Bi-Weekly Report Number 2

Computer vision for object detection in medicine

Team Number 6

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Week Overview

Client meeting No.2 (15/10/2018)

During the meeting it with the client we confirmed the project and discussed the requirements which resulted in the MoSCoW list.

It was also confirmand that we would be able to use a Kinect for the project and might be able to test out the project with ARM cameras later on, therefore, the back-end of the program must be cross-platform and not limit ourselves to using the depth aspect of the Kinect.

HCI

Meeting with the client and showing them the initial sketch designs allowed us to build on and enhance the interface and reach the final prototype which is displayed in the HCI presentation.

After talking with different users, we realised that we need to add a non-login function to allow the doctor to start the program without the login system in order for the surgery to start as soon as possible. During this time the monitor will not assume any tools are being used and will only display the tools that it has seen.

MoSCoW Requirements

Must Have:

- To be able to detect and identify medical objects
- Experiment with different settings and obstructions to mimic clinical scenarios
- Simple interface to display live object status
- After operation check all objects are accounted

Should Have:

- Customisation options of sets
- Two separate user interfaces
- Notify when an object has been removed and what the instrument is

Could Have:

- End of operation object summary, ML (Machine Learning)
- Object timestamps and heat maps

Won't Have:

- No notification sounds as they can be distracting
- Data collation from multiple theatres

Team Roles

Due to the fact that the team only consists of two people, most of the rolls will be done by both members.

Infrastructure

Looking at the requirement for the website gave allowed us to decide on the website template. After deciding a specific bootstrap template, the website was setup on the department computers and can now be viewed by anyone although at this point in time the project information has not been added.

We also looked into how we would approach the project and different tools we would use. During this time, we found OpenCV, a SDK mainly aimed in real-time computer vision.

List of tasks done

- Created personas by talking to users
- Created scenarios from these personas
- Finalise MoSCoW list
- Finalise interface
- Setup website and decide design

Plan for the next two weeks

- Decide on APIs
- Setup website content
- Setup simple interface for testing object recognition on Kinects and cameras

Individual tasks completed

Benedict
The main focus for the last 2 weeks was finalizing the prototype. We performed an evaluation on our initial prototypes which included talking to different users to get their opinions and other lab students acting if they were experts in the field. I then created a 3d model of the setup of the system and a simple interface for the secondary monitor of the system for our final prototype. We also started researching into potential Computer Visions SDKs we could use for cameras and connect.

Shirin
During the past two weeks, our main focus has been on the interface of the system, coming up with personas and scenarios in order to get a better understanding of the project and look at it from the user's perspective.
I was also able to setup the website using the departments computers on the Linux systems after choosing the website template.