





With the brightness value expression of image gray level, Figure 4 shows the original, figure 5 is the gray after processing.

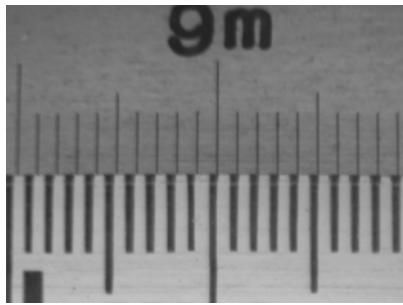


Fig 5 Gray processing

### B. Partition image of binarization processing

Binary image processing is that the point of image gray level is set to 0 or 255, that means the images clearly are shown the effect of black and white[4]. That means the 256 luminance level gray image can still reflect the global and local features of the binary image through appropriate threshold selection. In digital image processing, binary image plays a very important role, especially in the practical image processing. There are much more using binary image processing to achieve the structure system, if you have binary image processing and analysis, firstly, you have the gray value of the two images to get two binary images, when it is favor to make the image for further processing, image collection properties are only bond with the pixel values of 0 or 255 points, not involving the pixel value to multistage, thus the processing becomes simple, and the processing of data and compression become very small.

The tested steel ruler scale line and the background color is various, well, the standard steel tape color is fixed, so it is necessary separate a standard ruler and tested ruler in different region to select a different threshold binarization processing, the binary image of partition processed as shown in figure 6:

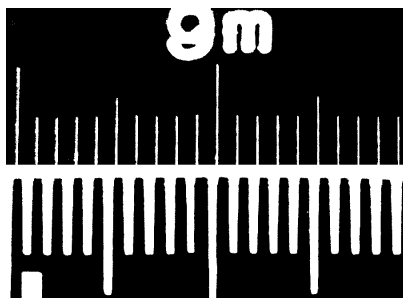


Fig 6 Binary image

### C. Detection of the groove center

Considering the steel tape line is very exiguous, it is much

easier to guarantee the precision compared the test groove center line to the edge detection, After the image was processing by binary and amplify it in X direction, then we can get data acquisition, when data is collecting, Click on the measured line, software will search the boundary line, automatically, and calculate the line center in X to pixel coordinates on the screen.

### D. Calculation of image pixel equivalent

Pixel equivalent is that the corresponding conversion relationship between the unit pixel and the actual length[5]. That means to confirm each pixel representing actual length value in image measurement system, In the actual verification, due to the CCD field of view within the standard steel tape, so the calculation of standard steel tape length L corresponding to the pixel number N, pixel equivalent for:

$$\beta = L / N \quad (2)$$

### E. Calculation error

Using software to calculate difference between the standard reticle and measured line of pixel M, the scribe of the error values:

$$\delta = M\beta \quad (3)$$

## V. CONCLUSION

Using the industrial video camera in the measured line collecting images with the partition type of Binary image and the groove center detection image processing technology, combined with mechanical and electrical integration control technology, it realizes the automatic test of steel tape. Test results are automatically stored into the database or output statements, which improves the efficiency and precision of calibration.

## REFERENCE.

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