

Generative AI



How might Generative AI be used in the field of digital content creation within Greenhouse?



University of Applied Sciences - Creative Technology

HOW MIGHT GENERATIVE AI BE USED IN THE FIELD OF DIGITAL CONTENT CREATION WITHIN GREENHOUSE?

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INTRODUCTION

Although some people might be frightened about AI, Generative AI is a subfield of Artificial Intelligence that has been gaining popularity over the years.

This technology does not only serves the purpose of entertainment but allows people to create highly personalized content.

But what can Generative AI provide to humanity in the future? What is the benefit of this type of technology at the workplace? Is Generative AI a threat to creative professionals' jobs?

Aiming to answer the questions above and provide insights about ***how generative ai might be used in the field of digital content creation within greenhouse***, this research is structured by sub-questions that aim to answer the main question.

The reader will be guided through the Development Oriented Triangulation Framework method that is based on techniques and strategies such as testing, cultural probes, interview, brainstorming, and literature study.

RESEARCH QUESTIONS & RESEARCH APPROACH

Main research question

How might generative AI be used in the field of digital content creation within Greenhouse?

Sub questions

1. What is Generative AI and what is the main purpose of making use of it?
2. How is generative AI art and sounds perceived by people?
3. How does art and sound can impact the human's brain?
4. How can Generative AI stimulate creativity?
5. What is the relevance of generative AI for the future of designing?
6. What is needed to improve the creative process at the workplace?
7. What are the benefits of investing in Generative AI at the workplace?

The questions below were answered and structured based on the Development Oriented Triangulation Framework.

1. What is Generative AI and what is the main purpose of making use of it?			
Strategy	Technique	Approach	Goal
Library	Literature Study	Research about the topic	Gain knowledge about Generative AI

According to the definition made by the website Fast company, Generative AI, in simple words, is the intelligence that can generate new content. This technology can be defined as a subfield of AI responsible for the creation of new data or content. This subfield of AI is composed of different techniques such as neural networks and evolutionary algorithms. (Fast company, 2022).

The use of Generative AI involves the technology of learning from a dataset and generating something completely new. Currently, this technology is largely used to generate text, images, music, and art.

2. How is generative AI art and sound perceived by people?			
Strategy	Technique	Approach	Goal
Library	Literature Study	Gather information about how people perceive generative AI art	Analise the public opinion about generative AI art
Field	Cultural Probes	Approach to qualitative research to analyze peoples opinion about generative AI art + sound	Check whether or not generative AI together with sound could trigger people's emotions

Results

Literature Study

As already mentioned, generative AI consists of enabling computers to create new content based on the previous content generated. For that reason, many people do not consider it art, reinforcing the idea that this type of content should be mainly used for fun and gaming purposes.

An article published by the electronic engineer Ritesh Kanjee on his blog highlights that many artists feel anxious about losing their job to AI. Kanjee believes that the market labor is facing a shortage of creative people and Generative AI could make it easier for businesses to solve this issue since this technology can create original content. (Kanjee, 2022)

According to computer scientist Yann LeCun during an interview with Analytics India Magazine, the current form of generative AI is just for entertainment. However, he mentions that “for generative AI to be useful, it has to make sense of real-world problems and assist people in their daily lives”. (Pandey, 2022)

However, unlike Kanjee and LeCun, the website Wired describes generated images as “very much like visiting a personal museum, but in this case, the walls are full of art we ask for”. (Kelly, 2022). The website brings up the idea that despite controversial thoughts involving Generative Art content, users around the world have been showing that it is possible to deliver a “human-like” experience through generative AI.

Cultural Probes

Thinking about gathering information on how people perceive generative AI, the test named “People’s reaction to generated content” was created.

The first part of the test aimed to gather information on whether or not people could see the difference between art generated by artificial intelligence and art made by humans. Besides that, the test would also reveal how similar the two types of content are to each other from a human perspective.

As a result of the first part of the test, many people could not see the difference between the contents, except for the paintings that belong to renowned artists, showing that, in a few cases, generative art can be very close to human art.

