

# PROCESS REPORT 1

## TEAM 1

ADAM DUKE – 17718781

ARTUR KAROLEWSKI - 17388976

JAMES OLIVER - 17365531

FRANK GALLAGHER – 17335161

### INTRODUCTION

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This process report outlines how our team has coped so far with the process of developing a solution to the assigned design challenge. It outlines what we as a team hope to achieve by the end of the module. It also discusses how we are planning and managing our project as well as how we cooperate as a team. To conclude we offer an overall assessment of our team's approach to the project and what could be improved.

### EXPECTATIONS

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Initially we expected to have a finished product by the end of the module, a smart camera that accurately detected people and estimated head poses with minimal error (no false or duplicate detections) under a range of operating conditions (adverse lighting and variable appearance of people).

However, once we began examining source code, researching the relevant theoretical areas and considering potential implementation issues (hardware limitations and operating conditions), we realised that our initial aim was unrealistic. We reevaluated our goals and decided to first aim for a simpler system to operate under simplified conditions: Only detect people in a particular section of the frame (removes the need to track individuals frame to frame as they pass the camera), implement a face detector that only detects faces front on (removes the need to implement a non-pose specific face detector and head pose estimator) and impose a limit of one person being in the camera's field of view. Our minimal viable product detects people that are standing directly in front of the point of interest and determines if they are looking by trying to detect a frontal view of a face. Once this milestone is reached, we will increase the complexity of the system gradually.

### PROJECT PLANNING

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Key factors when deciding on a project were scalability and modularity. Scalability offers us the freedom to reevaluate our end goal depending on time constraints and the current progress of the project. Modularity provides a platform for even workload distribution and supports our decentralised management style (outlined in the 'Project Management' section below).

We use the scheduled weekly meetings to track the overall progress of the project and to plan what tasks need to be completed in the week ahead. During this process individual tasks are assigned. We schedule additional meetings to plan reports and video logs. Each member does their bit for the report/video log and then one member compiles it into a cohesive whole.

## PROJECT MANAGEMENT

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Our team has adopted a decentralised management style whereby each member works on their own tasks and guides their own research. This has worked quite well so far as it has avoided conflict arising due to power struggles or tensions as a result of micromanagement. It has also provided each member the opportunity to research areas they are interested in. During the weekly meetings we update our team mates on our research and tasks and ensure we are all working towards a common goal. As well as this, we created a shared OneDrive folder so we could exchange information with each other and work on documents together. Decisions are made democratically.

## CO-OPERATION WITHIN THE GROUP

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To date we have co-operated effectively as a team. From the outset a group chat and a shared OneDrive folder was established to enable easy communication and sharing of information. Weekly meetings have allowed us to make decisions as a team and evenly distribute the workload as well as plan and compose reports/video logs/presentations. Our decentralised style of management lends itself to team members working on tasks individually as well as in pairs.

## CONCLUSION

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So far, our team process has gone well. We have had no conflicts and all members remain enthusiastic and motivated. The scalability of our project means we can adjust our expectations for the end product as time goes on. The modularity of our project along with our management style supports an even workload distribution and a productive work environment within our group. A shared OneDrive folder has proved invaluable in the exchange of information and the collaboration on reports.

However, a couple of improvements could be made. Composing a Gantt Chart at the beginning of the module would have helped us to better manage our time so we could make enough progress between submissions. Also, we could have planned our tasks more wisely. We have only recently began working on designing our algorithm and implementing person detection and head pose estimation. This is the main constituent of our project and the most complex. Starting this earlier would have maximised the amount of time we had to work on it.

## APPENDICES

### PROJECT IDEAS

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## PROJECT IDEAS

- Motion activated security camera that captures the face of the person.
- Facial recognition.
- Snapchat Filter.
- 3D modelling.
- Scan arm and overlay bones & blood vessels.
- Panorama photo.
- Children's AR game (identify coloured shapes).
- Object recognition with labels & dimensions.
- Place robot models on the floor.
- **Camera that analyses how often people look at an advert.**
- Retro hockey game where the paddles are controlled by the motion in each half of the frame.
- Yoga pose analyser.
- Emotional response analyser.
- Photo style transfer (photobooth).
- Security camera to detect cars, license plate and driver.

