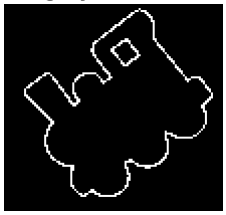
Continuing from the previous sections we can see that indeed the circles of 1,1 and 1,9.5 are the same, but the circles of 4,10 are different.
In addition we will notice that the accuracy also affects the accuracy in the circles themselves, for the first two pictures we will notice that the top circle is not marked in the exact same place, but the general marking is correct.
The important conclusion is that less accuracy will lead to a decrease in performance. The main question is how much performance will be affected, and what is our measure of performance impairment depending on the app.

2.2.7. As we reduce the R THETA parameters we get larger matrices, slower computational speed, more memory consumption and all of these will lead to higher costs. At the same time we get a system with good performance and a high level of accuracy.
For complex systems (security, medical, vehicle systems, etc.) we will require very high levels of accuracy and therefore we will not be able to tolerate mistakes.
However for simpler and cheaper systems we can choose larger parameters and adjust we will get lower costs and less good results.

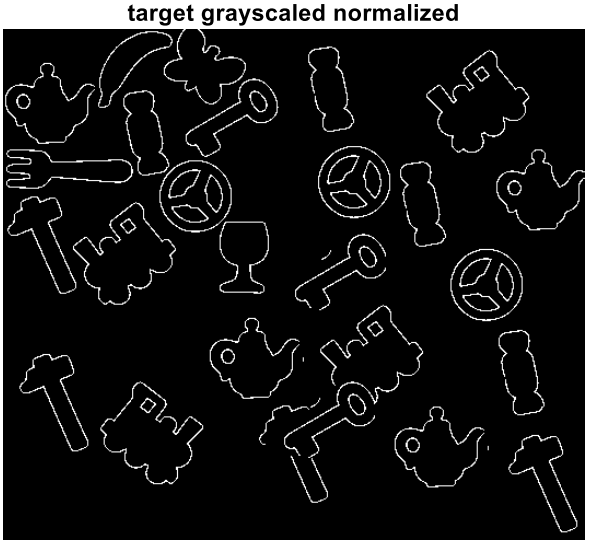
3. Bonus

We downloaded from the Internet the operating algorithm Generalized_hough_transform, the algorithm detects edges in unconventional shapes.
We tested the algorithm by an image containing several shapes including a train shape, and tested whether the algorithm would find the train well.
It can be seen that indeed the algorithm well recognized the train, but for a slight rotation of the image or incomplete contours the algorithm did not recognize the desired shape.

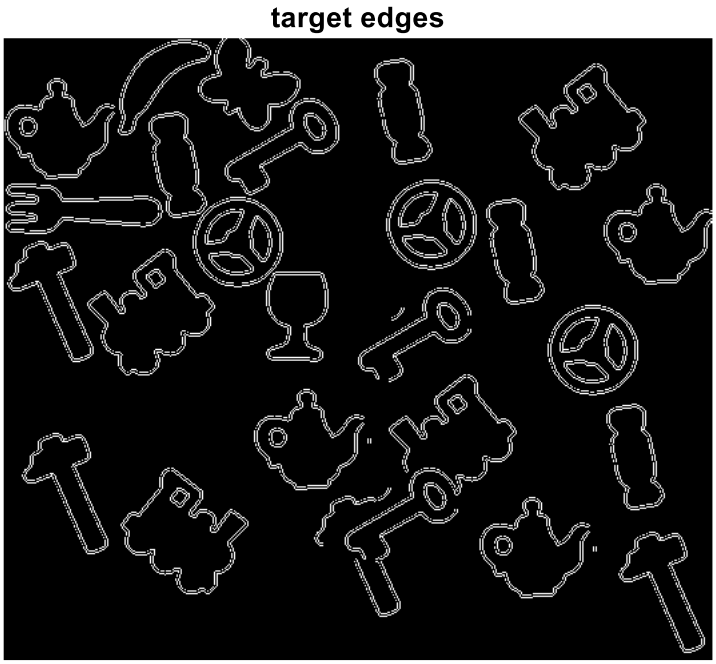
reference grayscaled normalized



target grayscaled normalized



The image edges –



the results –