Faculty of Computers & Artificial Intelligence

Benha University

2ⁿᵈ Term
Information Security and Digital Forensics Program
Course Code   **:**   FCS351
Course name   **:** Computer Graphics

Final Date: 7 / 6 /2020
Total Marks: Pass / Fail
Examiner(s): Dr. Neven ElSayed

<mark>**Research submission: From 31 May to 7 June 2020**</mark>

Write a research project in ONE of the following topics:

Topic No. 1: COVID-19 Game (Android / Desktop)

Educational Video Gaming is a power information delivery tool (Edutainment), such as: (***SICKO:*** https://stan.md/3b0Tj9f and ***Scratch:*** https://scratch.mit.edu/). Through the previous weeks, we all suffered from COVID-19 situation, which added new regulations to our daily life. Develop an edutainment game level to teach kids the COVID-19 WHO advises (https://bit.ly/2VVEjW3). The game level can be implemented using Unity3D. After the game implementation, **Write a report including the following sections:**
1. **Abstract** (maximum 250 words): A full view on your application, and your achieved outcome
2. **Introduction** (maximum 600 words): Provide the background information needed to understand your application and the reasons why you created that application.
3. **Literature review** (maximum 400 words): list and discuss games that were implemented for knowledge distribution, with citation.
4. **Implementation** (maximum 2000 words): provide a detailed explanation for your game, supported with screen shoots, block diagram, state diagram.
5. **References**: list all the articles or resources you used in your research.

Topic No. 2 Rendering Algorithms Survey

Through the last years, researchers worked on generating photorealistic images for computer graphics (Rendering). These images were processed based on light, shadow, shader, and camera calculations (see the following figures). Rendering algorithms are not only for games, however, they are also used for simulation and design application. **Write a survey report on computer rendering algorithms including the following sections:**
1. **Abstract** (maximum 250 words): A full view on your survey points, and your conclusion view.
2. **Introduction** (maximum 600 words): Provide the background information needed to understand rendering components and main features.
3. **Literature review** (maximum 2500 words): list and discuss rendering research, and their implementation methodology. Your survey should mainly rely on academic research papers (google scholar), with recent research algorithms.
4. **Conclusion** (maximum 400 words): provide a summary of your discussed algorithms and expected future work.
5. **References:** List all the articles or resources you used in your research.

Images taken from: https://bit.ly/2xoT8a6 (a) Game for speed heat (b) Rage 2

Topic No. 3 Quarantine VR / AR application

Virtual Reality (VR) and Augmented Reality(AR) are recent innovative technologies in the computer graphics field. With the current quarantine, how could VR and AR help! **write a report on a conceptual idea for using AR and VR to help in the COVID-19 and the quarantine including the following sections:**

1. **Abstract** (maximum 250 words): A full view of your proposed AR/VR application, and the expected benefits from using the application.
2. **Introduction** (maximum 600 words): Provide the background information needed to understand the technologies that you are using in the application.
3. **Literature review** (maximum 400 words): list and discuss AR/ VR application that was used for a similar situation to your application.
4. **Proposed idea** (maximum 2500 words): Explain briefly your idea, including block diagram, application components, and wireframes. you should also explain and verify the technologies and hardware (if required) that you need for your proposed application.
5. **Conclusion** (maximum 400 words): provide a summary of your application and the idea expected contribution.
6. **References:** List all the articles or resources you used in your research.

GOOD LUCK,

Examiner(s)	**Program Coordinator**
Dr. Neven ElSayed	**Dr. Ahmed Taha**