Exploring Mid-journey's Outputs and Analysing its Result for a New Design Approach in Architecture

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CHAPTER VII

In the era of Metaverse, as a concept of a persistent, online, 3D universe that mixes various virtual spaces, the Mid-journey is an interactive bot that plays a significant role in Architecture. It is a machine tool that uses artificial intelligence to produce unique images based on the text input given by the user. It uses a machine learning algorithm trained on a massive amount of image data to create images. It converts what architects want to see in their minds through visuals. 'Unfortunately, the Metaverse concept is not well known to most architects, and the Mid-journey's Outputs in the architecture are also unknown. Therefore, there is a need to explore such concept outputs in architectural design, which is the main aim of the study. In other words, the study designs examine the possibilities of Artificial intelligence (AI) technologies and combine them with Architecture design to identify a new design approach. Consequently, the critical aspects of the study methodology used Quantitative study to achieve the study aim in addition to reviewing and analysing some designs that were generated using the Mid-journey concept and created by different Architects and explorers, examining how they work and how they could be used in the architecture field. The significant results of the study will bring attention to a new design approach contribution to the architectural areas, which will expand the architects' imaginative powers.

Introduction

Exploring Mid-journey's Outputs and analysing its result for a new design approach in Architecture

With the acceleration of time, the world around us is developing rapidly. Most industries have switched to the digital world using many technologies that are about to replace human work and skills. Defining "Artificial Intelligence" is one of the technologies that revolutionized the world. In other words, it is a technology that simulates human intelligence to accomplish specific jobs and can repeatedly enhance itself based on the information it collects. This term has come to include applications that perform complex tasks that require human input. The emergence of AI-based resolutions and tools means that more corporations can benefit from AI at a minor cost and in a shorter period. Off-the-shelf AI depends on using solutions, tools, and software with built-in AI competencies or automated algorithmic decision-making. Ready-to-use AI can perform anything from self-repairing databanks, which self-heal using machine learning, to pre-built replicas that can be performed to a diversity of databanks or datasets to resolve challenges such as image recognition and text analysis. It could be defined that Mid Journey is one of the AI image generator tools that can convert text to images using a machine learning algorithm. This tool has benefited many fields, such as art design and Architecture.

This research investigates how the Mid-journey technology can improve Architecture Design outcomes by exploring its outputs in this field to identify a new design approach. A literature review will be done on this topic, followed by a qualitative study through questionnaires and interviews with Architecture students and specialists in the program. The result of this study will show the benefit of the Mid-journey tool in Architecture design and how it can be used effectively. As a result, this research is divided into main four sections. The first section introduces the Mid-journey tool and reviews some studies that explore and analyze the same technology. Then investigates how this tool can enhance the Architecture design projects. The second presents the analysis methodology based on a Quantitative study. The third section considers the results of the study and, finally, a discussion of the main findings of this research.

This research tries to resolve the problem of the low level of awareness of the Mid-journey and the application of AI in designing. It is recognized from the primary survey that designers find themselves lost in the Architecture and interior designing environment and need clear guidelines for their professional works due to the rapid technology, high amount and value of information and data, and the significant changes that cannot capture or distinguish. Therefore, scientists and specialists in design must think about a method that helps designers generate new concepts and ideas. This study's problem is identifying a new design approach in Architecture using technology by investigating Mid-journey technology to improve Architecture Design outcomes. Accordingly, the significance of this study is due to the substantial rapid development in the design process and technology that shows the need to benefit from the Mid-journey tool in Architecture design and explore how it can be used effectively. Consequently, the Hypothesis of the study is that the Mid-Journey as a design tool can improve the design process and enrich the design experiences that will benefit many fields such as art design and Architecture. Therefore, this study aims to explore the use of AI Mid-journey tools in Architecture and Interior Design and discover its impact on such fields. Accordingly, by answering some questions the study will achieve its aim. The study questions are:

- How can mid-journey technology improve Architecture Design outcomes?
- What are the benefits of Mid-journey tools in Architecture and Interior Design?
- How can this tool be used effectively in Architectural design?
- What is the future of AI in the field of Architecture?

2. Mid-journey tool

2.1. Definition of Mid-journey and how it works.

There are many AI image generators that use artificial intelligence algorithms based on a large dataset of images and their corresponding descriptions to turn text into graphics. These AI tools can visualize your thoughts and ideas and transfer them from text to pictures in a couple of seconds. It can be used for a variety of things, such as generating inspiration for new projects, investigating various concepts or scenarios, or just for fun (Easton, 2023) One of these AI image generator tools is Mid Journey. It is an AI application that uses human input (text prompts and parameters or other images) to generate original photographs using a machine learning algorithm that has been trained on a massive amount of image data (Dennis, 2022). Mid-journey AI also can be defined as a highly imaginative program that assists users in making creative images using their imaginations through text (Sharma, 2023). This tool can help users from different fields enhance their creativity and convert their imagination to a visual picture, especially in design industries such as Architecture and Interior Design.

Mid-journey uses text provided by architects or users as input to generate images that meet their needs using machine learning algorithms. Murphy (n.d) states the process of using the Mid-journey tool as follows. First, a prompt to Mid-journey is provided by the user; it might include details and a description of what you want to get. The more details are written, the closer the image is to what in your mind you get. Second, a new design will be generated every time after the users provide some feedback to Mid-journey on what they want and don't want in the design to give a closer view of their vision until they are satisfied with the final product.

