

BI-Weekly Report - HoloLens project

Client: Microsoft HoloLens Gaming (Group 11)

Team: Miron Zelina (Leader), Mehul Modha, Tilman Schmidt

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Report Number: 1

Introduction:

Team 11 is working on the Microsoft HoloLens with the objective of delivering a Game or API highlighting the capabilities of what the HoloLens can do. The idea being that the API can be used as a building block for other applications that will be designed in the future of this product.

Discussed tasks and challenges:

After the winter holidays, we have turned our attention to delivering a tangible product to our clients. We have been working on developing and enhancing the concept and projects from last term. During these two weeks, we have been in communication with Graham Tyler regarding the direction we should be taking and the deliverable recommended by them. From the conversation, it has been suggested there is much value in developing a game and providing a blog on the processes taken to produce the product, this is to assist future developers about the potential issues we come across and how we overcame them while developing. Currently, one consideration to factor in while developing is that there is only one HoloLens to test outputs, which is in heavy demand. To work around this, we will need to request the HoloLens out of lab hours to test and fix bugs and issues with current projects.

Plan of action:

In the upcoming week, we will begin to mould our ideas and concepts to develop a product, this is with the assistance of a skype conversation with Graham Tyler during the week. During that week, we also hope to come up with a design for our product/game. During the week after that, we hope to reuse the projects from our last term and start implementing them into the game or into the systems that will make up the final game. Of course, we will still be iterating over our design and adding and removing requirements as necessary.

Individual Bi-Weekly feedback

Mehul Modha: I have been working on integrating the Chess Game with HoloLens gesture features in order to provide a fluid game. Currently, I am looking for a new game to work on to combine the work of Tilman Schmidt's' work on marker tracking. The game would ideally would use the marker tracking to generate a key game feature, making the library a pivotal part of the game. Some ideas that have been considered is, player assisted pool, and basketball. More ideas to be thought of during the next two week and hopefully into development.

Tilman Schmidt: Over Christmas break, I did further research into the information that the AprilTag library provides, and realised that it would not give me access to full pose information of each of the detected markers. Because of this, I decided to start a new attempt at using the Aruco library, which is now viable since another developer has created OpenCV builds for the HoloLens. So far I have created a plugin that runs in the Unity editor, detecting tags in the webcam video feed and providing position and rotation information to a C# script. This information is then used by the script to spawn 3D objects that follow the marker's real world position and rotation. In the following weeks, I am planning to build HoloLens counterpart to this plugin, including the integration with the HoloLens' spatial information. Once complete, I will release it as a standalone library to the public. After this, I will be able to use it in the full project we are planning to take on this term.

Miron Zelina: During these past two weeks, I have managed to fix the rotation issue that sprung up during my gesture tests last term. Then, we collectively moved onto the decision-making process for our final product, where I helped set up meetings and present our work so far, as well as a plan for the future. For the our final product, I hope to come up with a reasonable time and person allocation for the various parts that it will require. I also hope to dive into spatial understanding for the Hololens, as we have discussed that this functionality may be useful to implement for various ideas for game development that we had.