## REFLECTIVE JOURNAL 1

### TEAM 1

WEEK 1 – WEEK 4 (FEBRUARY 4TH – MARCH 1ST)

ADAM DUKE – 17718781

ARTUR KAROLEWSKI – 17388976

JAMES OLIVER – 17365531

FRANK GALLAGHER – 17335161

### 1 PROGRESS TO DATE

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- Decided on a project idea.
- Researched methods for implementing person detection, facial detection and head pose estimation.
- Setup a VNC viewer to remotely connect to the Raspberry Pi.

For our project we decided to design a smart camera capable of identifying the direction of a person's gaze, with the aim of positioning the device above a noticeboard, recording the number of passers-by and analysing how many look at the advertisement and how long for. We are currently pursuing the use of the OpenVINO toolkit to implement person detection, facial detection and head pose estimation, so we can avoid building and training neural networks from scratch. Sample apps that use the OpenVINO toolkit are available for us to learn from. We spent of our time researching and implementing methods for remotely connecting to the Raspberry Pi. Avoiding the need to physically connect a VGA cable, keyboard and mouse is essential for our chosen application. Initially we created a PuTTY SSH link to the board and established a terminal window connection. We then able to setup a GUI connection to the Raspberry Pi using VNC Server.

### 2 TEAM REFLECTION

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So far, we have been working well as a team and haven't experienced any major issues. All team members have been attending the weekly meetings and the practical sessions. The most challenging aspect of the project so far has been collaborating on research. A shared online folder has proved invaluable in this regard, as it has enabled us to share resources and edit documents together. In the Monday meetings we discuss our

progress to date and the work that needs to be completed in the week ahead, concluding with the assignment of individual tasks. Each member works on their tasks and updates the team on their progress. When faced with significant decisions, such as our project idea or what content to put in the video log, we scheduled an additional meeting where we brainstormed ideas and decided on a plan of action. Our approach to solving problems and making decisions has worked thus far so we will continue this practice for future problems.

### **3 INDIVIDUAL REFLECTIONS**

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#### **3.1 ADAM DUKE**

To date I have established an SSH terminal connection with the RasPi, setup a graphical connection using the VNC software, and being implementing the vision software that we chose 'Motion'. To date we have configured it to stream a live video from the camera to a browser window, although it seems to be stuck on a setting which reduces the framerate to 2/3 per second. Mainly we have been reading a mixture of setup guides online and utilizing trial and error while playing with settings, and we have successfully implemented motion alerts and logs. We believe that we are on the right track and we will continue to try and resolve out framerate issues.

#### **3.2 ARTUR KAROLEWSKI**

Up to this point, I have been researching information about how neural networks work, learning the Python syntax, writing some of my own sample Python programs and I also edited the first video log. I have also made sure I understand how we managed to connect the Raspberry Pi so that it streams live video by talking to James or Adam every time progress was made. I carried out my research by watching YouTube videos. I found the animations and commentaries easier to follow and understand than reading long articles. I also watched video tutorials about Python as well as doing coding exercises on HackerRank and analysing sample code from various websites. I recorded a few clips for the video log and edited them on my laptop. I also added some simple animations to demonstrate how we imagine our device will work. So far, I am satisfied with what I have learned from my research and with how the video log turned out. I think that I might start reading some more in-depth stuff about Python and neural networks. The videos are good but don't go into full detail about some of the areas. Uploading the sample code to the Raspberry Pi and seeing how it works would also have been a better way of seeing how the code works. As for the video log, I think recoding some screen footage with a screen recorder would have been better for some parts of the video rather than recording the screen with the phone.

### **3.3 JAMES OLIVER**

One of my tasks was to gain a video stream from the Logitech c270 webcam. My initial approach to the task of getting a video stream was to use the internet to find a software package to get a video stream from the webcam. This approach was only a partial success as I could only get a still image from the webcam using the fswebcam software package. In future I would be more specific it. My second approach was to see if any of the other groups had gotten the webcam to work and ask them what package they used to get it to work. This was a success as Cian found the package motion and the online guide <https://www.instructables.com/id/Raspberry-Pi-remote-webcam/> on how to get a video stream from the webcam. What I have found difficult to date is to get the camera and the software to provide a smooth clear stream to the computer I have been looking through the documentation for the motion package to resolve this issue. I resolved this by increasing stream\_maxrate from 1 to 30 and framerate to 1500. I have learned that minor changes to a config file can make a large difference in the running of the program so I need to be cautious when tuning in the future. Another one of my tasks to date was to assist Adam in setting up the remote access to the raspberry pi. I did this by researching and assisting in the setup process I was successful as Adam was successful

