SOCIOCULTURAL INFLUENCE ON PERCEPTION AND INTERACTION WITH USER INTERFACE 3D ILLUSTRATIONS
(A practical experience inspired by the Egyptian culture)

التأثير الاجتماعي والثقافي على إدراك المستخدم للرسوم التوضيحية ثلاثية الأبعاد والتفاعل معها في واجهة المستخدم (تجربة عملية مستوحاة من الثقافة المصرية)

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ABSTRACT

Illustrations are visual communication tools used to send messages to viewers, elicit emotions, and influence their decisions. 3D illustrations have been used in user interface (UI) design by the end of 2019. Before that, Flat illustrations were used in UI for years. The new 3D style (Neumorphism) merged the simplicity of shapes in Flat style with realism in colors, lights, textures and shades in Skeumorphism. UI illustrations are commonly made in a universal style to cross boundaries and engage users universally. However, current research showed evidence of how perception, especially of user experience and UI design, is affected by cultural influences. In this paper, the author reviewed her approach to experimentally design UI 3D illustrations inspired by the Egyptian culture. This is to test the engagement of the Egyptian users through positive triggers. A survey was made among Egyptians and Non-Egyptians to measure their perception and interaction with these illustrations.

KEYWORDS

Egyptian Culture; 3D illustrations; User interface (UI) design.

الملخص

الرسوم التوضيحية هي أداة للاتصال المرئي المُستخدمة لإرسال رسائل إلى المشاهدين، واستثارة المشاعر، ثم التحكم في قراراتهم. تم استخدام الرسوم التوضيحية ثلاثية الأبعاد في واجهة المستخدم بحلول نهاية عام ٢٠١٩. وقد حدث هذا بعد استخدام الرسوم المسطحة لسنوات. يجمع الأسلوب الثلاثي الأبعاد الجديد (Neumorphism) بين بساطة الأشكال التي اشتهر بها النمط المسطح وبين الواقعية في الألوان والملامس والظلال. تُصنع الرسوم التوضيحية لواجهة المستخدم عادةً بأسلوب عالمي لتتجاوز الحدود بين الثقافات ولجذب المستخدمين من كل العالم. الا أن الأبحاث الحديثة أظهرت دلائل على تأثر إدراك المتلقي، وبالأخص إدراكه لتصميم تجربة المستخدم وواجهة المستخدم، بالعوامل الثقافية والخبرات السابقة. خلال هذا البحث، تستعرض الباحثة نهجها في التصميم التجريبي لرسوم إيضاحية ثلاثية الأبعاد مستوحاة من الثقافة المصرية. وذلك لاختبار تفاعل المستخدمين المصريين مع هذه الرسوم من خلال المحفزات الإيجابية. كما تم عمل استطلاع رأي ضم مصريين وغير مصريين لقياس مدي إدراكهم وتفاعلهم مع هذه الرسوم التوضيحية، ومن ثم الوصول الي النتائج والاستنتاجات في النهاية.

الكلمات المفتاحية

الثقافة المصرية؛ رسومات ثلاثية الأبعاد؛ تصميم واجهة المستخدم.

1. INTRODUCTION

Digital illustrations are visual communication tools that can be used to send messages to the viewer, elicit emotions, change his thoughts, and finally influence his decisions.

Digital illustrations also have a very crucial role in UI design of websites and applications. They make features and commands easily understood. They also let websites and applications stand out and own a very special identity in the market. In addition, it acts as artwork that enhances the aesthetic value of the UI designs.

According to research work, conducted by Kozak, that aimed to measure the impact of illustrations and analyze their influence on human computer interaction, three conclusions were deduced (Kozak. O, 2020):

- Memories can be triggered through seeing illustrations, as they make contents more memorable.
- User experience can be more pleasurable through adding illustrations as they elicit emotions.
- Illustrations accelerate perception and understanding of the content.

UI illustrations are mostly made in a universal style that would be able to cross cultural boundaries. Concepts of simplicity and minimalism were adopted in the Flat style (that was first presented by Microsoft as a new flat and minimalist style through the launch of the Zune music player in 2006). In addition to that, the use of simple geometrical shapes to compose its characters, objects and backgrounds.

By the end of 2019 and the beginning of 2020, a new 3D illustration style was developed. It merges the simplicity of shapes in Flat style and the realism in textures, colors and lights in Skeumorphism style. The global look and feel of characters are still noticed in these 3D illustrations so they can be perceived by different users all over the world (El-Sherbiny. H, 2022).

