

CHAPTER V

CLOSING

5.1 Conclusion

This screening system is used as an educational tool to independently determine whether a person has strabismus. The public can now utilize the website-based screening application developed in this research. Through this platform, users simply upload a photo of their face or use a live camera to directly detect their eye area. The system then processes the image and automatically labels whether the eye condition is indicated as "Squint" or "Normal." However, this application is designed as an initial, educational screening tool. To obtain an accurate clinical diagnosis, the public is still advised to undergo further examination by an ophthalmologist.

In detecting and isolating the eye area from the rest of the face, the YOLO (You Only Look Once) algorithm plays a crucial role. Through an object localization approach, the YOLO model is able to separate the spatial area of the eyes with great precision. This is proven through high testing metrics, where the eye location model successfully achieved a precision value of 0.98, a recall of 0.995, and an mAP50 of 0.995. These figures indicate that the model performs well in detecting the eye area.

The role of a Convolutional Neural Network (CNN) with the YOLO architecture in classifying strabismus or normal strabismus lies in its ability to extract visual characteristics from the eyeball. This model intelligently analyzes important parameters such as light reflection in the pupil, the proportion of scleral white, and the alignment of the eye's position with the canantal angle. Test results show quite good classification performance, with a precision value of 0.096, a recall of 0.884, and an mAP50 of 0.92.

This system is expected to improve its dataset and methods for greater accuracy, increasing public awareness of their eye conditions.

5.2 Suggestion

1. This research still cannot differentiate between squinting and glancing eyes because it only looks at the angle of the eyeball. Further development is

expected to be able to differentiate between squinting and normal eyes by observing the eyeball reflex during detection.

2. Model performance can be continuously improved by trying other, more complex or advanced architectures/methods. Additionally, a more varied and diverse dataset is needed to increase the accuracy.