Mid-Journey, created by David Holz, is run via a discord bot that refers and accepts calls to AI servers. You should have an account to run the program, and you can start typing your text to get four images for each attempt. After entering the prompt, it takes around 1 minute to produce your images. You then can upscale any of the four images by selecting (U + no. of image) or creating four more variations of each image by clicking (V + no. of image). The AI even learns from this, as millions of users select the best results, which teaches the AI what works and what doesn't.

2.2. Exploring Mid-journey Outputs

Dennis (2022) explores the output he gets from the Mid-journey tool based on the inputs he gives, search for patterns, and make predictions. Although it might not improve comprehension of the system's functions, it might improve the ability to use it. Dennis selects a circle as a simple model to test the primary output by comparing a hand drawing for a circle with a simple prompt "A circle" in the Mid-journey generator. **Figures 1 and 2** show the result of a circle drawn by a person using a pencil, while Figure 3 shows the output of a circle using a Mid-journey. As can be seen, Mid-journey fills in a lot of gaps around the picture that humans usually leave blank. If the same prompts run several times, the system will show different images with different aspects but some similar traits.

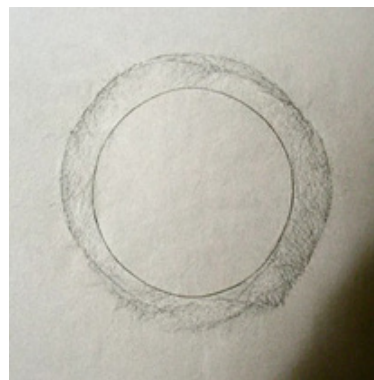**Figure 1.** Prompt: "A simple pencil outline of a circle on white research"

Figure 2. Prompt: "A pencil line drawing of a circle"

Figure 3. Prompt: "A circle"

Then, Dennis explores the circle with different types of materials, moods, mediums, environments, and artists. It was observed that Mid-journey can simulate different types of materials and understand their properties, forms, and colours. **Figures 4 -6** show the results of other materials from the given texts. Also, more results have been obtained by adding different text for various modes, such as mysterious, evil, and blossoming, represented in **Figure 7**. Moreover, Dennis tried the same with different mediums, environments, and artists every time and got excellent results.

Figure 4. Prompt: "A circle made of branches, bronze metal and grass".

Figure 5. Prompt: "A circle made of ice, emerald and gold, and embers and ashes".

Figure 6. Prompt: "A circle made of liquid gold, wood, and feathers".

Figure 7. *Prompt: "A mysterious circle", "An evil circle", "A blossoming circle"*

It is also noticed that Mid-journey can read the aspect ratio of the images. For example, if you want to get an image with a specific size or standard ratio that can be used as a poster or for phone or desktop background or any other needs **(see Figure 8).**

Figure 8. *Prompt: "A circle" in (9:16) and (16:9) circle"*

Note. Figures are generated through the Mid-journey tool by Dennis (2022)

2.3. Exploring Mid-journey Outputs in the Architecture Field

"Generative AI is an incredibly powerful approach that can be used to solve complex problems across many industries" It can assist architects in designing structures that are not only practical and visually beautiful but also satisfy the demands of the users. Mid-journey is one resource that architects can use to advance their design thinking (Murphy, n.d). A study by Rozdolska (2022) explores the Mid-Journey generative tool as part of creating an architectural form. This study shows that when artificial intelligence is appropriately applied, it can be a valuable tool for architects and support the process of creative thought. However, the current study will explore these uses and investigate how people are aware of Mid-journey and its benefits in their field and whether they are able to use it and show how it will affect their designs.

Mid-journey has been used by architects and architectural firms, who have found that it facilitates the speedy creation and modification of design concepts. The Zaha Hadid Architects firm also employs AI to show their clients renderings of the finished product. Many other Architects and Architecture firms have started using Mid-journey and other AI tools to quickly create and modify design ideas for their clients. A well-known architect may inspire the design of the project to create similar vibes; some examples of Mid-Journey Prompts for Architecture Design inspired by known architects are shown in Appendix D.

One of the famous Mid-journey creators is Hassan Rajab, who is an interdisciplinary designer with an architectural and computational design background highly interested in visual arts. He tried many prompts to generate Architecture design images using the Mid-journey tool. He believes that this tool can benefit the Architecture field as it can expand the limitations of inspiration (PA Next Team, 2022); he clarifies, "I'm really interested in designing facades and having weird, or very interesting shapes interact with it" adding that he occasionally explores other areas of architectural design, such as interiors (LTD, 2022).

2.4. Experts' Opinions and Experiences with Mid-journey

Diego Castro Posada, a Managing Director of the architectural rendering studio (M.O.N.O.M.O, London), compares Mid-journey with DALL. E 2, he noted that DALL. E 2 lacks realistic quality and produces unclear images, while Mid-journey represents ideas in an artistic way and gives better results than DALL. E 2. It is also much simpler to use and easy to teach; users can generate fantastic images on their first try (LTD, 2022).

