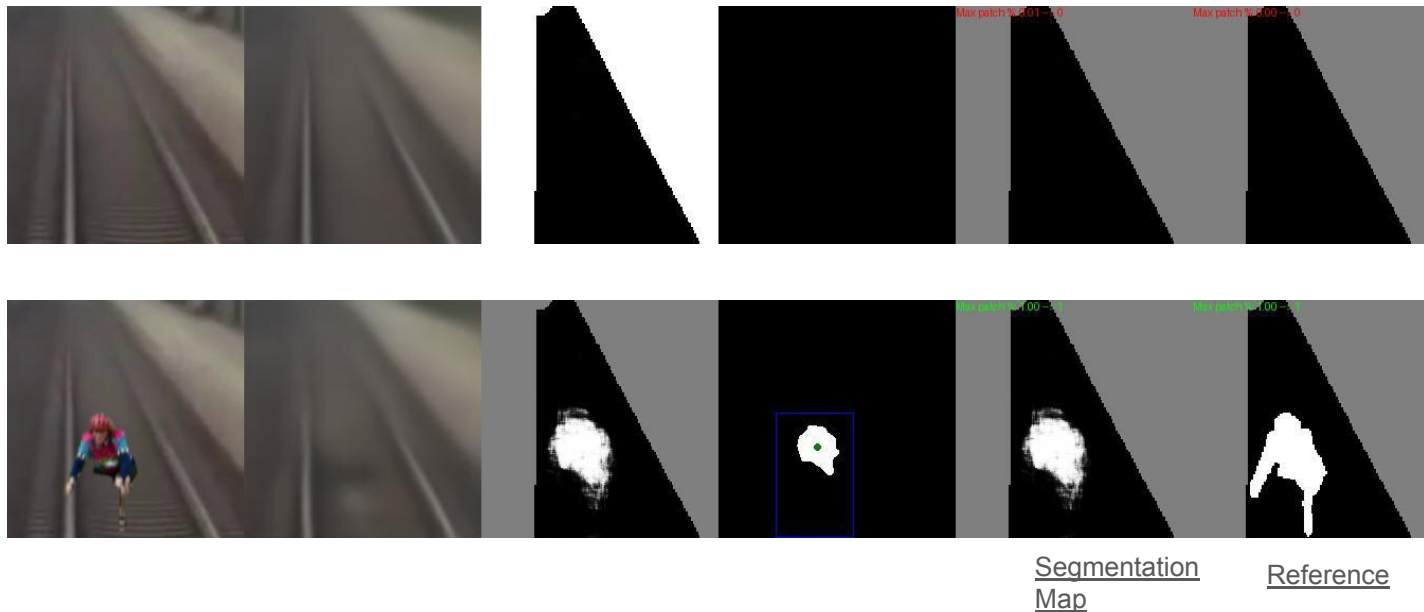


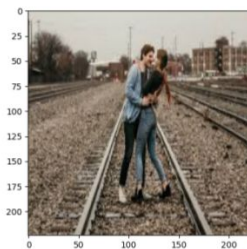
Previous Approach: The original work from IROS journal only created segmentation map for object in image containing rail

Results

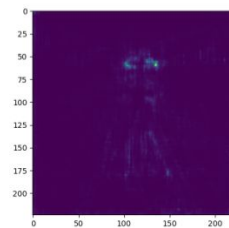
Sample Outputs
from Repository
(on validation
set)



