TECHNICAL TASK FOR POST OF SOFTWARE DEVELOPER

1.Capture image from your mobile phone camera.

2.Convert the 2D image into 3D Model.

Step 1: Capture the Image

1. Use your mobile phone's camera to capture the image of the object you want to convert into a 3D model.
2. Ensure that the object is well-lit and that you capture images from multiple angles to provide sufficient information for the 3D reconstruction process.

Step 2: Choose a 3D Modeling Software

1. Choose a 3D modeling software that supports image-based 3D reconstruction. Examples include Autodesk ReCap, Agisoft Metashape, and RealityCapture.

2. Download and install the chosen software on your computer.Blender.

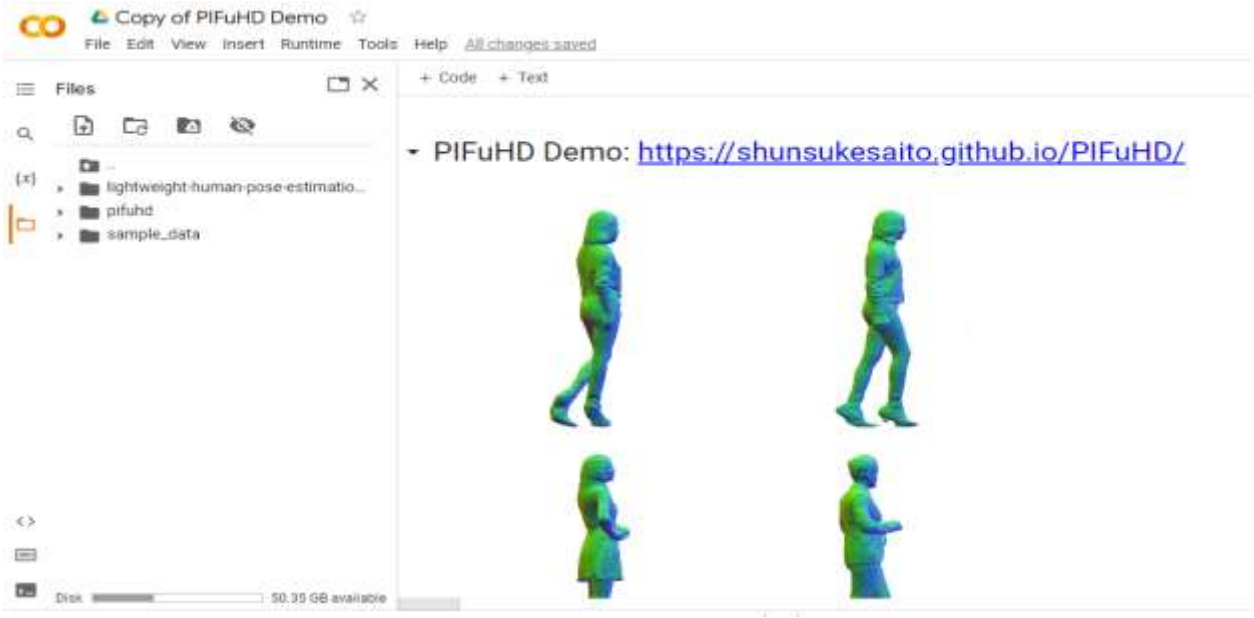