In UI design, positive emotional stimuli enhance engagement with users and can make the design experience friendly and trustful, like communication with a close person. (Kozak. O, 2020)

In addition, current research work showed evidence of how perception, especially user experience (UX) and UI design perception, is affected by cultural influences. Researchers were able to study the ways and the extent in which human perception is affected by sociocultural experiences. Moreover, another study concluded that human perception is totally affected by the knowledge structures acquired from human experiences. (Masuda. T, 2009)

In this paper, the author will review her approach to experimentally design UI 3D illustrations that were inspired by the Egyptian culture. The target was to create illustrations that reflect the Egyptian culture, nature and traditions. Then use these illustrations in Egyptian websites and applications.

The goal was to create digital artworks that could easily engage the Egyptian user and trigger positive emotions in his perception. The illustrations may reflect their link to Egypt in foreign users' perception as well. However, the researcher suggests that these artworks could not be well received by different nationalities. This experimental design project suggests that creating the illustrations in that theme may enhance the country's identity through the user experience.

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2. LITERATURE REVIEW

User interface (UI) design is an expression that refers to the layout of all visual elements (as colors, buttons, icons, graphics, texts) that a user might use or interact with in a website, a mobile application, or any other technological product. UI designs need to be functional, attractive and well perceived by different users.

Some research was conducted to measure the effectiveness of UI designs from a sociocultural perspective. The work of (Almakky, H. & Sahandi, R. & Taylor, J.) from the Faculty of Science and Technology, Bournemouth University, United Kingdom, studied the effect of culture on user interface design of social media. Their research was based on a case study on preferences of Saudi Arabians on the Arabic user interface of Facebook. The paper assumed that users' preferences may be influenced by their culture, which should be considered in the user interface design. And it came up with a conclusion that users are more comfortable when interacting with a user interface that relates to their own culture. This happened through a survey that investigated the preferences of Saudi Arabians on the Arabic version of the user interface of Facebook.

Also, in the work of (Luna, D. & Peracchio, L.A. & De Juan, M.D, 2002) under the title of "Cross-Cultural and Cognitive Aspects of Web Site Navigation" the authors examined some of the websites' layout qualifications that can lead to an optimal navigation user experience, or flow, in a cross-cultural context. Particularly, the paper focused on the effect of users' culture and backgrounds on their attitudes toward the website's user experience (UX) and UI design. The authors suggested that the congruity of a website with a visitor's culture could influence the likelihood of experiencing flow. Thus, increase revisit and purchase intentions.

Concerning UI illustrations, their latest styles and universal implementation, the work of (El-Sherbiny, H.F., 2022) conducted a study on the new 3D style that was launched at the end of 2019. It discussed their characteristics and the circumstances that paved the way for their emergence. A comparison between the 3D and the Flat style was conducted. Moreover, the work reviewed examples for the new 3D style that has been adopted by big companies and it was obvious that the style used for these illustrations was a universal style that could be perceived by users from different backgrounds and cultures.

Therefore, the gap concluded from the literature review includes the absence of study of UI illustrations that can target users from a specific culture or background. In this paper, the author will design a set of 3D illustrations inspired from the Egyptian culture and still follow the contemporary universal style, this style is a merge between the simplicity of shapes and realism of color, texture and shades. In addition to that, she will examine using these illustrations on websites that is linked to Egyptian communities or services. Moreover, she will measure the level of perception of these illustrations by Egyptians & Non-Egyptians.

3. PROBLEM STATEMENT

The research problem is looking for answers for the following questions:
1. Can Egyptian culture be an inspiration for artists to produce digital 3D illustrations while still follow the universal contemporary style of simplicity in shapes and realism in shades?
2. What are the implementation stages that could be followed to make these contemporary 3D illustrations?

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3. Can UI illustrations, that were inspired by Egyptian culture, increase the Egyptian user's engagement in user experience through positive triggers?
4. Can these illustrations be well perceived by foreigners as well as by Egyptians?

4. OBJECTIVES

1. Create UI illustrations that should follow the modern contemporary 3D style, which is the simplicity and abstraction of shapes mixed with realism in colors, light and shades.
2. Use the Egyptian culture, landscapes, portraits, costumes, accessories, and patterns in order to elicit positive triggers in Egyptian user's perception.
3. Use these illustrations in the UI design of websites and applications that target the Egyptian Users, tourists or people who are interested in the Egyptian culture.

