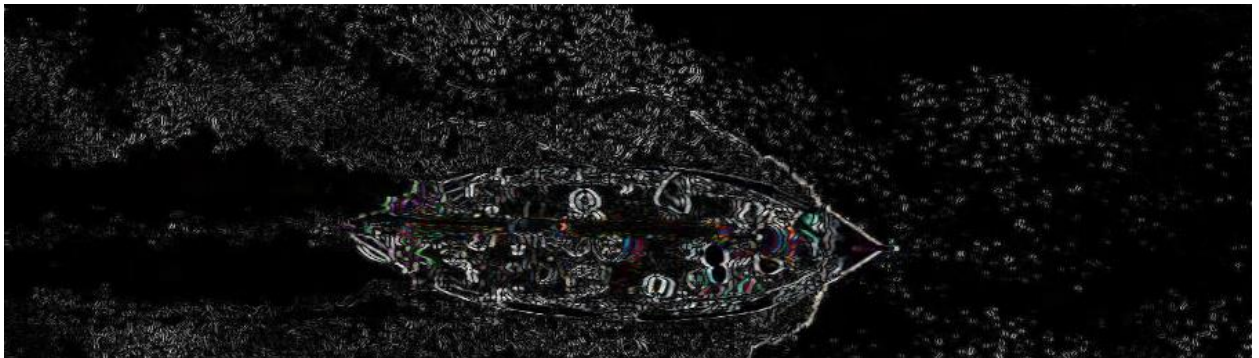Ethan Hartman
Assignment 5 Task 1

1. Considering the previous frame as background (frame-by-frame)
   - vehicles.mp4: This technique is not horrible for this video due to vehicles driving at constant rates, and a decent distance between the vehicles. We do, however, see a bit of noise, especially on the grass from shadows.

   - boat.mp4: This technique was bad for this video. You could see a lot of noise from the water which makes sense. The water is constantly changing, too, so we will see it in a direct frame subtraction.

   - pedestrians.mp4: This technique was decent for this video. There was a bit of noise at times, likely due to shadows and the people who were standing still did not stand out much.
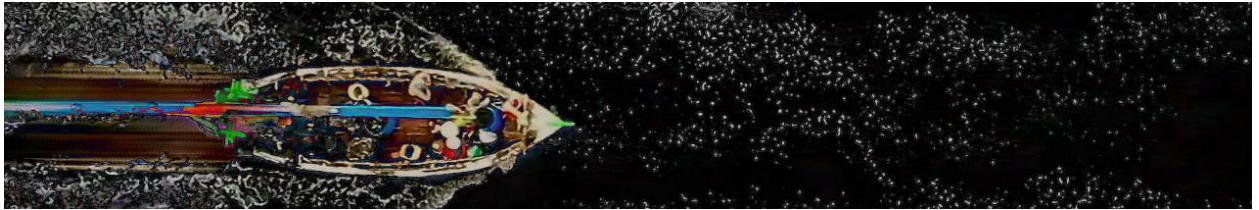

2. Using the first 50 frames as background
   - vehicles.mp4: This technique was bad for this method, as well. So much in the scene has moved, causing lots of unnecessary noise.

   - boat.mp4: This technique was bad for this method. Due to nearly everything moving since the initial 50 frames, there was a lot of noise. The ship was highlighted better than the first method, though.