Sample Output
on Custom
Image



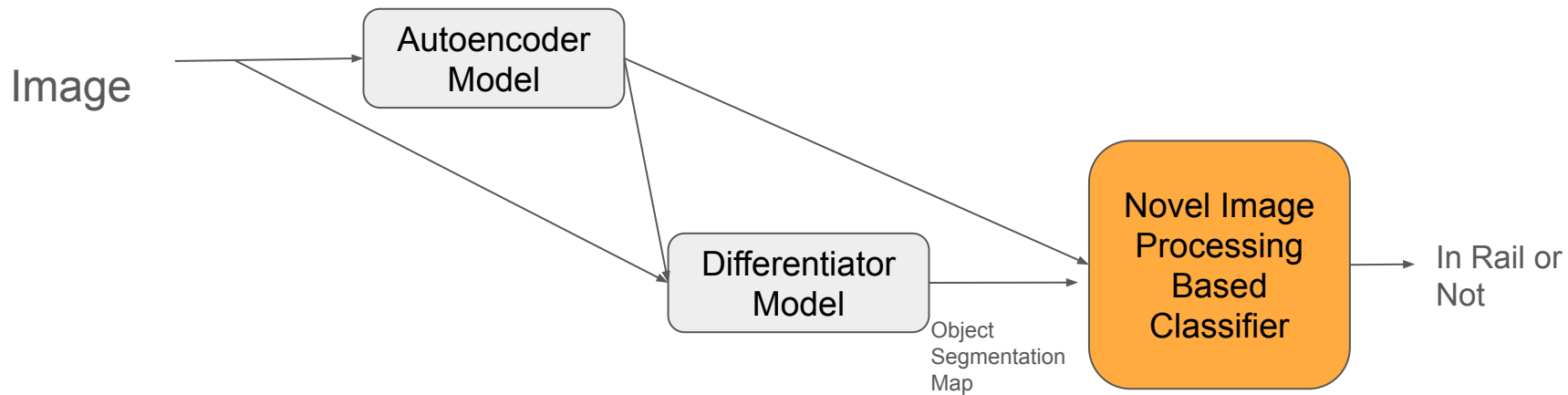
New Target
Image



Segmentation
Map

Concern

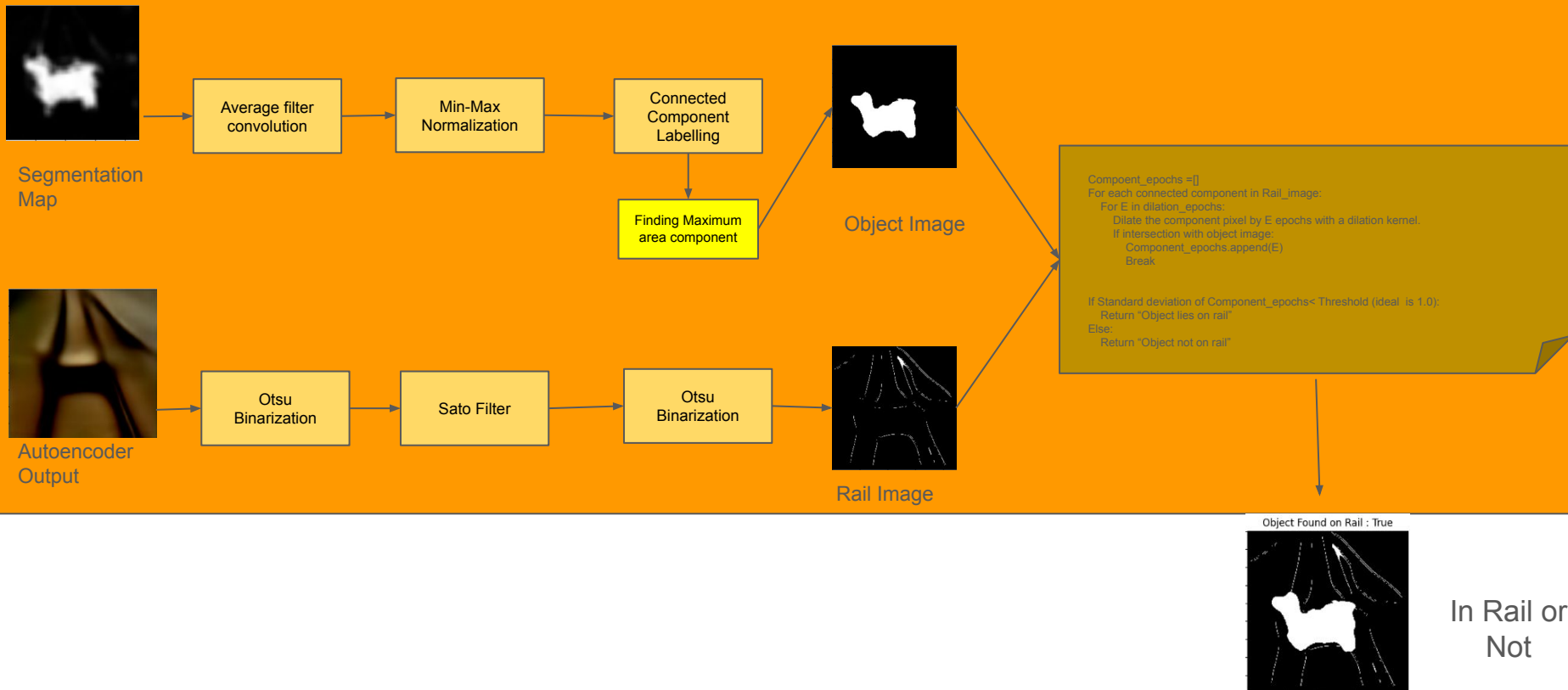
1. Does not work well with small obstacles.
2. Fails to classify whether object lies on rail or not, unless there are segmentation labels for tracks available.



New Approach: I create a useful modification, where I use the results to definitely classify whether an object is within rail or not

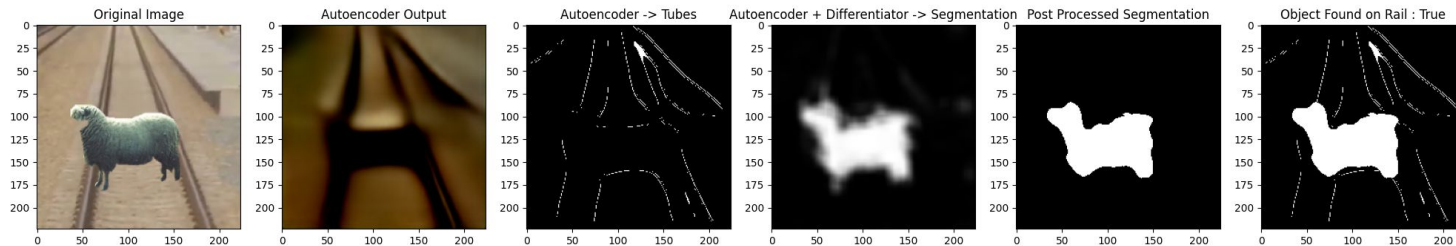
Strategy: the proposal is to utilize the outputs of autoencoder, as well as differentiator model in classical image processing way to get a “yes” or “no” answer whether the object lies on rail or not. The key strategy is to make the dilated rail parts intersect with object pixels, and measure a proxy of angle between line segments joining the center of object to point of intersection.

