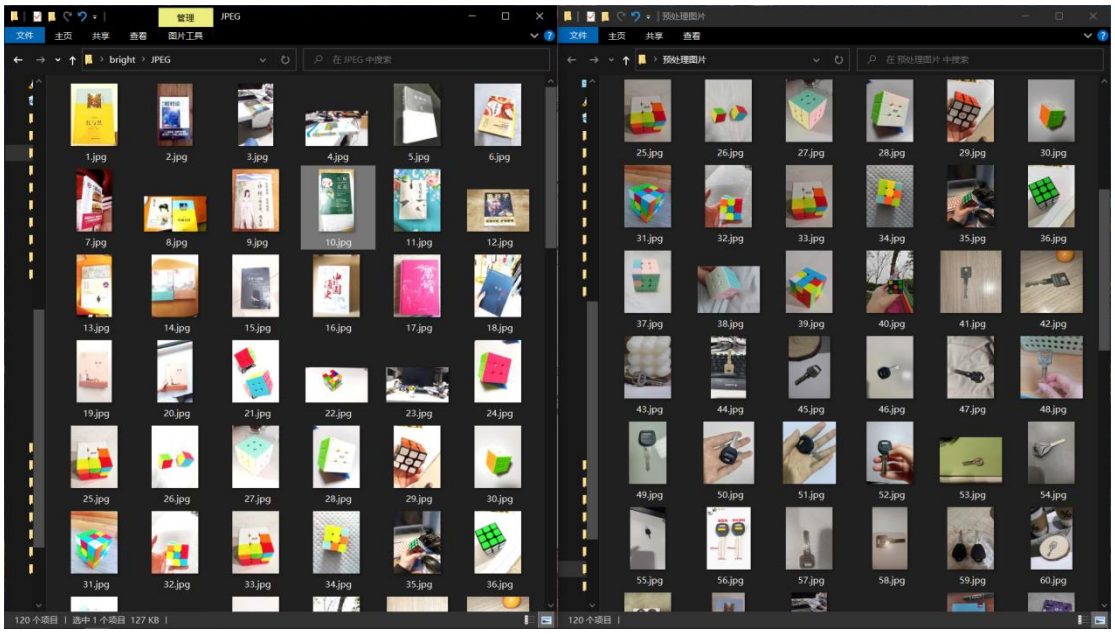
Report on recognition accuracy in light and dark environments

210982996 Jiatong Du 210985665 Yuhang Yang 210985872 Yutong Wang

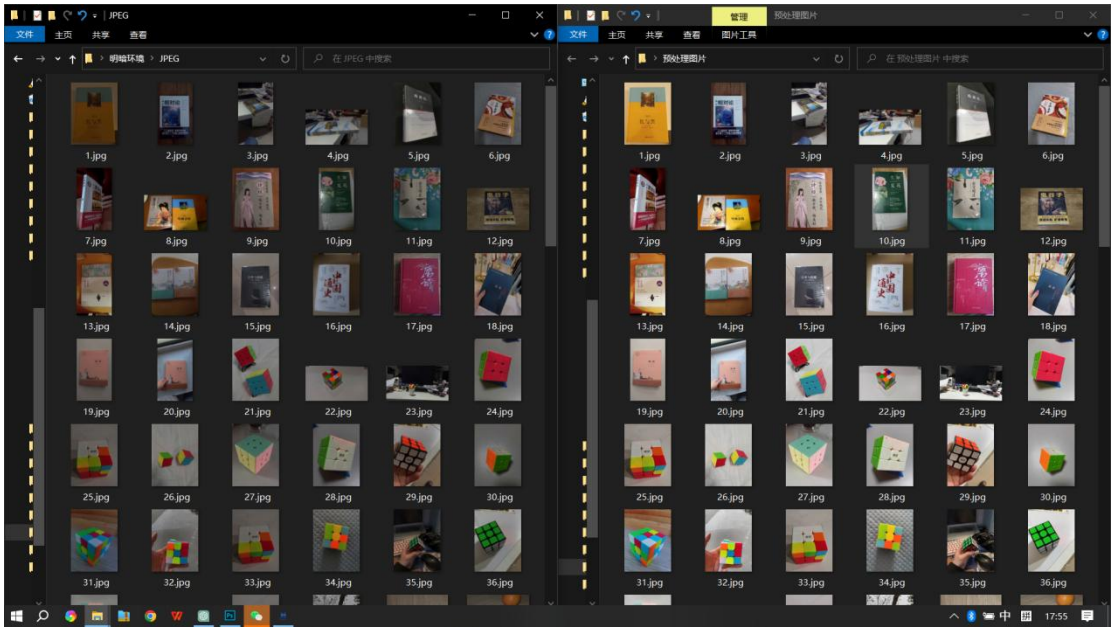
Firstly, we use Photoshop to batch process test set images,simulate bright or dark environments by adjusting brightness and exposure.