Chhavi Mehta, an Architectural Assistant at Zaha Hadid Architects, said that Zaha Hadid tried to work with both DALL·E 2 and Mid-Journey in the design projects at projects in their office. These tools help them generate images that represent their identity based on the massive database of Zaha Hadid images (LTD, 2022).

Hasan Ragab found that Mid-Journey lack diversity in Cultural Representation; he faced some challenges when dealing with non-western architecture. He tried working with different architectural styles in Egypt, but he didn't get the expected results, so he added irrelevant text to generate images that were close to his mind. He also noted that users need to control the outputs they want through the text they provide (LTD, 2022).

2.5. Benefits and drawbacks of Mid-journey

Murphy (n.d) presented some benefits of the Mid-journey tool these are as follows: 1) Mid-journey helps architects save time in the design process stage, which allows architects to concentrate on other project aspects, 2) Mid-journey can generate high design quality that satisfies clients' needs, 3) It increased creativity and lead to more successful projects, 4) Using Mid-journey can be cost-effective, as it requires less time and money to produce high-quality designs.

As with many other technologies, each tool has some benefits and drawbacks. The negative aspects of mid-journey are that it must be used with Discord pot only and it produces visuals that can be used as inspiration but not as 3D models with specific dimensions. In addition, this tool is only available in the English language and doesn't support other languages. And as Hassan Ragab said, it lacks diversity in some cultural representations.

3. Material and Methods

Qualitative study uses specific methods to understand people's experiences and perspectives, study people's behavior in their natural settings, and listen to their stories. This kind of study allows you to identify issues from people's points of view and understand the contextual influences on the study issues (Hennink, Hutter,& Bailey, 2020). A specific set of methods can be used in qualitative study, such as in-depth interviews, focus group discussions, observation, content analysis, visual methods, and life histories or biographies (Hennink, Hutter,& Bailey, 2020). On the other hand, quantitative data is the worth of information that is expressed as counts or numbers, where each data set has a distinct numerical value. Any quantifiable information that researchers can use for statistical analysis and mathematical computations is considered this data, and it may be used to support any judgments that are based on the results of these computations in the actual world.

Quantitative methods are used in this study based on the literature review that was focused on previous studies about the Mid-journey tool and explored how this tool works and how people use it in different disciplines, especially in Architecture and Interior design. It also looks at Architects' and experts' opinions on using the mid-journey tool and represents some examples of expert outcomes with this tool.

The Quantitative methods used in this study are Questionnaires and one-on-one interviews. In the past, surveys were carried out using research-based techniques, but they have gradually transitioned to online platforms. These surveys frequently include closed-ended questions since they are better at gathering data. The questionnaire of this study was conducted online by sending emails to students, staff, and specialists in the field. Also, the survey form was spread on social media such as WhatsApp and Instagram to get more responses. The survey consisted of 13 questions and was spread using Google Forms starting with a brief introduction about the topic and the objectives of the study followed by the questions (sample of the questionnaire questions and results are shown in Appendix A and D). The aim of the Questionnaire is to investigate how far people are aware of mid-journey tools to enhance their understanding of using these tools effectively. In addition, the Questionnaire is used to explore the possibility of a mid-journey generator in the Architecture and interior design field and to identify the benefits and drawbacks of this tool.

The one-on-one interviews were conducted with students who used Mid-journey tools to know how participants think about the importance of the topic, how far they used the mid-journey tool and why, how it affected their work in their experience, and how it impacted the future. The interviews were conducted online through MS Teams, and each of them took around 15 - 20 minutes to complete. Students are selected as participants to focus on the use of the Mid-journey tool during the study of Architecture design and explore how it will affect their design when it is applied as part of the design process in the early stages. **(Samples of Interviews including questions and answers are presented in Appendix B and C)**

4. Results

It was found from the literature that the Mid-journey tool has many uses in different disciplines and industries, including the Architecture and interior design fields. The use of this tool increased in recent years by different users such as architects, designers, engineers, artists, and even students. The most used of these tools were as inspiration tools or for generating ideas in the design process stage. It also gives a 3D visualization of the space to the clients to show an idea of how it could look like. This tool can save time and costs for both designers and clients. The Questionnaire got 54 respondents and shows that around 20% of the participants were not aware of the mid-journey tool, and even if they knew about it, they never used it or tried how it works (more than 60%). Some participants are aware of other AI tools that have similar characteristics, such as Dall E, Binge, Roomai, RoomGBTm EvolveLab, etc. In addition, it was a challenge to decide whether this tool could replace human skills, maybe or not, as the participants were divided into two groups (agreed, maybe) or (not agreed), and both groups gave almost similar numbers of respondents. Also, most participants agree that this tool can benefit designers and Architects in their projects for inspiration, generating concepts, and getting new ideas.

Interviews were conducted with interior design students who tried exploring the mid-journey tool and got great inspiration. They tried many interesting things, including Art, Graphics, fashion, and interiors. The best result was with the interiors. As much as you write text, the more details, and realistic images you get. Some benefits of the mid-journey were provided by the participants, such as generating ideas quickly, giving more inspiration and helping in brainstorming, being easy to use, open to the public, and having endless variations with different sizes and ratios. There are also some drawbacks that users talked about, which are that this tool is not able to generate a space with specific dimensions and detail, and people may stop thinking and depend heavily on this tool.