Novel Image Processing Based Classifier

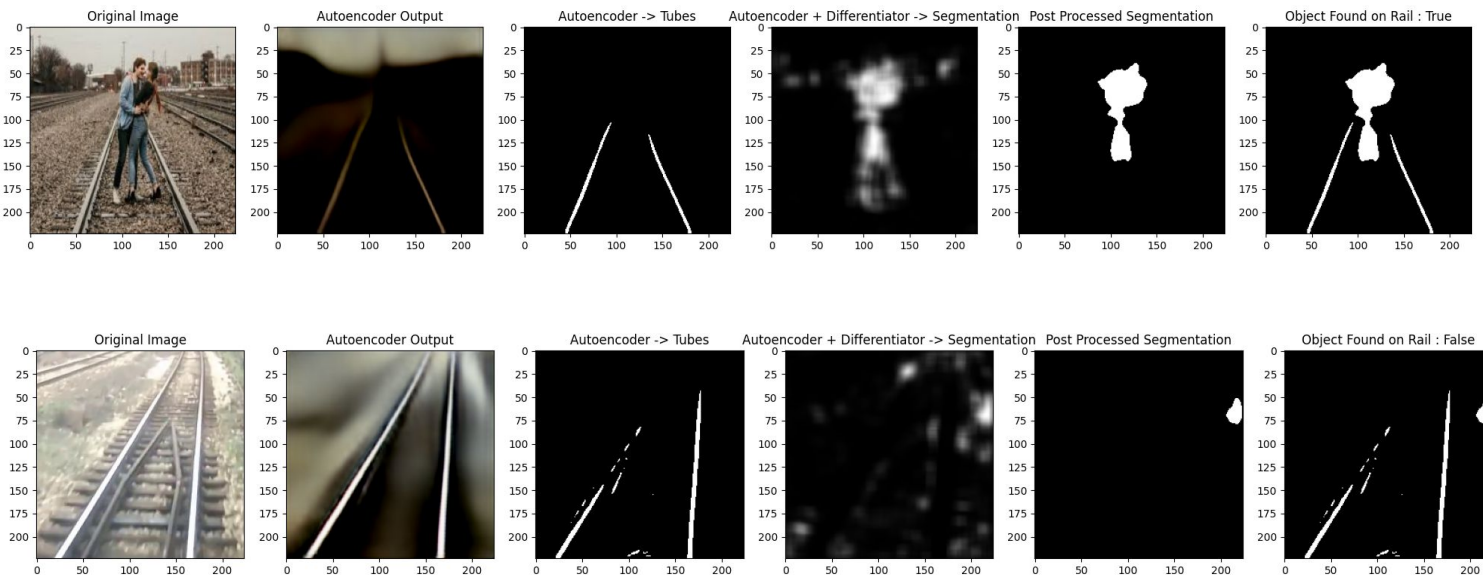


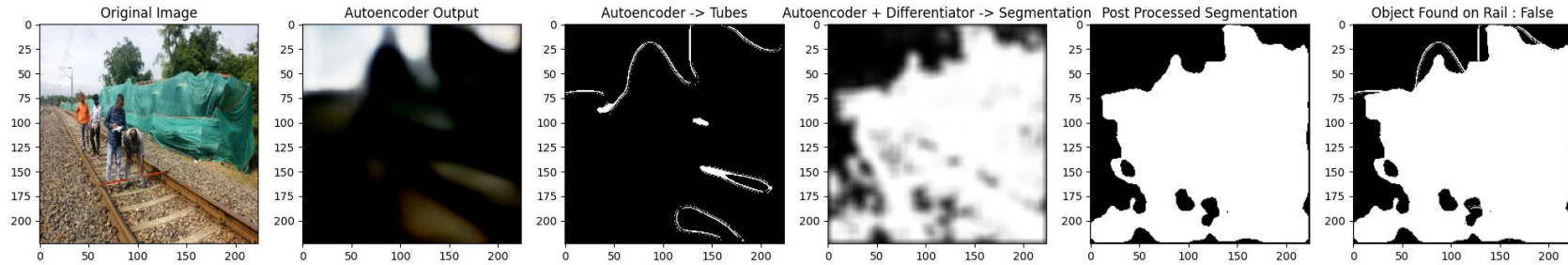
Results

Performance on Training Set Sample



Performance on Testing Set Sample





As the sample becomes out of distribution, the autoencoder's output fails, and consequently performance of pipeline fails. But for railway project this would not be case, as we will have dataset associated with target railway