For images in bright environments, our parameters are brightness 70 and exposure 0.3.



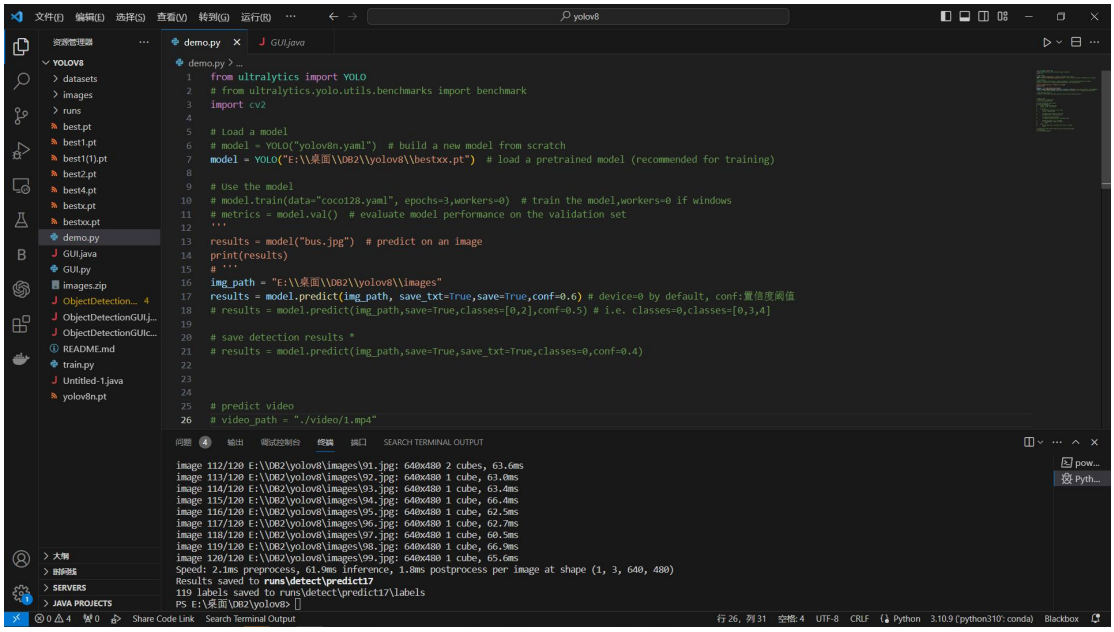
(Bright images) (Original images)

For images in dark environments, our parameters are brightness -70 and exposure -0.3.

