Assignment Five

REPORT

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MSEE-22002

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CS-525: Computer Vision

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~ (Qno.1) ~

~ (Background Removal of Video) ~

What am I trying to do in assignment?

High level idea to implement background removal is to somehow develop a model that recognizes each pixel and decides whether this pixel qualify as background or foreground. So, here we train background model by finding mean and standard deviation of background frames. This mean and standard deviation would help in Gaussian modelling of frame sequence for each RGB pixel. User can input or change standard deviation confidence bound to threshold between background and foreground pixel. Those pixels that are present in the defined confidence bound would be marked as background pixel and asked in the homework document, we have zero out background pixels of video.

What I am submitting?

I have coded everything in my Juypter notebook with. pnyb extension, each function is commented enough to tell its functionality.

- Importing required libraries.
- A function that loads video from the given path in 4D array.
- A function for finding mean frame and std frame.
- A function that takes background clip for model training, and video on which we want to remove background. This function takes confidence bound in terms of standard deviation bound.
- A function to write output video to the memory with given path, name, frames per second.

What I got in results?

I tested on given video, and this is what I got in result in comparison to the original frame. I tried to take snap shot at that instant roughly and compared results that come after removing background from the video after training background model.

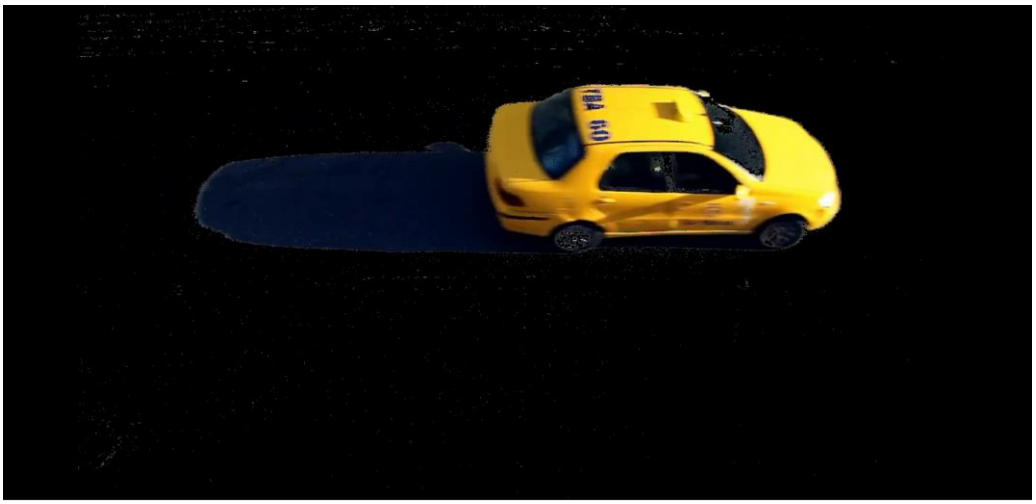


Image after background removal.

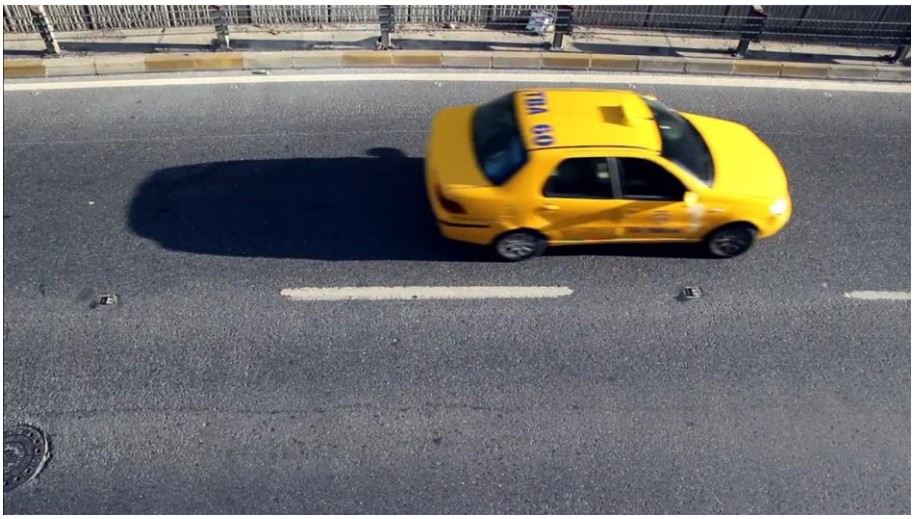
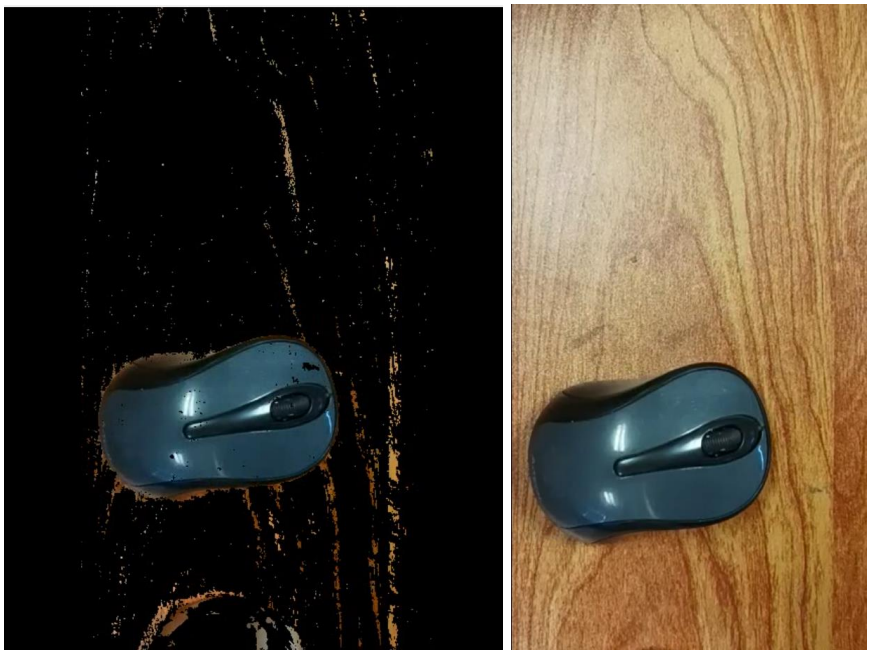


Image before background removal.



Side-by-side comparison.

Little distortion in background image is because camera moved a bit which change the orientation of camera from the place where it was trained.