

ABSTRAK

Alat musik tradisional Jawa merupakan salah satu warisan budaya Indonesia yang memiliki nilai seni dan sejarah penting. Namun, perkembangan zaman menyebabkan pengetahuan masyarakat, khususnya generasi muda, terhadap alat musik tradisional semakin berkurang. Penelitian ini bertujuan membangun sistem klasifikasi citra alat musik tradisional Jawa menggunakan metode *Convolutional Neural Network* (CNN) pada lima jenis alat musik, yaitu *kendang*, *rebab*, *siter*, *suling*, dan *gong*.

Dataset yang digunakan berjumlah 300 citra yang diperoleh dari pengambilan gambar langsung dan *Google Image*. Tahap *preprocessing* meliputi penghapusan latar belakang, *resize* citra menjadi 256×256 piksel, *rescale* nilai piksel, dan augmentasi data menggunakan *ImageDataGenerator* sehingga menghasilkan 3000 citra. *Dataset* dibagi menjadi 80% data *training*, 10% data validasi, dan 10% data *testing*. Pengujian dilakukan dengan memvariasikan *learning rate*, jumlah lapisan konvolusi, jumlah *filter*, jumlah neuron *dense layer*, *dropout*, *epoch*, dan *batch size* untuk memperoleh model terbaik.

Hasil penelitian menunjukkan bahwa model CNN terbaik diperoleh pada skenario P7 dengan 4 lapisan konvolusi, *filter* 16, 32, 64, dan 128, *learning rate* 0,001, *dropout* 0,6, *epoch* 50, *batch size* 32, serta *dense layer* 256 neuron. Model tersebut menghasilkan akurasi pengujian sebesar 95,33%. Selain itu, evaluasi menggunakan *precision*, *recall*, dan *f1-score* menunjukkan nilai di atas 0,90 pada seluruh kelas.

Kata Kunci: *Deep Learning*, *Convolutional Neural Network*, Klasifikasi Citra, Alat Musik Tradisional Jawa, CNN.

ABSTRACT

Traditional Javanese musical instruments are part of Indonesia's cultural heritage and hold significant artistic and historical value. However, as times have changed, public awareness—particularly among the younger generation—of traditional musical instruments has gradually declined. This study aims to develop an image classification system for traditional Javanese musical instruments using the Convolutional Neural Network (CNN) method for five types of instruments: the kendang, rebab, siter, suling, and gong.

The dataset consists of 300 images obtained from direct photography and Google Images. The preprocessing stage includes background removal, resizing the images to 256×256 pixels, rescaling pixel values, and data augmentation using ImageDataGenerator, resulting in 3,000 images. The dataset was divided into 80% training data, 10% validation data, and 10% testing data. Testing was conducted by varying the learning rate, the number of convolutional layers, the number of filters, the number of neurons in the dense layer, dropout, the number of epochs, and the batch size to obtain the best model.

The results show that the best CNN model was obtained in scenario P7 with 4 convolutional layers, filters of 16, 32, 64, and 128, a learning rate of 0.001, dropout of 0.6, 50 epochs, a batch size of 32, and a dense layer with 256 neurons. This model achieved a test accuracy of 95.33%. Furthermore, evaluations using precision, recall, and F1-score showed values above 0.90 across all classes.

Keywords: *Deep Learning, Convolutional Neural Network, Image Classification, Traditional Javanese Musical Instruments, CNN.*