Criteria for Designing Augmented Reality Applications to Navigate in Smart Cities

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Abstract:

A smart city is one that uses technological infrastructure in all aspects of life to facilitate the citizens' life. A city cannot be considered smart unless modern technologies are promoted. Augmented Reality (AR) is one of the most important modern technologies that can play an important role in achieving smart cities' objectives of sustainability and improving citizens' lives, as well as creating and encouraging innovations in city systems that are available by technology, Augmented Reality applications for navigating in smart cities are used to move both externally in road and internally in different buildings in a user-friendly manner.

The applications of augmented reality navigation that will be discussed in this research are not only intended to travel from one place to another and identify directions, but also to obtain all the information that the user needs in a pleasant and interesting way. The research problem lies in answering the following questions: How can enhanced augmented reality applications be used for navigating in smart cities? What criteria should be observed in designing enhanced augmented reality applications to navigate in smart cities? The research aims to examine how to make use of augmented reality technology in smart city navigation applications in order to meet the user needs and satisfaction efficiently and effectively.

Keywords:

Augmented Reality ,Augmented Reality Navigation Application ,Smart Cities

Introduction:

Designers all over the world seek to use the best available technologies and learn about the most prominent developments and ideas to solve design problems, in addition to their endeavor to adapt and exploit the best capabilities to present and present their ideas in a way that achieves simplicity and clarity. New digital developments and modern technologies have affected most areas of life, including design. Augmented reality came as one of the modern technologies to change the way we deal with design spaces, as it is not an independent and separate dimension from real reality. Augmented reality is an improved version of the real reality that was created using technology to add digital information to a real scene in the environment surrounding us, and this is done through tools that have the ability to create this addition and this linkage. This real reality can be represented in the cities in which we live. There has become a global trend to develop cities and transform them into smart cities that seek to provide an environmentally friendly digital environment that stimulates learning and creativity and contributes to providing

a sustainable environment that enhances happiness and health. Augmented reality technology has made a great impact in the past few years through its various applications in various fields of life such as: education, tourism, medicine, entertainment, shopping, navigation, transportation and many others, and these applications have a set of design criteria that the designer must study and know; To take advantage of them to produce and implement more effective and beneficial applications for the user; To meet his needs while navigating smart cities efficiently and effectively.

Research problem:
The research problem lies in answering the following questions:
1- How can applications of augmented reality be used for mobility in smart cities?
2- What are the criteria to be considered in designing augmented reality applications for mobility in smart cities?

Importance of research:
1- Keeping pace with the technological development in smart cities by employing augmented reality technology in their mobility applications.
2- The need to take advantage of augmented reality applications to help the user in smart cities to obtain all the information he needs when navigating in an interactive, new and fun way.

Research Objectives:
1- Studying how to take advantage of augmented reality technology in smart city mobility applications to meet the needs and satisfaction of the user efficiently and effectively.
2- Studying the criteria for designing augmented reality applications for mobility in smart cities.

Methodology:
The research follows the descriptive approach to study augmented reality technology and how to use it in smart city mobility applications, and to study the standards for designing these applications.

Results:
1. Navigating using augmented reality applications aims to know and acquire information in many different areas of life that the user navigates internally and externally.
2. Taking advantage of augmented reality applications for mobility in Egyptian smart cities that facilitate life in them as well as meet the user's needs efficiently and effectively.
3. Taking into account design considerations for augmented reality applications for mobility helps to achieve functional effectiveness of applications.
4. Taking into account design standards for augmented reality applications in smart cities increases mobility efficiency.

Recommendations and suggestions:

1. Designer Recommendations:

- The need to take advantage of the criteria for designing augmented reality applications for mobility in smart cities to produce more effective and beneficial applications for the user.
- Designing an application with a unified design identity that allows the user to navigate internally and externally in the various sections of the city to facilitate the user's tasks there.

2. Recommendations for those in charge of smart cities:

Exploiting the technological infrastructure and using modern technologies such as augmented reality applications to achieve the goals of the city because of their great impact on the user.

- The need for smart cities to benefit from the applications of augmented reality in various areas of life within the city.

References:

1. khamis muhamad , tiknulujia alwaqie , tiknulujya alwaqie almueazaz , watiknulujia alwaqie almukhtalit , aljameiat almisriat liltiknulujya , almujalad 25 , aleadad 1 , 2015.

2. eabd alrawuwf 'iismaeil , almadinat aldhakiat - astiratijiat lidaem altahawul alraqamii wa'iidarat albinyat altahtiat aldhakiat lidual almintaqat fi tahqiq alaizdihar wajawdat alhayaat nahw almujtamaeat almutaqadimat , dar rawabit lilnashr watiknulujia almaelumat , almujalad 1 , 2018.

3. rami mahmud qanawaa "alhaqiqat almudmajat watatbiqatuha fi 'anzimat aleard almukhtalifati" risalat majistir , kuliyat alfunun altatbiqiat , jamieat hulwan , 2016 ma.

4. 'ashraf muhamad albaradiei , 'amirat aihmad fuad hasan , 'athar altafaeul bayn namat altaeaqub watiqniat aldamj bitiknulujia alwaqie almueazazealii tanmiat altahsil majalat almihnat wal'iitijahat nahw biyat altaealum tulaab tiknulujia altaelim , kuliyat altarbiat bibinha , aleadad 120 , 2019 m.

5. 'ahmad alhanyan , almudun aldhakiat wadawruha fi bina' alfard walmujtamae , almutamar al'aqlimi al'awal lilqiadat , altanmawiat fi zili alealamat alraqamiat , 2019 ma.

6. aynas eabd almaeiz alshaamiu , madrasat kuliyat altarbiat , jamieat almanufiat , aleadad alraabie , aljuz' al'awal , 2017 ma.

7. hanan alkamil , alwaqie almueazaz fi al'iielam aljadid , kuliyat al'iielam jamieat baghdad , 2020 m.

8. muhsin bin alhabib , eabd alghanii bin hamid , alharaf al'awal - birlin - 2019 mi.

9. marwat eabdalmuneim muhamad 'ahmad qunsuat , al'iisdar 3 , aleadad 12 (2) , alkharif 2018 mi.