Step 3: Import Images

1. Open the 3D modeling software and create a new project.

2. Import the images you captured from your mobile phone camera into the software.

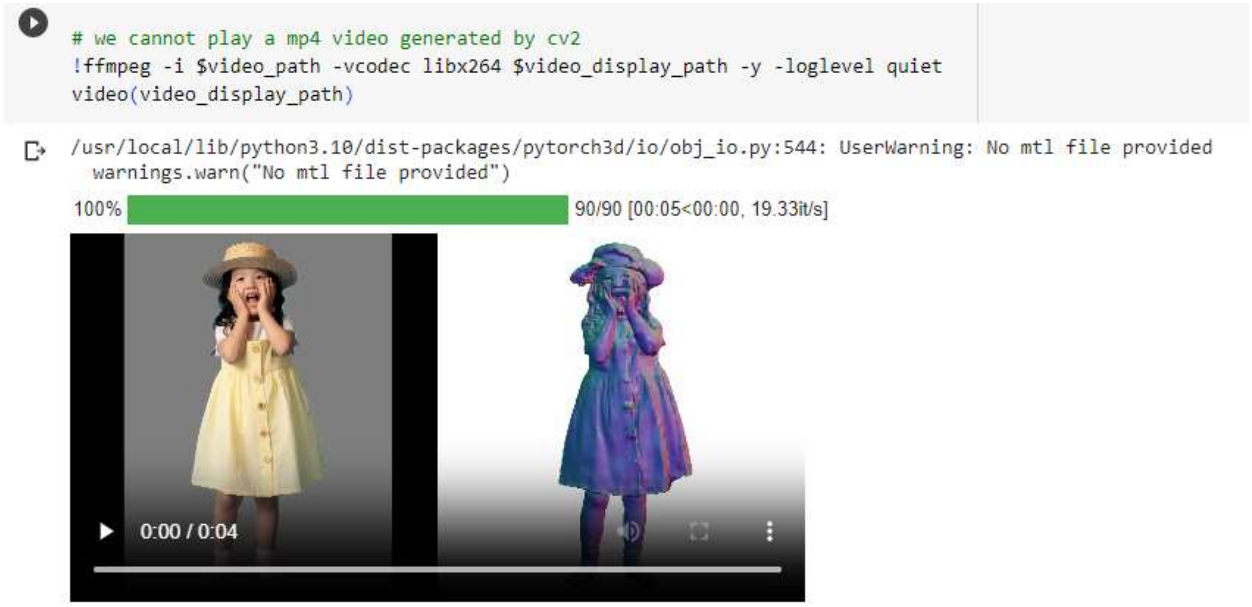
Step 4: Image Alignment

1. The software will automatically analyze the images and attempt to align them based on common features.
2. You may need to manually align the images if the software doesn't produce satisfactory results.



Step 5: Generate the 3D Point Cloud

1. The software will use the aligned images to create a point cloud, which is a collection of 3D points that represent the object's surface.
2. This point cloud provides a basic 3D representation of the object.



