152).

On the other hand, small c creativity refers to creative actions or ideas that occur in everyday life, work settings, or any context where individuals can exercise their creativity. These creative acts do not have a significant impact on society or culture as a whole but are still important for personal growth, problem-solving, and improving the quality of life. Examples of small c creativity include coming up with new recipes, solving everyday problems in innovative ways, or engaging in creative hobbies like painting or writing. (Csikszentmihalyi, 1997, p.7)

Csikszentmihalyi's theory emphasizes that both Big C and small c creativity involve similar psychological processes of preparation (incubation), insight (illumination), and evaluation (verification) (Csikszentmihalyi, 1997, p. 81-82). However, the context, scale, and impact of these creative acts differentiate Big C from small c creativity. By recognizing both types of creativity, Csikszentmihalyi's theory highlights that creative thinking can occur at all levels of society and can be nurtured in various contexts.

In summary, Mihaly Csikszentmihalyi's theory of creativity distinguishes between Big C Creativity (eminent creativity) and small c creativity (everyday creativity). Both types of creativity involve similar psychological processes but differ in their impact on society or cultural domains. Big C Creativity represents significant, innovative achievements that change society or culture, while small c creativity refers to creative acts in everyday life that contribute to personal growth and problem-solving.

Thus, the term creativity, when used in this paper, refers to Csikszentmihalyi's systemic view on creativity. Mainly Big C and small c, where he differentiates the types of creative output certain individuals provides. Big C is the type in which ideas are innovative and provides benefit while small c is limited in outreach. Furthermore, small c could be useful but due to circumstances such as network, timing and presentation isn't able to be Big C. For this paper, this perspective on creativity is the framework for the analysis of AI and creativity.

## Tokenization, a look inside AI

Tokenization in natural language processing (NLP) for AI applications involves breaking down text into smaller meaningful elements called tokens according to Vaswani et al. (2017, p.5; p.9). These tokens can be words, punctuation marks, or sub-word units like morphemes or characters. By tokenizing text, NLP algorithms can better understand and process natural language data for various applications such as machine translation, sentiment analysis, information retrieval.

This process is what makes AI process data and predict the next information queried to it. Based on the data given to the AI, it will replicate through the token noise filter into numbers and

signs. This limited context is how AI is able to “understand” language and information. However, the context is easily lost between translation causing errors and faults (Vaswani et al. 2017, p.9).

The initial boom of ChatGPT had this issue where the AI was not able to contextualize letters in the input given. Furthermore, it's knowledge nodes where token is stored intermingle causing black box situations, where even the researchers aren't fully knowledgeable on which nodes provides what in the models. A lack of understanding and a tendency to humanize chat models is something that this paper will cover further on. (Borji & Ai, 2023, p. 2-10)

## Howard Becker's perspective of “Art Worlds”

Howard Becker's "Art Worlds" is a sociological study that explores how art comes into being through social processes and interactions within various art worlds. Becker argues that art is not solely an expression of individual talent or creativity but rather a collaborative process shaped by cultural norms, social networks, institutions, and audiences (Becker, 2008, p.1-6).

He identifies six types of art worlds: the art market, commercial galleries, museums and art collections, art schools, the critical fraternity (comprising art critics and journalists), and informal artist networks. Each art world plays a specific role in producing, distributing, and evaluating art. Becker highlights the importance of informal interactions among artists and their relationships with other art world members as crucial for creating art that gains recognition within the larger society (Becker, 2008, p.172-191).

For the goal of this analysis, this structural and interconnectivity perspective is how the historical timeline is built and understood. Through each evolution of AI research, the picture of AI's progress can be understood. By understanding how AI has ramped up since it's initial inception, can we see the significance of today's AI. Much like history, each event can be linked to another chain. How these events have impacted AI's funding, focus and tenants towards growth can be gleamed from the steps taken up to today.