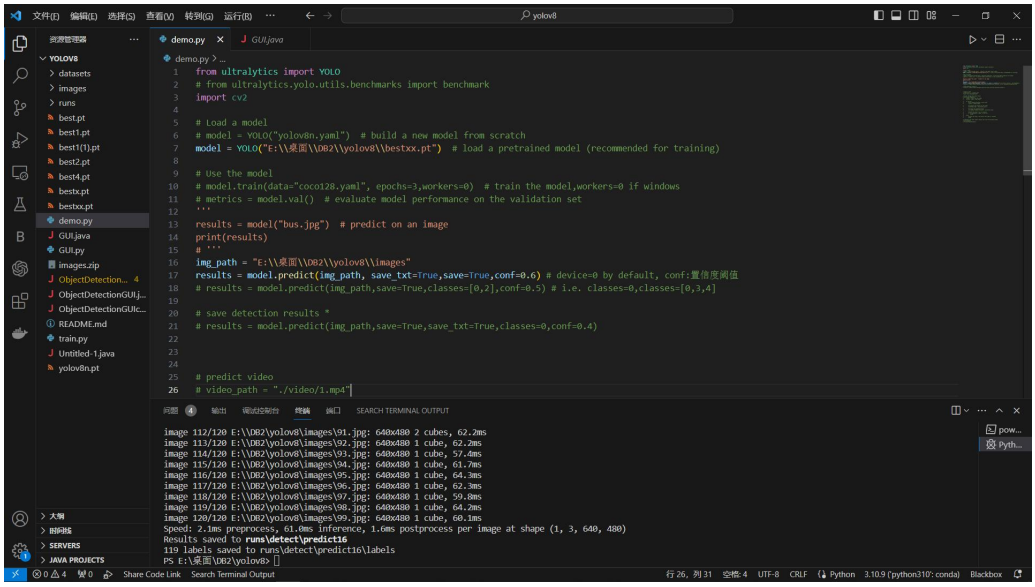


(Dark images) (Original images)

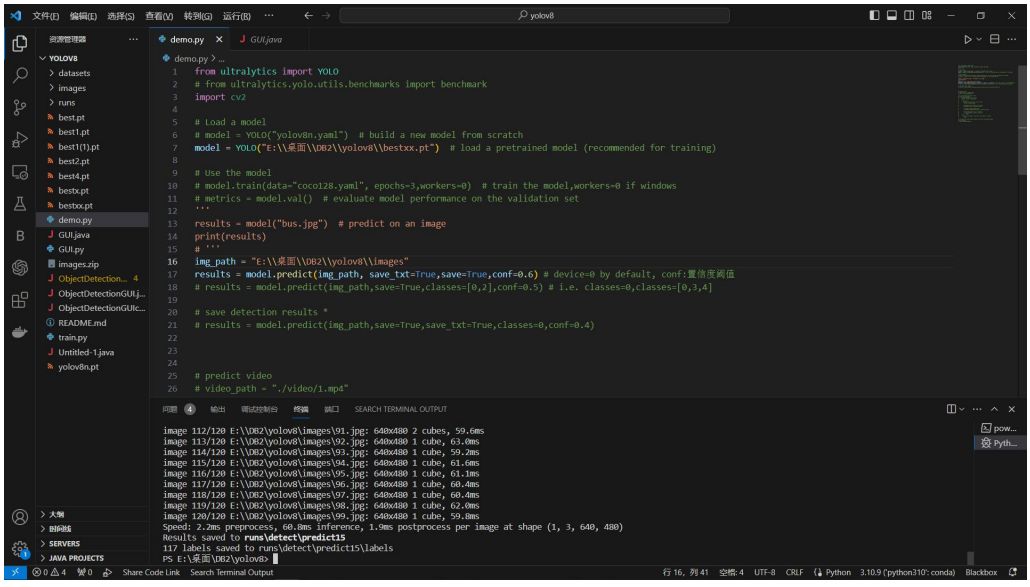
Then we identify the original test set, 119 out of 120 images can be correctly identified, with a recognition accuracy rate of almost 100 percent.