5. Discussion

The first two questions of this research were asked about how mid-journey can improve Architecture and Interior Design outcomes and its benefits in such field. The research found that Mid-journey can help architects and designers in their projects because of the excellent quality image that they get, which is also close to what they have in their mind and save their time in preparing 3D visualizations using different software. It increased creativity and improved design quality by learning from feedback provided by architects and generating designs that meet their needs. Many Architects and architecture firms are using this tool because it can be cost-effective, as less time and limited resources are required to create high-quality designs.

The third question was how this tool can be used effectively in Architectural design. As was shown from the survey many respondents are not aware of the Mid-journey tool and how AI generators can affect their design and improve their skills. Therefore, one of the major points that need to be considered in the Architecture and Interior design study is applying these kinds of tools during the design process. These tools also need to be highlighted for graduates and specialists in the field to have a valuable impact on the industry by providing workshops or courses on these topics. In addition, AI skills can be added as a part of the required qualification to get a higher degree in the field.

The last question of the research was about the future of AI in the field of Architecture. It was found that Mid-journey can be improved a lot in the future as Vanucci (2022) says, "The images created are only graphic illustrations. There's no inventive file to measure, extract shop drawings, or 3D print. However, it's not difficult to imagine how this smart technology can be improved or implemented to more precise and clear outputs". However, there is a limitation in creating visuals for drawings with actual dimensions created with CAD/CAM technologies. The file we use for designing can be conveyed to a machine for making. Also, Hassan Ragab says, "We should learn to harness this technique to our benefit by learning how to utilize it, by being updated, and keep following such technology. It is important to be able to discuss a lot of concerns regarding the usage of these tools without prejudice or bias and with an open mind. Kevin Abanto says, "It is possible for AI to replace manual 3D modeling workflows. Imagine that AI generates results in three dimensions, and you can edit it as you wish". So, there are many expectations for AI tools that will be seen soon. Engineering societies should be responsible for introducing and improving AI skills to architects and designers to get the maximum benefit from It in their field.

6. Conclusions

The AI world is improving rapidly and affects many disciplines; the generative text-to-image tools encourage designers to explore design possibilities more from different perspectives. This study aimed to explore the use of the AI Mid-journey tool in Architecture and Interior Design and discover its impact on such fields. It was done through different quantitative methods such as questionnaires, and interviews. The study proved that AI tools will make a significant shift in the world of architectural design and the design process, and it can improve design outcomes in two areas: Academically and professionally. Academically, this tool can improve students' creativity and imagination skills within less time. Teaching AI tools to students as future designers will enhance the output of design projects. Professionally, architects and designers can generate ideas quickly for their clients while clients can also generate their own preferred ideas and present them to designers in a visual way for better understanding between the designer and the client. This research also found that there are many benefits of using mid-journey tools in the field of Architecture and Interior Design. Many Architects and Designers are already experimenting with these tools, and they benefit from them to explore complex issues and provide ideas for their clients. Others are combining architectural with contemporary design to explore the nature of design trends and technology. Moreover, it can generate high-quality designs in less time and cost-effectively with limited resources. However, Architects and designers should be careful about over-extreme imagination and expectations as this may cause a lack of reality in the design.

On the other hand, there are some limitations to the Mid-journey tool. First, the outputs of Mid-journey are only shown as visual representations of the generated ideas, but it is not real 3Ds with specific dimensions and correct scale. However, this may improve rapidly in the near future, and it may replace 3D modeling by generating three-dimensional designs in a few seconds. Second, this tool only works with one language, which is English, and this may not give us the expected results that we want because some words in Arabic or any other language cannot be translated to English with the exact meanings. Moreover, one of the limitations of this study is that this tool was not explored personally by the author to check personal ideas and what kind of results will be given. This is due to time and cost issues as this tool was open to the public for free, but just last month, it needed some payment to subscribe. However, further studies need to be done to continue with this study by exploring this tool personally and comparing it with other AI competitors' tools to discover the best results. Also, more investigations and interviews could be done with specialists in the field to explore if AI tools are used in architectural companies and firms and how they can benefit from it.

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- **Figure 3:** Prompt: "A circle". Adopted from "Exploring Midjourney's AI art style using circles -" by S. Dennis, 2022, Towards Data Science. Retrieved from June 6, 2023, from https://towardsdatascience.com/exploring-midjourneys-art-style-using-circles-a461a78e7196

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- **Figure 5:** Prompt: "A circle made of ice, emerald and gold, and embers and ashes". Adopted from "Exploring Midjourney's AI art style using circles -" by S. Dennis, 2022, Towards Data Science. Retrieved from June 6, 2023, from https://towardsdatascience.com/exploring-midjourneys-art-style-using-circles-a461a78e7196

- **Figure 6:** Prompt: : "A circle made of liquid gold, wood, and feathers". Adopted from "Exploring Midjourney's AI art style using circles -" by S. Dennis, 2022 Towards Data Science. Retrieved from June 6, 2023, from https://towardsdatascience.com/exploring-midjourneys-art-style-using-circles-a461a78e7196

- **Figure 7:** Prompt: "A mysterious circle", "An evil circle", "A blossoming circle". Adopted from "Exploring Midjourney's AI art style using circles -" by S. Dennis, 2022, Towards Data Science. Retrieved from June 6, 2023, from https://towardsdatascience.com/exploring-midjourneys-art-style-using-circles-a461a78e7196

- **Figure 8:** Prompt: "A circle" in (9:16) and (16:9). Adopted from "Exploring Midjourney's AI art style using circles -" by S. Dennis, 2022, Towards Data Science. Retrieved from June 6, 2023, from https://towardsdatascience.com/exploring-midjourneys-art-style-using-circles-a461a78e7196

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Appendix
Appendix A: Questionnaire format:

The questionnaire will start with a brief introduction about the topic and the objectives of the study. This will give an idea about artificial intelligence (AI) technology for those who are not aware of it. Here is a sample of the questionnaire introduction and questions to show what it will look like.