## Csikszentmihalyi's theory of creativity

Mihaly Csikszentmihalyi's theory of creativity focuses on the psychological aspects of creativity, describing it as a process that occurs within individuals but also involves their interactions with the world around them. His theory consists of two main stages: the first stage involves preparing for creativity through gathering knowledge and skills, while the second stage



involves engaging in creative action. Csikszentmihalyi calls these stages "incubation" and "illumination," respectively (Csikszentmihalyi, 1997, p. 81-82).

During incubation, individuals accumulate knowledge and skills in their chosen domain, as well as reflect on various problems or challenges they want to address creatively. This stage often involves unconscious processing, where the individual's mind continues working on the problem even when they are not actively thinking about it.

The second stage, illumination, is characterized by the sudden insight or "aha" moment when the individual arrives at a creative solution or idea. This insight can be triggered by various factors such as external events or encounters or through deliberate acts of focusing one's attention. Csikszentmihalyi emphasizes that illumination often feels like a gift from the unconscious mind (Csikszentmihalyi, 1997, p. 83).

After illumination comes the third stage of "verification," where individuals test and refine their creative idea or solution. They may receive feedback from others or engage in iterative processes of refinement until their work reaches its final form.

Csikszentmihalyi's theory also highlights the importance of the "domain," which refers to the specific field or area in which creative work takes place. A person's creativity within a domain depends on their knowledge, skills, and understanding of its rules and conventions. Moreover, Csikszentmihalyi emphasizes that creativity occurs within a cultural context that provides frameworks for evaluating creative products. (Csikszentmihalyi, 1997, p. 82)

In summary, Mihaly Csikszentmihalyi's theory of creativity describes it as a process consisting of incubation (accumulating knowledge and skills), illumination (having a sudden insight), and verification (testing and refining ideas) by experts. It also highlights the roles of domain expertise and cultural context in shaping creative work.

For the purpose of this paper, I have added two factors which I believe are vital to differentiate whether or not AI is creative. The first is the intention of the work made, this is an extension of the deep concentration and serendipity of illumination needed for Csikszentmihalyi's creativity. The second being understanding, due to the nature of tokenization and how AI of today has to translate between binary numbers into text. For an AI to interpret text, it needs to recode the letters used backwards into a string of numbers which it uses to interpret meaning based on patterns in its database. This is then reversing back from tokens back to letters in what the AI predicts the sender to want. The specifics of this will be covered in the analysis of this thesis.

## Eithan Y. Wilf's anthropic study

Eitan Wilf's anthropic study in "The Inspiration Machine" explores how humans can harness AI for creative tasks. Anthropic being the study of humans during their era, as Wilf is studying his workshop collaborators and participants. His research investigates the idea that human creativity can be enhanced through collaboration with AI systems. That these systems generate ideas based on patterns observed in human-created works. (Wilf, 2023, p.1-6)

Wilf explores how individuals uses a machine learning model, that learns from human-generated texts or other creative works. Through this, it is able to create new works that emulate these patterns (Wilf, 2023, p.1-6). The machine learning models in Wilf's study can be summarized as two main components: an "idea generator" and a "critic". The idea generator creates new works based on patterns observed in human-generated creative works, while the critic evaluates these generated works to determine whether they are creative, useful or not. This feedback loop allows the idea generator to learn and refine its creative output over time. The human being the critic while AI generates based on existing ideas and references. (Wilf, 2023, p. 35-58; p. 84-111)

Wilf's study highlights that anthropic principles can guide the design of AI systems for creative tasks. Anthropic principles refer to considerations that consider the human perspective or experience in designing intelligent systems. In this context, anthropic principles ensure that generated works by AI systems are not only creative but also resonate with human sensibilities. (Wilf, 2023, p.139-141)

In summary, Eitan Wilf's anthropic study in "The Inspiration Machine" proposes a machine learning model that collaborates with humans in creative tasks by generating new works based on patterns observed in human-created works. His model consists of an idea generator and a critic that work together in a feedback loop to refine creativity over time. This study emphasizes the importance of anthropic principles in designing AI systems for creative tasks to ensure their output resonates with human sensibilities.