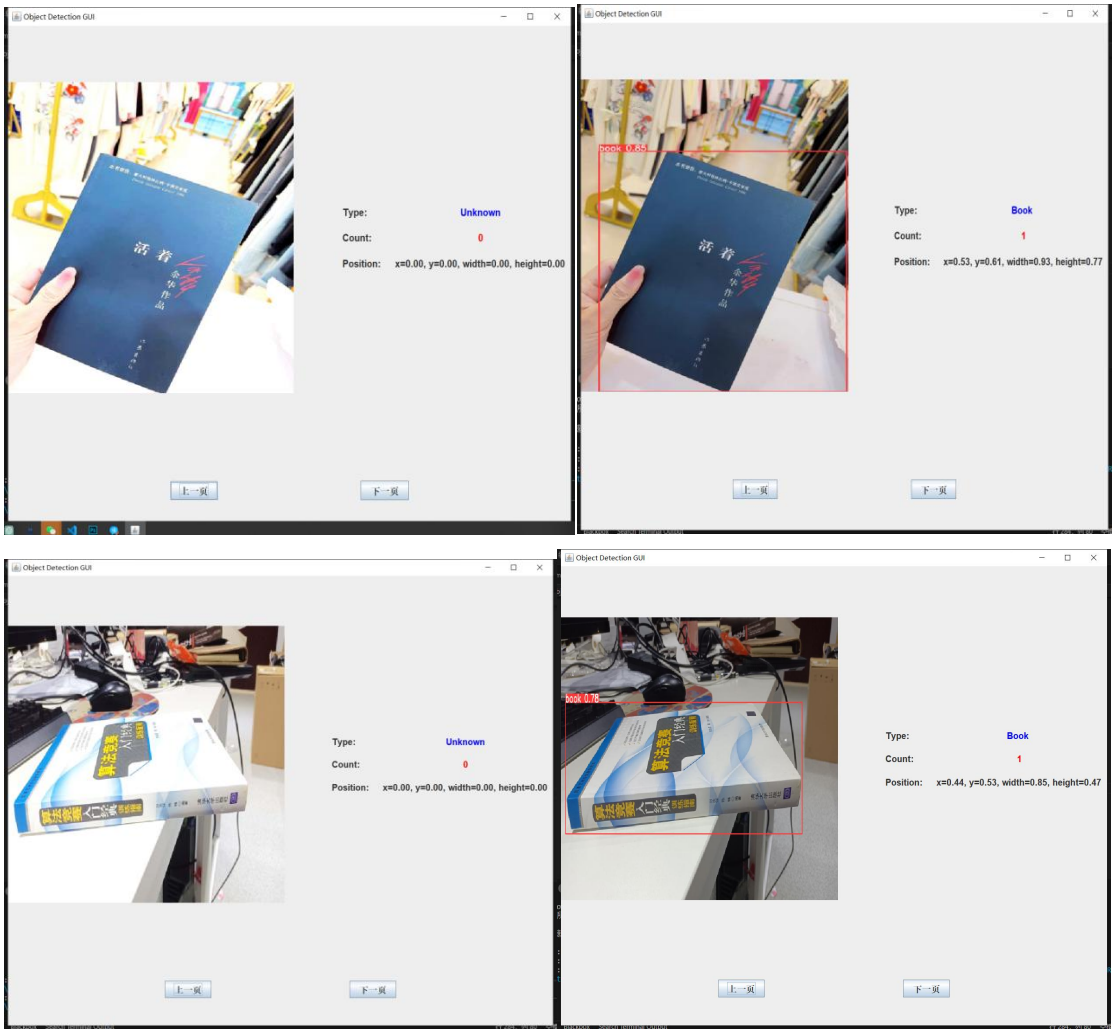
Afterwards, we tested the test set simulating dim environments and found that the results did not change. It can be concluded that the recognition accuracy of the model in dim environments has little impact.



Then, we tested the test set that simulated a bright environment and found that the number of successful recognition was reduced by two, with an accuracy of 97.5%. It can be seen that the accuracy of model recognition in bright environments will have a certain impact.



The following is a comparison between the recognition of unrecognized images and the original image.



Recognition accuracy in different environments

	Test set	Correctly recognized images	Accuracy
Original	120	119	99.1%
Dark	120	119	99.1%
Bright	120	117	97.5%

Summary

We found that when the model is in a dark environment, its recognition accuracy is almost unaffected, but when it is in a bright environment, its recognition accuracy is slightly affected, indicating that the model's recognition ability can still be trained and strengthened under bright conditions. Overall, the model we train can adapt to various different environments.