

The use of artificial intelligence in reimagining the overall perception of Algerian cultural heritage: An augmented reality experience at the Visual Arts Exhibition in Algeria as a model.

توظيف الذكاء الاصطناعي في إعادة التصور العام للتراث الثقافي الجزائري: تجربة الواقع المعزز
بمعرض الفنون التشكيلية في الجزائر أنموذجا

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Abstract :

In light of the rapid technological developments that the world is witnessing, it has become essential to explore how these emerging technologies are impacting various creative fields, including visual arts. One of the modern technologies that has revolutionized this field is "augmented reality," which integrates digital elements with the real world to provide an interactive and immersive artistic experience. This technology allows artists the opportunity to expand their creative horizons, enabling them to present multidimensional artworks that combine traditional and digital media.

Through this research, we aim to highlight the manifestations and applications of augmented reality in the field of visual arts, focusing on how this technology affects the experience of both artists and users alike. Therefore, this research will address many important aspects, starting from the definition of augmented reality and its history, to showcasing artistic applications, the technologies used, and the challenges faced in this field.

Keywords: Augmented reality; technologies; visual arts; virtual reality.

المخلص:

في ظل التطورات التكنولوجية المتسارعة التي يشهدها العالم، أصبح من الضروري استكشاف كيفية تأثير هذه التقنيات المستجدة على المجالات الإبداعية المختلفة، بما في ذلك الفنون التشكيلية، واحدة من التقنيات الحديثة التي أحدثت ثورة في هذا المجال هي تقنية "الواقع المعزز"، التي تعمل على دمج العناصر الرقمية مع العالم الحقيقي لتوفير تجربة فنية تفاعلية وشاملة. هذه التقنية تتيح للفنانين فرصة توسيع آفاقهم الإبداعية، مما يسمح لهم بتقديم أعمال فنية متعددة الأبعاد تجمع بين الوسائط التقليدية والرقمية.

نسعى من خلال بحثنا هذا إلى إبراز تجليات وتطبيقات الواقع المعزز في مجال الفنون التشكيلية، والتركيز على كيفية تأثير هذه التقنية على تجربة الفنانين والمستخدمين على حد سواء. لذا سنتناول في هذا البحث العديد من تجارب استخدام الواقع المعزز بدار القازوز بالعاصمة تحت إشراف مؤسسة حمود بوعلام للمشروبات، بدءاً من تقديم أهم المعطيات والمعلومات حول هذا المعرض، وصولاً إلى استعراض أهم النتائج المتوصل إليها من خلال هذا المعرض على طول السياق العلمي والتكنولوجي من جهة والنطاق التجاري والاقتصادي من جهة أخرى.

الكلمات المفتاحية: واقع معزز؛ تكنولوجيات؛ فنون تشكيلية؛ واقع افتراضي، دار القازوز.

1. Introduction:

Recent studies show that augmented reality plays an increasing role in changing the way arts are presented and received. In a study titled "Augmented Reality and Visual Arts," the use of augmented reality techniques in visual arts was explored and how it helped enhance visitor interaction with artworks in exhibitions. Augmented reality provides artists the ability to add digital elements to paintings and sculptures, allowing viewers to interact with the artwork in ways that were not possible before.

Visual art operates according to specific standards that utilize all available material resources around it in an effective manner to achieve the desired work, characterized by beauty, efficiency, and excitement.

The use of modern technologies such as augmented reality represents an important shift in the field of Algerian visual arts, as this approach allows artists the opportunity to expand the boundaries of artistic expression and interact with the audience in new ways. It enables Algerian artists to add digital elements to their actual artworks, allowing them to create an enhanced and innovative artistic experience. This has been emphasized through the application of augmented reality technology in the visual arts exhibition "Dar Al- QAZOUZ " in the capital.

Contemporary art is generally considered a modern creative medium that employs advanced techniques and media, such as augmented reality, to highlight interactive artistic experiences that reflect the manifestations of this era. For example, in the context of the visual arts exhibition in Algeria, virtual elements were integrated with the physical reality to present innovative and immersive artworks. This overlap between the real and virtual spaces allowed the audience to interact with the artworks in an unprecedented way, through smartphone screens, tablets, or by using augmented reality glasses.

Through this research, we aim to highlight the manifestations and applications of augmented reality in the field of visual arts in Algeria, focusing on how this technology affects the experience of both artists and users. Therefore, we will address in this research the enhancement of this technology from the depth of the artistic experience, where the works can include moving, sound, and interactive elements, contributing to the creation of an engaging interactive artistic experience with cultural and artistic significance that aligns with the environment of the Algerian exhibition, as observed in the Dar el-QAZOUZ exhibition in the capital.

The visual arts in Algeria are characterized by their diversity and richness, reflecting a history and culture that blend Arab, Islamic, and Amazigh influences. This is combined in a variety of techniques and styles, including painting, sculpture, decorative arts, and miniatures, which continuously keep pace with and interact with Algerian reality.

