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Image Processing - Final Project

Project report

Stage1

Image 1 - Standard behavior ✔

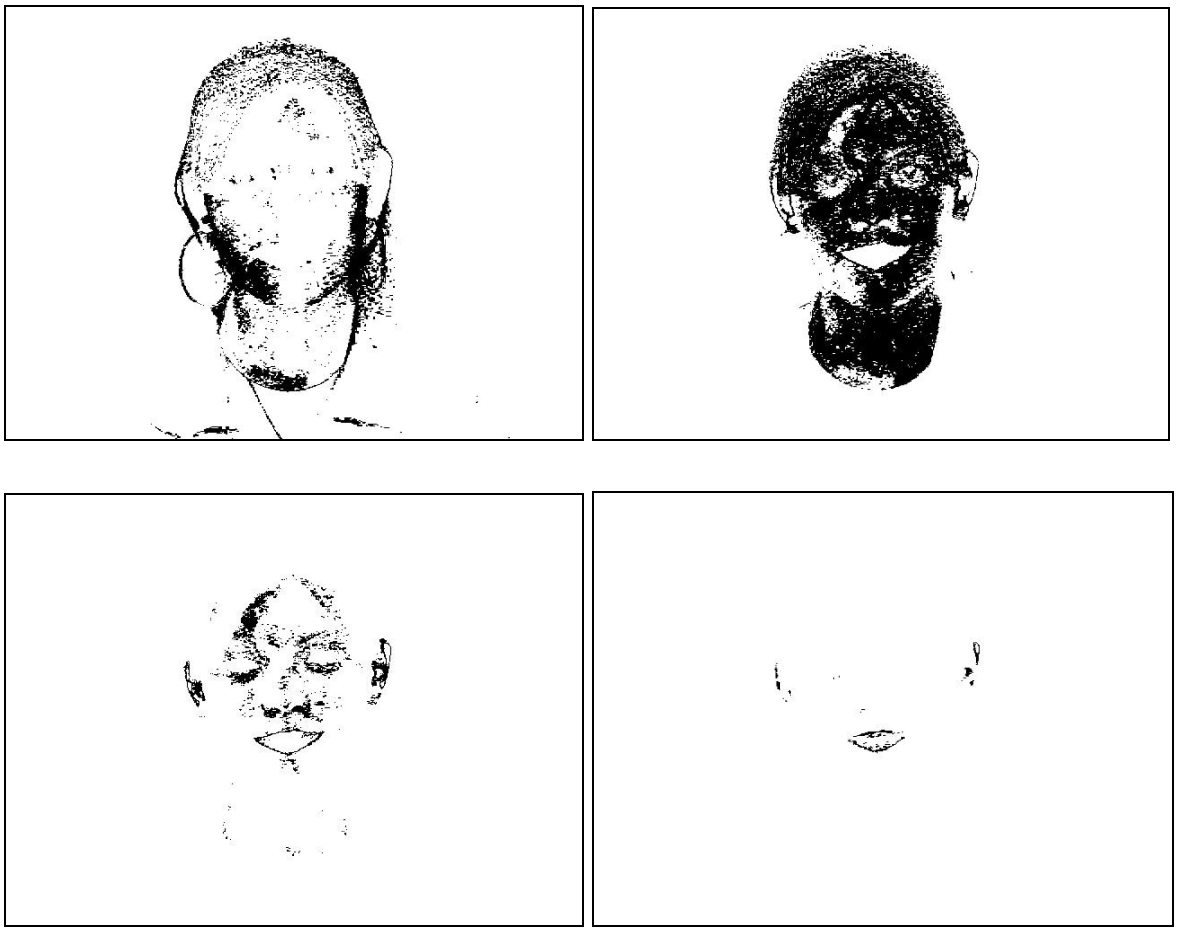


Image 2 - Standard behavior ✔