5. METHODOLOGY

This work applies a theoretical, practical, and analytical methodology. It begins by studying the difference between the Cross-cultural UI design and a UI design that is targeting a specific type of users with a specific culture or background. How this might influence the perception and interaction of users with these websites or applications. Thus, increase or decrease the flow and navigation rate in these technical products. After that, it will focus on the use of 3D illustrations in UI designs. This happens through a practical experiment made by the researcher that targets creating 3D illustrations inspired by the Egyptian culture and use them in UI designs.

The practical experiment is conducted in order to measure the sociocultural influence on user's perception of UI 3D illustrations. A framework of sequential steps was constructed as follows:

First: Drawing and designing 3D illustrations inspired from the Egyptian culture. This followed the collection of references from real Egyptian life, it includes landscape photos from upper Egypt, rural scenes, Bedouins, folk symbols and patterns, cloths, and accessories designs. Moreover, the researcher experimented using them on UI design of Egyptian websites and applications.

Second: The artworks were exhibited in a public art exhibition in July 2022. The exhibition was under the title of "UI in watermelon flavor". The name has been chosen based on a popular meal mix that is close to the Egyptian hearts which is eating watermelon with white cheese. The Exhibition included 10 printed artworks displaying digital 3D illustrations, in addition to 6 printed artworks displaying details of some scenes or their implementation through UI screen designs.

Third: A survey has been held in March 2023 on "Google forms". The aim was to measure the level of perception of these illustrations by Egyptians and Non-Egyptians. The researcher examined as well if the respondents can understand the messages behind the illustrations done and if they could link it to "Egypt" or not.

Fourth: Analysis and discussion of results of the survey. Where the paper could finally reach conclusions and review its recommendations.

6. SOCIO CULTURAL EFFECT ON UI DESIGN

"Cross-cultural design can be defined as designing technology for different cultures, languages, and economic standings to ensure usability and user experience across cultural boundaries."

Nowadays, user interface (UI) is mostly designed in western styles with English as the main language. However, these designs are interpreted by users according to their cultural backgrounds,

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and preferences. Therefore, this might influence their effectiveness and success in delivering information and emotions to users.

For that reason, interaction designers and illustrators need to conduct their research before any approach to make a design for another country. For example, colors can express different emotions and meanings in different cultures. As the white color, it can be linked to mourning in the Chinese culture, whereas in the Western culture black is considered the color of mourning.

As well, images, graphics, icons, and symbols should be chosen with great care by designers because they can have different meanings in different cultures. Some images may seem harmless but, in another culture, they can look very offensive. For example, adding images of scantily clad women in cloths advertisements would look very offensive in the Arabic and Islamic cultures. Whereas it is a very normal act in western cultures. For these reasons, to make an effective user interface design, difference in cultures and beliefs should be considered. (Risse, 2017)

In a study by Steven John Simon, under the title of "The Impact of Culture and Gender on Websites", the researcher suggests through his findings that there are indeed differences between cultural and gender-based perception and satisfaction with a website. A user's perception and satisfaction with a website could affect the tendency as well to use that site frequently and ultimately increase the turnout rate. Understanding cultural and gender-based perceptions of Internet users could serve in creating a suitable user interface, one that improves a site's performance and causes more users' visits. Thus, improve the competitive position of the business itself. (Simon, 2001)

7. 3D ILLUSTRATIONS IN EGYGPTIAN UI DESIGN

3D illustrations designed in western styles have noticeably been used in user interface designs since late 2019. In this paper the researcher made a practical experiment. The target was to create 3D illustrations that target the Egyptian user, increase his satisfaction and engagement while using websites and applications. The researcher made research about the colors, images, signs and symbols that truly reflect the Egyptian culture.

8. PRACTICAL EXPERIMENT

The practical experiment included a collection of digital 3D illustrations that was previewed in an art exhibition under the title of "UI in watermelon flavor":

- **Artist**: The researcher
- **Number of artworks**: 10 artworks.
- **Year of production**: 2022.
- **Exhibition location**: Grand Hall, Faculty of Fine Arts, Zamalek, Cairo.
- **Technique**: Digital design using Maxon Cinema 4D software.
- **Implementation**: to be used in UI design of Egyptian websites and applications.
- **Software used in UI design**: Adobe InDesign.

8.1. Collecting References

Before proceeding in creating the artworks, the first step made by the researcher was to collect a lot of references from real Egyptian life. This included landscape photos from upper Egypt, rural scenes, different Egyptian portraits, Bedouins, folk symbols and patterns, cloths and accessories designs.

