

## **Reviving and Preserving Cultural Heritage and Antiquities Using Three-dimensional Survey and Mixed Reality Technology**

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### **Abstract**

[Abstract] Cultural heritage and antiques are of great importance and must be preserved and properly restored when damaged by the use of appropriate technology. Artifacts in Egypt are subjected exposed to environmental factors and unexpected events such as the incident involving the Church of Notre Dame. We will create a complete archive of all the monuments and antiques in the form of three-dimensional graphic models preserving the original state of these artifacts that can later be used as a reference. In the case of any damage, we can rely on these three-dimensional models to restore them accurately. These 3D models of all the scanned artifacts can also be used as 3D holograms.

The methods used here are to first use the technology of three-dimensional laser scanning to survey buildings and artifacts and then save these units in the form of three-dimensional graphic models in archives that can be used in case of damage occurring to a piece or a historical building, whether caused by natural reasons or as a result of mishandling. Additionally, the three-dimensional printers can be used to print the damaged parts of these pieces. and we will also minimize the transfer of these pieces to be displayed and replace those physical exhibitions with exhibitions by Holograms models using mixed reality all over the world which will greatly help their preservation.

The traditional methods used to display and preserve our historical artifacts are ineffective and incompatible with the available technology as well as the great value of these monuments.

### **Keywords**

Mixed reality technology, Service design, 3D scanning, Hologram