ABSTRACT

In Indonesia, consumption of wheat for bread averages 4.7 kg per capita per year, estimated to increase to 6.6 kg in 2030. Bread sales in 2021 will reach USD 18.7 billion, the highest in Southeast Asia. However, there have been incidents of bread poisoning, including at SDN Pengasinan 1 and Nganjuk, due to expired or moldy bread. This research designs a moldy bread classification system using CNN with GoogLeNet architecture, classifying the severity of mold in four levels: Grade 0, 1, 2, and 3. The model shows an accuracy of 88.10% at epoch 10 with batch sizes of 16 and 86.31% on batch size 32, but the high validation loss value indicates the potential for overfitting. The results show that the model is effective in identifying Grade 0 and Grade 1, but its performance is poor for Grade 2. Further improvements are needed to address overfitting and improve the classification of Grade 2. CNN technology, especially GoogLeNet, makes a significant contribution to improving the efficiency and quality of bread production.

Keywords: CNN, Bread, Deep Learning, GoogleNet, Mold.