Introduction to the topic:
Exploring Mid-journey generator as a new design approach in Architecture
Mid-journey is an artificial intelligence program, that can create images and art from a text description. You can describe what you want as a text, then watch the artificial intelligence (AI) text to image generator bring it to life in seconds. This survey is conducted by a PhD student from University of Bahrain. It aims to investigate knowledge of the Mid-journey tool and explore its impact on the Architecture and interior design field.

General information:
- Age – range (below 18 / 18 – 25 / 26 – 40 / above 40)
- Gender (male / female)
- Major
- Job
- Interest area

How far are people aware of mid- journey tools (awareness – knowledge)
- Did you hear about AI (Artificial intelligence) and mid-journey tools - an image generator? (yes/no) if yes how did you know about it?
- Did you use mid-journey tools before? (yes/no)
- If yes, how far do you use this tool? (Multiple choice)
- Do you know any text-to-image tools that are similar to the mid-journey tools? Please mention.

The possibilities of mid-journey generator in the Architecture and interior design field
- What is the purpose of using this tool? from your point of view (Multiple choice)
- What are the uses of this tool in architecture and interior design? (open-end)
- Do you think this technology can replace human skills and ideas? And why? (open-end)
- Imagine how will be the future of architecture and interior design with these new technologies? (open-end)

The benefits and drawbacks of using mid-journey tools (positive and negative)
- Do you think this tool is helpful in the architecture and interior design field? (yes/no) if yes, how? (open-end)
- What are the benefits of using the mid-journey tools?
- Do you think mid- journey has any drawbacks? Explain.

Appendix B: Interview 1

General information:
- Age – range (26 – 40)
- Gender (Female)
- Major (Interior Design)
- Job (student)
- Interest area: Art & Interior Design

- How did you know about the mid-journey tool, and what encourage you to try it?
I heard about it from my colleagues, and I did some search to learn about it and how it is used. The reason that encourages us to try AI – mid-journey tool is that my friend had a dream, and she wanted to discover what the background of the dream looks like, and she got a quite similar view of what we saw.

- How far do you use the mid-journey tool, and why did you use it? (What is the purpose of using it?)
Few weeks ago, I started experience the mid-journey with my friends and I like this tool and we are trying to explore it more. We used it to see different results of what we have in our minds. Currently I resister for Mid-journey tool with my friend. It costs a small amount monthly.

- How does this tool used in architecture and interior design work and how does it affect their work?
In Interior spaces, it is much more successful.
It gives the same vibes of the overall image, it can be used as inspiration for interior, to imagine and transfer what in your mind. Some image can be applied in real life as a 3D visual. There is a problem with the ceiling always giving high ceiling.

- Give some examples from your experience in using this tool personally and how you used it to benefit from it.
we tried many interesting things include Art, Graphics, fashion and interiors. The best result was with the interiors. I found that as much as you write text, the more details and realistic images you get .. there is also filtering options for more realistic details such as painting effects or any other details / we can also use reference photo but the result not that much perfect appear not realistic.

- Did you use any other AI tool like Mid-journey?
Through my search about AI tools, I found some software related to Interior Design, but I didn't try it because it's not free. I also tried ping search which have AI tool with 24 trials but the results are not similar to mid- jour.

- Do you think this technology can replace human skills and ideas? How and why?
No never will replace human however in future it may develop more but there should be always a person behind the scenes.

- What are the benefits and drawbacks (or limitations) of using this tool?
This is what we hear about and is easy to use at a lower cost.
A great inspirational tool and give more ideas, it collects different things from available data it gives different results but with the same spirit.
Very good starting in the AI world – it can be used in studios as an extra tool but not depend on it . It is not a real 3D, but it looks as 3D renders as we get from the 3Ds max. It almost gives the same style or vibes.

- What is the impact of this tool on the future of Architecture?
In the future, it may include more details as working drawings details to be ready to be used.

Appendix C: Interview 2

General information:
- Age – range (26 – 40)
- Gender (male)
- Major (Interior Design)
- Job (student)
- Interest area: art & architecture

- How did you know about the mid-journey tool and what encourage you to try it?
I saw about it in social media (Instagram) & some YouTube videos. I tried it as it looks like a helpful tool for design field in architecture as well as interior design. Also the experience is so fun according to what I saw in YouTube videos, as it is simple to use and not complicated.

- How far do you use the mid-journey tool and why did you use it? (What is the purpose of using it?)
I used it for about two weeks, but I don't use it anymore. The purpose was for fun for the first time as well as experimenting the quality of the outcomes and testing them whether it is really helpful in design projects or not. Then I used it to produce inspiration images for one of my interior design projects in the university.