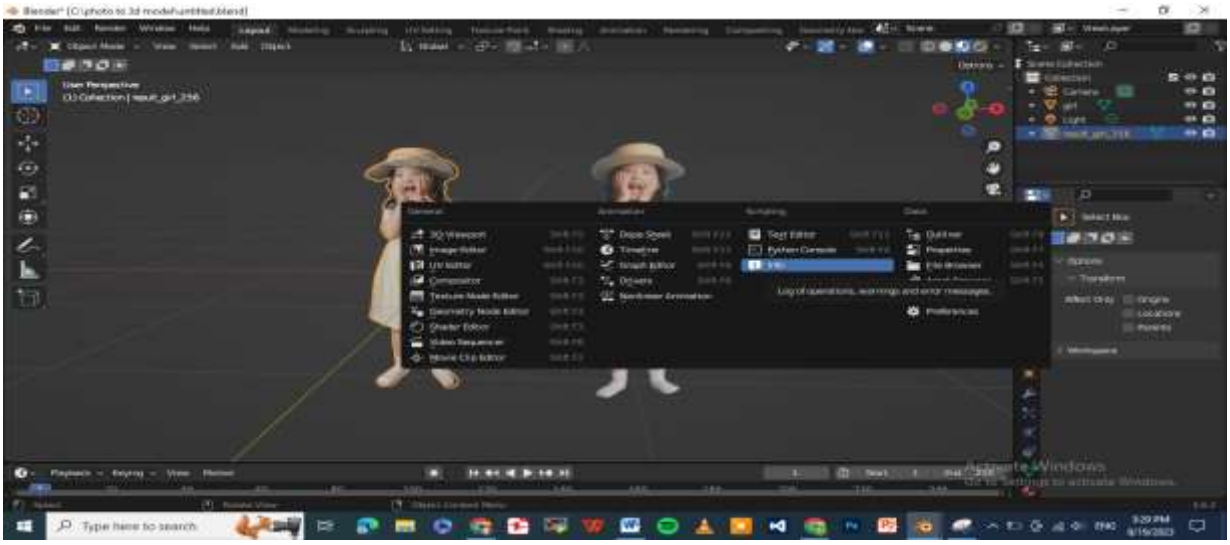
Step 6: Surface Reconstruction

1. The software can attempt to create a surface mesh from the point cloud, generating a more detailed 3D representation.

2. Adjust settings such as resolution and accuracy to achieve the desired level of detail.

Step 7: Refinement and Editing

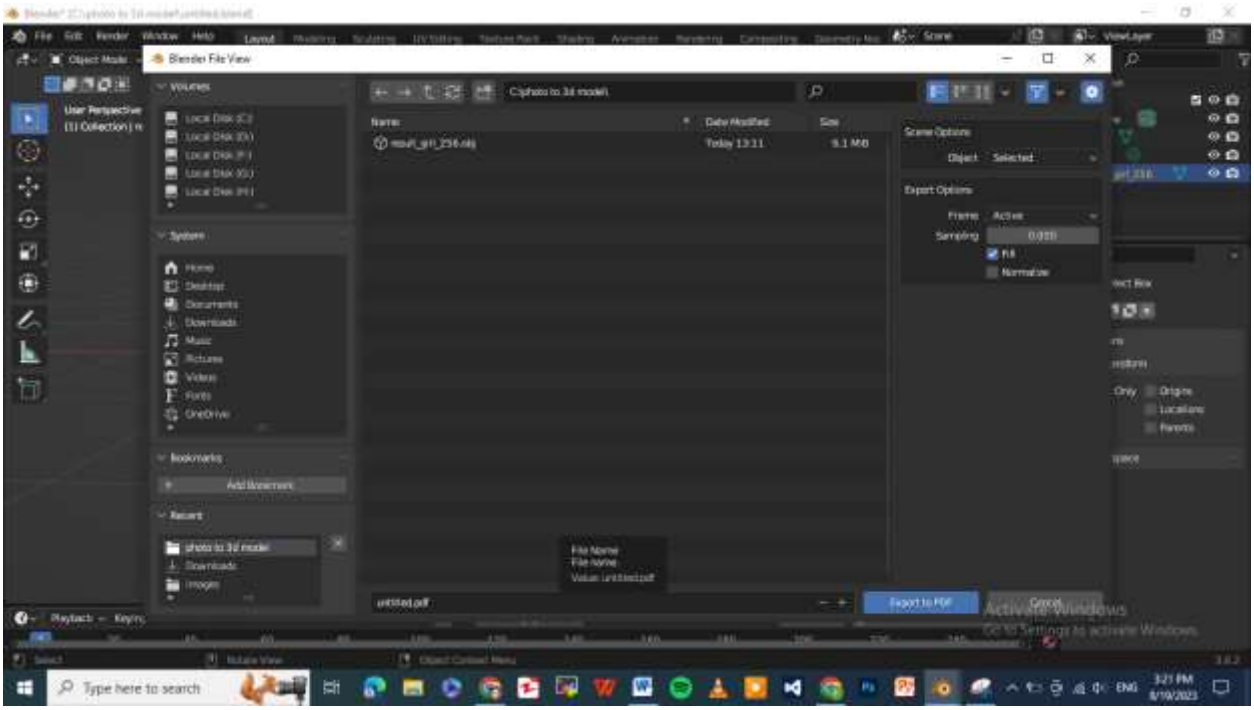
1. Clean up any artifacts or imperfections in the generated 3D model using the software's editing tools.



2. Sculpt, smooth, and refine the model as needed to improve its accuracy and appearance.

Step 8: Export the 3D Model

1. Once satisfied with the 3D model, export it in a suitable file format (e.g., OBJ, STL) that can be used in other 3D software or applications.

