

KLASIFIKASI CITRA LUKISAN BALI DAN NON-BALI MENGUNAKAN METODE CONVOLUTIONAL NEURAL NETWORK DAN RESNET-50

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ABSTRAK

Seni lukis merupakan karya seni rupa dua dimensi yang berfungsi sebagai media visualisasi ide dan representasi budaya, salah satunya adalah lukisan tradisional Bali. Namun, rendahnya apresiasi seni di masyarakat menyebabkan kesulitan dalam membedakan karakteristik antara lukisan Bali dan lukisan Non-Bali secara manual. Penelitian ini bertujuan untuk mengembangkan model klasifikasi citra menggunakan pendekatan *deep learning*. Data penelitian berjumlah 250 citra yang dikumpulkan dari sumber terpercaya seperti *Kaggle*, pameran seni, dan dokumentasi buku dengan jumlah dua kelas yaitu lukisan Bali dan lukisan Non-Bali. Pengujian dilakukan menggunakan dua arsitektur, yaitu *Convolutional Neural Network* (CNN) dan ResNet-50, dengan variasi parameter *learning rate* (0,0001 dan 0,00001) serta *batch size* (16 dan 32). Hasil pelatihan menunjukkan model CNN mencapai performa optimal pada *learning rate* 0,0001 dan *batch size* 16 dengan akurasi *training* 90%, *validation* 90%, dan *testing* 86%. Sementara itu, model ResNet-50 mendapatkan hasil optimal pada konfigurasi *learning rate* 0,0001 dan *batch size* 32 yang menghasilkan akurasi *training* 98%, *validation* 92%, dan *testing* 94%. Kedua model terbaik tersebut kemudian disimpan dan diintegrasikan ke dalam aplikasi berbasis web sederhana menggunakan platform *streamlit* untuk memfasilitasi klasifikasi citra lukisan secara digital.

Kata Kunci: *Deep Learning*, Klasifikasi Citra, Lukisan Bali, CNN, ResNet-50.

***IMAGE CLASSIFICATION OF BALINESE AND NON-BALINESE
PAINTINGS USING CONVOLUTIONAL NEURAL NETWORK AND
RESNET-50***

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ABSTRACT

Painting is a two-dimensional work of art that serves as a medium for visualizing ideas and cultural representation, one of which is traditional Balinese painting. However, the low appreciation of art in society leads to difficulties in manually distinguishing the characteristics between Balinese and Non-Balinese paintings. This study aims to develop an image classification model using a deep learning approach. The research data comprises 250 images collected from reliable sources such as Kaggle, art exhibitions, and book documentation, consisting of two classes: Balinese paintings and Non-Balinese paintings. The experiments were conducted using two architectures: Convolutional Neural Network (CNN) and ResNet-50, with variations in learning rate parameters (0.0001 and 0.00001) and batch sizes (16 and 32). The training results indicate that the CNN model achieved optimal performance at a learning rate of 0.0001 and a batch size of 16, resulting in a training accuracy of 90%, validation accuracy of 90%, and testing accuracy of 86%. Meanwhile, the ResNet-50 model reached its optimal performance with a learning rate configuration of 0.0001 and a batch size of 32, yielding a training accuracy of 98%, validation accuracy of 92%, and testing accuracy of 94%. These two best models were subsequently saved and integrated into a simple web-based application using the Streamlit platform to facilitate digital image classification of paintings.

Keyword: *Deep Learning, Image Classification, Balinese Painting, CNN, ResNet-50.*