Algorithm and results

First algorithm: background subtraction in the streaming image

The previous algorithm is working on the stream image. Meaning the background in each images shall be removed before integration in the 3D format (for instance *.ply). So we can consider that algorithm as a preprocessing step to the main 3D rendering process.

Fig.1 shows an overall view of the algorithm:

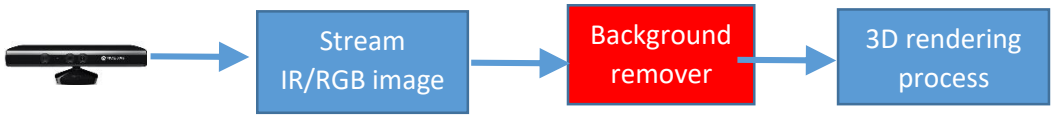

Fig.1 overall view of the background subtraction suing raw image stream

Second algorithm: background subtraction after 3D rending using planar surface adjustment.

This algorithm uses two adjustable planes to select the region of interest. Unlike first algorithm, this algorithm works after the formation of the 3D model which means we use this algorithm as a post processing algorithm. The overall view of the algorithm is as shown in Fig.2.

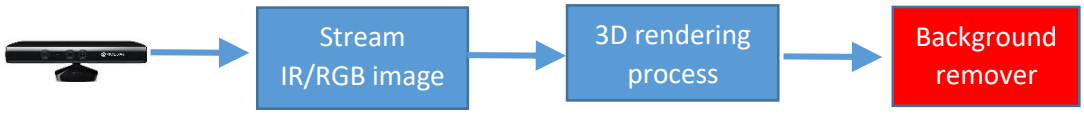

Fig.2 background subtraction using 3D model (*.ply format)

The second algorithm will be detailed in another report. However, only the result of the algorithm will be presented here from Fig.3 to Fig.5. Fig.3 represents the original image and Fig.4 and Fig.5 show the target object and background. Here, background is defined as table which the object is placed over.

Note:

- a new report will be sent in the upcoming week to update previous report and provide very detail information about new background remover algorithm (second algorithm).
- A C++ library is sent to you for integration in the 3D scanner project
- A visual studio project will be sent later to show how to implement algorithm in visual studio using provided library.

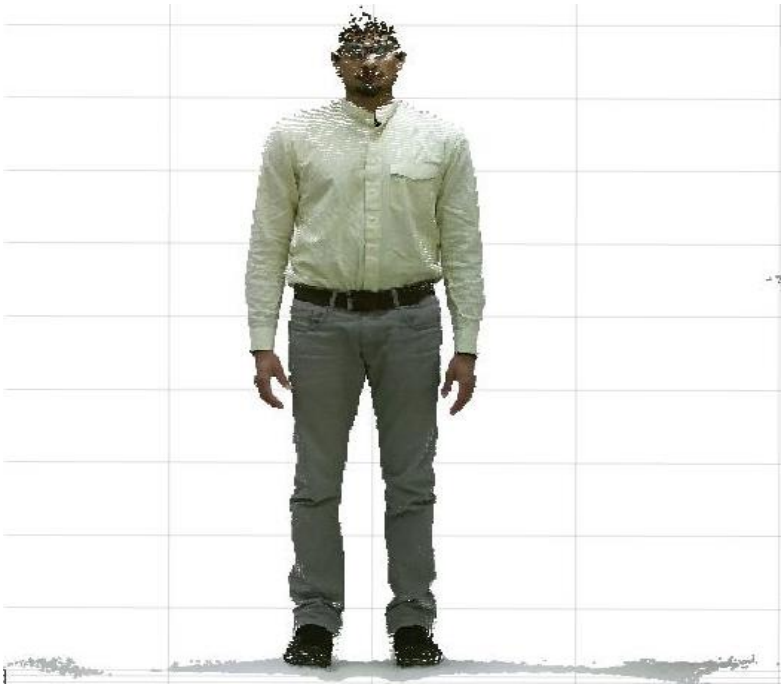

Fig.3 Original *.ply 3D model

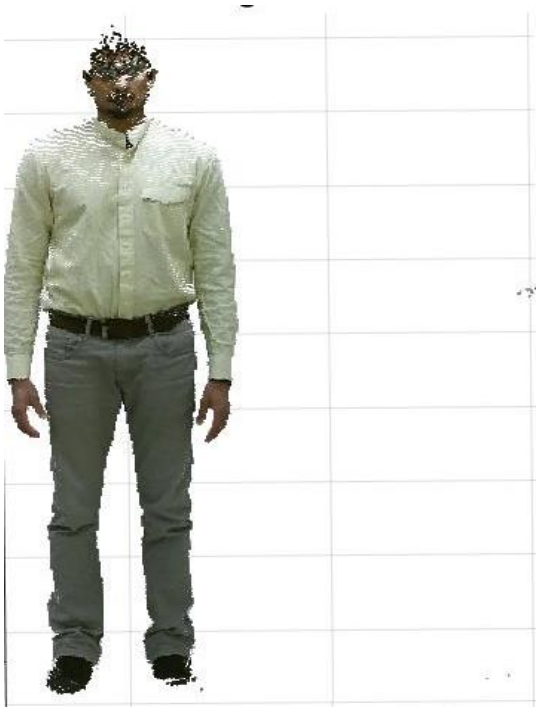

Fig.4 target object

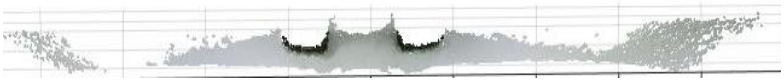

Fig.5 Background removed from original 3D model