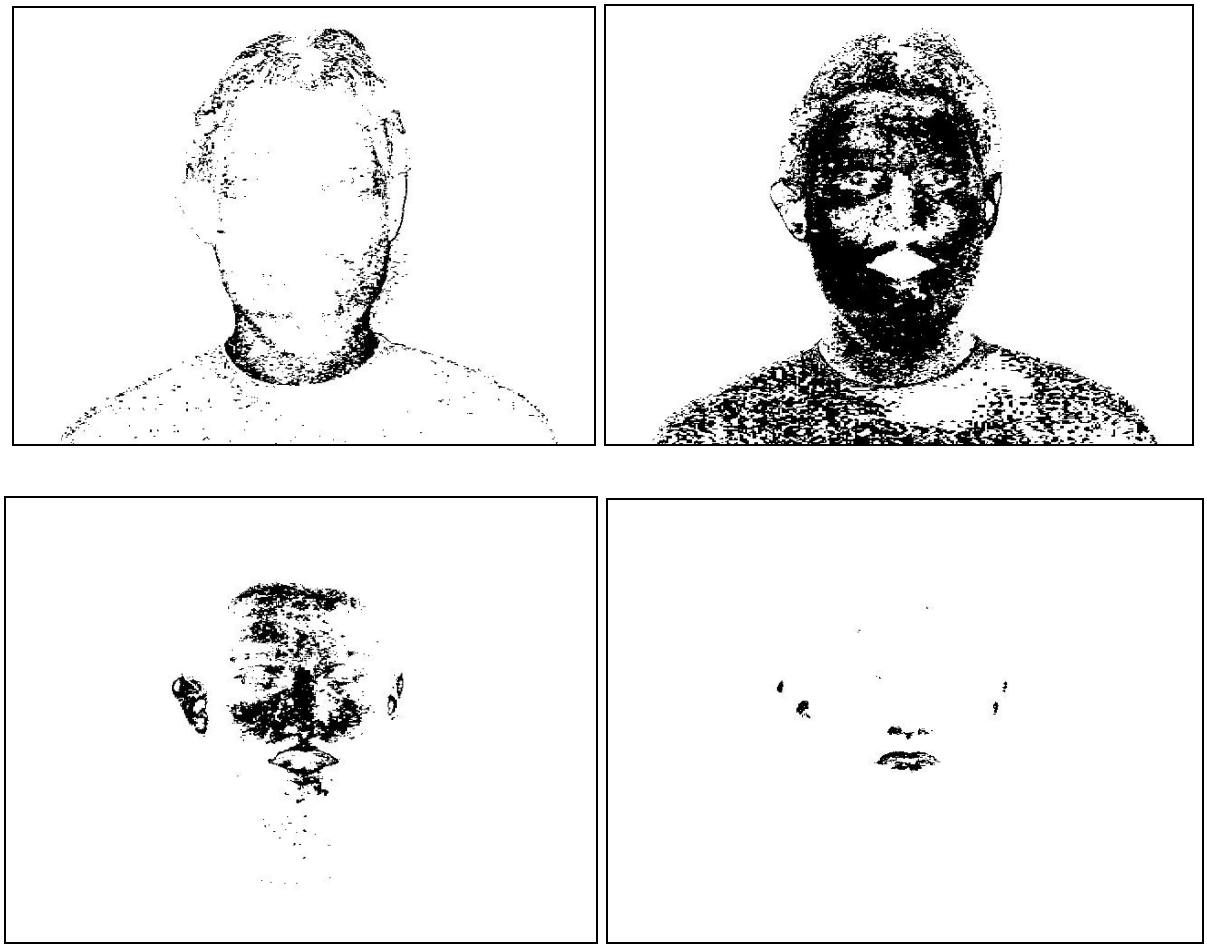


Image 3 - Standard behavior ❌

Binary layer 0 is not selecting the face bounds, instead the skin pixels.

Binary layer 1 is not selecting the skin pixels, instead the face bounds.