Figure (1), Samples of references from Egyptian culture collected by the researcher through google search engine.

8.2. Materials

8.2.1 Artwork no. 1: "A Girl with A Butterfly"

In this illustration, the author is portraying a girl with a rural Egyptian cloths and accessories. The girl is holding a butterfly that is ready to fly and she is staring at it with a smile on her face. In Egyptian non-educated societies, women don't own their complete freedom in marriage decisions, education, work, or legacy. That's why she was illustrating their dream to fly and own their freedom exactly like this butterfly in an atmosphere full of colors, hope, optimism and joy. (Fig.2)

In Figure (3), she experimented this 3D illustration on a governmental website interface (The Ministry of Social Solidarity). The page was promoting a program made by the ministry to encourage equality between man and woman in all human rights.

Figure (2), 3D illustration for a rural Egyptian girl, 2022. - (Source: Author)

Figure (3), UI design for an Egyptian website, 2022. (Source: Author)

In the following figures, the author is viewing the practical steps made by her to finish this artwork. A pencil sketch was made at first. Then, the figure has been built on C4D software before coloring and rendering the artwork in the end.
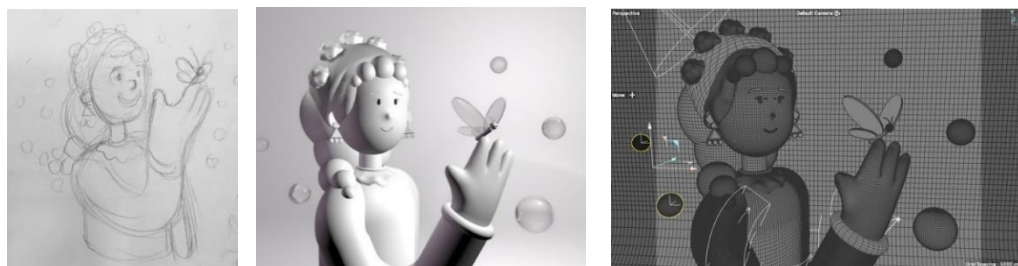

Figure (4), Artwork steps made by the researcher. (Source: Author)

8.2.2 Artwork no. 2: "Nubian Singing"

In the following illustration (Fig 6), the researcher is viewing a composition of Nubian items such as: the wooden window with Nubian patterns on it, a Kollah (a clay bottle for preserving drinking water), a Rababa (music instrument that looks like a small violin), tambourine (music instrument), crescent, star and eye (Folk symbols) and others.

The composition is filled with colors, love, music, feelings of joy and celebrations.

In Figure (8), she experimented this 3D illustration on Aswan's city official website. The page promotes an international festival of culture and arts that was held before in Aswan city with the service of booking online through the website. The design could target the Egyptian user or tourists who might be planning to visit Egypt soon and are browsing the city's website for further details.
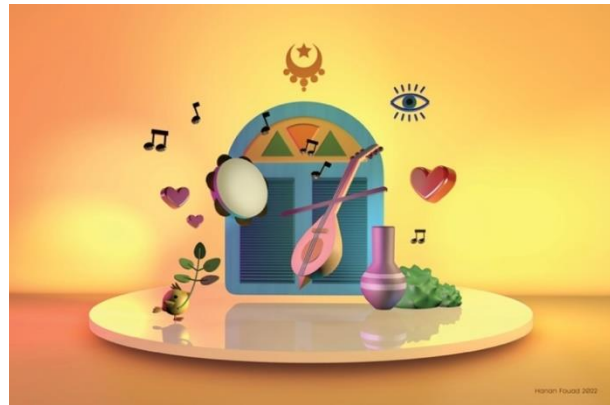

*Figure (5), A quick sketch
(Source: Author)*

Figure (6), 3D illustration for a musical composition inspired by upper Egyptian culture, 2022. (Source:
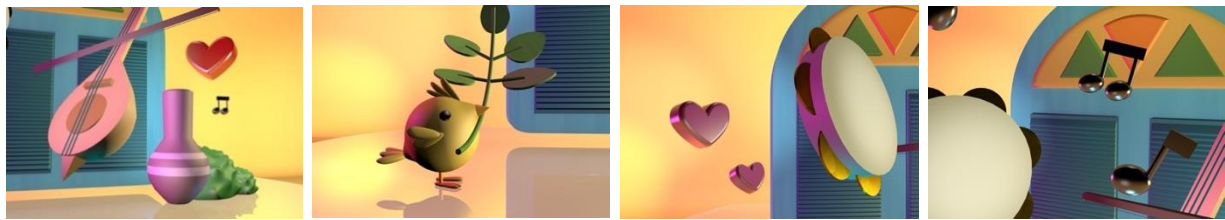