In the context of this thesis, Wilf's study is the main comparison I will be using for presenting my findings. The cases Wilf explores tackles the topic of collaborating with AI and what type of restriction exist when moving around the creative space. Be it structural, cultural or social barriers. The Artificial Intelligence in Wilf's study is used in the context of allowing the users to freely produce their personal piece. By subverting the issue of finding collaborators which fits, synthesising a specific way, or compile certain references.

Despite the promise of creative freedom, Wilf also mentions the problems these users experience with AI systems. Such as the inflexibility and specific problems that arises from synthesis. Like how a piece doesn't come out fully fleshed as the users would like and intentions being subverted due to different understandings between user and system. As such, Wilf while understanding this issue, also says that despite this, the user is freer due to the nature of self-agency. Due to them understanding and creating this method of collaborative art through AI systems. (Wilf, 2023, p.59-70)

## Methods

The findings used in this paper comes from research and articles relating to gen AI from 2022 with the inception of ChatGPT. Some research papers dating back to the start of chat bot AIs. The process of gathering data has been combing through a multitude of sources from news articles, research papers and to YouTube video for examples. The date itself is second hand sources and the main case comes from Eitan Wilf's book the Inspiration Machine. From the book, the case chosen for this thesis is how the participant David uses computational systems to replicate musical styles.

For the narrowing of which research paper and articles picked for the findings. If one would search up terms AI, gen AI and AI creativity on google scholar, one can see upwards of 4.3 million to 8 million results. The process of combing down and picking data for this thesis has been going through important cases and events. Such as the original research papers to sources such as The Guardian, The Verge, Forbes that has covered events where AI and technology has caused societal impact, be it positive or negative ones.

Through these data a discourse analysis will be done, where I will present a sociological perspective that isn't covered in depth by journalist surround these events. Ask and present ethical issues around AI and creative work. Then present the case of David in comparison with the current situation in creative work. By comparing the actuality of AI in creative work with situations surrounding them. The paper aim, to question the underlying implications of AI in creative fields. Then draft potential outcomes of AI's rapid development.

The process of eliminating data which was too far from the centre of the topic, was determining how impactful the event was. Despite this there were and are events which are still happening right now that wasn't feasible to cover. The events and cases chosen therefor was a lot of back and forth until a cohesive picture was formed. Due to the nature of how fast AI has been

developing, a fully comprehensive narration of ongoing events could not be fully achieved. So, compromises had to be made and certain events such as Sora, OpenAI's latest video generation tool, could not be fully researched.

## Historical Timeline of AI

### Early Developments (1950s-1970s)

The inception of AI can be traced back to the Turing Test proposal by Alan Turing in 1950, which aimed to determine if a machine could think like a human. In the 1960s, the field of AI expanded into medical diagnostics through expert systems like MYCIN, which naming is derived from antibiotics as many have “-mycin” in their name, in the 1970s. Of which employed rules-based reasoning for medical diagnosis. These early developments laid the foundation for AI's potential impact on creativity but were still in their infancy, marking only the first steps in a long journey towards more sophisticated machine intelligence. (Anyoha, 2017; Press, 2016)

### Applications in Various Fields (1980s-2000s)

During this period, AI applications diversified into multiple fields such as medicine, robotics, finance, and more. In the 1980s, neural networks were developed, simulating human brain function and leading to significant advancements in pattern recognition and machine learning techniques like support vector machines (SVMs). By the 2000s, deep learning techniques were introduced, further enhancing AI capabilities in various fields. These advancements paved the way for AI's influence on creativity in fields like art, music, literature, and filmmaking. For example, deep learning algorithms have enabled machines to create realistic images, music compositions, and even write texts that are increasingly indistinguishable from human-generated content. (Anyoha, 2017; Press, 2016)