The second part of the test was based on showing to people generative AI images with and without sound, both artificial contents, and asking them what they think of that.

As a result of the second part of the test, most people appreciated the images and the sounds, reporting that the sound combined with the images intensified their emotions.

It was possible to notice that people are very enthusiastic about generative art. When the art generated by AI and the ones made by humans were displayed to the users, the level of acceptance of both of them was fairly similar.

3. How does art and sound can impact the human's brain?			
Strategy	Technique	Approach	Goal
Library	Literature Study	Research about how the humans brain handles art and sound	Obtain information about whether or not art and sound impact the humans brain

Results

Literature Study

It is noticeable that experiencing or making art can lead individuals to develop their creativity and reasoning, as well as improve their potential for thinking and exposing themselves to social and everyday situations.

Every year new researches bring back the correlation between a healthy brain and art. According to an article published by the website The Healing Power of Art, art enhances brain function and well-being. The shreds of evidence are that experiencing art can trigger brain wave patterns and emotions, which can impact the nervous system and raise the serotonin levels in the human body. (Phillips, 2022).

Besides that, an article published by the University of Wisconsin Health website explained that experiencing art can benefit us with “unconscious healing” bringing important implications for our well-being. According to the author of the article, psychologist Shilagh Mirgain, “*Experiencing awe can give us a sense of hope and provide a feeling of fulfillment.*” (Mirgain, as cited in Phillips, 2022).

In addition to providing a feeling of fulfillment, experiencing art can significantly reduce the levels of stress and contribute to depression treatments since art can also be faced as a creative activity.

According to a publication by the American Public Health Association “*Engagement with creative activities has the potential to contribute toward reducing stress and depression and*

can serve as a vehicle for alleviating the burden of chronic disease”. (Heather L. StuckeyDEd, 2011).

Equally important to the human state of mind is sound. It is scientifically proven that music has a powerful effect on the brain. Music and different types of sounds (such as nature sounds) can stimulate concentration, excitement, and relaxation, help to sleep, and influence other human behaviors. (Johns Hopkins Medicine, 2022).

In 2018, the Brazilian website Sabra published an article about how music gives form to a society: *“Music is present in all areas of our society and can stimulate the emergence of new ideas, unite and separate people, create new social groups, and promote both the rise and fall of leaders”*. (Blog Sabra, 2018)

Although music influences people's behaviors, it triggers emotions in individuals. Nowadays, it is common to see how musical impulses can induce a person to stay longer in an establishment, or even consume a greater amount of products in a store because they are influenced by the background music. (Blog Sabra, 2018).

Music and sound have the power of making people feel more comfortable with the way they dress, look after themselves, talk, and also how they expose and deal with feelings. (Blog Sabra, 2018)

4. How can Generative AI stimulate creativity?			
Strategy	Technique	Approach	Goal
Library	Literature Study	analyze different articles about creativity and generative AI content	Check whether or not generative AI can be used to stimulate creativity at the workplace
Field	Cultural Probes	Test about creativity using generative AI art	Check if creativity is improved after gaining inspiration from generative AI content

Results

Literature Study

According to the website AdExchanger, artificial intelligence can not replace human creativity, however, it can enhance it. The article made by Graham Wilkinson highlights the fact that the human brain absorbs information in a unique and complex way where the information gained with time is applied to different situations: *“It’s this balanced learning that makes us creative, allowing us to innovate by abstractly applying knowledge gained in one situation to completely different contexts”*. (Wilkinson, 2022)

Considering Wilkinson’s ideas about artificial intelligence and creativity, it is possible to say that there is space for generative AI to be used to stimulate creativity. This technology can be used in the initial ideation of a product or campaign, helping with iterations, conceptualization, or inspiration.

Creativity is something that is built by experimenting, exploring, or even questioning. For that reason, it is possible to say that generative AI can help humans to create more effectively and efficiently, adding value to the human creative process. That happens because even though generative AI can provide you with an image or artwork, the human brain will take what it sees and expands upon it, triggering imaginative thinking. (Tarrant, n.d.)

