Blender Dance

Start

Now that **a.** blender is installed, **b.** SMPL-blender addon added and **c.** the "annotation_3d-main" folder downloaded, go to `annotation_3d-main/data/blend_files` and make sure that you have `starter.blend` file. This is the backbone for all the separate blend files that would be generated for each of the sequences.

Corresponding to each dance clip(that you submitted in the drive) there would be a folder provided encompassing three files: i. Original video, ii. Mesh-fit video and iii. Mesh in pickle format. Therefore, for each sequence that we want to change there should be a folder by the same name under `annotation_3d-main/data/to_annotate/`.

Required

Here are two " python ". One which runs your programs and another which runs in blender itself. We are going to focus on the later one for now.

It is advisable to first download blender tar from here followed by "tar -xvf blender.tar.xz" command to extract it. You can rename the complex blender folder name to blender itself (eg: "mv blender-2.93.4-linux-x64/ blender").

Next, to download pip for blender enter the following command:

- curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py (downloads pip)
- LOCATION/blender/2.93/python/bin/python3.9 get-pip.py (installs)

other packages:

- LOCATION/blender/2.93/python/bin/python3.9 -m pip install joblib

Folder Structure

|— data

|—blend_files

|—starter.blend

|—to_annotate

|—BHA0001C0001

|—ref_video.mp4

|—tcmr_output.mp4

|—tcmr_output.pkl

|—KAT0004C0001

|—export_param.py

|—prepare_for_annotation.py

|—run.sh

|—starter.py

|—variables.py

Editing

Run the `run.sh` file on command line and it'll pop up blender with the sequence input. Pass the sequence and gender arguments.

eg:

- sh run.sh KAT0001C0001 female

You can edit your files now.

Export

Once the editing has been completed move to "scripts" tab on the top shelf. You might have to slide towards it on the right. Open the file `export_param.py` and click on the run(play symbol). This will save the changes you have made in blender and save the

blend and pkl files. You can continue working from this branch later. Go to "layout" if you want to make changes again.

Linear summary of editing a sequence

1. Press shift and move the screen to include both frame and mesh at centre.

   You can rotate around the mesh by clicking the mouse scroller and moving. For laptop touch-pad you can use two finger touch to do the same.

2. Double click on "-Y" axis to arrange the view in xz plane.

3. You see bone joints on the mesh body. Click on it and change "Object mode" to "Pose mode" from *top left* drop down.

4. Once done till here, either manually search for the root bone or find the "root bone" under "Pose" drop down on *top right*. This will allow you to move the body in sync. Remember to move the **root bone only** to move the body.

   Press "g" key to move the mesh around and click to end the process.

5. Press "s" key to change the scale of the body.

   These steps would help you move the mesh around.

   If you wish the **global rotation** of the body, then select **"pelvis joint" only**.

   All rotations of the body/body-joints can be done by pressing "r" key. To rotate along x-axis, press "r" key followed by "x". These changes pose of the body.

   To remove any ill changes press "escape", "control+z" for undo.

6. After you are satisfied with fitting the body on a frame saving the key-points is needed. You can look for "Playback-Keying-View-Marker" tab at *bottom*. *Pull it up* to see frame numbers and yellow(or white) markers. Select the first frame (1st not 0th) or the first frame you want to change. Fit the mesh as described above.

   After the changes has been made, do not navigate to other frame as it will delete your current savings. You can save the current frame changes by right clicking and selecting "insert key-frame" option (or pressing "i"). Select "Rotation, Location & Scale" to save your changes you made for the current pose.

7. You can repeat this for another frame and interpolate between them.

   To correctly interpolate between $frame_N$ and $frame_{N+n}$ you first need delete the keyframe data between $frame_{N+1}$ and $frame_{N+n-1}$. It can be done by clicking on the frames and making a "box" between the frames. The frames selected would turn to yellow from white. Press "x" and select "Delete keyframes". This would be one step and you can save your complete changes now.

8. To save changes as pkl file and blend files, go to "Scripting" in the top bar. You might need to move the bar to left. Select the "Scripting" tab, click "Open", go to your working folder and open `export_param.py`. Change the sequence-name to your clip name. Click on the run (play) button on top. Save.