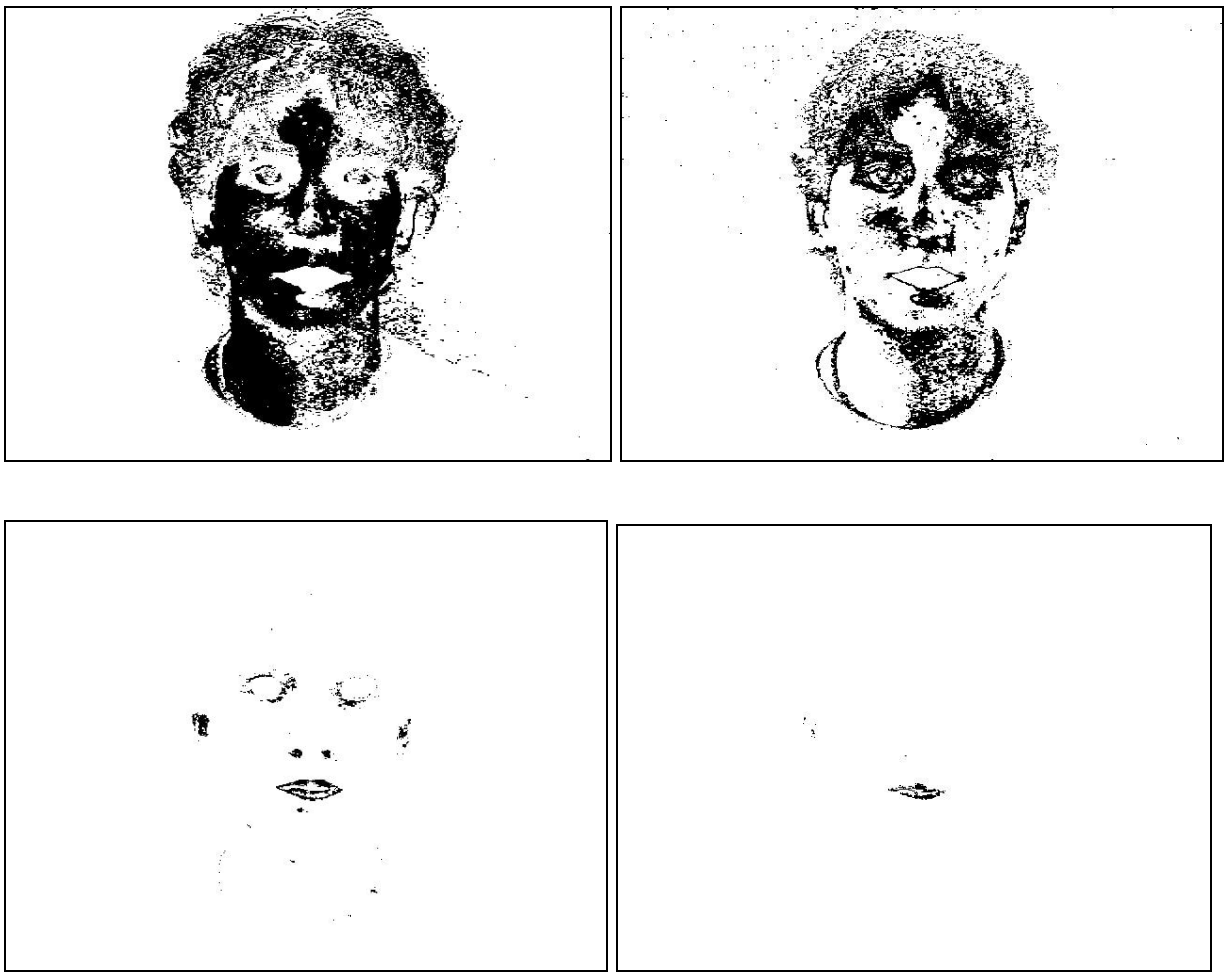