Cultural Probes

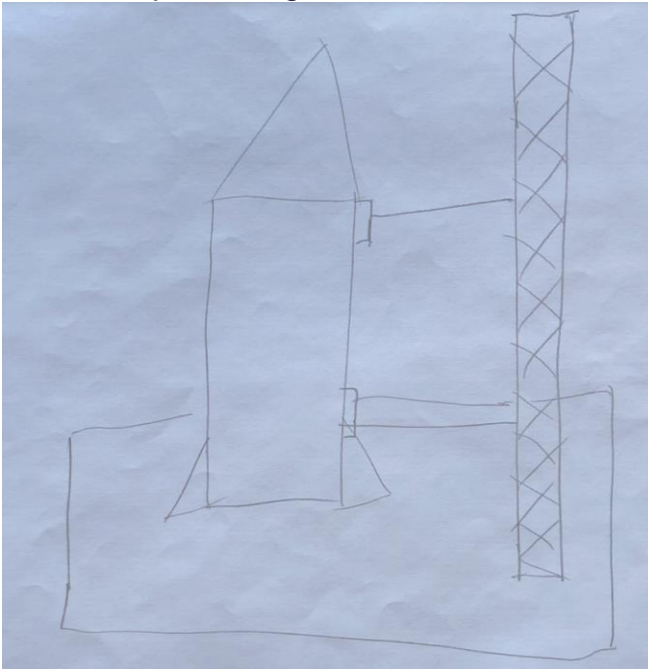
Aiming to gather information about how creativity works with the help of generative AI, a creativity test was performed. (See Appendix A)

The test was performed in two steps. The first step was to give people a single word (rocket) and ask them to draw on a white paper anything related to the given word. After that, in step 2, they would see images generated by artificial intelligence related to the same word they were drawing before.

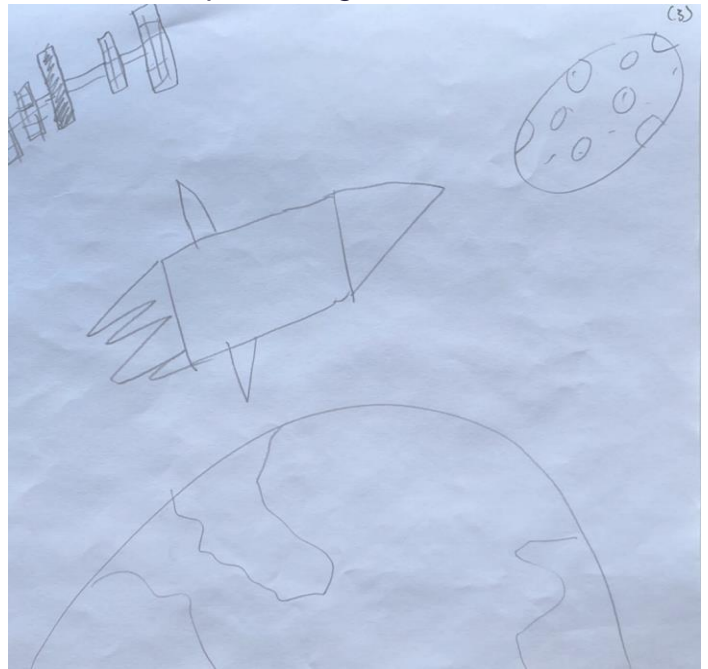
The results were very impressive. Most of the drawings were significantly simpler in the first attempt than in the second. The second drawing attempt had more colors, more objects, and more details than the first one.

