

KLASIFIKASI JENIS JAJANAN TRADISIONAL KHAS BALI MENGUNAKAN CONVOLUTIONAL NEURAL NETWORK DENGAN ARSITEKTUR MOBILENETV2

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ABSTRAK

Jajanan tradisional merupakan warisan budaya yang mengandung nilai-nilai sosial dan spiritual bagi masyarakat. Di Bali, berbagai jenis jajanan tradisional tidak hanya sekadar dikonsumsi, melainkan menjadi bagian penting dalam pelaksanaan upacara adat maupun kegiatan keagamaan. Seiring berkembangnya kuliner modern, minat masyarakat terhadap jajanan tradisional khas Bali cenderung mengalami penurunan. Selain itu, proses pengenalan setiap jenis jajanan masih menjadi tantangan karena banyak di antaranya memiliki karakteristik visual yang serupa, seperti bentuk, warna, dan tekstur. Oleh sebab itu, diperlukan pemanfaatan teknologi sebagai salah satu upaya untuk mendukung pelestarian warisan budaya tersebut. Penelitian ini bertujuan mengembangkan model yang dapat mengidentifikasi berbagai jenis jajanan tradisional Bali secara otomatis. Data yang digunakan berjumlah 1.000 gambar dan dibagi ke dalam 10 kelas, terdiri dari 9 kelas jajanan tradisional Bali, yaitu laklak, lukis, kalidrem, cerorot, jajan matahari, begina, sirat, satuh, dan reta serta 1 kelas tambahan untuk jajanan non-Bali. Pembagian data dilakukan dengan rasio 60% data pelatihan, 20% data validasi, dan 20% data pengujian. Model klasifikasi dibangun menggunakan arsitektur *MobileNetV2* dengan beberapa variasi *hyperparameter*, yakni *learning rate* 0,001, 0,0001, dan 0,00001, serta *batch size* 16 dan 32. Pada tahap pelatihan, digunakan strategi *early stopping* dan model *checkpoint* untuk meminimalkan *overfitting* sekaligus menyimpan model dengan performa validasi terbaik. Berdasarkan evaluasi, model menunjukkan hasil yang sangat baik. Kombinasi *learning rate* 0,0001 dan *batch size* 16 memberikan performa optimal dengan akurasi validasi 98,50% dan akurasi pengujian 98,50%. Temuan ini menandakan bahwa model memiliki kemampuan generalisasi yang tinggi dan efektif untuk mengklasifikasikan berbagai jenis jajanan tradisional khas Bali.

Kata kunci: Klasifikasi Citra, Jajanan Tradisional Bali, *Deep Learning*, *Convolutional Neural Network*, *MobileNetV2*

CLASSIFICATION OF BALINESE TRADITIONAL SNACK TYPES USING A CONVOLUTIONAL NEURAL NETWORK WITH MOBILENETV2 ARCHITECTURE

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ABSTRACT

Traditional snacks are a cultural heritage that contain social and spiritual values for the community. In Bali, various types of traditional snacks are not merely consumed as food, but also play an important role in traditional ceremonies and religious activities. As modern cuisine continues to grow, public interest in Balinese traditional snacks tends to decline. In addition, recognizing each type of snack remains a challenge because many of them share similar visual characteristics, such as shape, color, and texture. Therefore, the use of technology is needed as one effort to support the preservation of this cultural heritage. This study aims to develop a model that can automatically identify various types of traditional Balinese snacks. The data used consisted of 1,000 images divided into 10 classes, comprising 9 classes of traditional Balinese snacks, namely laklak, lukis, kalidrem, cerorot, jajan matahari, begina, sirat, satuh, and reta, as well as 1 additional class of non-Balinese snacks. The data were split using a ratio of 60% training data, 20% validation data, and 20% testing data. The classification model was built using the MobileNetV2 architecture with several hyperparameter variations, namely learning rates of 0.001, 0.0001, and 0.00001, as well as batch sizes of 16 and 32. During training, early stopping and model checkpoint strategies were used to minimize overfitting while saving the model with the best validation performance. Based on the evaluation, the model showed very good results. The combination of a learning rate of 0.0001 and a batch size of 16 produced the optimal performance, with a validation accuracy of 98.50% and a testing accuracy of 98.50%. These findings indicate that the model has a high generalization ability and is effective for classifying various types of traditional Balinese snacks.

Keywords: *Image Classification, Balinese Traditional Snacks, Deep Learning, Convolutional Neural Network, MobileNetV2.*