Figure (7), Details of the artwork. (Source: Author)

Figure (8), 3D illustration for a musical composition inspired by upper Egyptian culture, 2022. (Source: Author)

Figure (9), Real website interface of Aswan music days, 2022. (Source: https://aswanmusicdays.com, 19/3/2023)

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8.2.3 Artwork no. 3: "Mini Aswan"

In this illustration (Fig. 10), the author is viewing a natural scene for the city of Aswan under the title of Mini Aswan. The land of gold, as it is well-known for. Aswan is known for its spectacular landscape scenes. The Nile, the rocks, the boats, and the colorful Nubian houses. In Figure (11), she experimented this 3D illustration on the UI design of an application for Aswan's city (A guide for tourist and travelers).

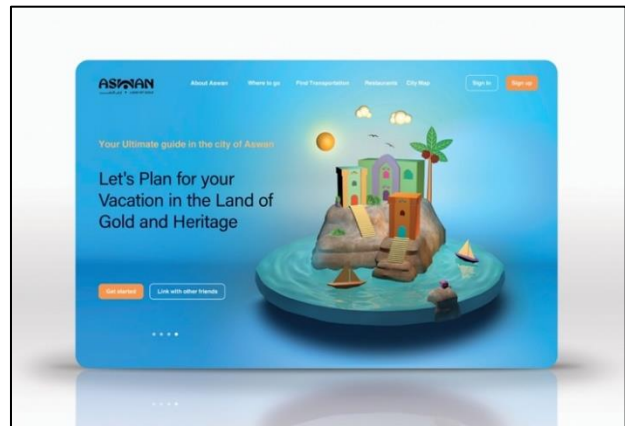*Figure (10), 3D illustration for a natural scene in Aswan, 2022. (Source: Author)*

Figure (11), UI design for an Aswan city website, 2022.

In the following figures, the author is viewing the practical steps followed to finish "Mini Aswan" artwork. (Fig.12) was the inspiration, then a pencil sketch was made as it is shown in (Fig.13). Finally, in (Fig.14) the illustration was built on C4D software before coloring and rendering the artwork as well in the end.
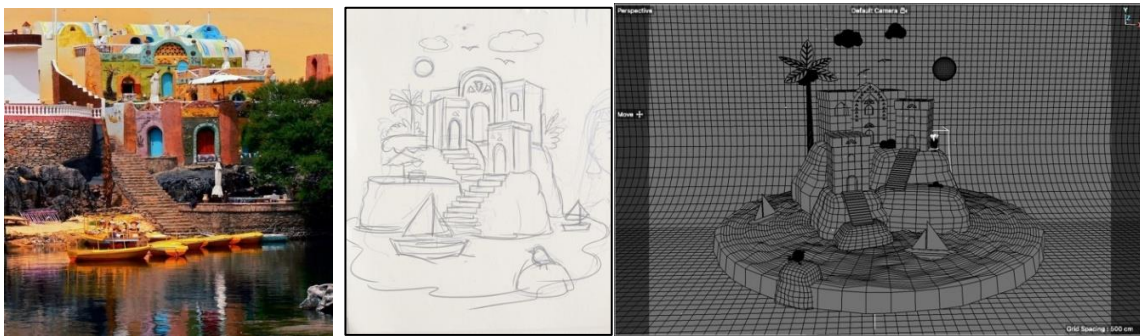

Figure (12,13,14), Artwork steps made by the researcher. (Source: Author)

8.2.4 Artwork no. 4: "Egyptian Rural Family"

In this illustration (Fig.15), a composition of 4 figures were designed to represent the Egyptian rural family. The body language express male domination in this society. The man has the higher height. He is looking upwards with light shed on his face to express his pride, dignity and superiority. The figures are designed using simple geometrical shapes. They consist of a cylinder for the body and a capsule for the head. They don't have limbs. However, they seem connected on an emotional level. We can see a blue hand on the right with an eye on it. It represents protection

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from hatred, envy and evil. While we can see the crescent-star folk symbol on the left. Lights, textures and shades follow hyper realism style.