The following drawings were made by people during the creativity test:

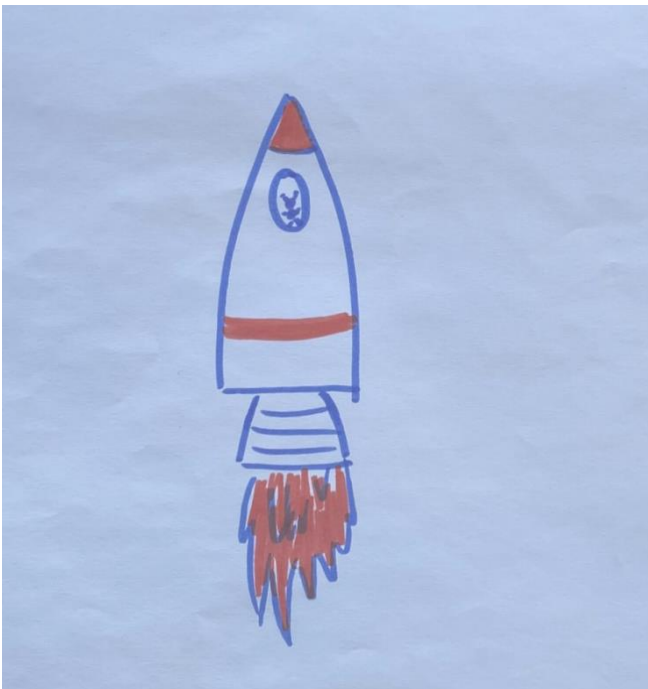
First attempt drawing



Second attempt drawing



First attempt drawing



Second attempt drawing



The results lead us to think that in the second drawing the perspective of the rocket (that was the prompt given) changed.

Therefore, it is relevant to state that generative AI art proved effective in motivating users to sketch the rocket from a fresh angle and with far more detail than in their first try.

5. What is the relevance of generative AI for the future of designing?

Strategy	Technique	Approach	Goal
Library	Literature Study	Understand how creative professionals face generative AI	Check whether or not creative professionals feel comfortable using generative AI

Although the previous question the topic of generative AI and creativity was approached, it is important to gain insights into the real meaning of this emerging technology for creative professionals. To approach this question, an example of a company that has been successfully using generative AI is given below:

The company Shutterstock based in New York helps creative professionals from all backgrounds to produce content and innovative tools. The company published an article in 2022, that brings up again the idea that generative AI will never replace human creativity, but instead, it will be used hand-in-hand with it: “There are many ways this technology will change the art world but, ultimately, it will never replace human creativity. Instead, generative AI will complement it”. (Johnston, 2022).

The company decided to send out a survey to customers and contributors that were creative professionals asking what they think of generative AI.

The article reveals that 53% of the contributors of the Shutterstock company are using generative AI for fun, while 30% already expect to sell AI-generated art in the future. These numbers demonstrate that creative professionals do not think that the technology is a threat to their jobs, but instead, the employees demonstrate confidence in using it.

It is relevant to mention that over history, creative thinkers have been adapting themselves and exploring new tools available to improve their work.

For that reason, Shutterstock believes that the combination of artificial intelligence and human imagination will “*produce richer experiences and stronger creative projects*” (Johnston, 2022), implicating that generative AI will become powerful tool for the future of designing.

6. What is needed to improve a creative process at the workplace?

Strategy	Technique	Approach	Goal
Library	Literature Study	Make use of articles, websites, researches about the subject	Gather information about the topic and reference it to illustrate the relevant information that aims to answer the question
Field	Interview	Interview employees from the Creative Department of Greenhouse	Obtain information about their creative process
Workshop	Brainstorm	Discuss the main findings as a group	Gain insights on how to improve the creative process at the workplace

Results

Literature Study

Creativity is the main working tool of many professionals, especially those who always need to create something new. According to the website Calendar, “*creativity is becoming an increasingly valuable asset in the workplace for both individuals and teams*”. (Ritchie, 2022). Creativity at the workplace goes “hand-in-hand” with innovation, leading employees to be more productive, providing adaptability skills, and consequently boosting the overall growth of the company. (Ritchie, 2022).

The internet is something that has greatly facilitated individuals to get inspired and stimulated their creativity. However, it is necessary to consider that the creative process is not only based on the internet content, “*being defined as a succession of thoughts and actions leading to original and appropriate productions*”, as mentioned in the article What Are the Stages of the Creative Process? (Lubart, 2001; Lubart et al., 2015 as cited in (Marion , Zenasni, & Todd, 2018)).

