

ABSTRACT

Chili plants are one of the horticultural agricultural products that play an important role in meeting food and industrial needs. Chili cultivation is a source of income for many farmers around the world. However, chili cultivation often faces various challenges such as the spread of diseases, pests, and inappropriate environmental factors. This study aims to implement CNN and image processing for plant disease classification and monitoring of chili plant growth. The classification is divided into three classes, namely: DaunSehat, KeritingMozaik, and VirusGemini. The CRISP-DM method is applied in this study with the stages of business understanding, data understanding, data preparation, modeling, evaluation, and deployment, ensuring a systematic and comprehensive approach. The evaluation results show that the CNN model trained using unaugmented data has a relatively low accuracy of 61.67%, while the CNN model trained using augmented data has a high accuracy of 95.73%. This study has not succeeded in designing an automatic measurement system using image processing that is quite precise. This is indicated by the high Mean Absolute Error (MAE) value in plant height measurements, which is 4.836 cm with an average relative error percentage of 12.27%, and in leaf area measurements of 2.929 cm² with an average relative error percentage of 7.64%.

Keywords — Augmentation, Chili plants, Classification, CNN, Image processing,