MoCapVR Lab Guidelines (INFOMCANIM 2025-26)

Notes:

- For the Option 1 Final Project, your team will be given 3 dedicated timeslots to work in the lab after the team formation is done (i.e., after 9th February 2026).
- The lab is at K.62 on the basement floor of the BBG building. **Alessandro will be in the mocap lab to assist you, and he will open the door for you for Slot 1.** In Slot 1, he will give you training for body and face capture systems. In Slot 2 and 3, he will be there only at the beginning (about 1 hour if requested by the team), but he might not spend time with you for the entire duration. If you need more help from him, discuss with him in advance via teams.
- For Slots 2 and 3, collect the keycard from BBG- 573. Once finished, return the key to the same room. The secretary office on the 5th floor is BBG-573 (also check the adjacent rooms if 573 is locked). Please pay attention to the fact that the secretary does not work during lunch hours (12:00-13:00) (it is likely that you will find at least 1 person in the office except for lunchtime).
- If the communicated timeslot(s) does not fit you (e.g. due to other courses), please send an email to Alessandro for a new appointment. In general, follow the schedule; not all team members have to be present at the same time!
- **For a given slot, only one group is allowed to be in the lab**. If possible, select a mocap team of specific people so that the same students go to the lab each time.
- Keep the mocap lab tidy! Eating in the mocap room is not allowed. **Pay extreme attention to using the equipment without damaging**. You will get instructions from Alessandro on how to use the system safely. If you are not sure what you are doing, always ask him first.
- Please pay attention that learning to use the system and software takes some time. You don't have to use both body and face capture. You can, for example, only aim for body or face capture depending on what is most important in your project and taking into account the feasibility and timeline. Using both is also possible, of course. You don't have to collect all animation with the mocap system. You can also use existing animations from the internet and adapt them yourself. Or you can design some of the animations yourself (more time costly of course).
- If you need an extra slot or have any questions, please send an email to k.i.haque@uu.nl.

Using the Vicon camera system for body motion capture

- The lab has 14 cameras. 8 cameras are on the top (ceiling level, looking downward) and 6 of them are on tripods (ground level looking upward). The position and orientation of them can be changed if absolutely needed. The default set up is good normally but make sure before camera calibration that cameras have good coverage by checking the camera interface from Shogun Live. Do not move or change the position or orientation of the cameras yourself. That should be always done with the consultation of the IT Engineer (i.e. Michel Maasdijk).
- The Vicon camera system is switched on from the patch cabinet in the left corner of the lab (when the big screen tv is in front of you). By pressing the lock under the door handle, the door handle will swing out so that it can be operated. By switching the red button to the top right of the box, the Vicon camera system will be switched on.
  NOTE: turn on the Vicon camera system immediately upon arrival if you want to use the system. It takes about 45 minutes for the system to warm up to the optimal temperature.

- The Vicon PC in the same patch cabinet is (and must be) always on, meaning, do not shut down, only sign out and turn off the monitor. After using it, the Vicon PC must remain on, but do not forget to log out. (P.S. Only LOG OUT from the Vicon PC, **DO NOT** shut it down!)
- Users can log in to the Vicon PC and the other PC with their Solis ID. Make sure that the computers are disconnected from WIFI and using only Ethernet during login. The first login can take time as windows will create a profile for the new user. Subsequent logins will be fast. We suggest one student from a team uses the Vicon PC across lab slots.
- Many software packages are already installed on the Vicon PC. If you miss any software on the PC, please let the IT engineer know via email or inform us.
- In addition to the OS disk, there are data disks in the Vicon PC. Check in advance whether your work is saved to the data disk. There is a folder in Capture Data Drive, D:/ named "**INFOMCANIM2025-26**". Use your team's folder during your project work. We also strongly advise that you make backups of your capture data (OneDrive, portable HDD/SSD, etc.). You must never use the C:/ drive for your capture data.
  NOTE: Again, make sure you have secured your work on a USB drive (HDD/SSD) or in the Cloud before you leave as many people will be working in the lab.
- The Vicon camera system uses Shogun Live for capturing data. See https://docs.vicon.com/display/Shogun18/Getting+started+with+Vicon+Shogun for the manuals and official documentation. Be sure to read "Getting started with Vicon Shogun". Resort to the official documentation while working with the tool. (Both Shogun Live 1.18 and Shogun Post 1.18 are installed on the PC. There are older versions as well, but we recommend you use 1.18 (latest) for both Shogun Live and Shogun Post. Use the same version throughout your project to minimize bugs in production.
- For motion capture, we have 2 suits: one large suit for male and one large suit for female. These are in the left cupboard (next to the entrance) in black bags together with the markers.
  We also have some old suits in case you need to capture more than 2 people. Some reflective markers are new, and some might be old. Make sure markers are good quality and they are captured well by the cameras. Otherwise, replace them with better and new markers found in the cupboard.
- After putting on the trouser of the mocap suit, put on the feet parts of the suit over shoes you are wearing but please make sure your shoes are as clean as possible. It is recommended to put on clean slippers/clean pair of shoes in the mocap suits.
- You can find out how the markers should be placed under the heading "Create subjects": https://docs.vicon.com/display/Shogun18/Create+subjects. For detailed finger movement capturing, you need finger markers for each hand. For multi-user tracking, each user should have a special cluster of markers to identify them.
- In the middle of the floor is the sticker 15. The *Magic wand* must be at this place to determine the origin of the volume. This *Magic wand* is on top of the patch cabinet that you can use to calibrate the system before you start a capture session. If the magic wand is low on battery, ONLY use the designated "Magic Wand Charger" that can be found on the black casing of the Vicon PC. (**DO NOT USE ANY OTHER CHARGER TO CHARGE THE MAGIC WAND**)
- The results you get might not always be free of problems (e.g. missing or swapping markers). You can use Vicon Shogun Post to post-process your capture and fix these problems.
- Apart from the Shogun Manual, you can also check the YouTube channel of Vicon for some information: https://www.youtube.com/c/Vicon