### **3.4 FRANK GALLAGHER**

These past few weeks I have been researching ways of implementing the person detection, facial detection and head pose estimation procedures involved in our project. Currently I am pursuing the use of the Intel Distribution of the OpenVINO toolkit, which is a tool designed for optimized OpenCV apps as well as using deep learning for computer vision. I have begun to build the development environment for OpenVINO on Ubuntu. Since parts of the toolkit are based on neural networks, I have researched the structure of neural networks and how they are trained. Most of this research was done by watching video tutorials and reading wiki pages. This approached worked well for the research of neural networks because the graphical medium helped me understand their operation. However, a better approach for researching the OpenVINO toolkit would have been to build the development environment sooner and build some of the sample apps.

# MEETING 1

## TEAM 1

**Time:** 11:00 am

**Date:** 11<sup>th</sup> February 2019 (Week 2)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### TOPICS TO BE DISCUSSED

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#### 1. IDEAS FOR PROJECT

**Discussion:** Panorama photo, Snapchat style filter (face & voice distortion), 3D modelling, facial recognition, overlay blood vessels on skin, speech to text, virtual whiteboard, object recognition with dimensions and children's educational AR game whereby the child identifies coloured shapes. The potential difficulty and scalability of the project.

**Conclusion:** Team is more interested in a project based on image processing. Need an ambitious idea that can be scaled down if required.

**Action Point:** Decide on a project.

#### 2. RESEARCH TOPICS

**Discussion:** Python, Raspberry Pi, image processing and credible sources for such topics.

**Conclusion:** The project requires the use of a raspberry pi, the python programming language and image processing techniques so a good knowledge of these subjects is necessary.

**Action Point:** Research Python, raspberry pi and image processing techniques.

#### 3. RISK ASSESSMENT

**Discussion:** Compliance with data protection laws.

**Conclusion:** Research into possible risks associated with the project required.

**Action Point:** Complete Risk Assessment Form.

## ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Complete Risk Assessment form	All members	12 <sup>th</sup> Feb 2019 (1 day)
Decide on project	All members	18 <sup>th</sup> Feb 2019 (1 week)
Research Python, Raspberry Pi and image processing	All members	25 <sup>th</sup> Feb 2019 (2 weeks)



# MEETING 2

## TEAM 1

**Time:** 11:00 am

**Date:** 18<sup>th</sup> February 2019 (week 3)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### REVIEW OF LAST WEEK

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#### SUMMARY OF LAST MEETING

- Ideas for the project.
- Foundational research topics (Raspberry Pi & Python).

#### PROGRESS MADE

- Decided on a project idea – a camera that analyses the attention given to an advertisement/noticeboard.
- Completed the Risk Assessment form.
- Adam & James worked on SSH-ing into the raspberry pi from a laptop.
- Artur & Frank began researching neural networks and the OpenVINO Toolkit.

#### STATUS OF LAST WEEK'S ACTION POINTS

Task	Persons Responsible	Completed/Ongoing
Complete Risk Assessment Form	All members	completed
Decide on project	All members	completed
Research Python, Raspberry Pi and image processing	All members	ongoing

## TOPICS TO BE DISCUSSED

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### 1. RISK ASSESSMENT FORM

**Discussion:** Does the Risk Assessment form need to cover data protection?

**Conclusion:** Risk Assessment form needs to be modified to cover data protection issues.

**Action point:** Revise Risk Assessment form so it addresses data protection issues associated with the project idea.

### 2. VIDEO LOG 1

**Discussion:** Video Log 1 is due on the first of March. Content is limited since it is the early stages of the project. Should tell the story of the foundations of our idea, the plan of implementation and the resources available.

**Conclusion:** Need to brainstorm content for video log

**Action point:** Create story board and gather clips and snapshots.

### 3. RESEARCH TOPICS

**Discussion:** Remote access into raspberry pi from a laptop is necessary for our application. First step is accessing webcam feed. Neural nets and OpenVINO.