Although some professionals depend on their creativity to develop a new concept or product, providing a stimulating atmosphere to all employees (independent of their job positions) can be beneficial to the company.

According to the website WeWork, the work environment should aim to sparkle creative thinking in the employees: *“Many people forget how to let their minds run wild and come up with innovative ideas. Give them a little help by encouraging the right mindset to take hold.”* (Cohen, 2019).

However, it is valid to mention that encouraging and triggering employees to develop creative thinking is something new that many companies are still trying to implement.

For that reason, the website WeWork describes a few ways to encourage creativity in the workplace.

The article on the website highlights the value of a brainstorming space to discuss topics as a team but also mentions the importance of encouraging individuality among the employees. Besides that, providing a stimulating atmosphere with sound, color, temperature, and even lighting are factors that can boost innovation. (Ritchie, 2022).

Having considered the importance of an environment that aims to stimulate creativity, the Penketh Group highlight in their blog how important a space dedicated to developing the creative process is:

“A dedicated creative space allows for cross-functional / project team collaboration without interruption and will house all the necessary tools and technology to support the creative process. An ideal project team space will support the sharing of ideas by making thinking visible during the creative process”. (Penketh Group Insights Team, 2018)

Interview

During the interview, a few employees from the creative department of Greenhouse gave their inputs about inspiration, ideation, and some of the steps they take in their creative process. As a result, it was noticeable that the employees really enjoy working together and they highlighted the importance of having the teammate's opinion as a reference.

Besides that, some of the interview participants said that music, their mood at the moment, and the colors of the creative department are aspects that help them in their creative process.

Brainstorm

During the brainstorming sessions as a group, it was possible to evaluate many aspects of the data we gathered over the weeks. Based on that, it was clear that a space dedicated to the generation of ideas, insights, and thoughts would be necessary to stimulate creativity in the workplace.

Next to the space for the room to be built, it became evident that sound, lighting, and colors are also fundamental to triggering and relaxing the human brain.

For that reason, the discussions lead the group to think that a room where generative AI could be explored together with the aspects mentioned previously would be an interesting space at the workplace.

7. What are the benefits of investing in Generative AI at the workplace?			
Strategy	Technique	Approach	Goal
Library	Literature Study	Find articles about companies that have implemented Generative AI	Understand how generative Ai can be beneficial at the workplace

Literature Study

Generative AI can boost the way creative professionals work, improving significantly their creative process. However, besides enhancing creativity for marketing and advertising purposes, this technology can also be used to increase the automation of tasks such as data processing, analysis, and content creation. (IntellectData, 2022).

The optimization of tasks is important because employees will have more time to concentrate and put effort into other complex activities since the generative AI could be used to lighten their workload.

Therefore, generative AI will not eliminate jobs, rather, it will lead to the creation of new ones. Employing generative AI as a tool to develop new ideas and entertainment will be beneficial to the workforce of any sort of organization, besides enhancing the companies profit.

DISCUSSION

The outcome of this research provided valuable insight into Generative AI. Through different perspectives and strategies was possible to identify patterns that helped the group to make important decisions on how to approach the topic given by the Greenhouse Group.

The main limitation of this research is the timing of the study and the data collection. The time frame given to us was mainly used to gather inspirational data about how people perceive and deal with this new technology.

For that reason, it is important to consider the data collected through the tests should be interpreted as cultural probes, a technique used to gain insights and inspire ideas in a design process.

Although the data collected over the weeks of study was not based on large samples, it is noticeable the benefits of using generative AI in different environments.

CONCLUSION

Generative AI is a field within Artificial Intelligence responsible for creating new and original content. This technology can be incredibly powerful highly compelling and aesthetically pleasing to the human eyes.

It is evident the benefit that art and sound can provide to the human brain and the way that can influence the creative process of many professionals. Companies around the world have been investing in Generative AI at the workplace due to the improvements that it can have on the creative process.

