

ABSTRAK

Kopi merupakan salah satu komoditas perdagangan global yang memiliki nilai ekonomi tinggi, dan kualitasnya sangat dipengaruhi oleh tingkat *roasting* biji kopi. Penelitian ini bertujuan untuk membandingkan kinerja arsitektur *MobileNetV2* dan *ResNet50* menggunakan pendekatan *transfer learning* dalam mengklasifikasikan tingkat *roasting* biji kopi ke dalam tiga kategori, yaitu *light roast*, *medium roast*, dan *dark roast*. Dataset yang digunakan diperoleh dari Kaggle dan terdiri atas 1.800 citra yang telah melalui tahap *preprocessing* berupa *resize*, normalisasi, dan augmentasi, kemudian dibagi menjadi data latih, data validasi, dan data uji. Kedua arsitektur dilatih menggunakan *optimizer Adam* dan SGD dengan variasi *epoch*, *batch size*, dan *learning rate*, kemudian dievaluasi menggunakan metrik *accuracy*, *precision*, *recall*, *F1-score*, dan *confusion matrix*. Hasil penelitian menunjukkan bahwa arsitektur *ResNet50* dengan *optimizer Adam* memberikan performa terbaik, dengan *training accuracy* sebesar 99,93% dan *testing accuracy* sebesar 100%. Sistem klasifikasi yang dikembangkan juga dievaluasi melalui *User Acceptance Test* dan memperoleh nilai rata-rata 4,48 yang menunjukkan tingkat penerimaan pengguna dalam kategori sangat baik.

Kata kunci: Tingkat *Roasting* Kopi, *Convolutional Neural Network*, *Transfer learning*, *MobileNetV2*, *ResNet50*.

ABSTRACT

Coffee was one of the most valuable global trade commodities, and its quality was strongly influenced by the roasting level of the beans. This study compared the performance of MobileNetV2 and ResNet50 Architectures using a transfer learning approach to classify Coffee bean roasting levels into three categories: light, Medium, and dark roast. The dataset, obtained from Kaggle, consisted of 1,800 images that were preprocessed through resizing, normalization, and augmentation, and were Then split into training, validation, and testing sets. Both Architectures were trained using The Adam and SGD optimizer s with varying epochs, batch sizes, and learning rates, and were evaluated using accuracy, precision, recall, F1-score, and confusion matrix. The results showed that ResNet50 with The Adam optimizer achieved the best performance, reaching a training accuracy of 99.93% and a testing accuracy of 100%. The classification system was furTher evaluated through a User Acceptance Test, obtaining an average score of 4.48, which indicated a very good level of user acceptance.

Keywords: *Coffee Roasting, Convolutional Neural Network, Transfer learning, MobileNetV2, ResNet50*