**Action point:** Research neural networks, how to remotely access the Raspberry Pi and how to access the webcam feed.

## ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Research Python and Raspberry Pi (continued from last week)	All members	25 <sup>th</sup> Feb 2019 (1 week)
Revise Risk Assessment Form	All members	21 <sup>st</sup> Feb 2019 (3 days)
SSH-ing and webcam feed	Adam & James	25 <sup>th</sup> Feb 2019 (1 week)
Neural nets and OpenVINO	Artur & Frank	25 <sup>th</sup> Feb 2019 (1 week)
Video Log planning	All members	1 <sup>st</sup> March 2019 (2 weeks)

# MEETING 3

## TEAM 1

**Time:** 11:00

**Date:** 25<sup>th</sup> February 2019 (week 4)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### REVIEW OF LAST WEEK

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#### SUMMARY OF LAST MEETING

- Revise risk assessment form to amend for data protection.
- Research OpenVINO.
- Video Log 1.

#### PROGRESS MADE

- Risk assessment form amended and signed off
- Video Log 1, Arthur has made intro. Will continue to take point on physical design of video, with input from team members.
- Adam and James successfully created a graphical wireless connection to the Pi, in such a way that it is now possible to avoid connecting UI and monitors in future.
- Arthur and Frank researched OpenVINO and the basics of neural networks.

#### STATUS OF LAST WEEK'S ACTION POINTS

Task	Persons Responsible	Completed/Ongoing
Research Python	All members	Completed
Revise Risk Assessment form	All members	Completed
Webcam feed	Adam and James	Ongoing
VNC connection (SSH)	Adam and James	Completed
Neural Nets and OpenVINO	Frank and Arthur	Completed
Video Log Planning	All members	Ongoing

## TOPICS TO BE DISCUSSED

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### 1. VIDEO LOG 1

**Discussion:** Decided to spend most of the video describing the project in detail and what we hope to achieve. Since video content is limited at this point, we will focus on describing what we have been researching so far.

**Conclusion:** Brainstorm content for Video Log clips.

**Action point:** Plan and execute Video Log 1.

### 2. REFLECTIVE JOURNAL 1

**Discussion:** Explain targets achieved throughout project so far.

**Conclusion:** Discuss goals achieved by each team member.

**Action point:** Submit Reflective journal 1.

### 3. ACHIEVE LIVE VIDEO CONNECTION TO PI

**Discussion:** Find a software that can be loaded onto the Pi that will allow a live video stream from the webcam to be viewed onto the Pi.

**Conclusion:** Continue researching different software.

**Action point:** Work on establishing a connection between the webcam and the Pi.

### 4. OPENVINO

**Discussion:** Apps are developed using the OpenVINO toolkit on a development machine and then are deployed to the target hardware. Is the Neural Compute Stick required to run OpenVINO apps on the Raspberry Pi?

**Conclusion:** Need to build the OpenVINO development environment and find out if OpenVINO apps can be run without Neural Compute Stick.

**Action point:** Build OpenVINO development environment.

## ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Reflective Journal 1	Adam and Frank	1 <sup>st</sup> March 2019
Plan video log 1 (ongoing from last week)	All members (Artur lead)	1 <sup>st</sup> March 2019
Achieve Live Video Connection	James and Adam	4 <sup>th</sup> March 2019
Build OpenVINO development environment	Frank	4 <sup>th</sup> March 2019

# MEETING 4

## TEAM 1

**Time:** 11:00

**Date:** Monday 4<sup>th</sup> March 2019 (week 5)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### REVIEW OF LAST WEEK

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#### STATUS OF LAST WEEK'S ACTION POINTS

Task	Persons Responsible	Completed/Ongoing
Reflective Journal 1	Adam and Frank	Complete
Plan and compose Video Log 1	All Members (Artur lead)	Complete
Achieve live video connection	James and Adam	Complete
Build OpenVINO environment	Frank	Complete

### TOPICS TO BE DISCUSSED

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#### 1. TUNE LIVE VIDEO

**Discussion:** Tune live video feed. Play with the config settings to try and improve the framerate and the resolution without compromising the speed of transmission.

