Designing and developing an Augmented Reality museum Guide

Visiting a museum should be a joyful experience, once a visitor is reaching a museum he would like to see the exhibits that are interesting to him.

Most of the guides that exist today will not comply with this requirement; furthermore, all of the guides that we know of will not give the user the maximal user experience when touring a museum.

Museum Guides that exists today contain guides like:

1. Human guide – a person that will lead a group of individuals toward the museum and will stop in permanent exhibitions and not always have time to answer the visitor's questions.
2. Audio tour – a small device that allows the visitor to a self-guided (audio only) tour in the museum area. Most of those devices are not being targeted to expert visitors.
3. Electronic guides – small device that will include a lot of data about the museum, but the visitor will have to navigate a lot of menus to get the data he is looking.

Our goal is the create a robust, generic Android-based museum guide application that will use Augmented Reality and Beacon technology in order to make a better and friendlier user experience to the visitors. Augmented reality is a new technology that allows the user see contextualized data on his mobile device. The data is seen as layers that are added above the reality and are displayed on the device. The user can interact with the displayed data in such a way that it is clearer which data is needed (i.e., arrows directing the road are displayed on the junction).

The goal of this project is to use AR technology to provide a more robust, generic and user-friendly museum guide that will provide the museum visitors a knowledge and enjoyable experience. Moreover, we require that the user will have minimum interaction with the application to keep his or her focus, and will be able to continue using the application.

We used the IBM AR engine in order to create an AR Android application for a mobile museum guide. The visitor uses his own smart phone, first installing the application and then using it in the museum. The user wonders around the museum, and while looking at exhibitions inside the museum the application is searching for beacons (BLE devices that transmitting a signal). Once a beacon is found the application lets the user know that there is information at that point, and the user can scan the exhibition. Once the user scans an exhibition, the application adds an information layer (see Figure 1) of data of specific items that were chosen as POIs (points of interests). The visitor can choose each item, and once he pushed the button, he gets more data about the specific item in the form of videos, text and images.(see Figure 2). After the visitor views the item, the button turns grey to indicate to the visitor that he already looked at this item. Using the application, the user can receive all the information he needs from the modeled exhibition, and it is intuitive, and the connection between the information and the actual exhibit is intuitive and easy to understand.
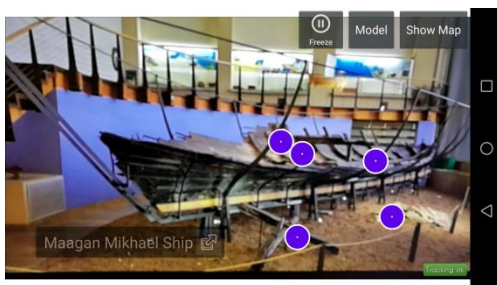

Figure 1: "Maagan Mikhael ship" model after the visitor had scanned the model. Each purple point is a button that after pressed can show information about that location.
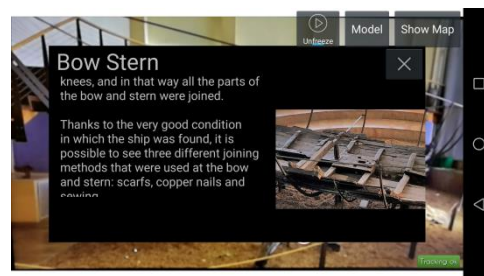

Figure 2: Information that is shown to the visitor after an item has been chosen