

**LIGHTWEIGHT CNN FOR *NASKHI* AND *RIQ'AH*
KHAT CLASSIFICATION**



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LIGHTWEIGHT CNN FOR *NASKHI* AND *RIQ'AH* KHAH CLASSIFICATION

THESIS

To fulfill some requirements
Obtained Bachelor of Computer Science

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ABSTRACT

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The Arabic script has various types of khat that are complex and different from one another, thus requiring an appropriate classification to identify the type of khat used. This study uses the Lightweight Convolutional Neural Network (CNN) classification method to identify the types of khat Naskhi and Riq'ah in the Arabic script dataset. The evaluation results show that this classification model has an accuracy of 98.75% on training data and 100% on validation data, with a relatively fast processing time of 2s 375ms/step faster than the previous study with an accuracy of 91.87% and an average processing time of 3s 465ms/step. so that the model can be implemented properly in systems that require high data processing speed and also devices that have resource limitations. These results indicate that the classification model using the Lightweight CNN layer can be used as an effective alternative in classifying types of Arabic writing, especially in recognizing certain types of khat such as Naskhi and Riq'ah. Furthermore, this research can be developed using a larger and more diverse dataset, and evaluated and compared with other classification models to improve the model's performance in recognizing more complex types of Arabic writing.

Keywords: Lightweight CNN, classification, khat naskhi, khat riq'ah, Arabic script.

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ABSTRAK

CNN RINGAN UNTUK KLASIFIKASI NASKHI DAN RIQ'AH KHAT

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Tulisan Arab memiliki berbagai jenis khat yang kompleks dan berbeda satu sama lain, sehingga memerlukan klasifikasi yang tepat untuk mengidentifikasi jenis khat yang digunakan. Penelitian ini menggunakan metode klasifikasi Lightweight Convolutional Neural Network (CNN) untuk mengenali jenis khat naskhi dan riq'ah pada dataset tulisan Arab. Hasil evaluasi menunjukkan bahwa model klasifikasi ini memiliki akurasi mencapai 98.75% pada data latih dan 100% pada data validasi, dengan waktu pemrosesan relatif cepat, yakni 2s 375ms/step lebih cepat dari penelitian sebelumnya dengan akurasi 91.87% dan rata-rata waktu pemrosesan 3s 465ms/step sehingga model dapat diimplementasikan dengan baik dalam sistem yang memerlukan kecepatan pemrosesan data yang tinggi dan juga perangkat yang memiliki keterbatasan resource. Hasil ini menunjukkan bahwa model klasifikasi menggunakan layer Lightweight CNN dapat dijadikan sebagai alternatif yang efektif dalam melakukan klasifikasi jenis-jenis tulisan Arab, terutama dalam mengenali jenis-jenis khat tertentu seperti naskhi dan riq'ah . Selanjutnya, penelitian ini dapat dikembangkan dengan menggunakan dataset yang lebih besar dan beragam, serta dievaluasi dan dibandingkan dengan model klasifikasi lainnya untuk meningkatkan kinerja model dalam mengenali jenis tulisan Arab yang lebih kompleks.

Kata kunci : Lightweight CNN, Klasifikasi, Khat Naskhi, Khat Riq'ah, Text Arab.

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APPROVAL

LIGHTWEIGHT CNN FOR *KHAT NASKHI* AND *RIQ'AH* CLASSIFICATION

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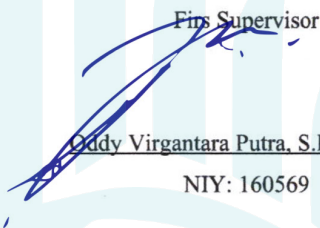
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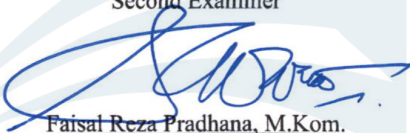
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