### Impact on Creative Industries (2010s-Present)

The impact of AI on creative industries has become more pronounced in recent years as its capabilities have grown exponentially. AI-generated art, music, literature, film, and photography have sparked debates about their originality, authenticity, and the very nature of creativity itself. Examples of such advancements include DeepDream (2015), an algorithm that creates surreal images by finding patterns in large datasets; Magenta (2016), Google's project generating music, images, and text using machine learning; and OpenAI's GPT-3 (2020), a language model

capable of generating human-like text. These developments have led to discussions about the implications of AI-generated works on copyright law, authorship, and ethical considerations related to employment in creative fields. As machines become more adept at generating creative content, it raises questions about the future of human creativity and the role of AI in shaping it. (Anyoha, 2017; Brandom, 2016; Press, 2016)

## Ongoing Advancements (Future)

As AI continues its rapid evolution, it will undoubtedly have a profound impact on creativity in fields. Future research may focus on developing more sophisticated algorithms that can generate emotionally resonant works of art, music, literature, and film, bridging the gap between machine-generated content and human-created artistry. As of February 15, OpenAI recently announced their latest text to video model, Sora. Further advancing the AI development into creative space (Brooks et al., 2024). AI has found applications in fields, from practical uses such as medicine and physics to creative pursuits like art, music, and video production. In medicine, AI-powered algorithms have revolutionized diagnostics, treatment planning, and drug discovery. In physics, AI helps analyse complex data sets and simulate experiments more efficiently than humans alone could manage. In marketing, AI-driven algorithms optimize advertising campaigns, personalize content for consumers, and predict trends. In art, music, and video production, AI-generated content has sparked debates about originality, fair use, copyright, innovation, and theft. (Anyoha, 2017; Press, 2016)

## What has really changed?

Is AI just faster Google searches?

While it's true that AI has made our lives more convenient in many ways such as faster internet searches. Where one could ask and receive more personalized answers to one's queries. Despite this, it remains debatable whether these advancements have fundamentally transformed our daily lives or merely improved existing processes. As we continue to explore the potential of AI, it's essential to consider its broader implications for society and strive for responsible development that benefits all members of our global community.

## Fear Mongering, Marketing Hype, and Fraud in AI Development

Like with any rapidly evolving technology, there are those who engage in fear mongering, marketing hype, or outright fraud in their pursuit of profit or attention. It's crucial for

consumers, investors, and individuals alike to approach AI developments with scepticism and critical thinking, ensuring that we avoid falling prey to exaggerated claims or unethical practices. Examples of this include the recent scandal of cryptocurrency blowout with Future Exchange, or commonly referred to as FTX. A large trader within this new technology space of digital currency. A common problem that seems to occur within this space is promise big innovation but lacking product and value backing their vision. Even spaces such as the car industry, large phone makers such as Google and Apple both promises big new features. Despite not launching their products with said features. (Naughton, 2024)

So, what are the promises of these AI models? Empowering and productivity. Common terms that are often bought up from interviews by the figure heads of the AI tech, such as Sam Altman and Satya Nadella, CEO of OpenAI and Microsoft respectively.

*“As we build this next generation of AI, we made a conscious design choice to put human agency both at a premium and at the center of the product. For the first time, we have the access to AI that is as empowering as it is powerful.”* Satya Nadella – The Future of Work: Reinventing Productivity with AI

In the same conference Satya mentions that AI will improve the workflow of workers, by allowing them access to knowledge from experts. Through this they are able to bargain for better work conditions. Belief he reinforced recently with Microsoft’s initiative to train 2 million people with AI skills in India. (Levy, 2023)

