

INTISARI

PENGENALAN TULISAN TANGAN AKSARA JAWA MENGGUNAKAN CAPSULE NETWORK

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Beberapa penelitian telah dilakukan untuk mengklasifikasikan tulisan tangan Aksara Jawa melalui berbagai metode *Artificial Neural Network*, namun akurasi yang didapatkan masih perlu peningkatan lebih lanjut. Penelitian ini mengusulkan penggunaan salah satu metode *Artificial Neural Network* yakni *Capsule Network* dengan harapan dapat meningkatkan akurasi dalam klasifikasi tulisan tangan Aksara Jawa yang *robust* terhadap *affine transformation*.

Optimalisasi performa *Capsule Network* pada tahap pra-pemrosesan data mencakup proses deteksi *Region of Interest* (ROI), *image enhancement*, *image transformation* dan *image resizing*. Kemudian pada arsitektur *capsule network* dilakukan optimasi *hyper-parameter* untuk mendapatkan performa model yang optimal berupa optimasi nilai *r* (*routing iteration*).

Hasil pengujian dengan menggunakan total data 19.800 menunjukkan bahwa dengan data uji dikenakan *affine transformation* berupa rotasi 1-5 derajat ke kanan dan ke kiri metode ini mampu menghasilkan tingkat akurasi klasifikasi tulisan tangan Aksara Jawa sebesar 95,08% dengan nilai loss 0,0563.

Kata Kunci: Capsule Network, Artificial Neural Network, Tulisan Tangan Aksara Jawa

ABSTRACT

HANDWRITTEN JAVANESE SCRIPT RECOGNITION USING CAPSULE NETWORK

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Some research has been done in order to classify handwritten Javanese Script using several Artificial Neural Network methods, unfortunately the result still needs improvements. This research proposes the use of Capsule Network as one of Artificial Neural Network methods to improve the accuracy of Handwritten Javanese Script classification which is robust to affine transformation.

Performance optimization of Capsule Network was done in this research by enabling data preprocessing which includes image segmentation, image enhancement, image transformation and image resizing. Then a hyper-parameter optimization in r (routing iteration) adds more performance boost to the model inside architecture of Capsule Network.

The result of this research using 19,800 total data shown that after being subjected to affine transformation in the form of 1-5 degree rotation to the right and left this method can reach an accuracy of classifying Handwritten Javanese Script as much as 95.08% with loss value 0.0563.

Keywords: Capsule Network, Artificial Neural Network, Handwritten Javanese Script