Figure (15), 3D illustration for an Egyptian rural family, 2022. (Source: Author)

Figure (16), UI design for Ministry of Social Solidarity's website, 2022. (Source: Author)

In Figure (16), the researcher is experimentally using the 3D illustration on the UI design of The Ministry of Social Solidarity's website. The website is encouraging Egyptian couples to give birth to only 2 children, for a better standard of living for the family and the kids.

8.2.5 Artworks no. 5 and 6: "Alexandrian Mornings"

In both artworks, we can see two different perspectives from the same location. The researcher made an outdoor composition in the Mediterranean Sea of Alexandria. She used shapes from the Egyptian Folklore as the fishes and triangles. This is in addition to the surfing boats that moves freely through the waves. The researcher was keen to set a mood that expresses serenity & new beginnings. Light & reflections adopt realism style. However, figures are built using simple geometric shapes as it is seen in the clouds and the boats.

Figure (17,18), 3D illustrations for an outdoor composition in sea, 2022. (Source: Author)

8.2.6 Artwork no. 7: "MALE DOMINATION"

In this artwork (Fig.19), the researcher portraited the rural house landscape in upper Egypt. She used symbolism to express mindset and culture of people living there. Giant eyebrows, moustache and head cover symbolize male domination in this community. The eye was put on the house in order to drive away evil and envy, following Egyptian beliefs. Palm tree, birds and triangular shapes are common elements in upper Egypt landscapes.

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In figure (20), the researcher experimented using this artwork in a "sign in" screen of a user interface design. The application is in Arabic language and may express the Egyptian heritage.

Figure (19), 3D illustration for an outdoor scene of an Egyptian house in the countryside of upper Egypt, 2022. (Source: Author)

Figure (20), UI "sign in" screen design for an application, 2022. (Source: Author)

8.2.7 Artwork no. 8: "The Red Window"

In this artwork (Fig.21), the researcher designed a composition that includes a red window inspired by upper Egypt (Aswan) houses on an orange and blue wall. She used other elements that reflect the city's spirit as the Kollah (clay water container), the triangles on the window, angular patterns, wall drawings and the highly saturated color palette. The design has space and air in its composition that may suggest adding some texts and link buttons in a UI design.
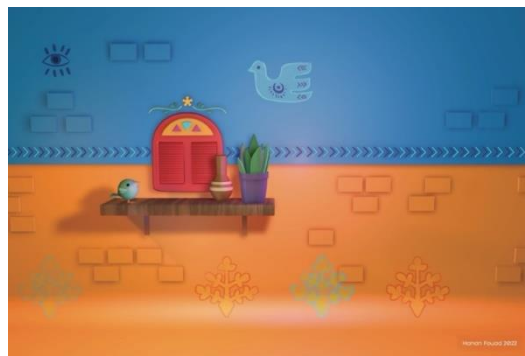

Figure (21), 3D illustration for a front wall of an upper Egyptian house, 2022. (Source: Author)

8.2.8 Artwork no. 9: "Egyptian Portraits"

In the following figures (22&23), the researcher experimented designing 3D Egyptian portraits that can be used as Avatars in a mobile application's UI design. The figures are diverse Egyptian characters from upper Egypt, countryside & oasis' residents (Bedouins). The researcher used traditional costumes, skin colors, hairstyles, accessories and head cover that reflect their Egyptian identity. On the other hand, she was keen to follow the contemporary universal style through the use of simple geometrical shapes in building the characters. However, the realism of colors, shades and lights can still be observed. The figures are cheerful and colorful to engage the users through their user experience.

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Figure (22), 3D illustrations for diverse Egyptian portraits, 2022. (Source: Author)

Figure (23), Avatars implementation on a UI design of an application, 2022. (Source: Author)

8.2.9 Artwork no. 10: "Watermelon & White Cheese"

In this artwork, the researcher made a 3D design for an outdoor composition in the countryside. This is obvious through the use of green lands, the sun and the clouds in the background. The researcher added in the foreground some common elements from the Egyptian culture. As, the watermelon, the white cheese plate, the well-known Egyptian "Baladi" bread, the basic metal teapot, the glass of tea drank by the Egyptians after their meals. In figure (25), the researcher experimented using this 3D illustration on a website that sells natural Egyptian food products.