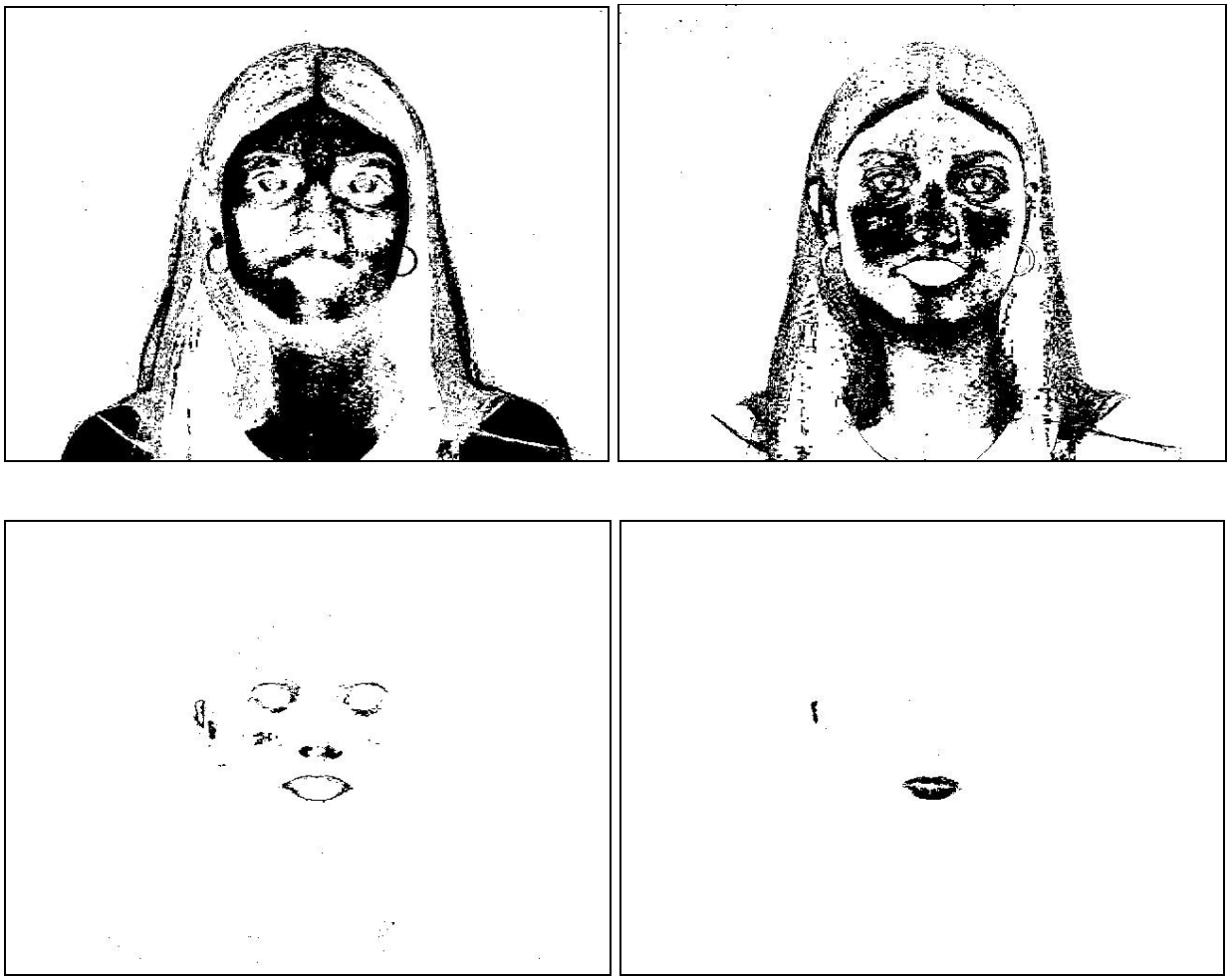


