

## **CHAPTER V**

### **CONCLUSION AND SUGGESTION**

This chapter presents conclusions from the results of the COPTAS application project and provides suggestions for further development to increase the benefits and impact of the application for coffee farmers.

#### **A. Conclusion**

The COPTAS application was developed to assist coffee farmers in identifying coffee leaf diseases using machine learning technology. The development process followed the systematic ADDIE model stages, including planning, design, development, and final evaluation. During the planning phase, user needs were identified, and the objectives of the application were formulated. The design phase focused on functionality and ease of use.

During development, a machine learning model using the InceptionV3 transfer learning approach was applied to detect symptoms of coffee leaf diseases such as rust, miner, and phoma. The application featured a user-friendly interface and provided essential information on symptoms and treatments, which enhanced farmers' understanding of coffee plant care.

Results from the development and testing phases indicated that the COPTAS application accurately diagnosed coffee leaf diseases and offered relevant recommendations to farmers. Testing in front of examiners and teams demonstrated that the application effectively analyzed coffee leaf images and

predicted diseases with a high level of accuracy, consistent with the labels provided.

Overall, the COPTAS application showed significant potential in improving crop yields and farmer well-being by offering practical and relevant solutions. The application served not only as an effective diagnostic tool but also provided additional insights useful for farmers in managing their coffee plants.

## **B. Suggestion**

To further enhance the benefits of the COPTAS application, several developments are recommended. Initially, expanding the application's capability to identify a broader range of diseases and monitor overall plant health would make it more comprehensive. Using various images for training and exploring advanced machine learning algorithms could also improve diagnostic accuracy. Moreover, providing detailed tutorials and implementing a feedback system would significantly enhance the user experience.

Moreover, fostering collaboration with agricultural experts and securing support from government bodies and agricultural organizations could help broaden the application's reach and increase its positive impact. Engaging with these stakeholders can provide valuable insights and resources, facilitating further improvements and ensuring the application meets the evolving needs of coffee farmers.