In light of the continuous development of digital technologies, augmented reality (AR) has become one of the modern tools that significantly affect various fields, including visual arts. With the increasing use of this technology in art exhibitions and cultural institutions, there is a need for an in-depth study to assess the impact of this technology on the artistic process and the audience's interaction with artworks.

The main problem of the research lies in how to exploit augmented reality technology to enhance the artistic experience and increase audience interaction with visual artworks at the Dar Al- QAZOUZ exhibition held in 2024. While this technology has prepared a promising means to elevate the level of artistic immersion for those interested in this form from Algeria, there are questions about its impact on the traditional understanding of Algerian visual art and the material and immaterial heritage in the country. There are still gaps in research related to augmented reality applications in local Algerian contexts, as this technology has not yet received sufficient attention to study its effects on the local artistic scene.

2. The contextual framework of study terms

The use of augmented reality techniques in visual arts dates back to the beginning of the new millennium (Aitamurto, 2018, p47). This technique emerged as a means to integrate digital media with traditional arts, aiming to create new experiences for visitors. In Europe, France and Germany were among the first countries to adopt augmented reality in museums and art exhibitions. For example, the Louvre Museum used augmented reality to display additional information about paintings, such as the "Mona Lisa," and to present three-dimensional models of artifacts that no longer exist. (Gould, 2013, p26)

Image No. 01: A workshop for preparing scenography with augmented reality at the Orsay Museum



Source: The official website of the Orsay Museum

2.1. Augmented Reality (AR) Technologies: Augmented Reality (AR) is a technology that integrates the digital world with the real world by overlaying virtual elements (such as graphics, texts, or videos) onto the real world. This integration is achieved through devices such as smartphones, tablets, or smart glasses, allowing the user to remain connected to their real-world environment while interacting with digital content. (Wang, 2012, p02)

2.2. Virtual Reality (VR): Unlike augmented reality (AR) technology, which blends digital elements with the real world, virtual reality (VR) technology allows the user to fully immerse themselves in a virtual environment that is completely separate from the surrounding physical reality. Using dedicated devices such as virtual reality

headsets, like the Oculus Rift and HTC VIVE, users can enter a three-dimensional virtual world where the real world is replaced by an immersive virtual environment.

In a virtual reality experience, the user is separated from the physical environment around them, allowing for complete immersion in the computer-generated virtual environment. This total immersion enhances interaction with the virtual elements that make up the virtual surroundings, making the user feel as if they are a part of that environment, whether it is an educational experience, an interactive game, or artistic exploration.

2.3. Visual Art: Visual art is one of the forms of visual arts that relies on the use of tangible visual elements such as colors, lines, and shapes. Visual art includes several branches such as painting, sculpture, photography, and graphic art. The visual artist relies on sensory materials to create a work of art that expresses their ideas or feelings. With technological advancement, visual art has also come to include digital media and augmented and virtual reality.

3. Algeria's Experience in Using Augmented Reality to Preserve Heritage: The "Dar El QAZOUZ " Exhibition as a Model

In 2024, the "Dar El QAZOUZ " exhibition was organized at the "Mohamed RASEM" exhibition hall in Algiers, under the auspices of Hamoud BOUALAM Company. This event represents an important turning point in the Algerian art scene by using augmented reality technologies to enhance visitor interaction with the displayed artworks.

The exhibition brought together traditional artworks and digital art, featuring the participation of 11 Algerian artists from various fields, including painting, sculpture, photography, and digital art.

Image No. 02: The promotional poster for the "Dar El QAZOUZ " exhibition



Source: from the website <https://jeune-independant.net>

3.1.The participating artists in the exhibition from the traditional field

- Field of painting and composition:

- Mahdi Jalil (BARDI): Presented interactive paintings that used augmented reality to enhance the intricate details in his works that express social and political themes.

- Mirin Haj Abdul Rahman (LAMAN du People): Paintings filled with interactive elements that come to life when visitors use smartphones.

- **Field of sculpture:**

- Walid Darwish: Displayed interactive sculptures that utilized technology to show changes in shape and materials when interacting with the sculptures via smartphones or devices.

3.2. The participating artists in the exhibition from the digital field

- **Digital Art Field:**

- Iman ZATANI (Easy Art Work) and TKHARBISHA: presented digital works that transcend reality using augmented reality technology, allowing viewers to interact with animated digital elements integrated with the paintings.

- **Photography Field:**

- BEBITO Jones: used augmented reality technology to add new dimensions to his photographs that focused on social themes in Algeria.

- **Immersive Arts Field:**

- Nassim TRABELSI: focused on providing an interactive experience where visitors could interact with artworks using augmented reality to activate audio and visual elements.

4. An Analytical Study of the Application of Augmented Reality Technology in the Fine Arts Exhibition (Dar Al- QAZOUZ)

The "Dar Al- QAZOUZ" exhibition, organized at the Mohamed RASEM Gallery in Algiers from March 30 to April 3, 2024, is one of the pioneering exhibitions in Algeria that heavily relied on integrating technology with fine art, particularly augmented reality technology. This exhibition, which celebrated cultural heritage and Algerian identity through the famous brand Hamoud BOUALAM, provided a multi-dimensional experience for visitors that combined the past and the present.