However, it is noticeable the importance of having a dedicated space where this technology can be placed and used properly. A dedicated space could be used to enhance creativity for marketing and advertising purposes, brainstorming, stress relief or entertainment.

As a conclusion and answer to the main question in this document: *How might Generative AI be used in the field of digital content creation within Greenhouse?* it is relevant to consider that the Greenhouse Group values innovation and creativity.

Therefore, it is necessary to highlight the importance of a dedicated space for generative AI to be placed in the company.

AI-Generated content will expand the possibility for creative professionals to apply audiovisual production, especially in the entertainment market.

It is recognizable that Generative AI has the potential to revolutionize the way employees and users interact with technology, creating highly personalized content that could boost the way creative professionals think and work at Greenhouse.

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APPENDIX A – TEST PLAN CREATIVITY TEST

INTRODUCTION

The goal of this test was to check if an individual could be inspired or boost their creativity with the use of images created by an Artificial Intelligence

The test was composed of a piece of paper, drawing utensils and a screen on which images made by an Artificial Intelligence were displayed.

Number of participants

16

TEST RISKS / ISSUES

Test Plan Risk	Mitigation Strategy
Already existing knowledge about the subject might allow the person to immediately think of complex images.	Choose a subject that's broad, so that many people know about it but it can still vary as to what kind of drawing the person can come up with.

TESTING SCOPE

Test item	Description	Date	Responsibility
Empty sheet of paper	This paper is used for the tested individual to draw on.	06/12/2022	Dion Coen Rik Noah Giovanna Kaloyan

ITEMS OUTSIDE OF SCOPE

1. Observe whether the person immediately draws both before and after the images.

TEST APPROACH

Test Approach	Scope	Proposed Date
Place a piece of paper on the table with the person in front of them. Explain what they will be doing and the time. Immediately	In a real world scenario the users of the room would be able to give the room a prompt, which the room will provide images,	06/12/2022

after providing the prompt the timer will start. Upon the time running out a set of images will be shown, after which the test will be repeated to look for any differences.	sounds and/or videos to inspire the users	
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TEST DELIVERABLES

Deliverable	Responsibility
Papers with drawings of the people tested.	Rik

ENVIRONMENT / STAFFING / TRAINING NEEDS

The test will require a room with a piece of paper as well as drawing utensils. In this room will be a screen with images on it as well as music that plays from another device.

SIGN-OFF

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APPENDIX B – TEST PLAN MOOD SLIDER

INTRODUCTION

The goal of this test was to check whether or not emotions can vary in a specific environment with predefined sounds and images generated by artificial intelligence.

The test was composed of a Mood Slider where stuck on a table positioned in front of the person. While the video with images and sounds generated by AI was being played, the person tested could use the slider to express their emotions if they wanted to.



Number of participants

11

TEST RISKS / ISSUES

Test Plan Risk	Mitigation Strategy
Person getting distracted by other people passing by, since the testing room had transparent walls	Close the curtains of the testing room and turn off the lights, so the screen was the main focus.

TESTING SCOPE

Test item	Description	Date	Person Responsible
Mood Slider	Paper with mood scale (very sad, sad, neutral, happy, very happy)	07/12/2022	Giovanna Coen

ITEMS OUTSIDE OF SCOPE

1. Recognize patterns in how people use the slider
2. Test whether or not they use the slider in a specific order

TEST APPROACH

Test Approach	Scope	Proposed Date
Position the Mood Slider on a table with a seat for the person tested to sit and easily use the slider while they watch the video	In a real world scenario, the users would be able to give the room a prompt related to what they would like to see, listen and feel	07/12/2022

TEST DELIVERABLES

Deliverable	Person Responsible
Recordings of all people tested	Coen

ENVIRONMENT / STAFFING

The test environment was a dark room, with no outside distractions and with the curtains closed. The room was composed by a table where the mood slider was placed on, a seat and a big screen where the video was shown.

The was performed by two students without required training needs.

SIGN-OFF

Giovanna Figueiredo

Coen Donk