**Action point:** Tune live video feed

#### 2. BUILD SAMPLE OPENVINO APPS

**Discussion:** Now that we have researched neural networks and OpenVINO, we will attempt to build some sample apps to practice implementing algorithms.

**Action point:** Build Sample OpenVINO apps

### 3. RESEARCH MOTION ON RASPBERRY PI

**Discussion:** Try and increase the accuracy of the built-in motion detection in the software.

**Action point:** Research Motion on Raspberry Pi.

### 4. PLAN AND COMPOSE INTERIM REPORT

**Discussion:** Plan the structure of the report and who will do what sections. Everyone writes their sections and then one person edits. Analyse our overall progress and include our future expectations.

**Action point:** Plan and compose Interim Report

### ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Tune Live Video Feed	James	11 <sup>th</sup> March 2019
Build sample apps on OpenVINO	Artur and Frank	18 <sup>th</sup> March 2019
Research Motion on RasPi	Adam	11 <sup>th</sup> March 2019
Plan and compose Interim Report	All members	18 <sup>th</sup> March 2019

# MEETING 5

## TEAM 1

**Time:** 11:00

**Date:** Monday 11<sup>th</sup> March 2019 (week 6)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### REVIEW OF LAST WEEK

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#### STATUS OF LAST WEEK'S ACTION POINTS

Task	Persons Responsible	Completed/Ongoing
Tune Live Video Feed	James	Ongoing
Build sample OpenVINO apps	Artur and Frank	Ongoing
Research Motion on Raspberry Pi	Adam	Ongoing
Plan and compose Interim Report	All members	Ongoing

### TOPICS TO BE DISCUSSED

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#### 1. INTERIM REPORT

**Discussion:** Structure of the Interim Report is different to what we initially thought. Need a section covering theoretical background. Deadline is on Friday so need to focus on it this week.

**Action point:** Write Interim Report.

#### 2. CONTINUATION OF LAST WEEK'S TASKS

**Discussion:** More time is required to complete the tasks assigned in last week's meeting. Next week is study week, so the deadline for these tasks is extended to Monday 25<sup>th</sup> March (Monday after study week).

## ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Tune Live Video Feed (ongoing from last week)	James and Adam	25 <sup>th</sup> March 2019 (2 weeks)
Build sample apps on OpenVINO (ongoing from last week)	Artur and Frank	25 <sup>th</sup> March 2019 (2 weeks)
Research Motion on Raspberry Pi (ongoing from last week)	Adam and James	25 <sup>th</sup> March 2019 (2 weeks)
Compose Interim Report (ongoing from last week)	All members (Frank lead)	15 <sup>th</sup> March 2019 (4 days)



# MEETING 6

## TEAM 1

**Time:** 11:00

**Date:** 25<sup>th</sup> March 2019 (week 7)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### REVIEW OF LAST WEEK

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#### SUMMARY OF LAST MEETING

- Interim Report.
- Extending deadline of tasks.

#### STATUS OF LAST WEEK'S ACTION POINTS

Task	Persons Responsible	Completed/Ongoing
Tune live video feed	James & Adam	Completed
Build sample OpenVINO apps	Artur & Frank	Ongoing
Research Motion	Adam & James	Ongoing
Compose Interim Report	All members (Frank lead)	Completed

### TOPICS TO BE DISCUSSED

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#### 1. CURRENT PROGRESS

**Discussion:** Raspberry Pi setup. Remote control of Raspberry Pi achieved. Webcam connected to Raspberry Pi and video feed displayed. OpenVINO development environment built. Submitted Reflective Journal 1, Video Log 1 and Interim Report.

**Conclusion:** Not enough progress has been made with the algorithm/software for person detection and head pose estimation. Need to focus on developing apps with OpenVINO and researching other software libraries.

**Action point:** Build sample OpenVINO apps. Research the use of 'traditional' computer vision libraries (OpenCV) for person detection.

### 3. INTERVIEW AND PRESENTATION

**Discussion:** Presentation and interview most likely this Thursday (28<sup>th</sup> March). In presentation we need to discuss what project idea is, the structure of the system, implementation issues and how we are approaching it. To prepare for interview we need to review the interim report and reflective journal.

