Meeting Agenda (Midsem break – week 1)

12th April 2019, 1PM – 2PM

Attendance:

Member	Attendance
Ben	Yes
John	Yes
Jose	Yes
Jordan	Yes
Jireh	Yes
Minh	Yes
Link	Yes

Tasks review (from last meeting):

1. Review documentation progress conducted since last week – the methodology of the sound team has been updated

Main objectives:

1. Testing the fish-eye camera
2. Testing the USB microphone receiver
3. Review of respeaker mic-array performance
4. Review of face detection
5. Determining the method of output from Raspberry Pi to PC

Points of discussion:

Testing the AHD digital video camera

The camera was plugged into a laptop and placed on a table approximately 70cm in height. The field of view of the camera was found to be an approximately 3.5m radius which could almost see the floor at this extremity:

The optimal distance from the camera for a clear video image was found to be within 1m of the device. Overall, the camera was found to be functional, and the quality of the video could be tuned by adjusting the focus of the camera.

Testing the USB microphone receiver

The USB Microphone receiver was found to be functional, however the sound output was quite small. A task that can arise from this is the amplification of the signal of the sound.

Review of respeaker mic-array performance

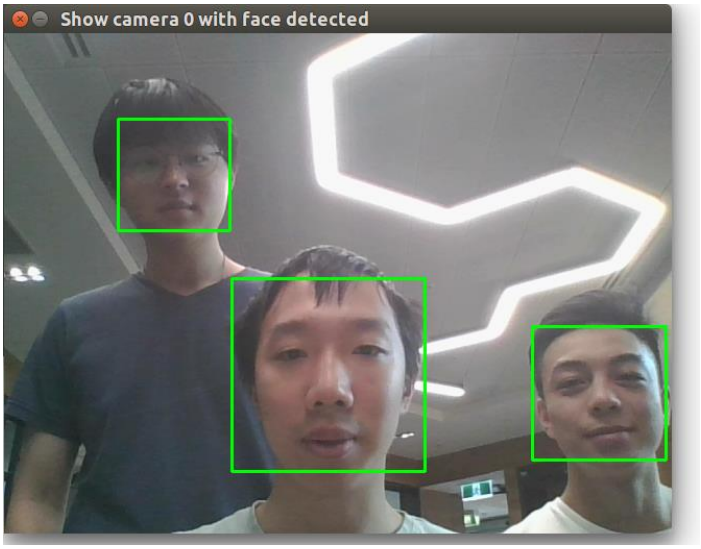
Initially, the mic array was very sensitive to minute sound inputs. This resulted in most background noise causing the device to have an unstable output in terms of detecting the direction of arrival (DOA) of the incoming sound.

In order to migitate this effect, both noise cancellation and the averaging output were implemented. The mic array is capable of outputting 4.3 values per second with respect to the direction of sound. As such, Noise cancellation was realised by grouping every 8 values, deleting the outliers, and then taking the average of this given output. As a result, the output for the DoA of sound is more stable and consistent. This will be useful in assisting the Image team for more consistent image switching for the camera with respect to detection of sound.

Additionally, the current open source code returns direction of sound continuously. However, we need to find the direction of the sound of the person who is speaking – to do this, we need to develop an algorithm that distinguishes human speakers and background noise or systematic errors.

Review of face detection

The face detection is functional but experiences slight delays due to keyboard input in the function. This can be eliminated to reduce the lag time. Additionally, the algorithm requires the user to look directly at the camera in order for a face to be detected. We could improve the efficiency by using a deep neural network detector.



Determining the method of output from Raspberry Pi to PC

Current solution is using the camera output from the Raspberry Pi into an IP address to set up a webcam server. This will allow us to utilise the web camera server as an IP camera that can be inputted into Skype.

Critical decision made:

No critical decisions have been made during this meeting. With all the hardware components having arrived, the team is more focused on completion of allocated tasks at this stage.

Task delegation:

Sub-team	Team members	Task
Sound	John, Jose	Improving the response rate of DOA algorithm through the use of Gaussian weighting.
I/O	Link, Jordan, Ben	Determining how the Raspberry-pi can output UVC to a computer with a MJPEG output from camera.
Image	Link, Jordan, Ben	Get fish-eye camera to work with the existing facial detection algorithm.
Assembly	Minh, Jireh	Redesign the prototype to ensure minimal interference

		with camera and microphone input.
Documentation	Minh, Jireh	Work on 2 documentation files outlined in Meeting log 5/4 with collaboration with other sub teams.