Figure (24), 3D illustration inspired by natural Egyptian countryside, 2022. (Source: Author)

Figure (25), Natural food products online shopping website, UI design, 2022. (Source: Author)

8.3 Protocol

A data collection tool was developed in the form of a questionnaire with 17 multiple-choice questions. It began by asking the participants about their name, gender, age and nationality. Then, the researcher wanted to measure if Egyptian or foreign users who use websites and applications frequently, can perceive the meanings of these illustrations or not. Also, she wanted to test to what extent the participants could link these illustrations with Egyptian culture.

Some of the artworks were displayed with questions about them. As, artwork no (1), participants were asked to guess her nationality and to guess the meaning of the illustration. Then they were asked to choose between this artwork and another simpler flat one with no specific features to be put on an Egyptian website UI design. They were also asked to justify their answers. After that, artwork no (4) "Mini Aswan" was displayed, as participants were asked to guess the location of this artwork, whether it is in Aswan in Egypt, Madrid in Spain or Rome in Italy. They were also

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asked if they like it or not with a justification for their answer. Then, they were asked if it fits well in the UI design in figure (11). As for artwork no (2), participants were asked to suggest a name for it. Also, they were asked to choose between figure (8) & figure (9) as which could likely be used for a website that express Aswan's music festival.

Finally, participants were asked to suggest an online topic that might use artwork no (7) in its user interface design. Survey was circulated via social media platforms and participants completed it individually without any supervision.

8.4 Participants

A total of 95 individuals participated in the research study. The participants consisted of a total of 71 Egyptians (74.7%), 12 Arab (12.7%), 8 Indians (8.4%), 2 Europeans (2.1%), 1 Chinese (1.1%), 1 Pakistani (1.1%). They included 72 females (77.4%) and 21 males (22.6%). 70 individuals (74.5%) aged between 18-35, 25 individuals (26.6%) aged 36-50, 0 individuals (0%) aged above 50. All participants are highly educated. All participants live in Arabic countries as Egypt. and UAE, so they are in touch with Egyptians and Arabs.
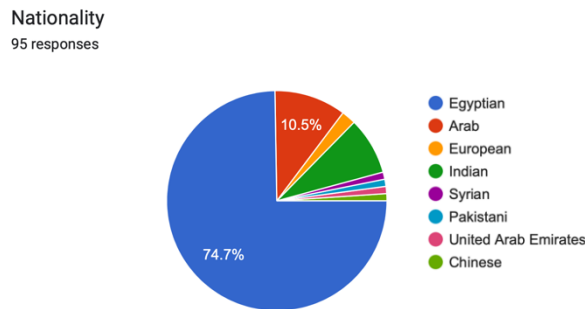
9. RESULTS AND DISCUSSION

The results of the survey came to solve some questions that the researcher needed to find answers to. In the next table, the researcher displays some of the questions used in the survey. Also, she could summarize the answers through a comparison according to Egyptians and non-Egyptians.

	Questions	Egyptians	Non-Egyptians
1	What might be the nationality of this girl? (Fig 2)	69 participants could recognize that she is Egyptian. **While** only 1 stated that she is an Arabic or African girl.	12 Arab, 2 European, 3 Indian participants could recognize that she is Egyptian. **While** 5 Indians stated that she is Indian, 1 Chinese stated she is Mexican, 1 Pakistani stated that she is Indian.

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2	Which is better to be used on an Egyptian website? Option 1 Option 2 	7 participants chose **option 1**, 59 participants chose **option 2.** **while** 1 participant stated that it depends on the website content.	6 participants chose **option 1,** 17 participants chose **option 2.** **while** 1 participant stated that it depends on the website content.
3	Justify your answer from the previous question	Participants who chose **option 1** said that it has a general look that suits modern Egyptian girls. **While**, Participants who chose **option 2** justified their answer by saying that It looks like the Egyptian girls in the countryside with their unique cloths and accessories.	Participants who chose **option 1** said that it does not limit the personal interpretation with details such as color, dress code and that it is more generic, thus target larger segment of audience. **While**, Participants who chose **option 2** justified their answer by saying that it is attractive, draws attention and more linked to Egyptian culture through skin color, head scarf and cloths.
4	Suggest the location of this artwork (Fig 10)	69 Participants answered Aswan city. **While** 1 participant answered Madrid in Spain.	21 Participants answered Aswan city. **While** 2 participants stated Rome and Madrid.
5	Did this art work fit well in this website's user interface design? (Fig 11)	22 Participants said "perfectly", 31 said "Yes", 3 said "No", 14 said "Not so much".	8 Participants said "perfectly", 9 said "Yes", 3 said "No", 4 said "Not so much".
6	Can you suggest a name for this artwork (Fig 6)	Most of the suggested names were linked to Aswan's music and Egyptian culture.	Most of the suggested names were linked to nature, senses, art, music and culture in general.
7	Which design do you like more for a website that express Aswan's music festival? (Fig 8) or (Fig 9) Option 1 Option 2 	1 Participant chose **option 1**. **While** 67 chose **option 2.** **While** 1 stated that it depends if it was modern musical event or Arabic heritage musical event.	4 Participants chose **option 1**. **While** 19 chose **option 2.** **While** 1 stated that it depends on type of songs.
8	Justify your answer from the previous question	No participant chose **option 1.** **While**, Participants who chose **option 2** stated that it is full of Aswan cultural items that reflects the country's culture and taste in music. Also, yellow color induces a more creative and positive atmosphere. While option 1 is more of a western representation.	1 Participant who chose **option 1** stated that it is catchier while the other didn't answer that question. **While**, Participants who chose **option 2** stated that it is culture-based music design and that it reflects the Egyptian culture.

