Main variables in the system:

1. Lighting conditions
   1. During payout onto a bare tool, surface reflection is high and therefore the brightness of the roller increases drastically
      1. This condition causes some black portions to appear white effectively reducing the area of the black carbon portion. Therefore, adjusting the exposure time too high tends to create false negatives (reports no roller wrap even if there is one)
   2. Buying a more focused set of lights can greatly help the variation in lighting conditions and is recommended
2. Bounding box
   1. Due to the roller being cylindrical geometry, it is always the case that there will be brightness variation within the ROI
   2. It is found that the upper and lower parts of the roller with respect to the rectangular ROI have noise when extracting the dark carbon color
   3. We can instead simply cut those portions of the ROI out and have the rectangle be bound only a subsection of the roller image
3. Extraction sensitivity
   1. The color extraction tool is used to find the area of the ROI that has a color similar to the carbon
      1. Although it is unclear how exactly the tool works, as you increase the sensitivity, the range of colors that it considers the same widens
   2. The idea is then to choose the lowest sensitivity that allows the largest area of the carbon to be included
      1. Very high sensitivities will simply result in large amounts of noise and possible false positive triggers
4. Threshold
   1. The numerical value after which the trigger for NG will be active
   2. This numerical value must be significantly above the process noise in order to reduce the likelihood of false positives
      1. Of course if the threshold is simply set too high, then there will be many false negatives