Image No. 03: A view of the virtual models in the exhibition



Source: Photographed by the researchers

Augmented reality was an integral part of the exhibition experience, as the technology added additional layers of interaction with the paintings and sculptures. Through smartphone applications, visitors were able to explore hidden details, such as historical information related to the "Hamoud BOUALAM " brand and its history. According to an article published in the newspaper "Al-WATAN" the exhibited works were designed to provide a multi-dimensional immersive sensory experience.

Image No. 04: Exhibition visitors interacting with the paintings



Source: Photographed by the researchers

4.1. Technical and Technological Challenges

Although the augmented reality experience was remarkable, some visitors and artists pointed out technical challenges. One of these challenges was related to the quality of 3D graphics and digital interactions, as some visitors reported slow application responses or difficulties in displaying details with high precision. Additionally, the heavy reliance on smartphones and headsets for the experience did not mean that the quality of the experience depended on the performance of the devices, leading to variations in visitor experiences based on the type of phone used.

4.2. Role of Participating Artists

The participating artists in the exhibition played an important role in transforming traditional artworks into interactive pieces. Artist Walid Darwish, who showcased interactive sculptures, used augmented reality to display changes in shapes and materials when visitors interacted with the sculptures. Additionally, Iman ZAYANI

(Easy Art Work) utilized augmented reality to add a digital dimension to her paintings, allowing viewers to see additional layers of information that are not visible to the naked eye. (Darwish, 2024, p01)

Artist TKHARBISHA, for his part, presented works that blend traditional art with digital art in his humorous and satirical style.

His paintings included visual and auditory interactions that reflect Algerian pop culture and urban society. According to an article from JEUNE INDEPENDENT, this artist aimed to revive popular culture in an innovative way by integrating digital elements. (Darwish, 2024, p02)

5. The Cultural and Artistic Impact of Augmented Reality

The impact of augmented reality on the experience of artists and users, The use of augmented reality contributes to enhancing the experience of Algerian artists, allowing them to interact directly with their artworks and share them with the audience in an innovative and exciting way.

Augmented reality helps stimulate Algerian users to explore and experience visual arts in new and innovative ways, which contributes to enhancing their understanding and appreciation of visual arts. Additionally, the use of advanced technologies such as augmented reality in Algerian exhibitions and museums represents an important shift in presenting art and cultural heritage in an innovative and interactive manner.

Museums and exhibitions in Algeria can use augmented reality technology to enhance the visitor experience and make it more interactive and engaging.

Visitors can explore artworks or historical exhibits in different ways through augmented reality applications on their smartphones or tablets.

Augmented reality can enrich the information provided to visitors about artworks or historical pieces by adding digital elements such as explanatory texts or 3D images.

Users can obtain precise details about artworks, such as the painting techniques used or the history of the piece, through their interaction with augmented reality elements. Augmented reality can also help highlight the stories and cultural heritage of Algeria by adding digital elements related to history and heritage to art displays or exhibitions. Visitors will be able to listen to stories related to the displayed pieces and interact with virtual representations of historical figures through augmented reality

applications. Augmented reality will contribute to expanding access to Algerian exhibitions and museums.

allowing people who cannot visit physical sites to benefit from Algerian art and heritage through an online augmented reality experience. Visitors can engage with friends and family in augmented reality experiences, increasing interaction and participation in exploring Algerian art and heritage.

Augmented reality will create a multi-sensory experience for visitors by adding audio, visual, or even interactive elements that contribute to making the artistic experience more exciting and enjoyable.

In this way, the use of augmented reality in Algerian exhibitions and museums can enrich and enhance the visitor experience, fostering their understanding and appreciation of Algerian art and cultural heritage.

6. Conclusion

Regarding the use of augmented reality in the field of visual arts, this emerging artistic form is still relatively new. However, more and more artists are exploring the possibilities of augmented reality to create contemporary abstract artworks. These artists utilize the latest technologies to integrate augmented reality elements into their works, creating interactive and innovative experiences.

In Algeria, at the Dar el- QAZOUZ exhibition, we discovered how contemporary abstract art in augmented reality can provide a unique way to create an immersive artistic experience for viewers. Artworks can be used to stimulate imagination and creativity, engaging viewers in a critical dialogue about current issues.

The application of augmented reality technology throughout the exhibition contributed to providing an immersive and interactive experience for the audience by combining traditional art with modern technology, allowing visitors to see the artworks in a new and innovative way. Despite the technical challenges faced by some, most of these exhibitions have achieved significant success in delivering an educational and interactive artistic experience that could serve as a future model for developing the artistic scene worldwide.

The experiences presented in this study demonstrate the immense potential that augmented reality technology offers in developing visual arts and interacting with the audience. This technology represents an effective means of enhancing viewer experiences and adding an interactive and multidimensional character to art. Thanks to augmented reality, visitors can explore the artwork in an interactive and immersive way, increasing understanding and appreciation of the artistic work.

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