Image 4 - Standard behavior ❌

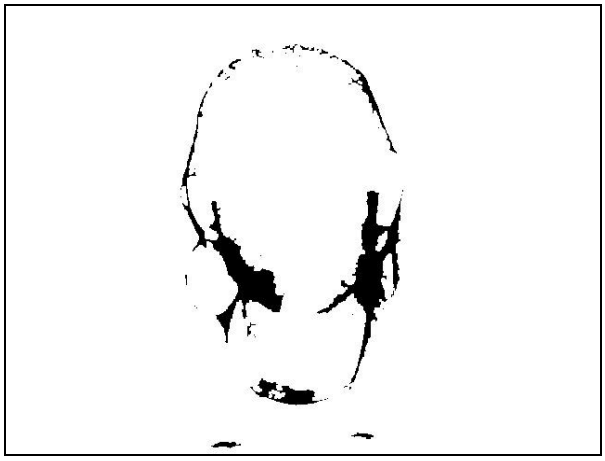
Binary layer 0 is not selecting the face bounds, instead the skin pixels.

Binary layer 1 is not selecting the skin pixels, instead the face bounds.

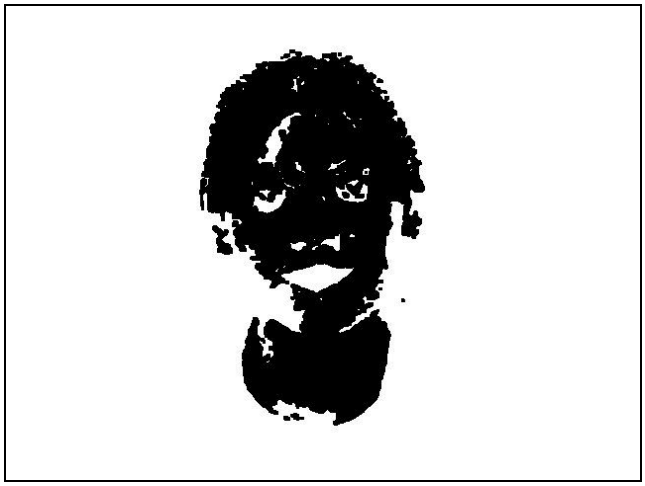


Stage 1-1

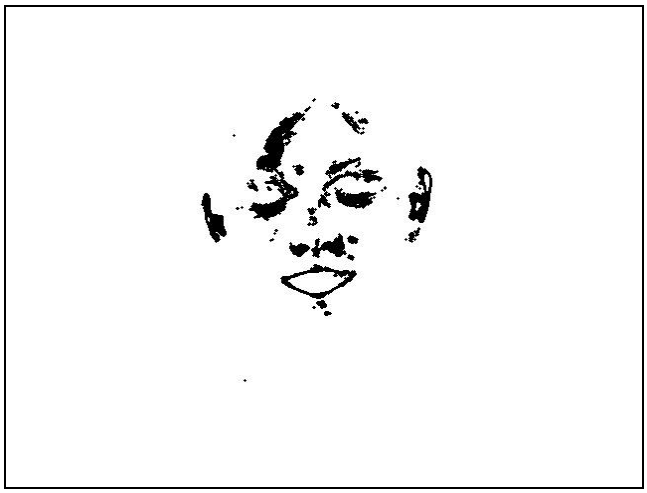
I have noticed that it is better to apply the filters and then the binary layer plugins, to get more accurate results. For example, in this picture after applying the sequence of Mean(3) + BinaryLayer0 + Max(1) I get the most accurate result. When I use Max Filter in the end, the noise from the inside part of the face is eliminated.



For the skin pixels, the best combination that I found was applying Binarylayer1 first, after that median(2) and then smoothing the result with Min(1).



For selecting the central part of the face I have used Median(3) filter + Binary layer 2 plugin + Min(1) in the end to reduce the noise. I have noticed that median filter makes the central part “darker”, that is why applying the Binary filter after that selects a smoothened region.



At last, for selecting the lips and possibly the ears I have used BinaryLayer3 + Min(1) + Median(3). It is important to get the binary image and then apply the filters, because in the opposite case most filters are distorting the image of lips.

The rest of the pictures having standard behavior are uploaded in the corresponding folder.