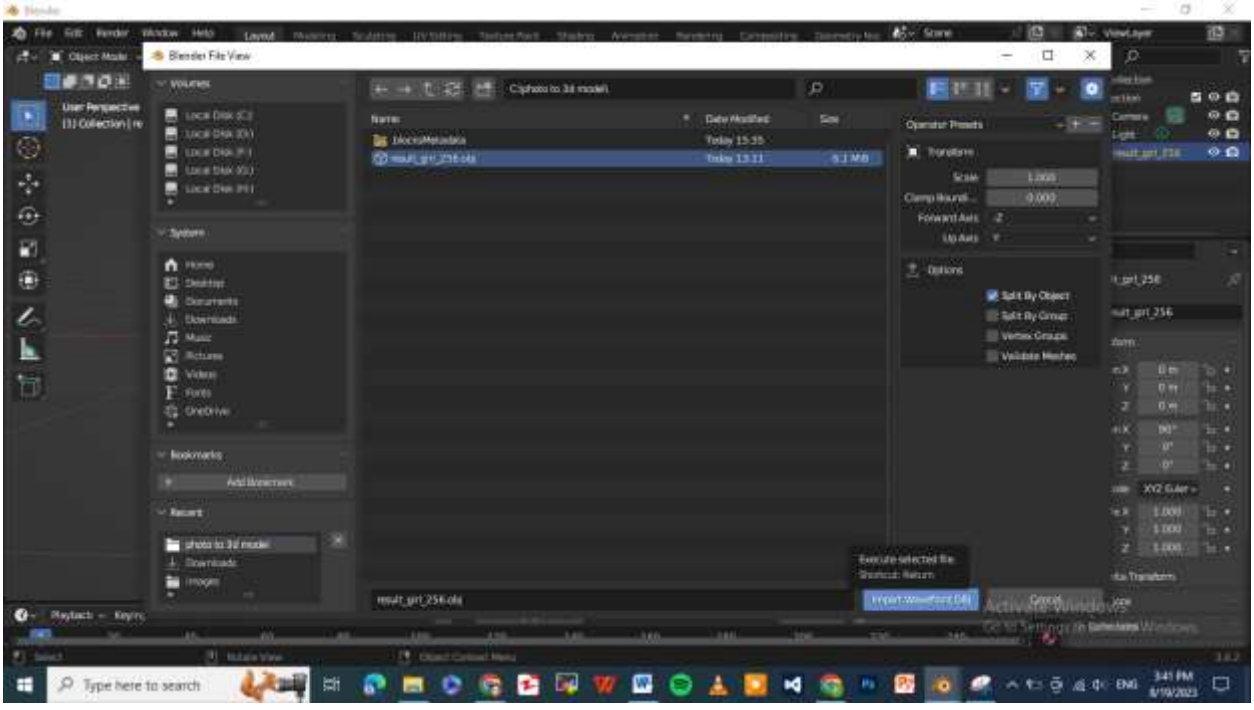


2. Keep in mind that the level of detail and accuracy of the converted 3D model will depend on the quality of the original images and the capabilities of the software used.

3.Calculate the dimensions from the 3D model as well as the real object and discuss the accuracy of results. For instance, you have captured your picture or that of a book, laptop or apple.

Step 1: Collect Data

1. Acquire a 3D model of the object you're interested in measuring. This could be obtained from sources like 3D modeling software, online repositories, or 3D scanning.
2. Obtain images of the real-world object you want to measure from multiple angles. A camera or smartphone can be used for this purpose.