- For post-processing and motion retargeting, you can use either Shogun Post (on the Vicon PC) or Motion Builder which is in the post-processing machine (The second PC in the room, not the one that is installed with Vicon Shogun.)
- Be advised that the capture data files (i.e., .mcp files) are specific to shogun software and will not work as is with other 3D software. You must export your captures to fbx files while in the lab. At the end of your lab slot allocate some time and please make sure that you either-
    - Import the mcp files to Shogun Post - > Retarget -> Export "Retarget" animation as fbx files.
    - OR
    - Import the mcp files to Shogun Post -> Export the "Solving" animation as fbx files.

Using the Dynamixyz camera system for facial performance capture

- For facial tracking, we have 3 sets from Dynamixyz. These sets are in suitcases in the right cupboard. Each set has its own number (16, 17 and 18). Set 16 and 17 should be used preferably.
- The Vicon PC in the patch cabinet is always on. After using, the Vicon PC should also remain on, but do not forget to log out.
- Users can log in to the Vicon PC with their Solis ID.
- The Vicon PC also contains the software to operate the Dynamixyz headsets.
    - Grabber: Dynamixyz software to record facial capture together with audio and store directly on the PC. To use this, you need to turn on the respective wireless receiver with the power adapter (labeled as 16,17 or 18 depending on which headset you are using). The receivers and their power connectors can be found on top of the black casing of the Vicon PC must be turned off after use.
    - Monitor: Dynamixyz software that stores the capture videos on the On-Board machine that goes around your waist. To copy the recorded videos from the on-board recorder, use WinSCP.
    - Performer: Dynamixyz software to process the facial capture, solve the facial animation and retarget to 3D model.
- Please make sure to watch the official tutorial playlist for a better understanding of the system: https://www.youtube.com/playlist?list=PLCJCE87-qdi8019mb8VVEeygRp7c0B5qg
- The sets have Wi-Fi connection via the access point in the lab (SSID: MoCapLab). This SSID is for lab equipment only!
- The sets have the following IP addresses (when writing this manual). Use it to connect to these with WinSCP if you are using Monitor to capture the facial performances. (Not needed if you are using Grabber to store the captures on PC wirelessly).
  Set 16: 145.136.136.190
  Set 17: 145.136.140.93
  Set 18: 145.136.148.193
  Default user name / password is used: dxyz / dxyz.
- The Vicon PC must also be (manually) connected to the same SSID; after using it must be disconnected again to avoid long logout from the network.
- For the use of the headsets, there are 5 *Nano one* batteries which are placed on the patch cabinet. These must be mounted in the belt holder. The on-board recorder is already connected to this belt holder and will start up immediately. The cable to the headset must be plugged into the battery (right side).

- The USB-C cable to the camera on the headset must be inserted carefully. After use, this cable must be disconnected to prevent damage.
- When using multiple sets, the sets must be kept apart.
- On startup, the cameras must be calibrated using the checkerboard.
- For more information, you can check out the help section of the installed software.
- Official manuals and documentation of the Dynamixyz system can be found in the following link : https://drive.google.com/drive/folders/18ZxcU2XSuNtCvv-jLPjJD0zOYYa1vvN9?usp=share_link
- Printed copies of the manuals can also be found inside the Vicon PC cabinet in the lab.
- ***Disclaimer: As Dynamixyz as a company was dissolved, the corresponding software is outdated. We recommend opting for Faceware or phone capture workflows for facial animation in your project. Recorded videos using Dynamixyz cameras can be used with Faceware software suit (i.e., Faceware Studio, Analyzer, Retargeter).***

Facial animation: IPhone and live link (ARKit blendshapes and Metahuman Animator)