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9	Can you suggest an online topic that might use this artwork in its user interface design? (Fig 19)	23 Participants didn't provide an answer. **While**, others suggested topics that are linked to Upper Egypt, Aswan men, TV series interface (Al Kabir) or as a separator between shots, TV shows about Egyptian life, Hotel in Aswan official website, Trips to Aswan.	12 Participants couldn't provide an answer. 1 Indian participant suggested Sada Punjab (an Indian name). **While**, others suggested topics that are linked to Egypt, heritage, village, tourism or Aswan.

After analyzing the results, the researcher finally suggests that background culture is observed to have a very important influence on users' perception and interaction with illustrations or UI designs. Which agrees with the work of of (Almakky, H. & Sahandi, R. & Taylor, J.). This also agrees with the work of of (Luna, D. & Peracchio, L.A. & De Juan, M.D, 2002). For example, the Indian participants who linked artwork no.1 with India although she is wearing rural Egyptian cloths and accessories. While the same artwork was well perceived by all Egyptian participants and they could easily recognize that she is an Egyptian rural girl. Moreover, the researcher suggests that users' preference depends on their cultural background, this was obvious in Egyptian participants' choices that were observed to be based on their cultural taste. By the use of positive emotional stimuli, linked to Egyptian culture and identity, engagement was enhanced. The researcher suggests that the designs seemed friendly and trustful to users, like communication with a close person. The researcher also observed that the use of colors had an impact on participants' choices. Users were more attracted to vibrant saturated colors when it comes to illustrations and UI designs.

Finally, the practical experiment came up to prove that the Egyptian culture can be a very rich inspiration to designers in order to produce UI illustrations, that still follow the contemporary 3D style. The artworks produced merged between simplicity of shapes and realism in shades, lights and textures.

10. CONCLUSION

Through this work, the researcher came up with few conclusions concerning the influence of using the Egyptian culture as an inspiration for UI 3D illustrations on users' perception, which can be summarized as follows:

• The Egyptian culture with its landscape scenes, diverse portraits, folk symbols, patterns, unique cloths, and accessories can be a very rich inspiration for artists to produce UI 3D illustrations.

• UI 3D illustrations inspired from the Egyptian culture are created through multiple steps that begin by collecting references and resources, making manual pencil sketches, build the compositions on Maxon Cinema 4D software, add colors that enhance the Egyptian identity and render the artwork in the end.

• 3D illustrations inspired from the Egyptian culture can be used on the UI design of Egyptian websites and applications that target the Egyptian Users. However, it won't be well perceived by foreigners unless text is added to the design.

• Egyptian users showed high understanding for the illustrations' content and could easily link it to Egypt. Also, they showed high engagement and appreciation to the artworks and their

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use in UI designs of websites and applications. On the other hand, non-Egyptians varied their answers between high or low perception rates.

- Social and cultural background influence user's perception while seeing and analyzing illustrations or UI designs.

11. RECOMMENDATIONS

After working through the paper, and experimenting the use of 3D illustrations inspired by the Egyptian culture on UI design of websites and applications and while observing and analyzing how this affect users' perception and engagement rate, the researcher recommends that:

- When targeting users from all over the world, user interfaces and their attached illustrations need to be designed in a universal style. This is to achieve high engagement rates and optimum perception for the content or commands.

- 3D illustrations inspired from the Egyptian culture should be added to UI designs of local websites and applications in order to elicit positive triggers in users' mind thus increase hiss engagement through user experience.

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