   - pedestrians.mp4: This technique was bad for this method. Due to the large number of people walking, we can see lots of noise, especially with the lines on the floor.
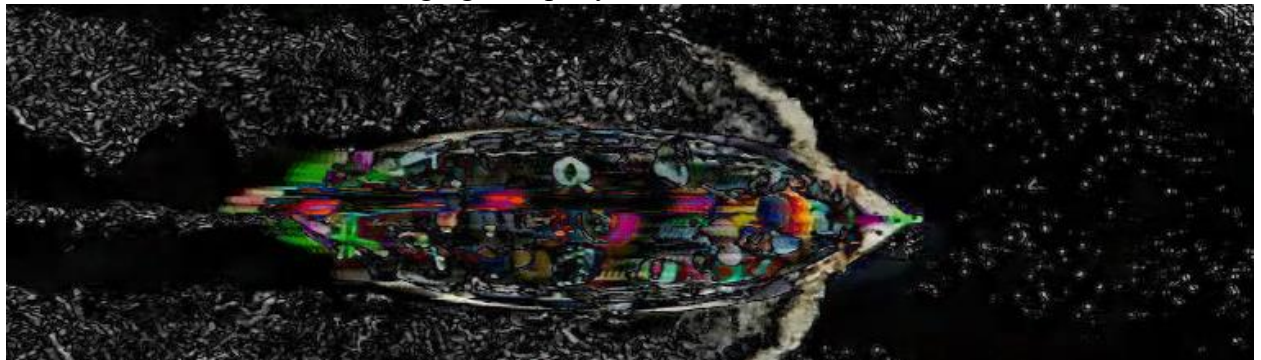

3. Using the last 50 frames as background
   - vehicles.mp4: This wasn't horrible, but we can see the sunlight on the side since that part was changing so frequently. Additionally, Vehicles had large trails due to capturing the last 50 frames.

- boat.mp4: Ships on the sides weren't really captured, which was good, but the water was still an issue since it is changing so rapidly.

- pedestrians.mp4: Not horrible, however, people were ghosting a lot, and lines on the floor were visible due to the background being the last 50 frames.
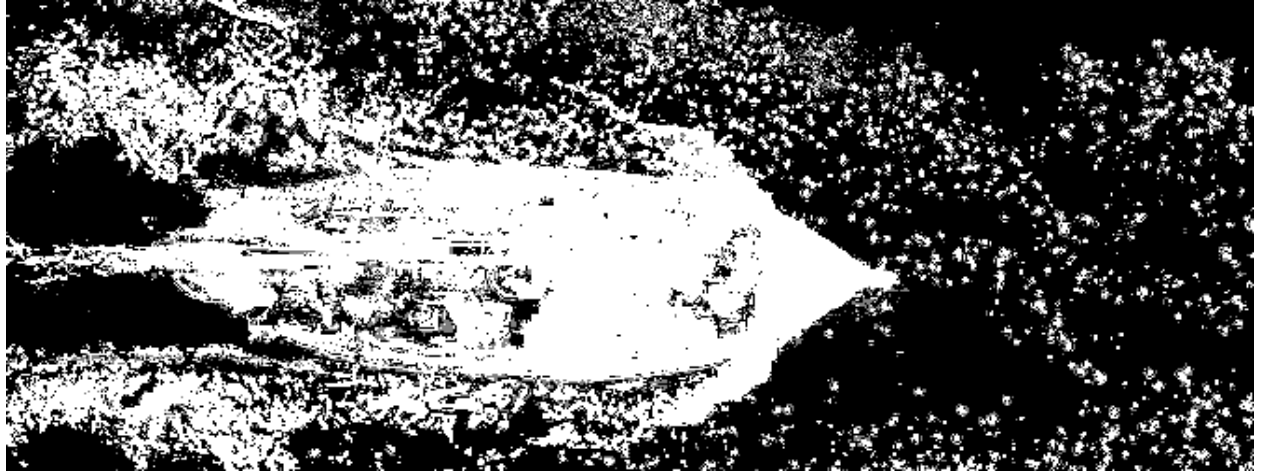

4. GMM-based background subtraction
   - vehicles.mp4: The vehicles were vibrantly highlighted but there was an insane amount of noise in the background. I'm not entirely sure why this was the case at times.

- boat.mp4: The boat is highlighted the best here for sure because the color difference is intensified.

- pedestrians.mp4: Highlights people the best out of all methods so far. There is a large amount of noise, though, especially below their feet, likely due to the fast change in colors.