

Rancang Bangun Aplikasi Pendeteksi Pneumonia Melalui Citra X-Ray Berbasis Mobile

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ABSTRAK

Pneumonia merupakan salah satu penyakit paru-paru yang menjadi penyebab utama kematian, terutama pada anak-anak balita. Deteksi dini melalui analisis citra X-ray memiliki potensi besar dalam meningkatkan akurasi diagnosis, namun keterbatasan sumber daya medis di berbagai wilayah menjadi hambatan signifikan. Penelitian ini bertujuan merancang dan membangun aplikasi *mobile* berbasis Android untuk mendeteksi pneumonia dengan menggunakan metode *Convolutional Neural Network* (CNN). Aplikasi dikembangkan menggunakan *framework* Flutter, sementara model CNN dilatih dengan dataset citra X-ray dari sumber terbuka berlisensi CC BY 4.0. Hasil pengujian menunjukkan model CNN mampu mencapai tingkat akurasi hingga 96%, dengan waktu prediksi rata-rata 3 detik setelah diintegrasikan ke dalam aplikasi menggunakan TensorFlow Lite. Aplikasi ini menyediakan fitur deteksi melalui kamera dan galeri, serta fitur artikel informatif terkait pneumonia. Aplikasi ini diharapkan menjadi solusi praktis bagi tenaga medis untuk mendeteksi pneumonia secara cepat dan akurat.

Kata kunci: Pneumonia, Citra X-ray, *Convolutional Neural Network*, Aplikasi *Mobile*.

Design and Development of a Mobile-Based Pneumonia Detection Application Using X-Ray Images

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ABSTRACT

Pneumonia is one of the leading causes of death among young children, particularly those under five years old. Early detection through X-ray image analysis has significant potential to improve diagnostic accuracy, yet limited medical resources in various regions pose a major challenge. This study aims to design and develop an Android-based mobile application for detecting pneumonia using the Convolutional Neural Network (CNN) method. The application was developed using the Flutter framework, while the CNN model was trained with an open-source X-ray image dataset licensed under CC BY 4.0. The test results show that the CNN model achieved an accuracy rate of up to 96%, with an average prediction time of 3 seconds after being integrated into the application using TensorFlow Lite. The application provides detection features through the camera and gallery, as well as informative articles about pneumonia. This application is expected to serve as a practical solution for medical professionals to enabling quick and accurate pneumonia detection.

Keywords: *Pneumonia, X-ray Images, Convolutional Neural Network, Mobile Application*