Bi-Weekly Report 6

Date: *29/01/2016*
Project: *ARUK-VRSim*
Project Title: *Video and sensor display on the Google Cardboard*
(Previously: Alzheimer's Experience using the Google Cardboard)
Team Members:
Garrett May (Team Leader)
Hekla Helgadóttir

Overview

We have acquired most of the hardware needed for our project, identified and split the workload for this term, and given a short presentation on our current achievements, and future plans.
We have created a stable version of our Google Cardboard application, and are working towards developing the drone system and connecting it via a network. The clients have both agreed to a meeting in order to discuss progress and future updates.

Meetings

Date: *26/01/2016*
Attendees: *Garrett May*
Hekla Helgadottir
Carla Hyenne
Daniel Eldar
Aron Monszpart

Teams 1 and 2 met up to discuss our plan for the second term of the project. Aron joined the meeting to give input on the workload and scope of work we intend to deliver. Both teams agreed to get a written confirmation from the client on the deliverables to be handed in at the end of the second term. We discussed priorities for the project, distributed tasks between team members and looked back at our MoSCoW chart, updating the time-scale of a few items.

Date: *28/01/2016*
Attendees: *Garrett May*
Hekla Helgadottir
Carla Hyenne
Daniel Eldar
Dean Mohamedally
Clients from other projects

Teams 1 and 2 had a 4-minute presentation on our project. We spoke about who our clients were, talked about our problem statement, to deliver a system for medical staff to help with data visualisation and representation making use of virtual reality with the Google Cardboard and drones. We explained what had been done so far in the project, and talked about our future plans, including attaching sensors and cameras allowing for live feed to be sent from drone to phone, improving the user interface and user experience, improving the video analysis to help medical staff to detect the size of a refugee camp, and to implement head tracking to allow the Cardboard user to control a camera on the drone by moving his head.

Completed Tasks and Project Projection

We have acquired hardware for our system, including sensors, telemetry, drones, camera and a gimbal. We have identified our future tasks to be: Attaching sensors

and cameras, establishing a connection to send data between the drone, the server and the phone, improving the user interface, improving the video analysis and implementing head tracking.
We have allocated these tasks to team-members, and believe we are on the right track with the project.

Problems to be resolved

The drone system and the networking system will be quite arduous, as they are quite intertwined with each other.

We have to confirm whether the telemetry (Jeelink and Jeenode) can be used as an Arduino to send sensor data from the drone, or whether we will need an additional microcontroller. If it is actually an Arduino, we will be able to programme it easily, and won't need to connect it to another processing board. We have to purchase a separate video transmitter and receiver, and we will have to read up on how to connect sensors and the camera to be able to transmit data.

Workload - Past Two Weeks

Garrett:

Over the Christmas holidays I have been working on refactoring, improving and updating the Google Cardboard application, so that it becomes easier to read, more efficient and more flexible to our needs.
I have also been looking at trying to establish a connection between the laptop and the phone via Bluetooth. Two programs have been created, one for each device, in order to test sending data. Currently, a server can be created, and paired devices are listed. This will need to be finished off so that the subsystem is finished, and several tests should be made in order to confirm that the data being sent is correct and not corrupted.

Hekla:

In the last two weeks I have been working on hardware and connectivity research. I have borrowed a gimbal and a low resolution camera which we will try with the Phantom drone to see if we can connect and use to send data to the server. I have also researched infrared cameras to use on our project, but as they are very expensive we will not focus on heat sensitive footage for now.
I have also created the slides for our presentation on our project, and written and delivered the presentation.

Workload - Next Two Weeks

Garrett:

I will focus most of my effort in checking whether the JeeLink is indeed Arduino-based. If so, a basic test will be created in order to verify that we can program it in a similar way to the Arduino. I will then be able to look into connecting sensors to it, and sending their data over through the antenna. If I have time, I will then look into finishing the Bluetooth subsystem, by making a connection between two devices through use of sockets, and sending data between the two.

Finally, tests will be implemented for the Google Cardboard application (JUnit tests, and possibly OpenGL tests), the Bluetooth subsystem (JUnit tests), and the JeeLink (if possible).

Hekla:

Over the next two weeks I will be focusing on the head tracking for controlling the gimbal. I will test whether the borrowed gimbal works for the Phantom, do research on connecting the gimbal to the drone or whether we need a separate power source and transmitter. We could possibly utilise the transmitter transmitting sensor data (the Jeelink and the Jeenode), I will work with Garrett on finding out.

Furthermore I will look into how to use the gyroscope of the android phone to control the camera with the gimbal. I have already come across instructions on linking gimbal control to a joystick on a remote control, this will be the first step before translating to head movements detected by the phone.