

KLASIFIKASI BATIK MADURA MENGGUNAKAN METODE *SUPPORT VECTOR MACHINE* (SVM) DENGAN FITUR EKSTRAKSI GLCM

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ABSTRAK

Keanekaragaman motif dan warna pada batik Madura tidak hanya memperkaya budaya Nusantara, tetapi juga memperkuat identitas masyarakat setempat. Namun, hingga kini, Indonesia belum memiliki sistem dokumentasi dan klasifikasi yang sistematis untuk berbagai motif batik dari berbagai daerah. Padahal, sistem semacam ini dapat menjadi referensi penting bagi kepentingan akademis, industri, maupun budaya. Oleh karena itu, diperlukan sistem otomatis yang mampu mengidentifikasi motif dan corak batik guna mempermudah penentuan asal-usul batik berdasarkan pola dan cirinya. Penelitian ini menerapkan metode Support Vector Machine (SVM) untuk mengklasifikasikan motif batik Madura, batik cap (non-Madura), serta non-batik. Dataset yang digunakan terdiri dari 50 sampel yang terbagi dalam lima kelas, dengan masing-masing kelas memiliki 10 sampel. Proses augmentasi data dilakukan menggunakan dua teknik, yaitu random brightness contrast dan hue saturation value untuk penyesuaian pencahayaan. Selain itu, tiga jenis kernel SVM, yaitu linear, polynomial, dan radial basis function (RBF), digunakan dengan berbagai rasio pembagian data pelatihan dan pengujian (60:40, 70:30, 80:20, dan 90:10). Hasil eksperimen menunjukkan bahwa metode yang digunakan mampu mengklasifikasikan batik dengan tingkat akurasi akhir sebesar 88% pada pengujian menggunakan input gambar. Namun, untuk meningkatkan akurasi model, jumlah dataset perlu diperbanyak agar sistem dapat mengenali motif batik dengan lebih baik.

Kata kunci: Batik Madura, Support Vector Machine (SVM) in Machine Learning.

CLASSIFICATION OF MADURA BATIK USING THE SUPPORT VECTOR MACHINE (SVM) METHOD WITH GLCM FEATURE EXTRACTION

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ABSTRACT

The diversity of motifs and colors in Madura batik not only enriches the culture of the archipelago but also strengthens the identity of the local community. However, until now, Indonesia lacks a systematic documentation and classification system for various batik motifs from different regions. Such a system could serve as an important reference for academic, industrial, and cultural purposes. Therefore, an automated system is needed to identify batik motifs and patterns to help determine the origin of batik based on its designs and features. This research applies the Support Vector Machine (SVM) method to classify Madura batik motifs, stamped batik (non-Madura), and non-batik. The dataset consists of 50 samples, divided into five classes, with each class containing 10 samples. Thought for 5 seconds the diversity of motifs and colors in Madura batik not only enriches the Nusantara culture but also strengthens the identity of the local community. However, to date, Indonesia has not yet established a systematic documentation and classification system for the various batik motifs from different regions. In fact, such a system could serve as an important reference for academic, industrial, and cultural purposes. Therefore, an automated system capable of identifying batik motifs and patterns is needed to facilitate the determination of a batik's origin based on its design and characteristics. This study applies the Support Vector Machine (SVM) method to classify Madura batik motifs, stamped batik (non-Madura), and non-batik. The dataset used consists of 50 samples divided into five classes, with each class containing 10 samples. Data augmentation was performed using two techniques—random brightness contrast and hue—saturation—value adjustments—to normalize lighting. In addition, three SVM kernel types—linear, polynomial, and radial basis function (RBF)—were employed with various train–test split ratios (60:40, 70:30, 80:20, and 90:10). Experimental results show that the proposed method can classify batik images with a final accuracy of 88% on the test set. However, to further improve model accuracy, the dataset size should be increased so that the system can recognize batik motifs more effectively.

Keywords: Madura Batik, Support Vector Machine (SVM) in Machine Learning.