- With Rokoko HeadRig and iPhone live capture: https://www.youtube.com/watch?v=rFKXFdtCrfA
- With Rokoko HeadRig and iPhone offline workflow: https://www.youtube.com/watch?v=z99Fo9LXLHk
    - In the Live Link Face app, record an act, and you can get the csv file for the act. Get the csv file from the phone and import the .CSV file into the Unreal Engine project. This will be converted into Level Sequencer and will be considered an animation.
    - Add the Subject that you want in the Sequencer to apply the animation.
- You can use the Live Link Face application to immediately transfer the Face Animation in the Unreal Project if you have a character having ARKIT blendshapes/morph targets for the face.
- For MetaHumans-
    - They have ARKit blendshapes
    - For high-quality MetaHuman facial animation, use the metahuman animator: https://www.youtube.com/watch?v=hZ2mkcd4C7M

Facial animation using Faceware Studio

- Have pre-recorded video and import it into Faceware Studio.
- In Unreal, enable Live Link with localhost.
- Select ARKit and select source
- Enable Streaming.
- Official documentation (strongly recommended): http://support.facewaretech.com/studio

Facial animation using Faceware Analyzer and Retargeter

- (Only use this workflow if your project's primary focus is facial animation)
- (It will require some skills in Autodesk Maya)
- Faceware Knowledge-Base link: http://support.facewaretech.com/home
- Analyzer: http://support.facewaretech.com/analyzer-intro
- Retargeter: http://support.facewaretech.com/retargeter-intro

Recording audio

- In the lab there are 2 RØDE smartLav+ lavalier microphones for recording audio.
- Beside these mics, there is the RØDE Wireless Go II system which is a dual channel wireless microphone system.
- The Wireless Go II can be used standalone (recordings are saved to the device itself).
- With the RØDE SC3 TRRS-TRS converter cable, it is also possible to connect the smartLav+ lavalier microphones to the Wireless Go II microphones.
- If you are using Dynamixyz Grabber to capture facial performance, you can turn on and connect the RODE Wireless Go ll receiver to the PC using USB. Turn on the Wireless Go ll mic(s) and it should be connected with the receiver. Select “Wireless GO ll” from Audio Source drop down menu on Grabber. Your capture will have audio embedded in it.
- If you are using Dynamixyz Monitor to capture facial performance, these mics (RØDE smartLav+ lavalier microphones) can be plugged into the back of the belt PC where an audio plug (3.5 mm) is available. This way, your recording has audio embedded in it.
  Please note that the audio quality probably will not be sufficient enough for your research purposes due to audio bleeding from other sources in the room.
- The recordings that are saved to the Wireless Go II microphones can be downloaded using the RØDE Central software that is installed on the Vicon PC (if used in a standalone manner for audio recordings only).
- Feel free to use the clapper board to synchronize the audio and video recordings by clapping it in view of the Dynamixyz headsets.

Using the Vicon and Dynamixyz simultaneously

- It is possible to use the Vicon and the Dynamixyz system at the same time. The cap that belongs to the Vicon suit will not be used in this case. The markers on the head will have to be mounted to the Dynamixyz headset.
  NOTE: Two markers on the back of the headset are permanent. Do not remove them.
- Make sure that the markers on the hips are not moved to weird places because of the Dynamixyz belt PC.
- To sync the start of the recording of the systems, there is an option in both Shogun Live (Vicon) and Monitor (Dynamixyz). With this, when starting one system, it triggers the other simultaneously (triggered capture).
  Please note that the time code on the Dynamixyz headsets will probably be different because they start running as soon as the battery is connected.

Recording reference video

- If necessary, you can also capture some reference videos to support your Vicon or Dynamixyz recordings. Two Sony FDR-X3000 cameras are present in the lab for this purpose.
- Set them up on the tripods with the FXLION battery holder strapped to the pole.
- Connect the *Nano Two* batteries to the battery holders and then connect the Sony cams to the batteries. This way the cams can record for a longer time than when using their internal batteries.

Using the iPad and iPhone

- An iPad Pro and an iPhone can be found on the bottom shelf of the Vicon PC casing.
- The password of both the iPad and iPhone is *MoCapLab*
- Various relevant apps (Live Link Face for Apple ARKIT facial animation, Unreal Remote, Unreal VCam for virtual camera, Polycam for scanning etc.) are already installed for you to use in your workflows. You can use the virtual camera rig (can be found beside the right cabinet) together with the iPad too.

Miscellaneous

- Autodesk tools (i.e. Maya, Motion Builder, 3ds Max) are installed on both the PCs in the lab. You can also get an education license for yourself using your UU email for personal use.
- The second PC (not the Vicon PC) should be used if you plan to use Unreal Engine/ Unity in your workflow. The game engines are already installed on this machine.
- The VR headsets and VR backpack machines are out of scope for the computer animation course and must not be played with.
- When you are done working in the lab, please be tidy, repack the things you used, and place them in their corresponding spots. This will allow other users of the lab to follow the rules and work efficiently.
- If any equipment is not working as expected, please let Michel (m.maasdijk@uu.nl) know as soon as possible via email with CC to k.i.haque@uu.nl.