Despite the optimistic outlook, analysis from The International Monetary Fund (IMF) and predicts the impact of affected jobs from AI will be nearly 40%. So, who is really empowered by AI? Is it the workers or the employers? Figures on growth by tech companies is on the rise but despite this layoff in the workplace has increased. Companies such as International Business Machines Corporation (IBM) has stated that they will stop hiring for jobs that AI will replace. If specialized engineers are getting replaced, what will it say for other fields? (Reinmann, 2023; Zinkula, 2024)

## The Potential Effects of AI/Technological Disruption

As AI continues to advance, it brings both opportunities and challenges. Work displacement due to automation raises concerns about job security and economic inequality. Identity theft, art theft, copyright infringement, and uncredited work are other potential consequences of AI's rapid development. These issues highlight the need for ethical considerations in AI development and deployment. (Reinmann, 2023; Zinkula, 2024)

AI's database is built on samples from a multitude of sources. This is to help the model understand and learn different trades to be the perfect assistance. Due to this factor of AI needing to be trained, companies such as Google and OpenAI has gathered data from all corners of the internet to make up this AI knowledge banks. Because of this OpenAI have come under fire from Getty images due to infringement on their copyrighted stock images. Artist from a variety of styles have also had their work stolen and used to train what could potentially be their replacement if not direct competitor. This leads us to the next issue of AI, ownership. (David, 2023; Grynbaum & Mac, 2023; Robins-Early, 2024)

## Who Owns What in the Age of AI?

As AI continues to reshape industries and create new forms of content, questions about ownership become increasingly complex. From site owners and companies to distributors and creators, determining who holds rights to intellectual property in the age of AI raises important legal and ethical considerations that must be addressed as we navigate this new frontier. As of right now, AI work is not able to be copyrighted and one judge in USA has ruled so from one hearing. But lawsuit on this topic is still ongoing as the case of Artist vs Stable Diffusion, another image generating AI. As is the case of Getty vs OpenAI on their use of Getty stock images without licence to train AI. Newspapers such as New York Times is also currently suing OpenAI and Microsoft over usage of their copyrighted work in training. (David, 2023; Grynbaum & Mac, 2023; Robins-Early, 2024)

Proponents of AI believe that technology can greatly enhance human creativity by providing new tools, techniques, and platforms for artists and creators. They argue that AI can act as a collaborator rather than a competitor in the creative process. For example, tools like Midjourney or DALL-E 2 can generate images based on textual descriptions or prompts, enabling artists to explore new visual concepts or styles they may not have considered otherwise.

These proponents see AI as a means of amplifying human creativity rather than replacing it entirely. However, they also acknowledge that striking a balance between human input and AI-generated output will be essential in maintaining the authenticity and originality of creative works. On the other hand, the individuals whose works goes uncredited into these large databases are left slighted and unpaid. But what about works that seeks to bridge the gap between individual work and AI generation?

## Copyrights in Collaboration with AI?

The concept of copyrights in collaboration with AI raises complex legal issues. As AI systems become more sophisticated in generating original content, it becomes increasingly difficult to determine who holds the rights to this content. The creators who prompted the AI or the AI itself? Some argue that since AI systems learn from existing data and content, any original work generated by these systems should be considered as jointly owned by both the human programmer and the AI system. Others believe that AI should have no rights as it lacks consciousness and is merely a tool created by humans. The legal framework around AI-generated content continues to evolve as courts grapple with these novel questions. As mentioned earlier, rulings for copyright are only applicable for human work. Thus, in a collaborative work the human side could be patented while the other part is not. Therefore, if a script is made by a human, it could be trademarked, but the part done by the AI such as video generation and/or artwork accompanying the script is not.

AI's impact on creativity goes beyond just the generation of new content; it also influences how we perceive and engage with art itself. By challenging traditional notions of originality and authorship, AI-generated art can encourage us to rethink our understanding of creativity and artistic expression. For instance, the line would be even blurrier if the artist is signed by a label. When AI work is made of such an artist, would the label then fully own said work? How is the ownership shared if there's a divide between writer, singer and AI?