**Action point:** Prepare slides for presentation.

### 4. VIDEO LOG 2

**Discussion:** Due next Friday (5<sup>th</sup> April). No significant progress made since last video log.

**Conclusion:** Need to make more progress so there are new topics to cover in the video log.

**Action point:** Plan and compose video log 2.

### 5. PROCESS REPORT 1

**Discussion:** Due next Friday (5<sup>th</sup> April). What is a process report?

**Conclusion:** Team unsure what a process report is.

**Action point:** Plan and compose Process Report 1.

### ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Build sample OpenVINO apps	Frank	1 <sup>st</sup> April 2019 (1 week)
Research OpenCV for person detection	Artur & James	1 <sup>st</sup> April 2019 (1 week)
Research and experiment with Motion software	Adam	1 <sup>st</sup> April 2019 (1 week)
Prepare slides for presentation	All members	27 <sup>th</sup> March 2019 (2 days)
Plan and compose Video Log 2	All members (Artur lead)	5 <sup>th</sup> April 2019 (2 weeks)
Plan & compose Process Report 1	All members	5 <sup>th</sup> April 2019 (2 weeks)

# MEETING 7

## TEAM 1

**Time:** 11:00

**Date:** 1<sup>st</sup> April 2019 (week 8)

**Location:** E2.08

**Attendees:** Frank Gallagher, Adam Duke, Artur Karolewski, James Oliver

### REVIEW OF LAST WEEK

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#### SUMMARY OF LAST MEETING

- Current Progress.
- Interview and Presentation.
- Video Log 2.
- Process Report 1.

#### STATUS OF LAST WEEK'S ACTION POINTS

Task	Persons Responsible	Completed/Ongoing
Build sample OpenVINO apps	Frank	Completed
Research OpenCV for person detection	Artur & James	Completed
Research and experiment with Motion software	Adam	Ongoing
Prepare slides for presentation	All members	Completed
Plan and compose Video Log 2	All members (Artur lead)	Ongoing
Plan and compose Process Report 1	All members	Ongoing

## TOPICS TO BE DISCUSSED

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### 1. INTERIM PRESENTATION & INTERVIEW

**Discussion:** Takes place this Thursday 4<sup>th</sup> April. Slides for the presentation are complete. Need prepare 'scripts' and practice giving the presentation. Need to review the interim report and reflective journal to prepare for the interview, focusing on the technical details (Person Detection and Head Pose Estimation).

**Action point:** Prepare scripts, practice giving presentation and prepare for interview.

### 2. VIDEO LOG 2

**Discussion:** Due this Friday 5<sup>th</sup> April. Include ethical considerations, implementation difficulties and a more detailed account of the workings of the system. Show the output of the OpenVINO pedestrian tracker as an example of what we are trying to achieve. Mention that we are shelving OpenVINO.

**Action point:** Plan and compose Video Log 2.

### 3. PROCESS REPORT 1

**Discussion:** Due this Friday 5<sup>th</sup> April. Purpose of a Process Report is to convey details of what sub goals have been accomplished (what and how), what problems have been encountered and whether the project is expected to be completed on time (the overall status of the project). Each team member will write a brief account of what tasks they have completed and one person will compose these accounts into a process report.

**Action point:** Plan and compose Process Report 1.

### 4. SOFTWARE DEVELOPMENT

**Discussion:** The OpenVINO toolkit is difficult to use due to its hardware restrictions and the complexity of its implementation. OpenCV is a more comprehensive library and is much easier to consume in Python, relatively speaking.

**Conclusion:** Shelve the OpenVINO toolkit and pursue the use of the core OpenCV library to implement person detection and head pose estimation.

**Action point:** Implement and analyse OpenCV person detection and head pose estimation samples.

## ACTION POINTS FOR THIS WEEK

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Task	Persons Responsible	Deadline
Experiment with motion software and webcam (ongoing from last week)	Adam	8 <sup>th</sup> April (1 week)
Prepare for presentation and interview	All members	4 <sup>th</sup> April (3 days)
Plan and compose Video Log 2	All members (Artur lead)	5 <sup>th</sup> April (4 days)
Plan and compose Process Report 1	All members	5 <sup>th</sup> April (4 days)
OpenCV sample person detection and head pose estimation	Frank and James	22 <sup>nd</sup> April (3 weeks)