BI-Weekly Report- HoloLens project

***Client**: Microsoft HoloLens Gaming (Group 11)*
***Team:** Miron Zelina (Leader), Mehul Modha, Tilman Schmidt*
***Internal Supervisor:** Dr Dean Mohamedally **TA:** Aron Monszpart*
***Report Number:** 3*

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:
Over the last couple of weeks, it has been independent work as there was scenario and reading week. We as a team have continued working on mini projects on the HoloLens project, this involves using Open CV for marker tracking. Also, there is works on an 'asteroid' game in which the user has objects (asteroids) coming towards them in their field of view and points are awarded for dodging said objects.

Considerations:
Unfortunately, we were unable to work on the HoloLens during our lab session on the 15th November (restarted Hololens required a password we did not know, this issue has since been resolved).

Meeting with Dean Mohamedally and Lee Stott *on 15th November 2016*
During the meeting, everyone in the team presented the work they had done so far, that being Mehul's work on the website, Miron's asteroid game prototype, and Tilman's attempts at object marker tracking. Regarding the marker tracking, it was suggested that it may take too long to resolve the issues he was having, and that a different prototype should be attempted. However, Lee Stott provided a contact with Graham Tyler from the HoloLens team to potentially ask about these problems.
Overall, it was noted that we should focus on creating something concrete and presentable. We were also reminded to keep a record of our research and activities along the way.

Plan of action:
This week we will work on individual projects and deliverables to produce before the next bi weekly report. We hope to progress with our project and log our findings along the way.

Individual Bi-Weekly feedback

Mehul Modha: This week, I am looking into researching and starting a new project on the HoloLens. The website has been completed and is ready for our clients to see. This will now be updated along the way. We were advised to consider developing more concert packages during our meeting. In our group meeting we discussed what we could work on. The team had me research recognition of flat objects to consider as a "playing surface" for games. I

will look into working on this project which will hopefully develop over the next two weeks. I will make sure to log my process and progress as I go along.

Tilman Schmidt: This week, I have continued to work on getting an OpenCV native plugin to work in the HoloLens emulator. While I have come very close to a working solution, I have encountered a Unity error that I was unable to solve. I have contacted Graham Tyler at Microsoft about this issue, and hope to resolve this issue with help from the HoloLens team. However, during the meeting it was brought up that I might not be able to solve this problem in a reasonable timeframe, so I have researched other solutions for object marker tracking on the HoloLens. For this, I have found Vuforia, a commercial program library that has just added HoloLens support. It is however not clear whether HoloLens functionality is available without a commercial license key, so I will further research this library to see if it is a viable solution. Aside from this, I have also started researching the possibilities of making the HoloLens communicate with a paired PC in real time to use the HoloLens as a new interaction device, and have the PC run heavier calculations not suitable for the HoloLens.

***Miron Zelina*:** During these past two weeks, I have tested out the asteroid dodging game and moved on to a different prototype after evaluating the asteroid game to have considerable issues with field of view (however, a different game design could solve these issues, therefore a revisit of this idea later may be beneficial). I then moved onto researching HoloLens spatial mapping features. I have started the HoloLens academy tutorial for this feature and I have also started researching the Unity API for spatial mapping from Microsoft. I hope to take this knowledge forward and leverage this feature for a unique experience with the HoloLens.