## AI and Creativity

Csikszentmihalyi proposes that creativity comes from a deep state of incubation and engagement to said activity (Csikszentmihalyi, 1997, p. 81-82). While the AI is able to do something akin to this due to the nature of training the model. As the AI is put to a long process of simulating and crossing out data that isn't relevant to the queries. However, the key differentiating factor between AIs of today's creativity and human is our understanding of the subject, our intentions. If asked about what project you have been working on, one is able to formulate answers that comes from us through our experience. The AI however takes into account multitude of previous patterns on the same subject to tune out an answer. The key difference between these two is what the project meant to us who experienced it. By going through and putting time into the project and interacting with different outside factors, we gained a unique formulation around it. The AI however goes through multitude of self-reflection in solitude by comparing data with different data. We are able to go out and discuss with other



people and bounce back through different understandings rather than repeated simulations. Furthermore, the AI struggle with contextual understanding of a subject, which is why whenever a benchmark is mentioned, this factor is always there. This is due to the nature of current technology so while AI of the future might be able to pass this factor, as of now it still struggles to keep up with context to a degree. Furthermore, this context limit is also something the AI has to take into account when responding back to a query.

The other factor which separates AI from human creativity is the aspect of intention, as of right now AI needs to be prompted to initiate a process of looking things up from the database then returning a response. We as people put intention into our creative work and often is driven by it. This is a driving force to make people go out of their way and put effort into their passion project even if the intended purpose doesn't work out. With the limitation of technology AI by itself isn't able to pass through this condition and seek out its own purpose and due to limitation on our understanding of AI, we aren't able to tell if AI gain satisfaction from its training into all these subjects. Which leads us to an old preposition that has been around in the AI space since the beginning, The Eliza effect.

**GPT-4 Turbo and GPT-4**

GPT-4 is a large multimodal model (accepting text or image inputs and outputting text) that can solve difficult problems with greater accuracy than any of our previous models, thanks to its broader general knowledge and advanced reasoning capabilities. GPT-4 is available in the OpenAI API to [paying customers](#). Like `gpt-3.5-turbo`, GPT-4 is optimized for chat but works well for traditional completions tasks using the [Chat Completions API](#). Learn how to use GPT-4 in our [text generation guide](#).

MODEL	DESCRIPTION	CONTEXT WINDOW	TRAINING DATA
<code>gpt-4-turbo</code>	<b>New</b> <b>GPT-4 Turbo with Vision</b> The latest GPT-4 Turbo model with vision capabilities. Vision requests can now use JSON mode and function calling. Currently points to <code>gpt-4-turbo-2024-04-09</code> .	128,000 tokens	Up to Dec 2023
<code>gpt-4-turbo-2024-04-09</code>	GPT-4 Turbo with Vision model. Vision requests can now use JSON mode and function calling. <code>gpt-4-turbo</code> currently points to this version.	128,000 tokens	Up to Dec 2023

Figure 1. Screenshot taken from OpenAI's documentation.

(<https://platform.openai.com/docs/models/gpt-4-turbo-and-gpt-4>)

## The Eliza Effect: Projecting Humanity into Computer Programs

The Eliza effect refers to the human tendency to project our thoughts, emotions, and intentions into computer programs, attributing human-like qualities to them even when they lack true understanding or consciousness. This phenomenon was first observed in 1966 by Joseph Weizenbaum, a computer scientist at MIT, when he created Eliza, a simple chatbot designed to simulate a psychotherapist using pattern matching techniques. Despite its simplicity and lack of understanding, users often attributed human qualities to Eliza and engaged in meaningful conversations as if they were interacting with a real therapist. This observation led Weizenbaum to coin the term "Eliza effect," highlighting our innate desire for connection and communication, as well as our tendency to anthropomorphize inanimate objects. Surprisingly, the trend for music to be synthesized through artificial vocals or beats has been a thing way before the current trend going around. (Tarnoff, 2023; Wilf, 2023, p. 112-113)

## The Art in Artificial

Eitan Wilf's "The Inspiration Machine" explores how AI can collaborate with humans in creative tasks by generating new works based on patterns observed in human-created works. Wilf's research explores the development of machine learning models that learn from existing human-generated texts or other creative works. His study emphasizes anthropic principles in designing AI systems for creative tasks. Observing how his workshop colleagues and facilitators collaborate with AI systems.

