method has the advantage of eliminating the need for explicit feature extraction and categorization.

Using the proposed CNN model, this study built a fundus image-based cataract classification system. The improvement was made to the class category into four classes, namely Normal, Immature, Mature, and Hypermature. The proposed approach's advantages are that it can pre-screen fundus images to help medical staff classify cataracts and primary owned datasets with various amounts. The system can classify cataracts into four classes: Normal, Immature, Mature, and Hypermature.

IV. Conclusion

This study discussed the classification of cataracts based on fundus images by comparing several CNN architectures, namely GoogLeNet, MobiLeNet, ResNet, and the proposed CNN model. Comparison of the four architectures consistently uses the Adam Optimizer with a learning rate of 0.001. The best system performance was obtained using the proposed CNN model on RGB input with an accuracy of 0.92. According to the performance results, the classification accuracy obtained in this study is acceptable accuracy performance compared with previous studies, which also develop detectable cataract classes into four classes, including Normal, Immature, Mature, and Hypermature. This study is expected to help medical staff to carry out early detection of cataracts to prevent the dangerous effect of cataracts and appropriate medical treatment. In the future, we want to expand the number of datasets to improve the classification accuracy of the cataract detection system.

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