- How does this tool used in architecture and interior design work and how does it affect their work?
In my opinion it is an effective tool for inspiration and it may help for creating new ideas for the designers, but it is not a tool for producing a real space visualization, which means that it could be useful only for ideation stage but never for later stages in a design project.

- Give some examples from your experience in using this tool personally and how you used it to benefit from it.
I used it to visualize an Islamic style architecture, then I focused more in Islamic libraries building and the style of the interior. Another topic I searched about is the biophilic buildings in general and how this generator imagines this concept in architecture and interior design. Also I did some experiments about buildings made with none structural materials like fluid, gas, and other imaginary materials which are not suitable for building.
The only experiment that benefited me in design projects was the one about Islamic architecture, as it gave me a good visual that really present the Islamic architecture, not only the patterns but even the natural lighting and the style of architecture and even the mood of the visuals.

-   Do you think this technology can replace human skills and ideas? How and why?

I think this will never replaces the human skills as this technology is only for visualizing what inside the designer's mind, it cannot be used as professional visuals for certain project as it is not meant to be. It can enhance the creativity for designers but it will never replace them.

-   What are the benefits and drawbacks (or limitations) of using this tool?
Benefits:

1-   Very simple to use.
2-   Great inspiration source.
3-   Visuals within less than a minute (very fast).
4-   Endless variations.
5-   Open to public.
6-   No special devices needed.
7-   Updated versions.
8-   Can creates different images sizes & ratios.
9-   Can optimize the style of image eg (photo realistic, watercolor, oil painting, etc).

Drawbacks:

1-   It is not free tool.
2-   Can not be controlled partially (every time it creates a whole new picture).
3-   Limited image size (not bad sizes but limited).
4-   Controlled only and only by words (you cannot use any brush tools or other tools than words).
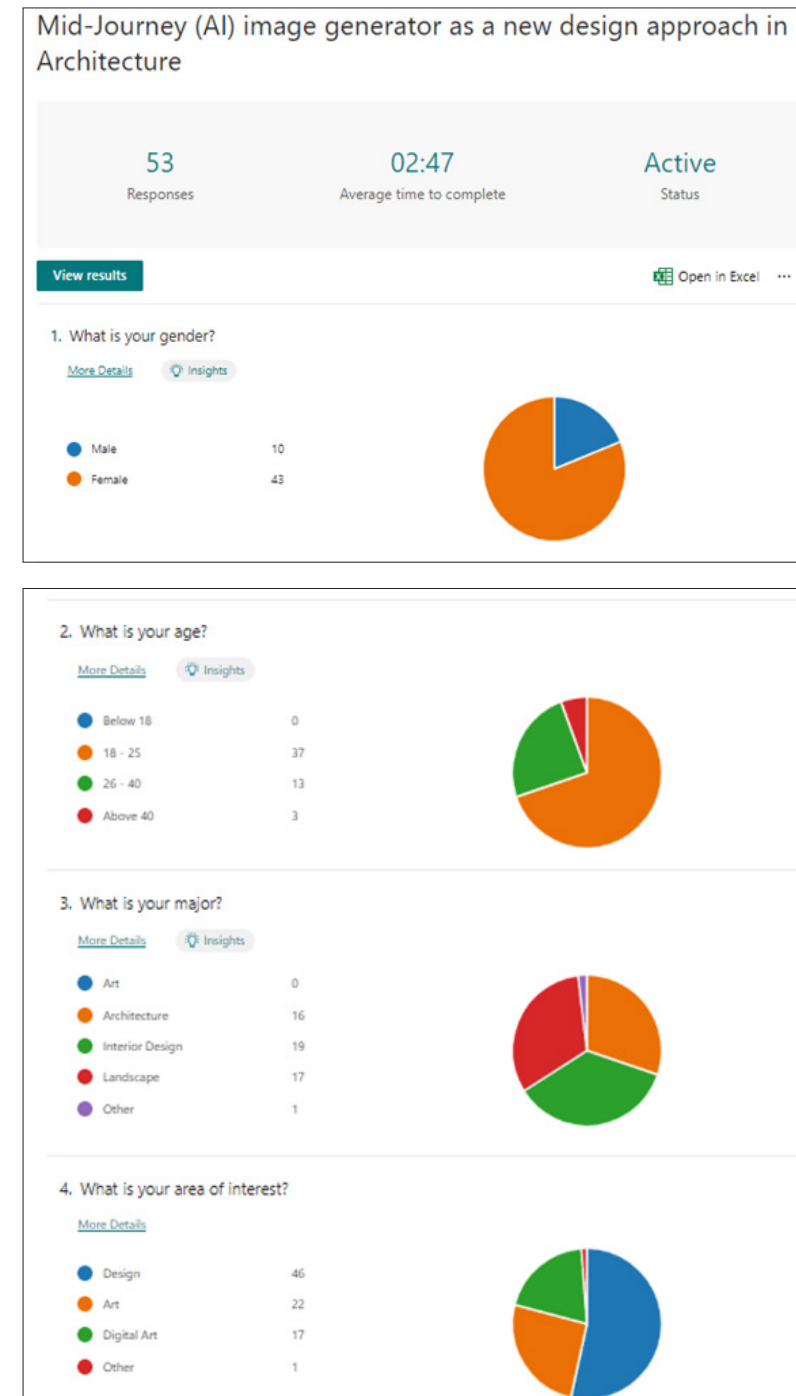
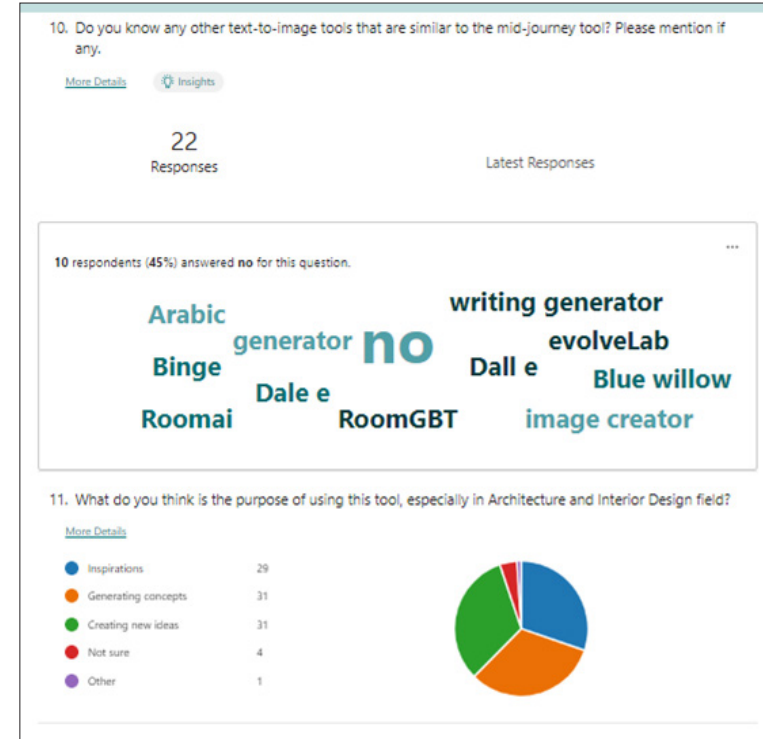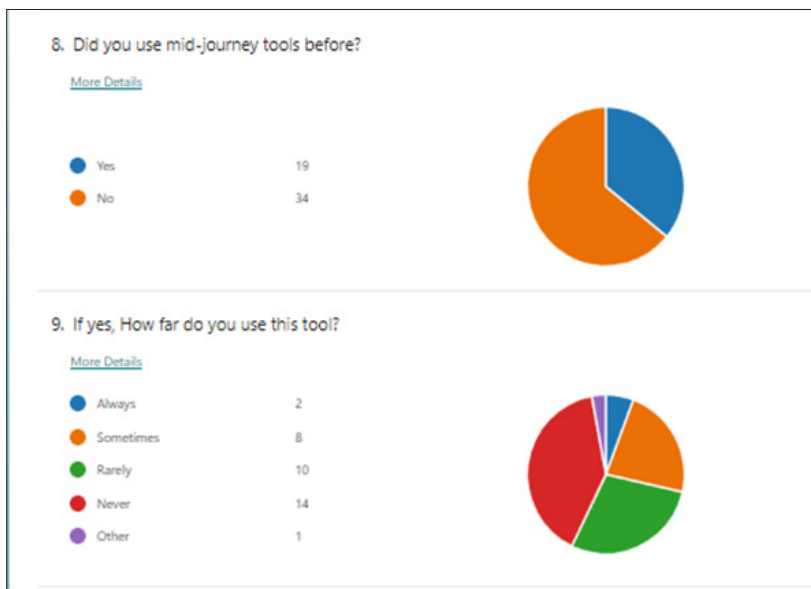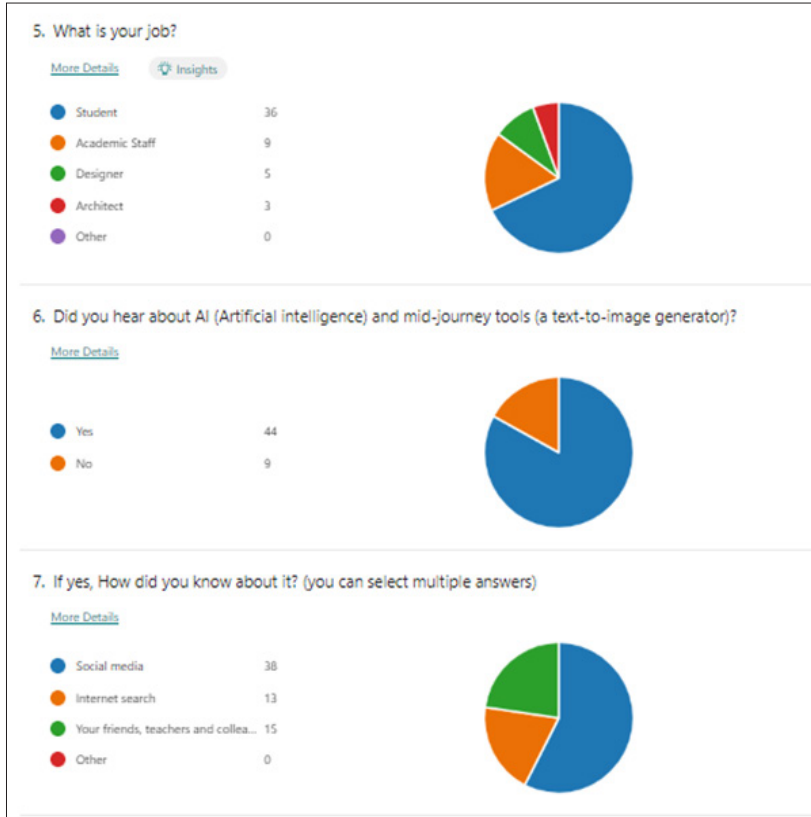**-   What is the impact of this tool on the future of Architecture?**
New forms of buildings will be seen.