The model in "The Inspiration Machine" consists of two primary components - an "idea generator" and a "critic." The idea generator creates new works by analysing patterns in human-generated creative works and synthesizing them into novel compositions. This part being the system and AI.

The human part "critic", on the other hand, evaluates these generated works based on their creativity and originality. By providing feedback to the idea generator, the critic enables it to refine its output over time and improve its ability to generate creative works that are more likely to be accepted by humans as creative expressions. This iterative process allows the model to learn from its mistakes and gradually enhance its performance in generating creative works that resonate with human sensibilities.

While AI systems like Wilf's model can assist in generating creative works, they do not completely replace human creativity. Instead, these systems can serve as tools that enhance

human creativity by providing new perspectives or ideas. Moreover, human intervention is still required to fine-tune and finalize AI-generated works. (Wilf, 2023, p. 84-138)

Like the case of David in Eithan Wilf's book, the journey of an individual named David which researched a way to make an artificial partner in his music making (Wilf, 2023, p. 35-138).

Being exhausted with trying to work with other people, David sought a different approach to articulate his creative work. What David encounters through his effort to program this musical partner which could replicate other's playstyle is something that is reflected in today's AI.

David encounters different roadblocks in trying to make the music AI realize his vision of the music pieces (Wilf, 2023, p. 59-83).

Today's AI despite being more advance still suffers from the issues of inflexibility. In spite of the ability to make faster generation that are sufficiently good on a surface level. The work made must be double checked and go through after processing to be worked into a finalized product. Be it artificial video generation, image generation or music generation. The AI has a built-in inflexibility in its generation due to the trained patterns and dataset worked through. If you seek something that is very specific or want to make certain changes, the AI could return a whole different result than the initial generation. The technological leap has made initial generation of work into a good initial draft. However, to reach further than that still requires human intervention and examination. (Goodfellow et al., 2014; Robers, 2019; Rombach et al., 2021; Vaswani et al., 2017)

As such, AI like many other technologies before has a new challenge that comes with its adoption into society. So, while the influx of serviceable good work will increase with due to the use of AI. I believe the notion that human work will still find place in society and would be higher valued over sufficient works.

My findings shows that human art will still hold a key role in the future. The fact we like to seek out something more lasting and connecting than just a one hit wonder. Key moments such as the writer's strike success in Hollywood and ongoing discourse around AI and art builds upon this notion. Furthermore, as AI still needs data to build a foundation for what it generates. The need for human data and filtering is still key to keep AI's creation in check. For if the data tuned in is bad, the output would be similar. If AI would start encroaching on itself, maybe we would be left with more mismatched art pieces with faulty anatomy. Therefore, AI as it stands right now is reminding us of its position as a tool in this state of development. So here I would like to turn the attention to a genre of music that originated in Japan around 2007, Vocaloid, a genre of music based on synthesized music of virtual singers. The mascot and often seen representation

of this genre, is one named Hatsune Miku, the blue haired virtual singer featured for Japan Olympics (Crypton Future Media).

Here comes a similar premise that AI is trying to sell us. Like autotuning and mixing software, Vocaloid is a synthesis software that allows users to mix vocals and beats to make their own songs without ever needing to sing themselves. The fan bases that start in Japan grew into popularity from 2012 when the holders of Hatsune Miku, supported open creative activities with the vocals. From there a multitude of now famous songwriters gained their popularity and showcased their talent in songwriting and directing (HATSUNE MIKU v3 | Piapro.net (2014)). Among the famous ones are DECO\*27 which produced collaborations with large companies such as Nintendo.

