DETEKSI *ESOPHAGITIS* BERDASARKAN HASIL FOTO *ENDOSCOPY* MENGGUNAKAN ALGORITMA CNN

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ABSTRAK

Penelitian ini bertujuan untuk mengembangkan model *Convolutional Neural Network* (CNN) yang mampu mendeteksi *esophagitis* berdasarkan citra endoskopi. Rumusan masalah dalam penelitian ini mencakup pengembangan model CNN yang efektif untuk mendeteksi *esophagitis*, menangani kompleksitas dan variasi gambar endoskopi, serta meningkatkan kualitas dan kecepatan diagnosis *esophagitis* secara non-invasif. Batasan penelitian ini meliputi penggunaan data gambar endoskopi untuk deteksi *esophagitis* tanpa membedakan jenis spesifik, pengembangan model CNN dengan dataset yang tersedia, serta evaluasi berdasarkan akurasi, presisi, *recall*, dan F1-*score*. Tujuan penelitian ini adalah untuk mengembangkan model CNN yang akurat dan cepat dalam mendeteksi *esophagitis*, serta mengevaluasi penerapan teknologi AI dalam diagnosis *esophagitis*. Latar belakang penelitian menyoroti pentingnya deteksi dini *esophagitis* untuk mencegah komplikasi serius dan perlunya teknik non-invasif yang efektif. Metode penelitian yang digunakan adalah *research and development* (R&D) dengan dataset gambar endoskopi dari *repository Gastrovision*. Model CNN yang dikembangkan mencapai akurasi 95% dalam mendeteksi *esophagitis* dan 100% untuk kondisi normal, menunjukkan performa tinggi dalam mengidentifikasi *esophagitis*. Kesimpulan dari penelitian ini adalah model CNN menawarkan metode deteksi *esophagitis* yang non-invasif, cepat, dan akurat dibandingkan metode tradisional. Saran untuk penelitian selanjutnya termasuk penambahan klasifikasi penyakit pada saluran pencernaan dan pengembangan prototipe perangkat lunak untuk implementasi di fasilitas kesehatan.

Kata Kunci: *Convolutional Neural Network, Esophagitis*, Endoskopi, Teknologi AI, Analisi Citra Medis, *Deep Learning*, Deteksi Penyakit.

ESOPHAGITIS DETECTION BASED ON ENDOSCOPY PHOTO RESULTS USING CNN ALGORITHM

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ABSTRACT

This research aims to develop a Convolutional Neural Network (CNN) model capable of detecting esophagitis based on endoscopic images. The problem formulation in this research includes the development of an effective CNN model to detect esophagitis, handle the complexity and variation of endoscopy images, and improve the quality and speed of non-invasive diagnosis of esophagitis. The limitations of this study include the use of endoscopic image data for esophagitis detection without distinguishing specific types, development of CNN models with available datasets, and evaluation based on accuracy, precision, recall, and F1-score. The aim of this study is to develop an accurate and fast CNN model in detecting esophagitis, and evaluate the application of AI technology in the diagnosis of esophagitis. The research background highlights the importance of early detection of esophagitis to prevent serious complications and the need for effective non-invasive techniques. The research method used was research and development (R&D) with a dataset of endoscopy images from the Gastrovision repository. The developed CNN model achieved 95% accuracy in detecting esophagitis and 100% for normal conditions, showing high performance in identifying esophagitis. The conclusion of this study is that the CNN model offers a non-invasive, fast, and accurate method of esophagitis detection compared to traditional methods. Suggestions for future research include the addition of classifications of diseases of the gastrointestinal tract and the development of software prototypes for implementation in healthcare facilities.

Keywords: *Convolutional Neural Network, Esophagitis, Endoscopy, AI Technology, Medical Image Analysis, Deep Learning, Disease Detection.*