-   Any other comments or additions.
This is my experience in version 4.0, this generator is updated frequently and by the day it reaches 5.1 and the experience improving with these updates as well as the generated image's quality.

Appendix D: Questionnaire Results

5. What is your job?

More Details   Insights

- Student — 36
- Academic Staff — 9
- Designer — 5
- Architect — 3
- Other — 0

6. Did you hear about AI (Artificial intelligence) and mid-journey tools (a text-to-image generator)?

More Details

- Yes — 44
- No — 9

7. If yes, How did you know about it? (you can select multiple answers)

More Details

- Social media — 38
- Internet search — 13
- Your friends, teachers and collea... — 15
- Other — 0

8. Did you use mid-journey tools before?

More Details

- Yes — 19
- No — 34

9. If yes, How far do you use this tool?

More Details

- Always — 2
- Sometimes — 8
- Rarely — 10
- Never — 14
- Other — 1

10. Do you know any other text-to-image tools that are similar to the mid-journey tool? Please mention if any.

More Details   Insights

22 Responses   Latest Responses

10 respondents (45%) answered **no** for this question.

Arabic   writing generator   generator **no**   evolveLab   Binge   Dall e   Blue willow   Dale e   Roomai   RoomGBT   image creator

11. What do you think is the purpose of using this tool, especially in Architecture and Interior Design field?

More Details

- Inspirations — 29
- Generating concepts — 31
- Creating new ideas — 31
- Not sure — 4
- Other — 1

12. Do you think this technology can replace human skills and ideas?

More Details   Insights

- Yes — 7
- No — 28
- Maybe — 18

13. What are the benefits or drawbacks of the Mid-journey tool if there are any?

More Details   Insights

18 Responses   Latest Responses

4 respondents (22%) answered **people** for this question.

inspiration from Pinterest   people too reliable   ur ideas   type of people   time way   inspiration   designs   New   people   Benefits   creative ideas   ideas   works   New way   ideas and concept   Makrs people   designer   drawbacks   negative side would be people

13. What are the benefits or drawbacks of the Mid-journey tool if there are any?

18 Responses

2	anonymous	Benefits: i think it is a great way when u type down ur ideas and concept or color scheme and see how they will match together to have inspiration from, it benefits a designer in a visual way just like having inspiration from Pinterest but its ur own ideas! Which is fascinating.. I personally don't see drawbacks but maybe its a negative point that all these generated designs where kind of collected from online works from designers
3	anonymous	New way for imagination, very usefull for specific type of people. People can use this ai tool to fill many art works or 3D visualization work and to avoid any copyrights in production.
4	anonymous	benefits : generating ideas quickly without having to go through the trouble of using time consuming softwares. drawbacks : not able to generate a space with specific dimensions and details yet
5	anonymous	Benefits: prompt concepts generations Drawback: limit creativity
6	anonymous	Not all concepts applicable
7	anonymous	Benefits: could save time especially when dealing with clients, gives more inspiration and helps in brainstorming. Drawbacks: although it could give inspiration, it can also make people stop thinking and depend heavily on these software.
8	anonymous	For now the best use is generating ideas when you have a block and can't come up with something new, they will help with creative ideas and feeding our eyes. The negative side would be people getting used to it to a point where they kill their own creativity. And I see it replacing some tasks and creating mood boards and similar tasks
9	anonymous	I have no idea
10	anonymous	Using it the right way can create new field of opportunities
11	anonymous	Representation of human figures and anatomy are still not accurate + Not all results are applicable to real life but can be inspirational
12	anonymous	Makrs people too reliable on technology
13	anonymous	It's really help to see the future
14	anonymous	Not doable realistic interior
15	anonymous	-
16	anonymous	-
17	anonymous	Help inspire new and innovative design in a time of ideablock within the designer mind
18	anonymous	-

Appendix E: Mid-journey Prompts for Architecture Design

Prompt: A modern house beside the waterfalls, in the forest, by Frank Lloyd Wright, extreme long shot, 8k— ar 16:9

Prompt: An art museum, by Zaha Hadid, concrete and glass facade, natural light with warm tones, super-resolution — ar 16:9

Prompt: A concrete science museum over a serene body of water, by Le Corbusier, minimal, — ar 16:9

Prompt: A hotel in unusual shape, by Frank Owen Gehry, in the urban city — ar 16:9

Prompt: : A modern city hall, over a serene body of water, minimal, inspired by Norman Foster — ar 16:9

Prompt: An aquatics centre beside the waterfront, breathtaking structure, by Santiago Calatrava, natural elements — ar 16:9