So how is this different from AI? The key difference here is that the individual is the one directing and using the AI as a tool. The songs are written and produced by the individual behind the persona DECO\*27 (DECO\*27 - YouTube). While AI might not be inherently creative in itself, I believe people are able to use the tools of AI creatively. The artist that managed to develop themselves during the era where tools of Vocaloid was less advanced than what we have today, will make the importance of the identity and presentation behind the persona more telling than ever. The ability to make a connection through their creativity work by making the readers, listeners and viewers feel relatable to the work and the artist.

This is under the basis that the model is trained up with consenting people's data. Due to the exploitation of available data online and the fact that copyrighted material is being used without credit is the biggest issue AI is facing on the ethical debate. The fate of how AI is going to be regulated is still ongoing at the time of writing this thesis. The multiple court cases and ongoing debate by the European Union is factors that will determine how we as a society goes forward with AI. However, with the success of the writer's strike, I'm hopeful that development is going a positive direction.

## AI and I

AI like many other technologies as it stands, is a tool and depending on how it is used will determine how society goes forward. A technology made in the pursuit of furthering society's ability to learn. However, due to its nature and process, it has led AI to face a multitude of challenges both on the aspect of its issue to be factually right. Its debated ethical standpoint in creativity and infringement on individual agency and autonomy.

Like many technologies before it, AI is predicted to cause disruption in a wide range of job markets. Despite this, usage of AI has improved society's development, but the term AI has now gotten too big for its own good. Often used as a blanket term for anything related to computing and algorithms. Printed and marketed on anything new trying to garner attention much like the dot.com bubble. What technologies will be left after the dust settled like the internet era, will be a leading force in human development. (Naughton, 2024)

The use of AI in fields such as gene research, medicine, disaster and weather prediction has already made impacts. Whether or not the creative fields are going through equally as large changes is a matter of time. As of today, the writer's strike that happened in Hollywood was due to encroachment of AI into scriptwriting and unlicensed usage of the writer's works to train models. By trying to push AI hype into the scriptwriting process, the autonomy of the writers is threatened, and their creative vision is encroached upon. (Anguiano, 2023)

Through my research and investigation, human intention and the connection felt through it, is a vital cornerstone to creativity. Despite the endless generation of new ideas from AI, the amount that goes beyond a one hit wonder still seems lacking. While more work is made, the amount of lasting work has yet to be generated. As it stands right now, AI by itself is unable to be creative without human intervention. Whether or not this stands to change in the coming decade or tech companies fuels the endless hype trend, is something still up for debate. Despite that, new features and AI tool are always in the work trying to crack the creative field. Maybe the research pointing towards a self-sufficient creative AI exist out there.

The avenue for AI research has been a vast rabbit hole to dive down, as the subject is constantly on the move with constant announcement of those features. During the writing of this paper, OpenAI previewed their new AI tool Sora, a video generation model. Furthermore, the current debate on music generators such as Udio is something this paper won't have time to fully cover. Other large issues within the space such as electricity usage of AI model training and the dilemma of is spending vast amount of money on training AI models to do human creative needed? The time needed and resources spent training the AI model would factor into multiple individuals getting scholarships and specialization. Other interesting research is what happens when AI generation loops into itself. As the amount of AI generated works gets published in the millions, how will their database and output look like when absorbing into each other due to lack of human works?

Lastly, I would like to end with encouragement towards following the court cases ongoing with OpenAI, Stable Diffusion (David, 2023; Grynbaum & Mac, 2023; Robins-Early, 2024). And

none lest, all these AI models need a ground foundation to work off. If the foundation is made on bad data, then the models will reflect such data. Human work and human benchmarks are going to be a vital part of creative work nonetheless even with the oncoming AI changes.

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