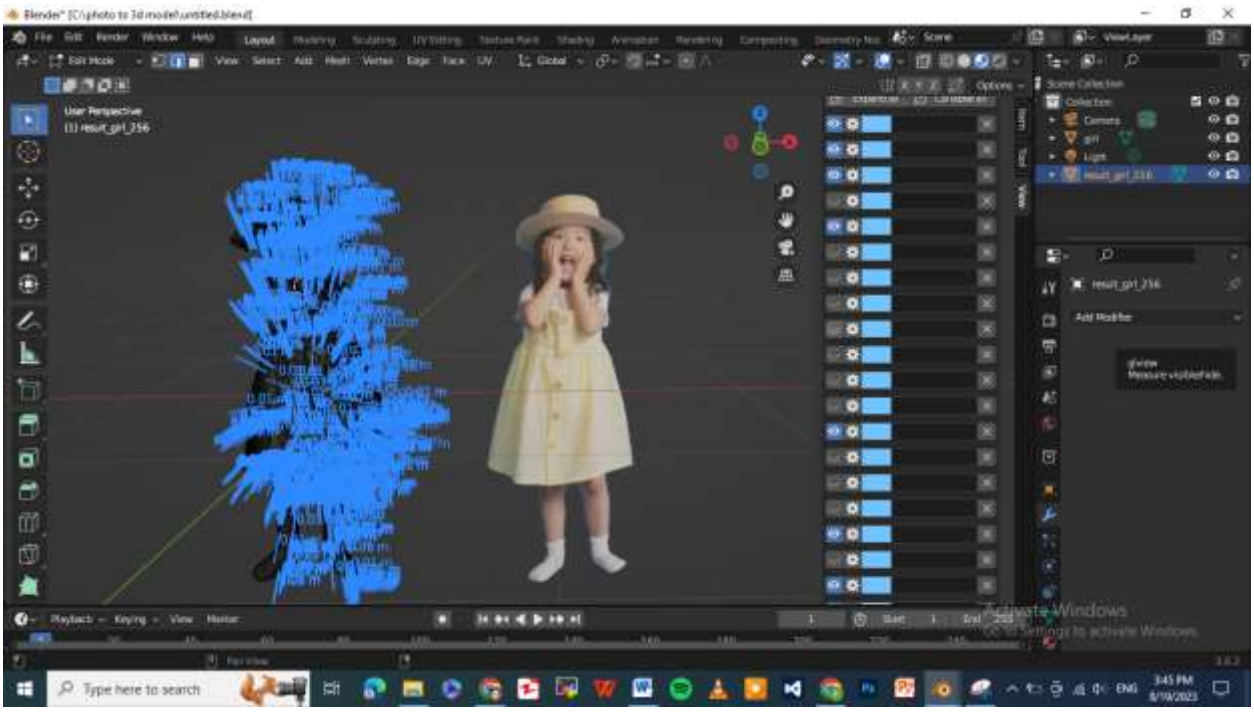
Step 2: 3D Model Analysis

1. Load the 3D model into a 3D modeling or computer vision software that supports dimension analysis. Software like Blender, MeshLab, or specialized 3D measurement tools can be used.

2. Use the measuring tools available in the software to extract the dimensions of the 3D model. Measure the relevant lengths, widths, heights, or any other dimensions that are important for your analysis.

Step 3: Real Object Analysis

1. Import the images of the real-world object into a computer vision software or framework like OpenCV or custom software built using a machine learning framework.
2. Apply image processing techniques to detect and segment the object from the background. This could involve edge detection, thresholding, contour detection, or more advanced techniques depending on the object's characteristics and complexity.
3. Use the known properties of the camera (like focal length and sensor size) to calibrate the image measurements and convert pixel dimensions to real-world dimensions.
4. Use computer vision techniques to estimate the dimensions of the real object in 3D space. Depending on the complexity of the object, you might use techniques like stereo vision, structure from motion, or photogrammetry.



Step 4: Comparison and Accuracy

1. Compare the dimensions extracted from the 3D model with the dimensions obtained from the real-world object. Calculate the differences and assess the accuracy of your approach.

2. Consider potential sources of error, such as inaccuracies in camera calibration, lighting conditions, and image processing algorithms. These can affect the accuracy of your measurements.

Step 5: Refinement and Iteration

1. If the results are not accurate enough, refine your approach. This might involve improving camera calibration, using more advanced image processing techniques, or considering other sources of data (like depth sensors).
2. Iterate on your analysis and calibration until you achieve a satisfactory level of accuracy.


Blender [C:\photo to 3d model\untitled.blend]
User Perspective
(1) Collection | result_girl_256
Scene Collection
Collection
Camera
girl
Light
result_girl_256
Add Modifier
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
3:47 PM