Bi-Weekly Report Number 1

Computer vision for object detection in medicine

Team Number 6

Author	*Author Email*
Benedict Chan	benedict.chan.17@ucl.ac.uk
Shirin Harandi	shirin.harandi.17@ucl.ac.uk

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Department of Computer Science

University College London

Week Overview

We spent the week researching into the computer visions field and brainstorming ideas on the different paths in which the project could go. As we had not met up with our client yet and the project brief was not too extensive, we kept our sketches and ideas very brief but on a diverse range of themes. At the start of the second week we had our first meeting with our client.

Client meeting No.1 (8/10/2018)

During the meeting with the client it was made clear that although there was no specific project in mind, they wanted us to use computer vision in some way to aid the medical field. The client suggested two possible routes we could take our project:

1. Using facial recognition to try help diagnose illnesses in children (one example given was as down syndrome)
2. Using computer vision to try and detect medical instruments in operating theatres to help aid the procedures.

Both of these projects require us to experiment with the limitations of current computer vision APIs. The first project requires us to see if symptoms can be reliably detected using facial detection. The second requires us to find out if objects can be reliably tracked and identified in a medical environment. Therefore, the final product is still kept pretty open ended as the extent we can take our project is still unknown.

We then had a further meeting with Yun Fu to discuss the feasibility of our project and to confirm whether we were working with ARM as this would allow us to access a wider range of resources.

After confirming the details of our project, we decided on the second idea presented by the client and had a further meeting with the client to discuss more specifics of the project.

Initial Requirements

- Use computer visions APIs to help aid in the medical field.
- Using multiple cameras to capture different operating theatre settings.
- Creating an application to track the objects identified in the input.
- Identify the different instruments and specify them.
- Display what items are present or removed from the frame (instruments tray).

Team Setup

As there is only 2 of us in the team we have not assigned specific roles as we will be doing the majority of the project together working on the same components. The tools we have decided to use in this project:

- Facebook Messenger – Team communication
- OneDrive – Management of documentation
- GitHub – Project management/version control

List of tasks done

- Talked to users and created preliminary sketches
- Gathered requirements for the project
- Researched into other computer visions related applications in lab sessions

Gathering requirements for the project took a lot longer than expected as we had to discuss with both the department and the client to confirm our project specifications. However, we should still be on track to capture the HCI requirements by the end of next week.

Plan for the next two weeks

- Talk to users to gather further requirements and create personas
- Draw further sketches of alternative designs
- Finalise Interface and create a prototype
- Decide on APIs
- Meet with clients
    - Finalise requirements (MoSCoW list)
    - Review interface design

Individual tasks completed

Benedict
For the majority of the first two weeks we researched into the computer visions field and met with our client to gather requirements for our project. In our research we looked at facial recognition applications like TrueKey and other phone apps like 'Facial Recognition' and took note of things we liked and disliked about them. We also talked to other students in our lab group to help us sketch up provisional designs.

Shirin
During the past two weeks we started looking into computer vision and the different APIs available. Afterwards we met with the client to discuss the project requirements where we were told to decide which project we were going to choose. After consulting the team, I met with Dr.Yun Fu to confirm the project as well as to talk about our collaboration with ARM. From then on, we contacted our client to set up a meeting for the coming week.